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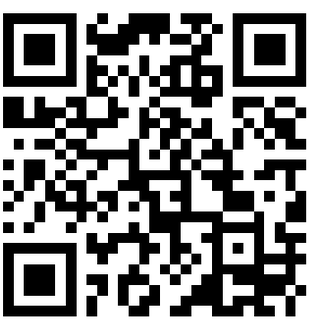
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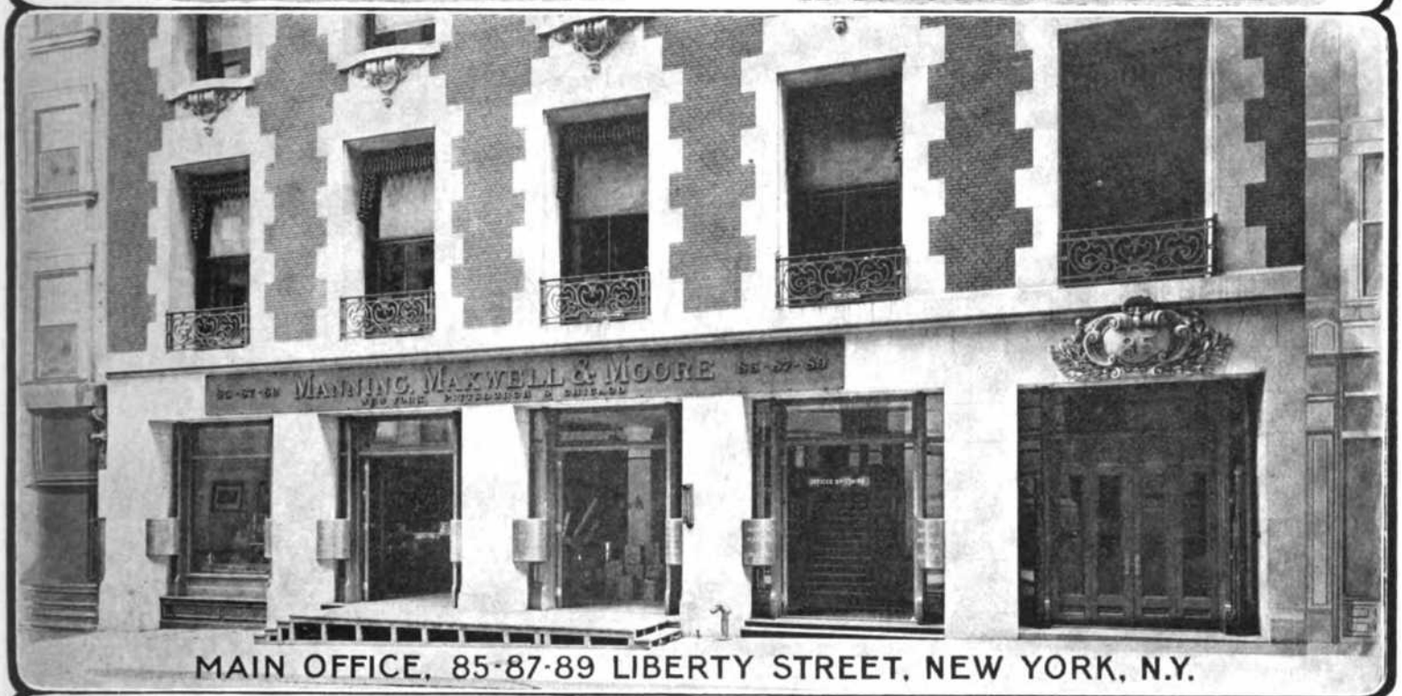


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MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

THREAD STANDARDS

UNITED STATES OR FRANKLIN INSTITUTE STANDARD

V THREAD

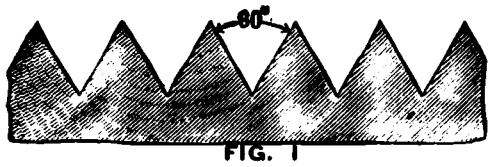


FIG. 1

Diameter taps, inches	¼	5/16	⅜	7/16	½	⅝	¾	⅞	1
No. threads to inch	20	18	16	14	12	11	10	9	8

Diameter taps, inches	1⅛	1¼	1⅜	1½	1⅝	1¾	1⅞	2
No. threads to inch	7	7	6	6	5	5	4½	4½



FIG. 2

Diameter taps, inches	¼	5/16	⅜	7/16	½	9/16	⅝	¾	⅞	1
No. threads to inch	20	18	16	14	13	12	11	10	9	8

Diameter taps inches	1¼	1⅜	1⅜	1½	1⅝	1¾	1⅞	2
No. threads to inch	7	7	6	6	5½	5	5	4½

WHITWORTH STANDARD

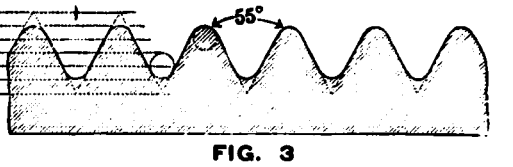


FIG. 3

Diameter taps, inches	¼	5/16	⅜	7/16	½	⅝	¾	⅞	1
No. threads to inch	20	18	16	14	12	11	10	9	8

Diameter taps, inches	1⅛	1¼	1⅜	1½	1⅝	1¾	1⅞	2
No. threads to inch	7	7	6	6	5	5	4½	4½

TAPER



FIG. 4

PLUG



FIG. 5

BOTTOMING



FIG. 6

Shanks size of bottom of thread.

SETS OF MACHINISTS' HAND TAPS

In ordering machinists' hand taps, parties will state whether they wish taps with shanks the full size of thread, or shanks size of bottom of thread. Unless otherwise specified, taps to and including ½ inch will be furnished with shanks full size of thread. Larger than ½ inch with shanks size of bottom of thread.

V, U. S. or Whitworth shape of thread. Unless advised to the contrary, we fill orders with **V** threads. Exact size.

TAPER



FIG. 6A

PLUG



FIG. 6B

BOTTOMING

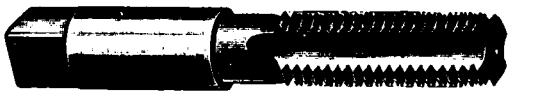


FIG. 6C

Shanks full size of thread.

Sizes, Inches.	Whole Lengths, Inches.	Length of Threads, Inches.	Number V Threads to Inch.	Prices, Each.	Prices, Per Set of 3 Taps.
¼	2¾	1⅛	16, 18, 20, 22, 24, 26, 28, 32	$0 45	$1 35
5/16	3	1¼	16, 18, 20, 22, 24, 26, 28	50	1 50
⅜	3¼	1⅜	14, 16, 18, 20, 22, 24, 26, 28	55	1 65
7/16	3½	1½	12, 14, 16, 18, 20, 22, 24, 26	60	1 80
½	3¾	1 9/16	12, 13, 14, 16, 18, 20, 22, 24, 26	70	2 10
9/16	4	1 11/16	12, 14, 20, 22, 24, 26	80	2 40
⅝	4¼	1 13/16	10, 11, 12, 20, 22, 24, 26	90	2 70
11/16	4½	1 15/16	10, 11, 12, 20, 22, 24, 26	1 05	3 15
¾	4¾	2	10, 11, 12, 20, 22, 24, 26	1 20	3 60
13/16	4⅞	2⅛	10, 12	1 40	4 20
⅞	5⅛	2 3/16	9, 10, 12, 20, 22, 24, 26	1 60	4 80
15/16	5¼	2 5/16	9	1 80	5 40
1	5½	2⅜	8, 12, 20, 22, 24, 26	2 00	6 00
1⅛	5⅞	2 9/16	7, 8	2 25	6 75
1¼	6¼	2¾	7	2 60	7 80
1⅜	6⅝	2⅞	6	3 00	9 00
1½	7	3	6	3 50	10 50
1⅝	7¼	3 3/16	5, 5½	4 20	12 60
1¾	7⅞	3 7/16	5	5 00	15 00
1⅞	8¼	3⅝	4½, 5	5 80	17 40
2	8½	3¾	4½	6 70	20 10
2¼	8½	3¾	4½	7 80	23 40
2¼	8¾	3⅞	4½	9 00	27 00
2⅜	9	4	4½	10 25	30 75
2½	9¼	4⅛	4	11 50	34 50
2⅝	9½	4¼	4	12 75	38 25
2¾	9¾	4 5/16	4	14 00	42 00
2⅞	10	4 7/16	4	15 50	46 50
3	10⅛	4 9/16	3½	17 00	51 00
3⅛	10⅜	4⅝	3½	18 50	55 50
3¼	10½	4¾	3½	20 00	60 00
3⅜	10¾	4⅞	3¼, 3½	22 00	66 00
3½	10⅞	4 15/16	3¼	24 00	72 00
3⅝	11	5	3¼	26 00	78 00
3¾	11⅛	5 1/16	3	28 00	84 00
3⅞	1 ¼	5⅛	3	30 50	91 50
4	11½	5¼	3	33 00	99 00

We have the above sizes in stock **V** Thread—1/32 over size to 2 inches only. Larger sizes made to order. Left-hand taps, regular sizes as above, same list prices as right-hand.

MACHINE OR NUT TAPS



FIG. 7

Long Shank. Patent Relieved. **V**, U. S. or Whitworth Shape of Thread. Unless advised to the contrary, we fill orders with **V** threads.

Sizes, Inches.	Whole Lengths, Inches.	Length of Threads, Inches.	No. V Threads to Inch.	Prices, Each.	Sizes, Inches.	Whole Length, Inches.	Length of Threads, Inches.	No. V Threads to Inch.	Prices, Each.
¼	4½	1⅞	16, 18, 20	$0 60	1⅞	16½	7¼	4½, 5	$6 80
5/16	5⅛	2⅛	16, 18	70	2	17	7½	4½	7 70
⅜	5⅞	2⅜	14, 16, 18	80	2⅛	17½	7⅞	4½	9 00
7/16	6½	2⅝	12, 14, 16	90	2¼	18	8¼	4½	10 20
½	7¼	2⅞	12, 13, 14	1 00	2⅜	18½	8½	4½	11 50
9/16	7¾	3	12, 14	1 15	2½	18¾	8¾	4	12 50
⅝	8½	3¼	10, 11, 12	1 30	2⅝	19¼	9⅛	4	14 00
11/16	9	3⅜	11, 12	1 45	2¾	19½	9⅜	4	15 00
¾	9½	3¾	10, 11, 12	1 60	2⅞	19½	9¾	4	16 50
13/16	10	4	10	1 80	3	20	10	3½	18 00
⅞	10½	4¼	9, 10	2 10	3⅛	20	10¼	3½	19 75
15/16	11	4⅜	9	2 40	3¼	20½	10½	3½	21 50
1	11½	4⅝	8	2 80	3⅜	20½	10¾	3¼	23 50
1⅛	12½	5	7, 8	3 20	3½	21	11	3¼	25 50
1¼	13¼	5⅜	7, 8	3 70	3⅝	21	11¼	3¼	27 50
1⅜	14	5¾	6	4 20	3¾	21¼	11½	3	29 50
1½	14¾	6⅛	6	4 70	3⅞	21¼	11¾	3	31 50
1⅝	15½	6½	5, 5½	5 80	4	21½	12	3	33 50
1¾	16	6⅞	5	6 00					

We keep in stock of the **V** thread the above, 1/32 over size for rough iron. In ordering, always state exact diameter and thread wanted. When exact duplicates are wanted, special orders should always be accompanied by a stub with nut fitting same.

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MACHINE SCREW TAPS



FIG. 8

Sizes of Screw Gauge, No.	Approximate Sizes in Inches.	Standard No. of Threads.	Threads also Furnished.	Prices, Each.	Prices, per Dozen.
1	1/16		56, 60, 64, 72	$0 35	$4 00
1½			56	35	4 00
2	5/64	56	48, 64	35	4 00
3		48	40, 44, 56	35	4 00
4	7/64	36	30, 32, 40, 42, 44, 48	35	4 00
5		36	30, 32, 40, 44, 48	35	4 00
6	9/64	32	30, 36, 38, 40, 44, 48	35	4 00
7		32	24, 28, 30, 36, 40	35	4 00
8	5/32	32	24, 30, 36, 40, 44	35	4 00
9		30	24, 28, 32	35	4 00
10	3/16	24	20, 22, 28, 30, 32, 36	35	4 00
11		24	22, 28, 30	35	4 00
12	7/32	24	20, 22, 26, 28, 30, 32, 34, 36	35	4 00
13		22	20, 24, 32	38	4 40
14	1/4	20	16, 18, 22, 24, 26	38	4 40
15		20	18, 22, 24	38	4 40
16	17/64	18	16, 20, 22, 24, 26	38	4 40
17		18	16, 20	38	4 40
18	9/32	18	16, 20, 22, 24, 26	38	4 40
19		18	16 20, 22, 24	38	4 40
20	5/16	16	18, 20, 22, 24	45	5 30
22		16	18	45	5 30
24	3/8	16	14, 18, 20, 22, 24	45	5 30
26		16	14	53	6 30
28		14	16	53	6 30
30	7/16	14	16	53	6 30

Less than six taps of a size and thread at single prices. Sizes and threads not on the list subject to special prices. For sizes of Tap Drills see page 28.

SHORT PLUG HOB TAPS



FIG. 10

Diameters, Inches.	Number of Threads to Inch.	Prices, Each.	Diameters, Inches.	Number of Threads to Inch.	Prices, Each.
1/4	16, 18, 20	$0 60	15/16	9	$2 40
5/16	16, 18	70	1	8	2 80
3/8	14, 16	80	1 1/8	7, 8	3 20
7/16	12, 14, 16	90	1 1/4	7, 8	3 70
1/2	12, 13, 14	1 00	1 3/8	6	4 20
9/16	12, 14	1 15	1 1/2	6	4 70
5/8	10, 11, 12	1 30	1 5/8	5, 5 1/2	5 30
11/16	11, 12	1 45	1 3/4	5	6 00
3/4	10	1 60	1 7/8	4 1/2, 5	6 80
13/16	10	1 80	2	4 1/2	7 70
7/8	9, 10	2 10			

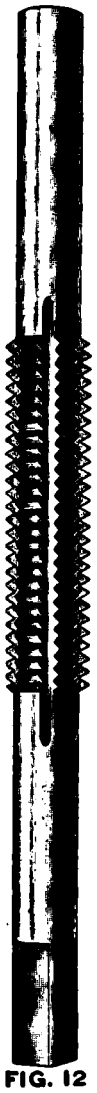


FIG. 12

SELLERS HOB TAPS

PRICES, FIG. 12

Diameters, Inches.	United States Standard. Number of Threads to Inch.	Lengths Over All, Inches.	Prices, Each.
1/4	20	4 1/4	$0 90
5/16	18	4 1/2	1 05
3/8	16	5	1 20
7/16	14	5 1/4	1 35
1/2	13	5 3/4	1 50
9/16	12	6	1 75
5/8	11	6 1/2	1 95
11/16	11	7	2 20
3/4	10	7 1/2	2 40
13/16	10	8	2 70
7/8	9	8 1/2	3 15
15/16	9	9	3 60
1	8	9 1/2	4 20
1 1/8	7	9 3/4	4 80
1 1/4	7	10	5 55
1 3/8	6	10 1/2	6 30
1 1/2	6	11	7 05
1 5/8	5 1/2	11 1/2	7 95
1 3/4	5	12	9 00
1 7/8	5	12 1/2	10 20
2	4 1/2	13	11 55

Sellers' Hob Tabs having United States Standard Threads furnished on orders, unless otherwise advised.

PULLEY TAPS



FIG. 9

PRICES BY LENGTHS

Diameters, Inches.	No. of V Threads to Inch.	6 Inch.	8 Inch.	10 Inch.	12 Inch.	14 Inch.	16 Inch.	18 Inch.	20 Inch.	22 Inch.	24 Inch.
1/4	20	$0 65	$0 70	$0 80	$0 90						
5/16	18	75	80	1 00	1 20						
3/8	16	80	90	1 10	1 30	$1 40	$1 55	$1 70			
7/16	14	90	1 00	1 20	1 40	1 50	1 65	1 80			
1/2	12, 13	1 00	1 15	1 30	1 45	1 60	1 75	1 90	$2 05		
9/16	12	1 10	1 30	1 45	1 55	1 70	1 85	2 05	2 20	$ 235	
5/8	11	1 20	1 35	1 50	1 60	1 75	1 90	2 10	2 25	2 40	$2 55
11/16	11	1 30	1 45	1 55	1 70	1 90	2 05	2 20	2 35	2 50	2 65
3/4	10	1 40	1 50	1 60	1 80	2 00	2 15	2 30	2 45	2 60	2 75
13/16	10	1 60	1 70	1 80	2 00	2 15	2 30	2 45	2 60	2 75	2 90
7/8	9	1 80	1 90	2 10	2 30	2 50	2 70	2 90	3 10	3 30	3 50
15/16	9	2 00	2 10	2 30	2 50	2 70	2 90	3 10	3 30	3 50	3 70
1	8	2 25	2 30	2 50	2 70	2 90	3 10	3 30	3 50	3 70	3 90

We furnish the above sizes in V and United States Standard Threads. Other sizes and threads made to order and furnished at special prices.

When ordering, specify length desired.

HOB OR MASTER TAPS

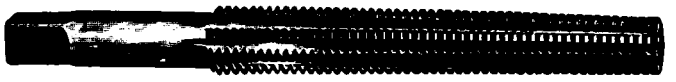


FIG. 11

Diameters, Inches.	No. of Threads to Inch.	Prices, Each.	Diameters, Inches.	No. of Threads to Inch.	Prices, Each.
1/4	16, 18, 20	$0 75	15/16	9	$3 00
5/16	16, 18	87	1	8	3 50
3/8	14, 16	1 00	1 1/8	7, 8	4 00
7/16	12, 14, 16	1 12	1 1/4	7, 8	4 62
1/2	12, 13, 14	1 25	1 3/8	6	5 25
9/16	12, 14	1 44	1 1/2	6	5 87
5/8	10, 11, 12	1 62	1 5/8	5, 5 1/2	6 62
11/16	11, 12	1 81	1 3/4	5	7 50
3/4	10	2 00	1 7/8	4 1/2, 5	8 50
13/16	10	2 25	2	4 1/2	9 62
7/8	9, 10	2 62			

We can also furnish Hob Taps for the various Bolt Cutters in the market, but need a drawing with order to show exact diameter and length of thread required.

In ordering Hobs always state whether they are required for hobbing chasers in Bolt Cutters, Solid Dies, or Screw Plate Dies.

STAY BOLT TAPS FOR BOILER WORK

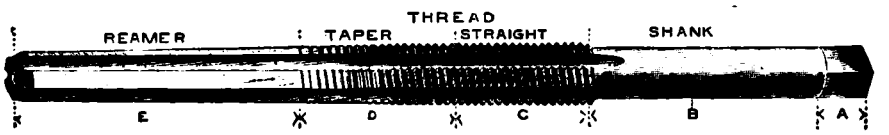


FIG. 13

DIAMETERS, INCHES.

Lengths, Inches.	¾ to ⅞ Prices, Each.	15/16 to 1 Prices, Each.	1 1/16 to 1 1/8 Prices, Each.	1 3/16 to 1 1/4 Prices, Each.	1 5/16 to 1 3/8 Prices, Each.	1 7/16 to 1 1/2 Prices, Each.
12	$ 4 50					
14	5 00					
16	5 60	$ 6 60	$ 7 60	$ 9 00	$11 00	$13 00
18	7 20	8 50	9 50	10 50	12 50	14 50
21	8 00	9 35	10 35	12 00	14 00	16 00
24	8 80	10 20	11 20	12 75	15 00	17 00
27	10 90	12 25	13 25	14 75	17 00	19 00
30	13 00	14 25	15 25	16 50	18 50	20 00
33	14 00	15 40	16 40	18 00	20 00	22 00
36	15 00	16 50	17 50	19 50	21 50	23 50
39	16 50	18 15	20 00	22 00	24 00	26 00
42	18 00	19 75	22 00	24 00	26 00	28 00
48	19 00	21 00	23 50	25 50	28 00	30 00
54	20 00	22 25	25 00	27 00	30 00	32 00

When ordering, the diameter and number of threads per inch, also the length of the parts A, B, C, D, and E, as shown in cut above, must be given.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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PATCH BOLT TAPS



FIG. 14

Diameters, Inches.	Number of Threads to Inch.	Prices, Each.	Diameters, Inches.	Number of Threads to Inch.	Prices Each.
½	12	$0 70	1 3/16	12	$1 40
9/16	12	80	⅞	12	1 60
⅝	12	90	1 5/16	12	1 80
1 1/16	12	1 05	1	12	2 00
¾	12	1 20			

Patch-bolt Taps are designed for boiler makers, and are tapered ¾ inch to the foot. Diameters given are nominal sizes.

STOVE BOLT TAPS



FIG. 16

Diameters Inches.	Number of Threads to Inch.	Prices, Each.	Prices, Per Dozen.
5/32	28	$0 35	$4 00
3/16	24	35	4 00
7/32	22	35	4 00
¼	18	38	4 40
5/16	18	38	4 40
⅜	16	45	5 30

Less than six of a size will be charged at single prices.

BICYCLE TAPER TAPS



FIG. 18

Diameters.	Threads.	Prices, Each.
¼	18, 20, 22, 24, 26, 28, 30, 32	$0 45
5/16	18, 20, 22, 24, 26, 28, 30, 32	50
⅜	18, 20, 22, 24, 26, 28, 30, 32	55
7/16	18, 20, 22, 24, 26, 28, 30, 32	60
½	18, 20, 22, 24, 26, 28, 30, 32	70
9/16	18, 20, 22, 24, 26, 28, 30, 32	80
⅝	18, 20, 22, 24, 26, 28, 30, 32	90

The diameter given in this table is that of the largest part of the tap.

Any sizes and threads not given in above table will be considered special.

We carry a stock of these taps as listed above in V threads only.

These Taper Taps were designed especially to meet the demand of bicycle repairers for a tapering tap. The taper on same is fast enough to give good results. These taps are so arranged that when run into a hole the full length of its thread the point of the next larger tap will enter.

BIT BRACE TAPS



FIG. 20

Diameters.	No. of Threads to Inch.	Prices, Each.
3/16	24	$0 50
¼	20	50
5/16	18	55
⅜	16	60
7/16	14	70
½	12 and 13	80

TAPS FOR BEAMAN AND SMITH HOLDERS



FIG. 15

FITTING No. 1 HOLDER.			FITTING No. 2 HOLDER.		
Diameters, Inches.	Number of Threads to Inch.	Prices, Each.	Diameters, Inches.	Number of Threads to Inch.	Prices, Each.
¼	20	$0 45	⅝	11	$0 90
5/16	18	50	1 1/16	11	1 05
⅜	16	55	¾	10	1 20
7/16	14	60	1 3/16	10	1 40
½	12	70	⅞	9	1 60
9/16	12	80	1 5/16	9	1 80
⅝	11	90	1	8	2 00
			1⅛	7	2 25
			1¼	7	2 60

Taps with V Threads sent on orders whenever the thread required is not stated.

Sizes or Threads not on the list subject to special prices.

BLACKSMITH TAPER TAPS



FIG. 17

Diameters, Inches.	No. of Threads to Inch.	Prices, Each.	Diameters, Inches.	No. of Threads to Inch.	Prices, Each.
¼	18, 20, 24	$0 30	¾	10, 12	$0 65
5/16	16, 18, 20	30	⅞	9, 10	90
⅜	14, 16, 18	35	1	8,	1 25
7/16	14, 16, 18	40	1⅛	7, 8	1 50
½	12, 14, 16	40	1¼	7, 8	1 75
9/16	12, 14	50	1½	6,	3 00
⅝	10, 11, 12	50			

TAPPER TAPS



FIG. 19

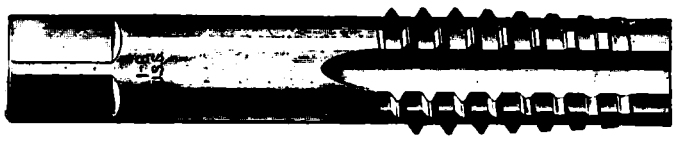
			PRICE EACH, WHOLE LENGTH.			
Diameters, Inches.	No. of Threads to Inch.	Length of Thread, Inches.	11 Inches.	12 Inches.	14 Inches.	16 Inches.
¼	16, 18, 20	1¾	$0 70	$0 75	$0 80	$0 90
5/16	16, 18	2	80	85	90	1 00
⅜	14, 16	2	90	95	1 00	1 10
7/16	12, 14, 16	2¼	1 00	1 05	1 15	1 25
½	12, 13, 14	2¼	1 12	1 15	1 25	1 35
9/16	12, 14	2½	1 30	1 35	1 45	1 55
⅝	10, 11, 12	2½	1 45	1 50	1 65	1 75
1 1/16	11, 12	2½	1 62	1 70	1 80	1 95
¾	10	2¾	1 80	1 85	2 00	2 10
1 3/16	10	2¾	2 05	2 10	2 25	2 35
⅞	9	3	2 35	2 45	2 60	2 75
1 5/16	9	3	2 70	2 75	3 00	3 15
1	8	3½	3 15	3 20	3 50	3 65
1⅛	7	3½	3 60	3 70	3 95	4 10
1¼	7	3½	4 15	4 25	4 50	4 65
1⅜	6	4	4 70	4 80	5 05	5 20
1½	6	4	5 30	5 40	5 65	5 80

Prices of special length taps given on application.

As ordered, we will furnish Tapper Taps in sixty-fourth and thirty-second sizes for rough iron.

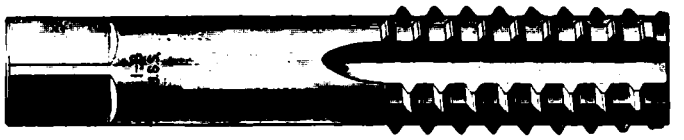
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ECHOLS PATENT TAPS, FOR HAND, PIPE, STAY BOLT AND BOILER TAPS



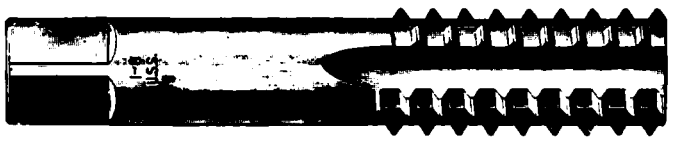
Taper

FIG. 21



Plug

FIG. 22



Bottoming

FIG. 23

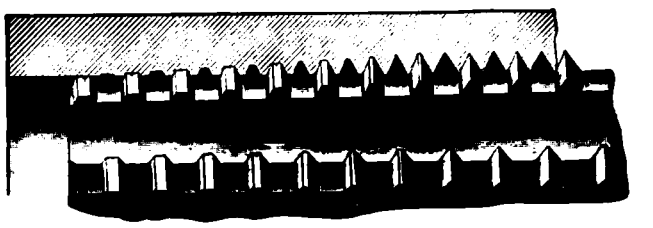


FIG. 24

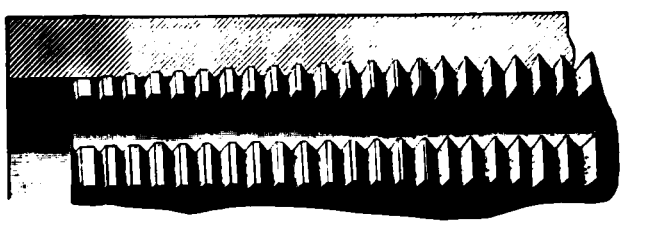


FIG. 25

DESCRIPTION

The illustrations above show a set of the Echols Patent Hand Taps, and views of this tap and the old style as they appear in actual work. The principle of the Echols patent is clearly shown in Fig. 24, in the omission of each alternate tooth, the organization being so carried out that each of the cutting teeth is followed by a space, and vice versa. This arrangement gives a freedom of action to each cutting tooth that is impossible in the old style, as in the latter the teeth of the tap and threads being formed, make a solid mass with no possibility of the relief from side pressure that is obtained in the Echols patent (Fig. 24).

In tapping holes in material such as copper and boiler sheets, the tendency is to tear the threads that are being formed, owing to the wedging action of the cutting teeth (see Fig. 25) and the little resistance offered by the metal to the pressure of the continuous row of cutting edges; the chips are carried forward in a mass in front of the cutting teeth, and unless the tap is frequently reversed and this mass of chips broken off the thread will either be mutilated or the tap itself broken.

It will be observed, by referring to Fig. 24, that only one side of the thread that is being formed is operated upon at once. It is thus relieved of one-half of the pressure and wholly of the wedging action, as in Fig. 25, and owing to the absence of the next adjacent threads (Fig. 24) it is possible for a slightly lateral movement of the thread being formed, owing to the mobility of the metal.

It will be noted that in the use of either tap the same amount of stock is removed in tapping out any given size hole, but actual practice shows that the resistance is from 30% to 50% less than the old style taps, proving conclusively that the excess resistance in the old tap is caused by friction, which is more destructive to the tap in its work than the resistance in the actual cutting operation.

Boiler makers will find this type of tap invaluable in tapping boiler sheets, as it effectually prevents the mutilation of threads and enables the operator to turn out a greater quantity of work.

Special taps made to order.

PRICES ON APPLICATION

CHASERS FOR SCREWS—V THREADS

INSIDE

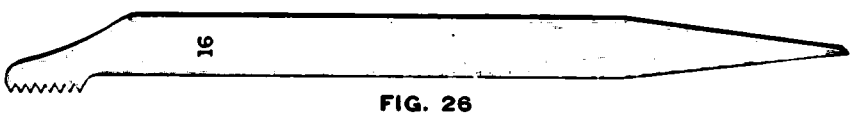


FIG. 26

OUTSIDE

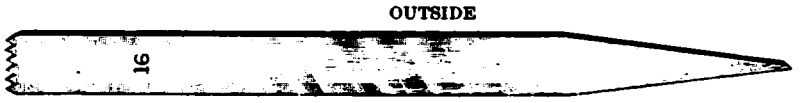


FIG. 27

	Prices, Each.	Prices, Per Pair.
Cutting 5, 6, 7, 8, 9, 10, 11, 11½, 12, 13, 14, 15, and 16 threads to the inch	$0 30	$0 60
Cutting 17, 18, 19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30, 31, 32, 33, 34, 35, 36, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50, 56, 60, 62, 64, and 70 threads to the inch	25	50

CHASERS FOR SCREWS—U. S. STANDARD THREADS

INSIDE

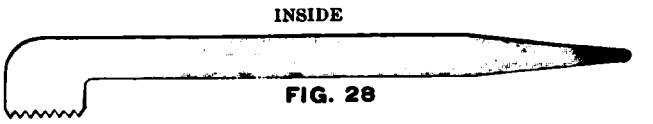


FIG. 28

OUTSIDE

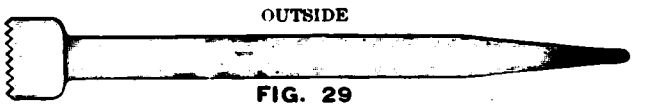


FIG. 29

	Prices, Each.
Cutting 3, 4, 5, 6, 7, and 8 threads to the inch	$0 50
Cutting 9, 10, 11, 11½, 12, 13, 14, 15, 16, 17, 18, 19, and 20 threads to the inch	85

MACHINE SCREW ADJUSTABLE TAP WRENCHES



PRICE

Each, $1.00

FIG. 30

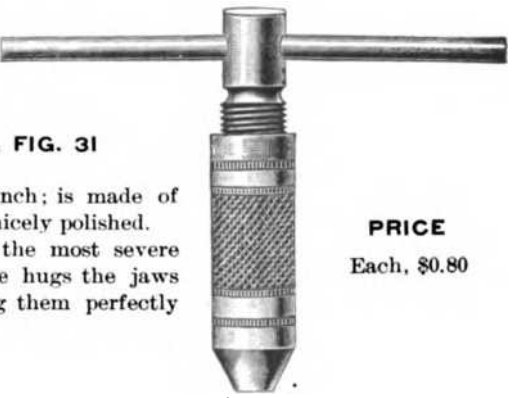
DESCRIPTION, FIG. 30

This wrench is represented in the cut, half the original size, holding a broken tap. The tool pays for itself in a very short time as it utilizes broken taps of sufficient length, holding them so that it is impossible for them to slip back. The nut being long furnishes an excellent grip for the hand in tightening, and will not slip out of the thread after being in use any length of time. Will center and hold firmly all taps from No. 1 to 14 inclusive.

DESCRIPTION, FIG. 31

Holds taps 1/32 to ¼ inch; is made of tool steel, hardened and nicely polished.

Will not twist under the most severe strain, as the long sleeve hugs the jaws their full length, holding them perfectly rigid.



PRICE

Each, $0.80

FIG. 31

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ADJUSTABLE TAP AND REAMER WRENCHES

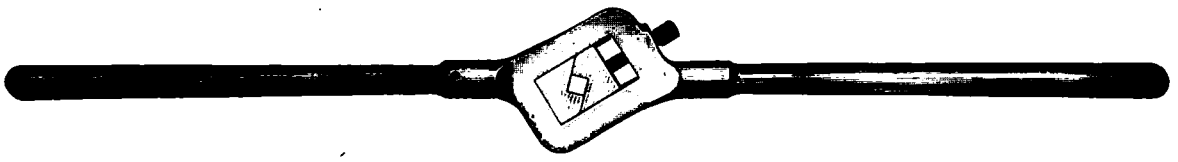


FIG. 32

Sizes		Prices. Each.
A	Fitting taps from ¼ to ⅝, inclusive; entire length, 13 in... Fitting reamers from ¼ to 13/16, inclusive.....	$3 00
B	Fitting taps from ½ to 1, inclusive; entire length, 18 in.... Fitting reamers from ⅜ to 1, inclusive.....	4 00

Sizes.		Prices Each.
C	Fitting taps from ⅞ to 1½, inclusive; entire length, 23 in.. Fitting reamers from 1 1/16 to 1 1/32, inclusive.....	$5 00
D	Fitting taps from 1¼ to 2 1/16, inclusive; entire length, 47½ in. Fitting reamers from 1 1/16 to 2 1/16, inclusive.....	15 00



FIG. 33



FIG. 34

No. 0 wrench, fitting taps from 1/16 to ¼, inclusive; entire length, 5⅛ inches.....$1 60

Nos.	Whole Lengths.	Holds Taps.	Prices, Each.
00	7 inches	0 to ¼ inch	$1 50
0	11	3/16 ½	2 00
1	15	¼ ¾	2 50
2	20 inches	⅜ to 1 inch	$3 50
3	30	¾ 1½	7 00

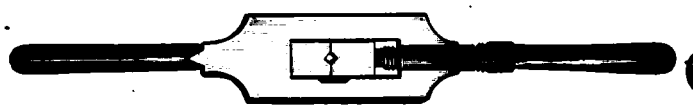


FIG. 35

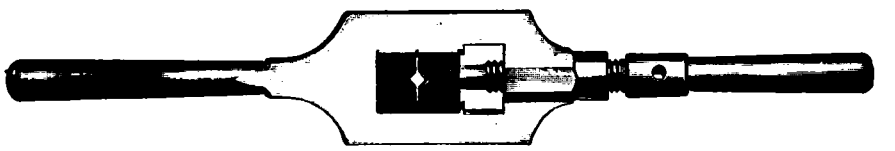


FIG. 36

Nos.	Lengths, Inches.			Prices, Each.
0	5, Fitting taps 1/16 to ¼ inch			$1 00
1	8, " "	⅛	⅜	1 50
1½	10, " "	3/16	½	2 00
2	12, " "	¼	⅝	2 00
3	14, " "	½	⅞	3 00
4	19, " "	¾	1¼	4 00
5	24, " "	⅞	1½	5 25
6	36, " "	1	2	8 00
7	54, " "	1½	3	16 00

Nos.	Lengths.	Holds Taps.		Prices, Each.
0	5 inches	1/16 to 3/16 inch		$1 00
1	7½	⅛	⅜	1 50
1½	10	3/16	½	2 00
2	12	¼	⅝	2 00
3	14 inches	½ to ¾ inch		$3 00
4	19	¾	1⅛	4 00
5	24	⅞	1½	5 25



FIG. 37

THE LITTLE GIANT



FIG. 38

MADE OF WROUGHT IRON AND STEEL

	Sizes of Tap. Shank Squares.		Prices, Each.
No. 1 fits ⅛ to ¼ inch taps	3/32 to 5/16 inch		$1 25
No. 2 fits ¼ to ½ inch taps	3/16	⅜	2 00
No. 3 fits 7/16 to ¾ inch taps	5/16	9/16	3 00
No. 4 fits 1 1/16 to 1 inch taps	½	¾	5 25
No. 5 fits 1 5/16 to 1½ inch taps	1 1/16	1⅛	7 25
Grant's No. 4 fits ¾ to 1½ inch taps...			9 00

Nos.	Lengths.	Holds Taps.		Prices. Each.
0	7 inches	1/16 to ¼ inch		$1 50
5	10½	3/16	½	2 00
6	15	¼	¾	2 50
7	20 inches	⅜ to 1 inch		$3 50
8	42	¾	1½	7 00

THE CHAMPION



FIG. 39

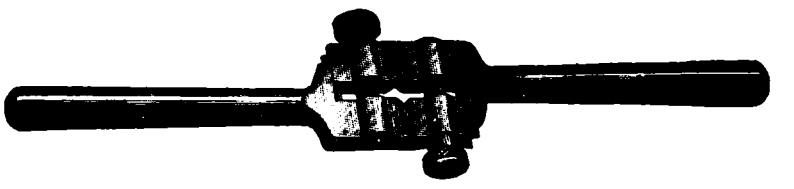


FIG. 40

The above cut illustrates a new adjustable tap wrench. It will be seen by illustration that the wrench is built "Hub" shape "Round." The adjustable squares or sockets to hold the taps in wrench are made to fit all sizes of taps, as designated by numbers in list below. This wrench not only holds all sizes of taps solid and firm, but the taps always remain in the center of the wrench, consequently it never becomes top-heavy or side-heavy.

These wrenches combine simplicity and strength with quick adjustment.

	Holds.	Prices, Each.
No. 1.	¼, 5/16, ⅜, 7/16, ½ inch taps	$2 00
No. 2.	¼, 5/16, ⅜, 7/16, ½, ⅝, ¾ inch taps	2 50
No. 3.	¼, 5/16, ⅜, 7/16, ½, ⅝, ¾, ⅞, 1 inch taps	3 50

		Prices, Each
No. 1.	12 inches long, fitting bolt taps ¼ to ⅝ inch	$1 50
No. 2	18 inches long, fitting bolt taps ⅝ to 1 inch " pipe " ⅛ ½	$2 50
No. 3	30 inches long, fitting bolt taps 1 to 1½ inches " pipe " ½ 1	$4 00

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MACHINE OR SOLID BOLT DIES



FIG. 41

Diameters, Inches.	Number Threads to Inch.	Size of Square.	Each.
¼	20	2½	$1 80
5/16	18	2½	1 80
⅜	16	2½	1 80
7/16	14	2½	1 80
½	12	2½	1 80
⅝	11	2½	2 00
¾	10	2½	2 20
⅞	9	2½	2 40
1	8	2½	2 70
1⅛	7	2½	3 00
1¼	7	2½	3 30
1⅜	6	2½	3 60
1½	6	3	3 90
1⅝	5½	3	4 20
1¾	5	3 by 1¼ inch thick.	5 40
1⅞	5	3½ by 1½ "	6 50
2	4½	3½ by 2 "	7 50

½ inch thick. ¾ inch thick. 1 inch thick.

The above are kept in stock. by sixteenths and thirty-seconds to 1 inch; by eighths and thirty-seconds from 1 inch to 1½ inches.

MACHINE OR SOLID BOLT DIES

FOR BOYNTON AND PLUMMER'S BOLT CUTTERS

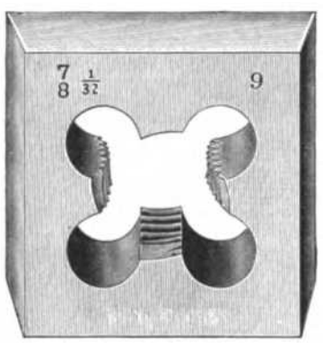


FIG. 45

Cutting Sizes, Inches.	Standard No. of Threads to Inch.	Threads also Furnished.	Outside Dimensions. Size of Square, Inches.	Thickness, Inches.	Each.
¼	20	18	2¼	½	$1 80
5/16	18	16	2¼	½	1 80
⅜	16	14	2¼	½	1 80
7/16	14		2¼	½	1 80
½	12	13	2¼	¾	1 80
9/16	12		2¼	¾	1 90
⅝	11	10	2¼	¾	2 00
11/16	11		2¼	¾	2 15
¾	10		2¼	¾	2 25
13/16	10		2¼	¾	2 30
⅞	9		2¼	¾	2 40
15/16	9		2¼	¾	2 55
1	8		2¼	1	2 70
1⅛	7		3	1	3 00
1¼	7		3	1	3 30
1⅜	6		3	1	3 60
1½	6		3	1	3 90
1⅝	5		3	1	4 20
1¾	5		3	1¼	5 40

Unless otherwise ordered these dies are furnished 1/32 inch over size. For rough iron, furnished in thirty-second or sixty-fourth sizes, as desired.

ROUND SOLID DIES

PRICES, FIG. 42

Size of Die. Diameters.	Thickness.	Cutting Size, Inches.	Each.
⅝ inch.	¼ inch.	No. 4 to 14	$0 40
⅝ "	¼ "	1/16 ¼	40
1 "	⅜ "	3/16 7/16	75
1 5/16 "	7/16 "	3/16 ½	1 00
1 9/16 "	9/16 "	¼ ⅝	1 25
2¼ "	¾ "	¼ ½	1 50
2¼ "	¾ "	9/16	1 80
2¼ "	¾ "	⅝	1 90
2¼ "	¾ "	¾	2 35
2¼ "	¾ "	⅞	2 75
2¼ "	¾ "	1	3 25

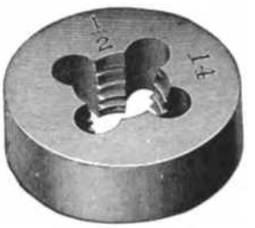


FIG. 42

These dies sent with standard number of threads to the inch, unless ordered otherwise.

ROUND ADJUSTABLE DIES



FIG. 43

(Size of die, ⅝ inch by ¼ inch.)

PRICES, FIG. 43

Screw Gauge, Nos.	Threads.
1	56, 60, 64, 72.
1½	56.
2	48, *56*, 64.
3	40, 44, *48*, 56.
4	30, 32, *36*, 40, 42, 44, 48.
5	30, 32, *36*, 40, 44, 48.
6	30, *32*, 36, 38, 40, 44, 48.
7	24, 28, 30, *32*, 36, 40.
8	24, 30, *32*, 36, 40, 44.
9	24, 28, *30*, 32.
10	20, 22, *24*, 28, 30, 32, 36.
11	22, 24, 28, 30.
12	20, 22, *24*, 26,28,30,32,34,36.
13	20, 22, 24, 32.
14	16, 18, *20*, 22, 24, 26.

Cutting Sizes, Inches.	Threads.
1/16	60, 64, *72*.
5/64	56, 60, 64, *72*.
3/32	48, 50, 52, 54, *56*, 60.
7/64	40, 48, 50, *56*, 60.
⅛	32, 36, *40*, 44, 48.
9/64	30, 32, 36, *40*.
5/32	30, *32*, 36, 40.
11/64	*32*, 36, 40.
3/16	22, *24*, 28, 32, 36.
13/64	22, *24*, 28, 32, 36.
7/32	*24*, 28, 30, 32, 36.
15/64	*24*, 28, 32, 36.
¼	16, 18, *20*, 22, 24, 26, 28, 32.
17/64	18, *20*, 22, 24, 26, 28, 32.

Price each, $0 40.

SMITH PATENT ADJUSTABLE DIES

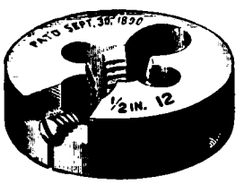


FIG. 44

PRICES, FIG. 44

Cutting Sizes, Inches. Sizes of Die.	Threads.	Each.
15/16 x ¼ in.	All sizes as per list. Fig. 43.	
	9/32 16, *20*, 22, 24, 26, 28	$0 40
	5/16 16, *18*, 20, 22, 24, 26, 28	
1 x ⅜ in.	All sizes preceding in this list, excepting 1/16, 5/64, 3/32, 7/64 in., and in addition thereto:	
	⅜ 14, *16*, 18, 20, 22, 24, 26, 27, 28, 30, 32	75
	7/16 12, *14*, 16, 18, 20, 22, 24, 26, 27	
1 5/16 x 7/16 in.	5/16 to 7/16 in., as preceding in this list, and also:	
	½ *12*, 13, 14, 20, 22, 24, 26, 27, 28, 30, 32	1 00
1 9/16 in. x 9/16 in.	¼ 16, 18, *20*, 22, 24, 26, 27, 28, 30, 32	
	5/16 16, *18*, 20, 22, 24, 26, 27, 28, 30, 32	
	⅜ 14, *16*, 18, 20, 22, 24, 26, 27, 28, 30, 32	
	7/16 12, *14*, 16, 18, 20, 22, 24, 26, 27, 28, 30, 32	1 25
	½ *12*, 13, 14, 20, 22, 24, 26, 27, 28, 30, 32	
	9/16 *12*, 14, 27	
	⅝ 10, *11*, 12, 14, 16, 18, 20, 22, 24, 26, 27, 28, 30, 32	
2¼ in. x ¾ in.	¼ 16, 18, *20*, 22, 24, 26, 27, 28, 30, 32	
	5/16 16, 18, 20, 22, 24, 26, 27, 28, 30, 32	
	⅜ 14, *16*, 18, 20, 22, 24, 26, 27, 28, 30, 32	1 50
	7/16 12, *14*, 16, 18, 20, 22, 24, 26, 27, 28, 30, 32	
	½ *12*, 13, 14, 20, 22, 24, 26, 27, 28, 30, 32	
	9/16 *12*, 14, 27	1 75
	⅝ 10, *11*, 12, 14, 16, 18, 20, 22, 24, 26, 27, 28, 30, 32	1 75
	11/16 *11*, 12	2 00
	¾ *10*, 12, 20, 22, 24, 26, 27, 28	2 00
	13/16 10	2 25
	⅞ *9*, 10, 12, 20, 22, 24, 26, 27	2 25
	15/16 *9*, 10	2 50
	1 *8*, 12, 20, 22, 24, 26, 27	2 50

Italic figures indicate standard thread for size. Specials furnished at 50 per cent. advance. V standard sent unless specified.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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SPRING SCREW-THREADING DIES

CLAMP COLLAR

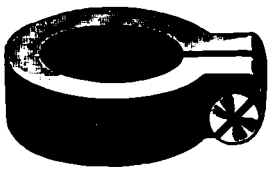


FIG. 46

SPRING SCREW-THREADING DIE

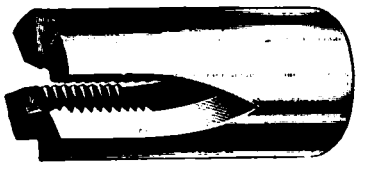


FIG. 47

PRICES, FIGS. 46 AND 47

Diameter and Pitch of Screw.	Outside Diameter of Dies, in Inches.	Length of Dies	Prices of Clamp Collars, Each. Fig. 46.	Prices of Dies, Each. Fig. 47.
⅛, 40; 3/16, 32; ¼, 20	½	1¼	$0 50	$1 50
¼, 20; 5/16, 18; ⅜, 16	¾	1¾	60	1 75
⅜, 16; 7/16, 14; ½, 13	1	2	70	2 00
⅝, 11; 1 1/16, 11; ¾, 10	1 3/16	2¼	80	2 00
⅜, 16; 7/16, 14, ½, 13; 9/16, 12; ⅝, 11; ¾; 10	1¼	2½	80	2 00
½, 13; 9/16, 12; ⅝, 11; ¾, 10	1⅜	2½	1 00	2 40
⅝, 11; ¾, 10; ⅞, 9; 1, 8	1⅝	2½	1 20	2 75
¾, 10; ⅞, 9; 1. 8; 1⅛, 7; 1¼, 7	2	3	1 50	3 50
1, 8; 1⅛, 7; 1¼, 7; 1⅜, 6; 1½, 6	2½	3½	2 50	5 00
1¾, 5; 1⅞, 5; 2, 4½; 2⅛, 4½	3¼	4	5 00	8 00

These dies are adjustable by means of the Clamp Collar shown in the cut. This collar is not furnished with the dies unless specially ordered. For uniform and well-finished threads, a Roughing and Finishing Die should be used.

Unless advised to the contrary, these dies will be sent with V threads. Can supply with U. S. Standard or Whitworth threads at regular price, if desired. Special diameters, form and pitch of thread furnished at special prices.

COLLETS FOR ADJUSTABLE DIES

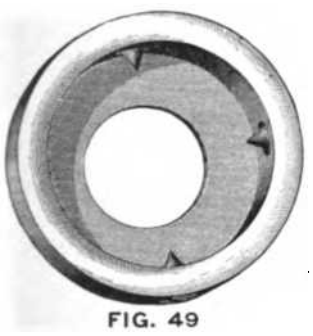


FIG. 49

PRICES, FIG. 49

FITTING ADJUSTABLE DIES

Nos.	Diameters.	Thickness.	Prices, Each.
1	⅝ inch.	¼ inch	$0 50
1½	13/16 "	¼ "	50
2	1 "	⅜ "	75
3	15/16 "	7/16 "	75
4	1 9/16 "	9/16 "	75
5	2¼ "	¾ "	1 00

SOLID DIE HOLDERS

HOLDING ROUND SOLID AND ROUND ADJUSTABLE DIES

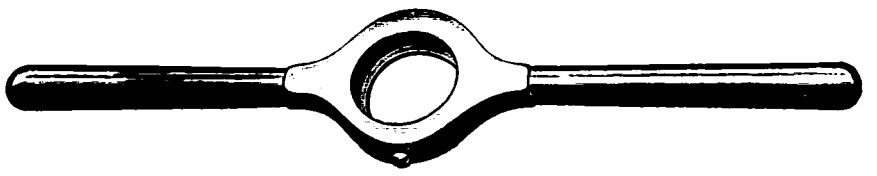


FIG. 51

Lengths.	Outside Diameter of Dies.	Prices, Each.
3½ inches	7/16 inches	$0 40
5 "	⅝ "	40
7 "	13/16 "	50
10½ "	1 "	1 00
14 "	15/16 "	1 25
18 "	1 9/16 "	1 50
23 "	1¾ "	1 50
29 "	2¼ "	1 75

BIT-BRACE DIE HOLDERS

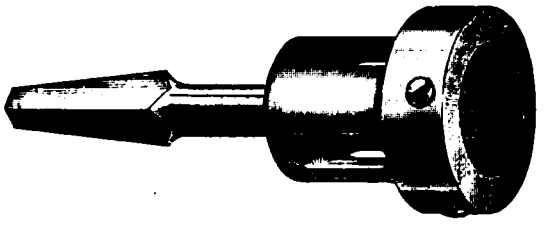


FIG. 48

No.	Holds Round Adjustable Dies.	Prices, Each.
1	⅝ inch diameter	$0 50
2	13/16 " "	50
3	1 " "	75

The above prices are for the Holders only.

Dies fitting these Holders will be found on page 14.

BIT-BRACE DIE HOLDERS, IN SETS

Set Nos.	Comprises.	Prices, Per Set.
3 N	1 No. 3 Holder; 1 Round Adjustable Die, 1 inch dia.; and 1 Bit Brace Tap Cutting 3/16, 24....	$1 75
3 O	1 No. 3 Holder; 1 Round Adjustable Die, 1 inch dia.; and 1 Bit Brace Tap Cutting ¼, 20....	1 75
3 P	1 No. 3 Holder; 1 Round Adjustable Die, 1 inch dia.; and 1 Bit Brace Tap Cutting 5/16, 18....	1 75
3 Q	1 No. 3 Holder; 1 Round Adjustable Die, 1 inch dia.; and 1 Bit Brace Tap Cutting ⅜, 16....	2 25
3 R	1 No. 3 Holder; 1 Round Adjustable Die, 1 inch dia.; and 1 Bit Brace Tap Cutting 7/16, 14....	2 60
3 S	1 No. 3 Holder; 1 Round Adjustable Die, 1 inch dia.; and 1 Bit Brace Tap Cutting ½, 12....	2 75

DIE HOLDERS

FOR USE IN LATHE OR TURRET OF SCREW MACHINE

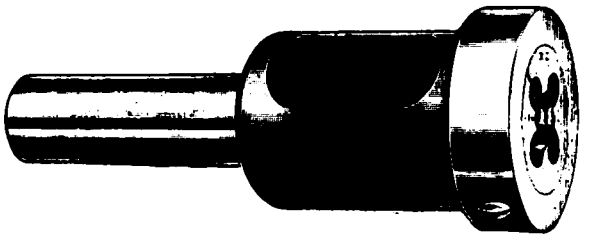


FIG. 50

No.	Dia. Shanks, Inches.	Holds Round Adjustable Dies.	Prices, Each.
1	½	⅝ inch diameter	$0 50
1½	½, 9/16, 11/16,	13/16 " "	50
2	½, 9/16, 11/16	1 " "	75
3	11/16, ¾, 13/16	15/16 " "	1 50
4	¾, 13/16, 1	1 9/16 " "	2 75
5	1 1/16, 1⅛, 1¼	2¼ " "	4 00

The above prices are for the holders only.

Dies fitting these holders will be found on page 14.

In ordering these holders, mention which size shank is desired.

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DIE HOLDERS AND SCREW PLATES

HANDY PLATES



FIG. 52



FIG. 53

		Prices, Each.
No. 1.	Holding two Round Adjustable Dies, ⅝ inch diameter	$0 75
" 1½.	Holding two Smith Patent Adjustable Dies, 13/16 inch diameter	75
No. 2.	Holding one Round Adjustable Die, ⅝ inch diameter	$0 50
" 2½.	Holding one Smith Patent Adjustable Die, 13/16 inch diameter	50

The above prices are for the stocks only. Dies fitting these plates will be found listed on Page 14. These plates are convenient for cutting and sizing screws in a lathe.

DIE HOLDERS

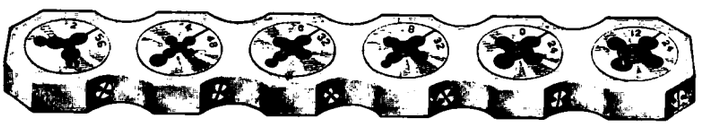


FIG. 54

		Prices, Each.
No. 1.	Holding six Round Adjustable Dies, ⅝ inch diameter	$2 00
" 2.	Holding six Smith Patent Adjustable Dies, 13/16 inch diameter	2 25

The above prices are for the Holders only; Dies fitting same will be found on Page 14. These Die Holders are made of Bessemer steel.

THE NEW SMITH PLATES

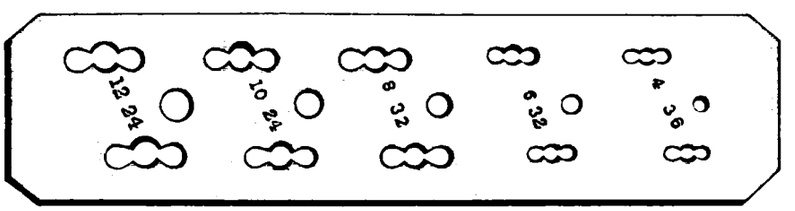


FIG. 57

Nos.		Prices, Each.
A	Cutting 4, 36; 6, 32; 8, 32; 10, 24; 12, 24	$1 50
B	" 4, 36; 6, 32; 8, 30; 10, 24; 12, 24	1 50
C	" 6, 32; 8, 32; 10, 24; 12, 24; 14, 20	2 00

The center row of holes in the Smith Plate give the size of wire for threading. No taps are sent with the Smith Plate.

PUMP PLATES

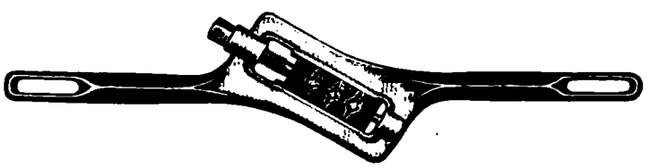


FIG. 59

			Prices, Each.
No. 12.	15 inches long; 2 pairs of dies, cutting ⅜, 14; 7/16, 12		$3 00
" 13.	18 " 3 " "	⅜, 14; 7/16, 12; ½, 12	3 50

Plates and dies are made to standards; dies are interchangeable. This avoids the necessity of returning plates when ordering new dies.

WOOD SCREW CUTTERS

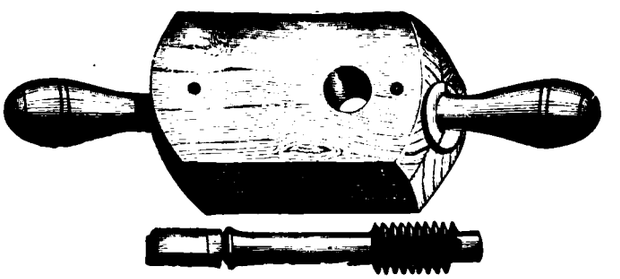


FIG. 55

Sizes, Inch.	⅜	½	⅝	¾	⅞	1	1¼	1½	1¾	2
Prices, Each.	$0 80	85	95	1 05	1 15	1 30	1 75	2 50	3 25	4 40

SCREW PLATES



FIG. 56

Nos.	Lengths, Inches.	Cutting.	Prices, Each.
OO	6	2, 64; 3, 56; 4, 48; 6, 40	$2 50
OOA	6	4, 36; 6, 32; 8, 32; 10, 24	2 50
OOM	6	1/16, 64; 3/32, 56; 7/64, 48; ⅛, 40	2 50
OON	6	⅛, 36; 9/64, 32; 5/32, 32; 3/16, 24; 3 pairs dies, 4 taps	2 50
O	7½	4, 48; 6, 40; 10, 32; 14, 24	3 00
OA	7½	10, 24; 12, 24; 14, 20; 16, 18; 3 pairs dies, 4 taps	3 25
OM	7½	7/64, 48; ⅛, 40; 3/16, 32; ¼, 24	3 00
ON	7½	3/16, 24; 7/32, 24; ¼, 20; 9/32, 18	3 25

Each plate in case. Furnished with plug taps.

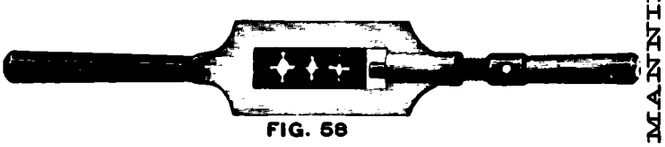


FIG. 58

Nos.	Lengths, Inches.	Cutting.	Prices, Each.
1½	9	6, 32; 8, 30; 10, 24; 14, 20	$3 25
1½A	9	14, 20; 16, 18; 18, 18; 20, 16; 3 pairs dies, 4 taps	3 40
1½M	9	9/64, 32; 5/32, 30; 3/16, 24; ¼, 20	3 25
1½N	9	¼, 20; 17/64, 18; 9/32, 18; 5/16, 16	3 40

Each plate in case. Furnished with plug taps.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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SCREW PLATES

PRICES, FIG. 60

Size A,	with 3	pair dies,	cutting	¼, 20; ⅜, 16; ½, 12	$5 00
" B,	" 4	"	"	⅜, 16; ½, 12; ⅝, 11; ¾, 10	8 00
" C,	" 4	"	"	½, 12; ⅝, 11; ¾, 10; ⅞, 9	10 00
" D,	" 4	"	"	⅞, 9; 1, 8; 1⅛, 7; 1¼, 7	13 00

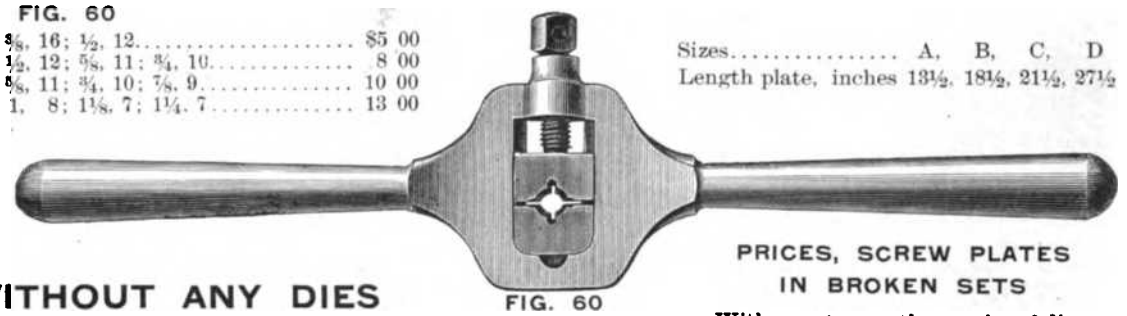


FIG. 60

Sizes..... A, B, C, D
Length plate, inches 13½, 18½, 21½, 27½

SCREW PLATES WITHOUT ANY DIES

PRICES.

Size A, $3 25; B, $4 00; C, $5 00; D, $6 00.

Size E.

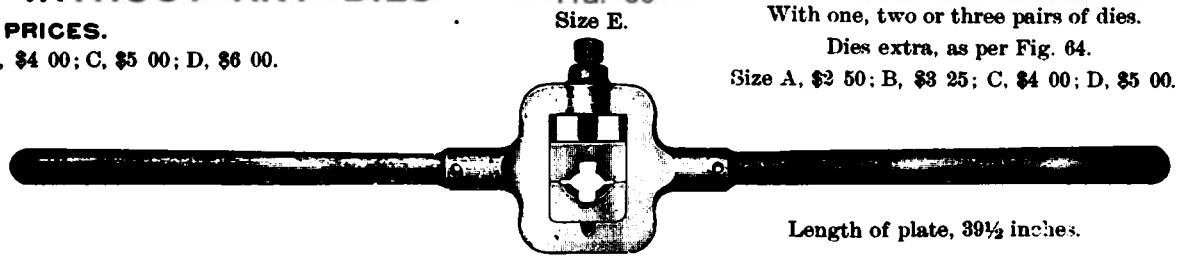


FIG. 61

PRICES, SCREW PLATES IN BROKEN SETS

With one, two or three pairs of dies.
Dies extra, as per Fig. 64.
Size A, $2 50; B, $3 25; C, $4 00; D, $5 00.

Length of plate, 39½ inches.

PRICES, FIG. 61

Both handles screw out from body.

	Prices, Each.
Size E, with 6 pair dies, cutting 1⅜, 6; 1½, 6; 1⅝, 5; 1¾, 5; 1⅞, 4½; 2, 4½	$33 00
Without dies	15 00
Extra dies, per pair	3 00

NO. 1 SCREW PLATE AND DIES

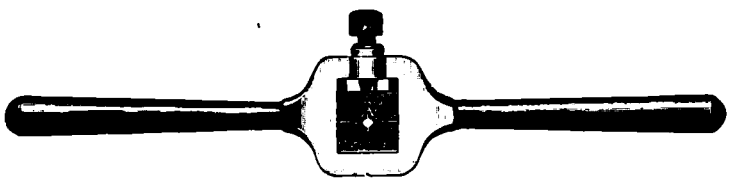


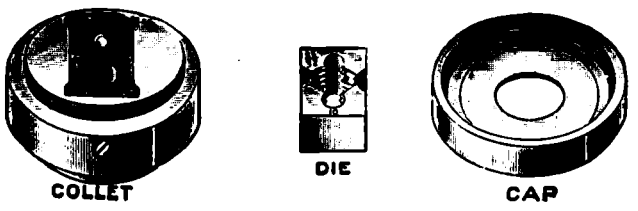
FIG 62.

For the use of Model Makers and Jewelers, cutting..... ⅛, 48; 5/32, 40; 3/16, 32; 7/32, 24; ¼, 20

	Prices, Each.
No. 1 Screw Plate, with 5 pair of Dies and 5 Taps, as above	$4 50
Single pair of dies	40
Set complete, including Plate, Dies, Taps and Adjustable Wrench	6 00
No. 1 Plate, without Dies or Taps—entire length, 6½ inches	1 60



FIG. 65—SIZE G



These cuts show collet, die and cap in sets, Fig. 65.

NO 1 SET, IN MOROCCO CASE



FIG. 63

The set complete, with 6 pair of dies, 6 taps, and tap wrench, in morocco case, 1/16 to ¼..... $6 75

EXTRA DIES FOR PLATES A, B, C, D, E

PRICES, FIG. 64

		Prices, Each.
Single pair Dies, Size 1,	Fig. 62.	$0 40
Single pair Dies, Size A,	Fig. 60.	1 00
Single pair Dies, Size B,		1 25
Single pair Dies, Size C,		1 75
Single pair Dies, Size D,		2 00
Single pair Dies, Size E,	Fig. 61.	3 00

Blank Dies one-half above prices.

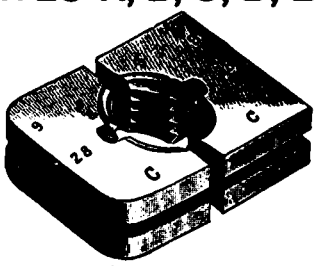


FIG. 64

PRICES, FIG. 65

Prices include one or more adjustable tap wrenches, complete in case, as the assortment requires.

Sizes.	Length, Inches.	Cutting, Inches.	Prices Each.
A	22	¼, 5/16, ⅜, 7/16, ½	$12 00
B	26	½, ⅝, ¾, ⅞, 1	17 50
C	26	¼, 5/16, ⅜, 7/16, ½, ⅝, ¾	16 00
D	26	⅜, 7/16, ½, ⅝, ¾, ⅞, 1	22 00
E	26	¼, 5/16, ⅜, 7/16, ½, ⅝, ¾, ⅞, 1	25 00
F	53	1⅛, 1¼, 1⅜, 1½	37 50
G	22	¼, 5/16, ⅜, 7/16, ½, ⅝, ¾	40 00
	40	⅞, 1, 1⅛, 1¼	
H	26	¼, ⅜, ½, ⅝, ¾	13 50
K	22	¼, 5/16, ⅜, 7/16, ½, ⅝, ¾	60 00
	53	⅞, 1, 1⅛, 1¼, 1⅜, 1½	
L	53	⅞, 1, 1⅛, 1¼, 1⅜, 1½	45 00
M	26	¼, 5/16, ⅜, 7/16, ½, ⅝, ¾, ⅞, 1	58 00
	53	1⅛, 1¼, 1⅜, 1½	

Stocks 22 and 26 in. long hold collets 2⅝ in. diam.; stocks 40 and 53 in. long hold collets 4 in. diam.

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SCREW PLATES

"DIAMOND"



FIG. 66

Numbers.	Length, Inches.	Cutting.	Prices, Each.
		Dies 5/8 inch diameter. With tap wrench 5 inches long.	
A	5	4, 36; 6, 32; 8, 32; 10, 24; 12, 24; 14, 20	$4 90
B	5	4, 36; 6, 32; 8, 32; 10, 24; 12, 24	4 40
C	5	6, 32; 8, 32; 10, 24; 12, 24;	3 90
D	5	2, 56; 3, 48; 4, 36; 6, 32; 8, 32; 10, 24; 12, 24; 14, 20	6 20
E	5	2, 56; 3, 48; 4, 36; 5, 32; 6, 32; 8, 32; 10, 32; 10, 24; 12, 24; 14, 20.	7 25

Each complete plate as listed sent in hardwood case.

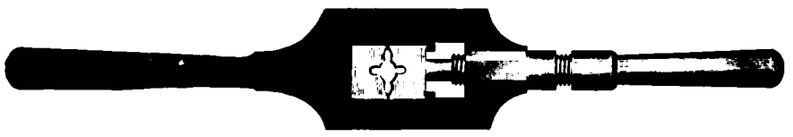


FIG. 67

Numbers.	Length, Inches.	Cutting.	Prices, Each.
		With blacksmiths' taper taps.	
2½ D	11½	¼, 20; 5/16, 18; 3/8, 16	$4 65
2½ E	11½	¼, 20; 3/8, 16; ½, 12	4 85
2½ F	11½	¼, 20; 5/16, 18; 3/8, 16; 7/16, 14; ½, 12	6 85
3 E	14	3/8, 16; ½, 12; 5/8, 11	5 10
3 F	14	3/8, 16; 7/16, 14; ½, 12; 5/8, 11	6 25
4	19	3/8, 16; ½, 12; 5/8, 12; ¾, 10; 3 pairs dies, 4 taps	6 00
7	27	½, 12; 5/8, 12; ¾, 10; 1, 8; 3 pairs dies, 4 taps	8 25
8	30	¾, 10; 7/8, 10; 7/8, 9; 1, 9; 1 1/8, 8; 1¼, 8; 3 pairs dies, 6 taps	10 50

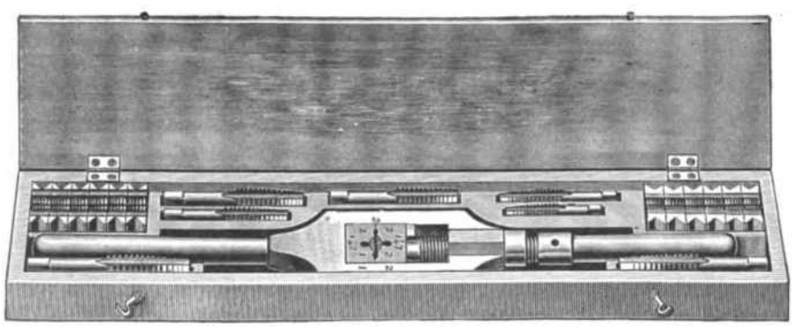


FIG. 68

Numbers.	Length, Inches.	Cutting.	Prices, Each.
		With taper hand taps.	
7 A	27	¾, 10; 7/8, 9; 1, 8	$10 00
7 B	27	¼, 20; 5/16, 18; 3/8, 16; 7/16, 14; ½, 12; 5/8, 11; ¾, 10; 7/8, 9; 1, 8.	21 00
7 C	27	3/8, 16; 7/16, 14; ½, 12; 5/8, 11; ¾, 10; 7/8, 9; 1, 8	18 00
7 D	27	½, 12; 5/8, 11; ¾, 10; 7/8, 9; 1, 8	13 50

PRICES, FIG. 66—CONTINUED

Numbers.	Length, Inches.	Cutting.	Prices, Each.
		Dies 17/16 inch diameter. With tap wrench 7½ inches long.	
N	7	4, 36; 6, 32; 8, 32; 10, 24; 12, 24	$5 65
O	7	4, 36; 6, 32; 8, 32; 10, 24; 12, 24; 14, 20; 16, 18	6 75
P	7	4, 36; 6, 32; 8, 32; 10, 24; 12, 24; 14, 20; 16, 18; 18, 18	7 30
Q	7	1/8, 32; 5/32, 32; 3/16, 24; 7/32, 24; ¼, 20	5 75
R	7	1/8, 32; 5/32, 32; 3/16, 24; 7/32, 24; ¼, 20; 5/16, 18	6 50
S	7	1/16, 72; 1/8, 32; 3/16, 24; ¼, 20; 5/16, 18	5 75
T	7	1/16, 72; 3/32, 56; 1/8, 32; 5/32, 32; 3/16, 24; 7/32, 24; ¼, 20; 9/32, 20; 5/16, 18	8 50

Each complete plate as listed sent in hardwood case.

PRICES, FIG. 67—CONTINUED

Numbers.	Length, Inches.	Cutting.	Prices, Each.
		Machinists' plug taps sent with these plates.	
1	7½	4, 40; 6, 40; 4, 36; 6, 36; 8, 32; 10, 32; 3 pairs. dies, 6 taps	$4 50
2	9½	6, 32; 8, 32; 10, 24; 12, 24; 14, 20; 16, 20; 3 pairs dies, 6 taps	4 50
		Machinists' taper hand taps sent with these plates.	
2½	11½	¼, 20; 3/8, 16; ½, 12	5 00
2½ A	11½	¼, 20; 5/16, 18; 3/8, 16	4 80
2½ B	11½	5/16, 18; 3/8, 16; 7/16, 14	5 00
2½ C	11½	¼, 20; 5/16, 18; 3/8, 16; 7/16, 14; ½, 12	7 50
3	14	3/8, 16; 7/16, 14; ½, 12	5 50
3 B	14	7/16, 14; ½, 12; 5/8, 11	5 90
3 C	14	3/8, 16; 7/16, 14; ½, 12; 5/8, 11	7 15
3 D	14	¼, 20; 5/16, 18; 3/8, 16; 7/16, 14; ½, 12; 5/8, 11	9 60
4 A	19	½, 12; 5/8, 11; ¾, 10	6 90
4 B	19	¼, 20; 5/16, 18; 3/8, 16; 7/16, 14; ½, 12; 5/8, 11; ¾, 10	13 50

PRICES, FIG. 68—CONTINUED

Numbers.	Length, Inches.	Cutting.	Prices, Each.
		With taper hand taps.	
8 A	30	¾, 10; 7/8, 9; 1, 8; 1¼, 7	$16 50
8 B	30	½, 12; 5/8, 11; ¾, 10; 7/8, 9; 1, 8; 1 1/8, 7; 1¼, 7	24 00
8 C	30	1, 8; 1 1/8, 7; 1¼, 7	11 75
8 D	30	7/8, 9; 1, 8; 1¼, 7	11 25
9 A	44	1, 8; 1¼, 7; 1½, 6	22 00
9 B	44	1, 8; 1 1/8, 7; 1¼, 7; 1½, 6	26 00
9 C	44	7/8, 9; 1, 8; 1 1/8, 7; 1¼, 7; 1½, 6	29 00
9 D	44	¾, 10; 7/8, 9; 1, 8; 1 1/8, 7; 1¼, 7; 1½, 6	32 00
9 E	44	½, 12; 5/8, 11; ¾, 10; 7/8, 9; 1, 8; 1 1/8, 7; 1¼, 7; 1½, 6	37 50
10 A	50	1 3/8, 6; 1½, 6; 1 5/8, 5; 1¾, 5; 1 7/8, 4½; 2, 4½	50 00
10 B	50	1, 8; 1 1/8, 7; 1¼, 7; 1 3/8, 6; 1½, 6; 1 5/8, 5; 1¾, 5; 1 7/8, 4½; 2, 4½	64 50
10 C	50	¾, 10; 7/8, 9; 1, 8; 1 1/8, 7; 1¼, 7; 1 3/8, 6; 1½, 6; 1 5/8, 5; 1¾, 5; 1 7/8, 4½; 2, 4½	72 00
10 D	50	1½, 6; 1¾, 5; 2, 4½	33 00
10 E	50	1½, 6; 1 5/8, 5; 1¾, 5; 2, 4½	39 00
10 F	50	1½, 6; 1 5/8, 5; 1¾, 5; 1 7/8, 4½; 2, 4½	45 00

Each complete plate furnished with hard wood case.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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SCREW PLATES

DIAMOND

PRICES, FIG. 69

Smith Patent Adjustable Dies. Dies 1 inch diameter.

Nos	Lengths, Inches.	Cutting.	Prices, Each.
16	10½	3/16, 24; ¼, 20; 5/16, 18; 3/8, 16; 7/16, 14...	$6 60
17	10½	¼, 20; 5/16, 18; 3/8, 16; 7/16, 14.....	5 70
17A	10½	¼, 20; 5/16, 18; 3/8, 16	4 60
18	10½	12, 24; 14, 20; 16, 18; 18, 18; 20, 16; 24, 16	6 90
18A	10½	12, 24; 14, 20; 16, 18; 18, 18; 20, 16	6 00
19	10½	14, 20; 16, 18; 18, 18; 20, 16.....	5 00
		Dies 1 5/16 inches diameter.	
21	14	3/16, 24; ¼, 20; 5/16, 18; 3/8, 16; 7/16, 14; ½, 12	9 60
22	14	¼, 20; 5/16, 18; 3/8, 16; 7/16, 14; ½, 12.....	8 40
23	14	¼, 20; 5/16, 18; 3/8, 16; ½, 12	7 00
24	14	¼, 20; 3/8, 16; ½, 12	5 75

Each set in hardwood case.



FIG. 69

IMPROVED SCREW PLATES

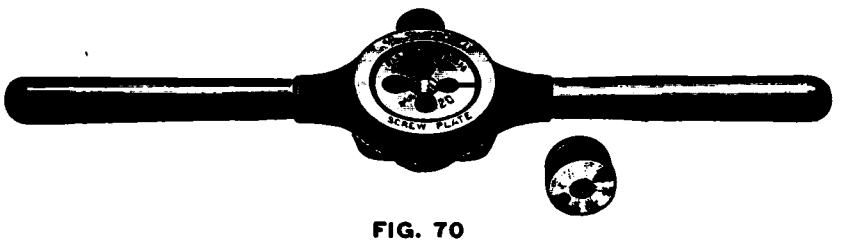


FIG. 70

PRICES, FIG. 70

Dies 1 3/16 inch diameter. With tap wrench 7½ inches long.

Nos.	Lengths, Inches.	Cutting.	Prices, Each.
50	7	4, 36; 6, 32; 8, 32; 10, 24; 12, 24.....	$5 75
51	7	4, 36; 6, 32; 8, 32; 10, 24; 12, 24; 14, 20; 16, 18	7 00
52	7	4, 36; 6, 32; 8, 32; 10, 24; 12, 24; 14, 20; 16, 18; 18, 18	8 00
53	7	1/8, 32; 5/32, 32; 3/16, 24; 7/32, 24; ¼, 20.....	5 75
54	7	1/8, 32; 5/32, 32; 3/16, 24; 7/32, 24; ¼, 20; 5/16, 18..	6 50
55	7	1/8, 32; 3/16, 24; ¼, 20; 5/16, 18.....	5 25
56	7	1/8, 32; 5/32, 32; 3/16, 24; 7/32, 24; ¼, 20; 9/32, 20; 5/16, 18.....	7 00

The above with guides and taps. Each set in hardwood case.

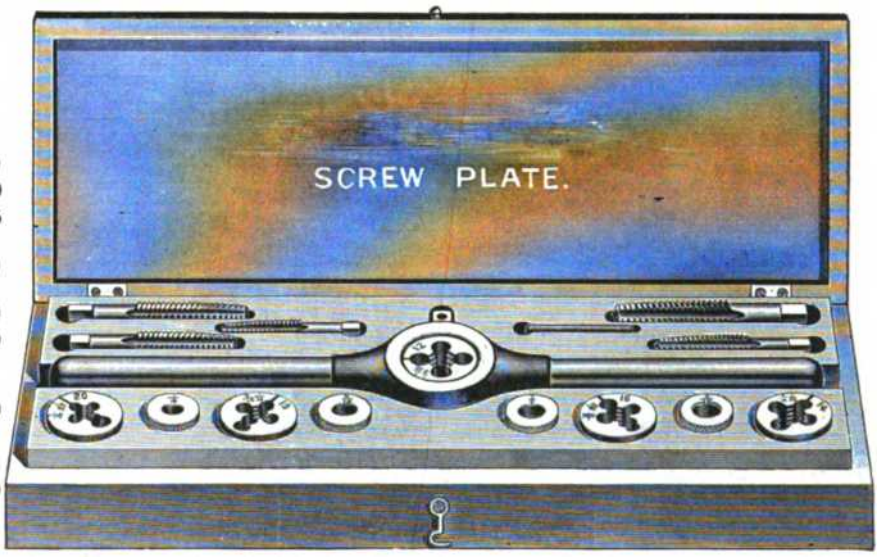


FIG. 71

PRICES, FIG. 71

Nos.	Lengths, Inches.	Cutting.	Diam. Dies, Inches.	Prices, Each.
80	23	¼, 20; 5/16, 18; 3/8, 16; 7/16, 14; ½, 12; 5/8, 11; ¾, 10.....	1¾	$16 00
80A	23	3/8, 16; 7/16, 14; ½, 12; 5/8, 11; ¾, 10...	1¾	13 00
80B	23	½, 12; 5/8, 11; ¾, 10	1¾	9 25
90	29	¼, 20; 5/16, 18; 3/8, 16; 7/16, 14; ½, 12; 5/8, 11; ¾, 10; 7/8, 9; 1, 8.....	2¼	26 00
90A	29	3/8, 16; 7/16, 14; ½, 12; 5/8, 11; ¾, 10; 7/8, 9; 1, 8.....	2¼	22 00
90B	29	½, 12; 5/8, 11; ¾, 10; 7/8, 9; 1, 8.....	2¼	18 50
		(Complete in one case.)		
100	14	¼, 20; 5/16, 18; 3/8, 16; 7/16, 14; ½, 12..	1 5/16	25 00
	29	5/8, 11; ¾, 10; 7/8, 9; 1, 8	2¼	
		(Complete in one case.)		
100A	10½	¼, 20; 5/16, 18; 3/8, 16; 7/16, 14.....	1	17 00
	23	½, 12; 5/8, 11; ¾, 10	1¾	

Each set in hardwood case.

PRICES, FIG. 71

Sent 1/32 inch over size, unless otherwise ordered. Each set in hardwood case.

Nos.	Lengths, Inches.	Cutting.	Diam. Dies, Inches.	Prices, Each.
60	10½	3/16, 24; ¼, 20; 5/16, 18; 3/8, 16; 7/16, 14	1	$8 75
60A	10½	¼, 20; 5/16, 18; 3/8, 16; 7/16, 14.....	1	7 50
70	14	¼, 20; 5/16, 18; 3/8, 16; 7/16, 14; ½, 12	1 5/16	10 50
70A	14	5/16, 18; 3/8, 16; 7/16, 14; ½, 12.....	1 5/16	8 90

PRICES, FIG. 71

Arranged with fine thread taps and dies for bicycle work. Each set in hardwood case. Dies 1 5/16 inches diameter.

Nos.	Lengths, Inches.	Cutting.	Prices, Each.
70B	14	5/16, 20; 3/8, 20; 7/16, 20; ½, 20.....	$8 90
70C	14	5/16, 22; 3/8, 22; 7/16, 22; ½, 22.....	8 90
70D	14	5/16, 24; 3/8, 24; 7/16, 24; ½, 24.....	8 90
70E	14	5/16, 26; 3/8, 26; 7/16, 26; ½, 26.....	8 90

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"LIGHTNING" SCREW PLATES



FIG. 72

All furnished complete in case.

Nos.	Stock Length, Inches.	Cutting.	Diameter Dies, Inches.	Prices, Each.
A	10	3/16, 1/4, 5/16, 3/8, 7/16 inch	1 5/16	$8 00
A	10	14, 16, 18, 20, 24	1 5/16	8 00
		Same, with adjustable tap wrench No. 2	1 5/16	10 35
A	10	10, 12, 14, 16, 18, 20, 24	1 5/16	10 00
		Same, with adjustable tap wrench No. 2	1 5/16	12 35
A 1	10	3/16, 1/4, 5/16, 3/8, 7/16 inch. Bit brace holder and nut wrenches	1 5/16	10 00
			Collets, Inch's.	
AA	18	3/16, 1/4, 5/16, 3/8, 7/16, 1/2 inch	2 3/16	13 50
		Same, with adjustable tap wrench No. 2	2 3/16	15 85
B	23	1/4, 5/16, 3/8, 7/16, 1/2, 5/8, 3/4 inch	2 3/4	16 00
		Same, with adjustable tap wrench No. 3	2 3/4	19 00
C	29	1/2, 5/8, 3/4, 7/8, 1 inch	2 3/4	18 50
		Same, with adjustable tap wrench No. 4	2 3/4	22 50
C	29	3/8, 7/16, 1/2, 5/8, 3/4, 7/8, 1 inch	2 3/4	22 00
		Same, with adjustable tap wrench No. 4	2 3/4	26 00
C	29	1/4, 5/16, 3/8, 7/16, 1/2, 5/8, 3/4, 7/8, 1 inch	2 3/4	25 50
		Same, with adjustable tap wrench Nos. 2 and 4	2 3/4	31 85
D	53	7/8, 1, 1 1/8, 1 1/4, 1 3/8, 1 1/2 inch	4 1/4	45 00
K	18	1/4, 5/16, 3/8, 7/16 inch	2 3/16	18 00
	23	1/2, 5/8, 3/4 inch	2 3/4	
		Same, with adjustable tap wrench No. 3	2 3/16 / 2 3/4	21 00
L	18	1/4, 5/16, 3/8, 7/16 inch	2 3/16	27 50
	29	1/2, 5/8, 3/4, 7/8, 1 inch	2 3/4	
		Same, with adjustable tap wrenches Nos. 2 and 4	2 3/16 / 2 3/4	33 85
D and B	23	1/4, 5/16, 3/8, 7/16, 1/2, 5/8, 3/4 inch	2 3/4	61 00
	53	7/8, 1, 1 1/8, 1 1/4, 1 3/8, 1 1/2 inch	4 1/4	

Sent 1/32 inch oversize, V thread, unless otherwise ordered.

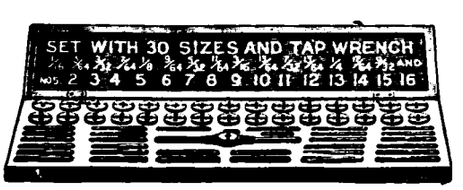


FIG. 74

All furnished complete in case.

Nos.	Stock Length, Inches.	Cutting.	Diameter Dies, Inches.	Prices, Each.
0	6	1/8, 5/32, 3/16, 7/32, 1/4 inch. Tap wrench fitting stock	7/8	$5 50
0	6	4, 6, 8, 10, 12. Tap wrench fitting stock	7/8	5 50
0	6	7/64, 1/8, 9/64, 5/32, 3/16, 7/32, 1/4 inch. Tap wrench fitting stock	7/8	7 00
0	6	4, 6, 8, 10, 12, 14, 16. Tap wrench fitting stock	7/8	7 00
0	6	1/16, 5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 3/16, 7/32, 1/4 in. Tap wrench fitting stock	7/8	9 75

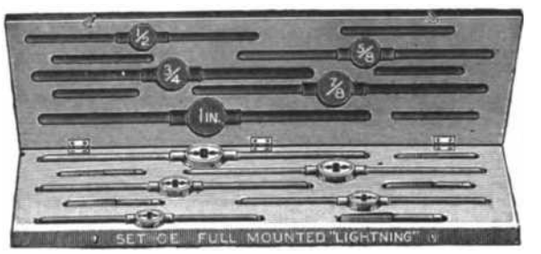


FIG. 73

All furnished complete in case.

Nos.	Cutting.	Prices, Each.
AAA	3/16, 1/4, 5/16, 3/8, 7/16, 1/2 inch	$12 00
	Same, with adjustable tap wrench No. 2	14 85
BB	1/4, 5/16, 3/8, 7/16, 1/2, 5/8, 3/4 inch	16 00
	Same, with adjustable tap wrench No. 3	19 00
CE	1/2, 5/8, 3/4, 7/8, 1 inch	18 50
	Same, with adjustable tap wrench No. 4	22 50
CC	3/8, 7/16, 1/2, 5/8, 3/4, 7/8, 1 inch	22 00
	Same, with adjustable tap wrench No. 4	26 00
CCC	1/4, 5/16, 3/8, 7/16, 1/2, 5/8, 3/4, 7/8, 1 inch	25 50
	Same, with adjustable tap wrenches Nos. 2 and 4	31 85

Sent 1/32 inch oversize, V thread, unless otherwise ordered.

LIGHTNING SCREW PLATES FOR PIPE

Nos.	Cutting.	Prices, Each.
230	1/2, 5/8, 3/4, 7/8, 1, 1 1/8, 1 1/4 in	$34 75
232	3/8, 7/16, 1/2, 5/8, 3/4, 7/8, 1, 1 1/8, 1 1/4 in	37 50
234	1/4, 5/16, 3/8, 7/16, 1/2, 5/8, 3/4, 7/8, 1, 1 1/8, 1 1/4	41 00
236	7/8, 1, 1 1/8, 1 1/4, 1 3/8, 1 1/2 in	45 00
238	1/4, 5/16, 3/8, 7/16, 1/2, 5/8, 3/4, 7/8, 1, 1 1/8, 1 1/4, 1 3/8, 1 1/2	60 00

Sent 1/32 inch oversize, V thread, unless otherwise ordered.

PRICES, FIG. 74—Continued.

Nos.	Stock Length, Inches.	Cutting.	Diameter Dies, Inches.	Prices, Each.
0	6	Equal number machine screw sizes	7/8	$9 75
0	6	5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 11/64, 3/16, 13/64, 7/32, 15/64, 1/4 inch. Tap wrench fitting stock	7/8	11 25
0	6	Equal number machine screw sizes	7/8	11 25
0	6	1/16, 5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 11/64, 3/16, 13/64, 7/32, 15/64, 1/4, 17/64, 9/32 inch. Tap wrench fitting stock	7/8	13 75
0	6	Equal number machine screw sizes	7/8	13 75
0	6	5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 11/64, 3/16, 13/64, 7/32, 15/64, 1/4, 17/64, 9/32 inch. Tap wrench fitting stock, bit brace holder, and holder for lathe use	7/8	15 00
0	6	2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, with holders as above	7/8	15 00
0	6	1/16, 5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 11/64, 3/16, 13/64, 7/32, 15/64, 1/4, 17/64, 9/32 inch, and also machine screw sizes 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16 (30 sizes). Tap wrench fitting stock	7/8	26 00

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X SCREW PLATE

PRICES, FIG. 75

Nos.	Stock, Length, Inches.	Diam. Dies, Inches.	Cutting.	Prices, Each.
350	5¼	⅝	⅛, 5⁄32, 3⁄16, 7⁄32, ¼	$4 25
351	5¼	⅝	4, 6, 8, 10, 12	4 25
352	5¼	⅝	7⁄64, ⅛, 9⁄64, 5⁄32, 3⁄16, 7⁄32, ¼	5 75
353	5¼	⅝	4, 6, 8, 10, 12, 14, 16	5 75
354	5¼	⅝	1⁄16, 5⁄64, 3⁄32, 7⁄64, ⅛, 9⁄64, 5⁄32, 3⁄16, 7⁄32, ¼	7 50
355	5¼	⅝	2, 3, 4, 5, 6, 8, 10, 12, 14, 16	7 50
356	5¼	⅝	5⁄64, 3⁄32, 7⁄64, ⅛, 9⁄64, 5⁄32, 11⁄64, 3⁄16, 13⁄64, 7⁄32, 15⁄64, ¼	9 00
357	5¼	⅝	2, 3, 4, 5, 6, 7, 8, 9, 10, 12, 14, 16	9 00
358	5¼	⅝	1⁄16 to 9⁄32, inclusive, by 64ths	11 00
359	5¼	⅝	2 to 16, inclusive	11 00
360	5¼	⅝	5⁄64 to 9⁄32, inclusive, by 64ths	12 00
361	5¼	⅝	2 to 16, inclusive, excepting 15	12 00
362	5¼	⅝	1⁄16 to 9⁄32, inclusive, by 64ths,	21 25
			2 to 16 "	



FIG. 75

Nos.	Stock, Length, Inches.	Diam. Dies, Inches.	Cutting.	Prices, Each.
363	5¼	⅝	1⁄16 to 9⁄32, inclusive, by 64ths 2 to 16 " except 15 16, 56; 15, 56; 15, 60; 14, 56; 13, 48; 13, 54; 13, 56; 12, 40; 12, 42; 12, 50; 12, 56; 11, 40; 11, 56; 10, 38; 9, 38; Stubbs gauge	$31 50
365	5¼	⅝	13, 48; 13, 56; 12, 40; 12, 42; 12, 50; Stubbs gauge	4 25
367	5¼	⅝	16, 56; 15, 56; 14, 56; 13, 48; 13, 56; 12, 40; 12, 42; 12, 50; 12, 56; 11, 56; Stubbs gauge	7 50
369	5¼	⅝	16, 56; 15, 56; 15, 60; 14, 56; 13, 48; 13, 54; 13, 56; 12, 40; 12, 42; 12, 50; 12, 56; 11, 40; 11, 56; 10, 38; 9, 38; Stubbs guage	11 00

Tap wrenches fitting stock included in all above cases.

X FULL MOUNTED SCREW PLATE

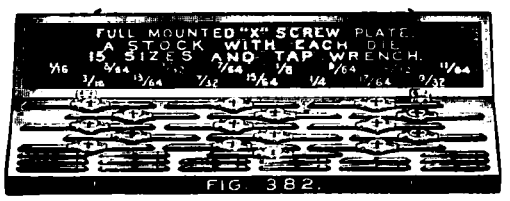


FIG. 76

PRICES, FIG. 76

A STOCK WITH EACH DIE

Nos.	Diam. Dies.	Cutting.	Prices, Each.
374	⅝	⅛, 5⁄32, 3⁄16, 7⁄32, ¼	$6 25
375	⅝	4, 6, 8, 10, 12	6 25
376	⅝	7⁄64, ⅛, 9⁄64, 5⁄32, 3⁄16, 7⁄32, ¼	8 25
377	⅝	4, 6, 8, 10, 12, 14, 16	8 25
378	⅝	1⁄16, 5⁄64, 3⁄32, 7⁄64, ⅛, 9⁄64, 5⁄32, 3⁄16, 7⁄32, ¼	11 50
379	⅝	2, 3, 4, 5, 6, 8, 10, 12, 14, 16	11 50
389	⅝	13, 48; 13, 56; 12, 40; 12, 42; 12, 50; Stubbs gauge	6 25
391	⅝	16, 56; 15, 56; 14, 56; 13, 48; 13, 56; 12, 40; 12, 42; 12, 50; 12, 56; 11, 56	11 50
393	⅝	16, 56; 15, 56; 15, 60; 14, 56; 13, 48; 13, 54; 13, 56; 12, 40; 12, 42; 12, 50; 12, 56, 11, 40; 11, 56; 10, 38; 9, 38	16 75

Tap wrenches fitting stock included in all above cases.

GREEN RIVER SCREW PLATES

PRICES, FIG. 77

ALL FURNISHED COMPLETE IN CASE

Nos.	Stock, Length, Inches.	Cutting.	Diam. Dies, Inches.	Prices, Each.
1	10	3⁄16, ¼, 5⁄16, ⅜, 7⁄16 inch, with brace holder	1 5⁄16	$8 75
		Same, with adjustable tap wrench No. 2	1 5⁄16	11 10
1¼	18	3⁄16, ¼, 5⁄16, ⅜, 7⁄16, ½ inch	2 3⁄16	11 00
		Same, with adjustable tap wrench No. 2	2 3⁄16	13 35
1½	22	¼, 5⁄16, ⅜, 7⁄16, ½, ⅝, ¾ inch	2 3⁄16	13 00
		Same, with adjustable tap wrench No. 3	2 3⁄16	16 00
2	23	¼, 5⁄16, ⅜, 7⁄16, ½, ⅝, ¾ inch	2¾	15 25
		Same, with adjustable tap wrench No. 3	2¾	18 25
3	29	½, ⅝, ¾, ⅞, 1 inch	2¾	17 00
		Same, with adjustable tap wrench No. 4	2¾	21 00
4	29	⅜, 7⁄16, ½, ⅝, ¾, ⅞, 1 inch	2¾	20 00
		Same, with adjustable tap wrench No. 4	2¾	24 00
5	29	¼, 5⁄16, ⅜, 7⁄16, ½, ⅝, ¾, ⅞, 1 inch	2¾	23 00
		Same, with adjustable tap wrenches Nos. 2 and 4	2¾	29 35
6	35	½, ⅝, ¾, ⅞, 1, 1⅛, 1¼ inch	2¾	26 00
7	35	⅜, 7⁄16, ½, ⅝, ¾, ⅞, 1, 1⅛, 1¼ inch	2¾	30 00
8	35	¼, 5⁄16, ⅜, 7⁄16, ½, ⅝, ¾, ⅞, 1, 1⅛, 1¼ inch	2¾	34 00

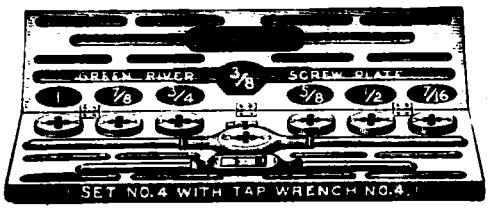


FIG. 77

Nos.	Stock, Length, Inches.	Cutting.	Diam. Dies, Inches.	Prices, Each.
9	53	⅞, 1, 1⅛, 1¼, 1⅜, 1½ inches	3 7⁄16	$40 00
13	22	¼, 5⁄16, ⅜, 7⁄16 inch	2 3⁄16	25 00
	29	½, ⅝, ¾, ⅞, 1 inch	2¾	
		Same, with adjustable tap wrenches Nos. 2 and 4,	2 3⁄16 / 2¾	31 35
16	22	¼, 5⁄16, ⅜, 7⁄16 inch.	2 3⁄16	36 00
	35	½, ⅝, ¾, ⅞, 1, 1⅛, 1¼ inch	2¾	
25	22	¼, 5⁄16, ⅜, 7⁄16, ½, ⅝, ¾ inch	2 3⁄16	53 00
	53	⅞, 1, 1⅛, 1¼, 1⅜, 1½ inch	3 7⁄16	

Sent 1⁄32 inch oversize, V thread, unless otherwise ordered.

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LITTLE GIANT SCREW PLATES

ADJUSTABLE DIE

EXPLANATION OF THE LITTLE GIANT DIE

The collet, or holder, is made of two pieces, called a cap and a guide. The cap has a bevel slot into which the bevel of the die is fitted. The guide is screwed into the cap, which throws die into the bevel of the collet, and into line. To adjust, simply turn the screws at ends of dies in or out, as the adjustment desired requires.

SECTIONAL VIEW OF DIE AND COLLET

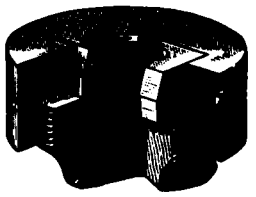


FIG. 78.
Diameter, 1¼ Inches.

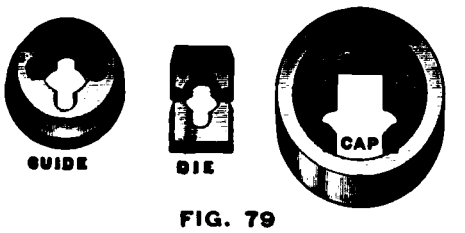


FIG. 79

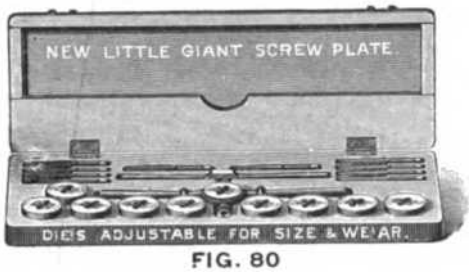


FIG. 80

PRICES OF SEPARATE PARTS

FIG. 80

	Each.
Dies	$0 60
Collets	40
Taps under ¼ in.	35
Taps ¼ inch	45
Tap wrenches	50
Stocks	70

PRICES, FIG. 80

Nos.	Lengths, Inches.	Cutting.	Diam. Collets, Inches.	Each.
A 1.	7½	⅛, 5⁄32, 3⁄16, 7⁄32, ¼ in	1¼	$6 50
A 2.	7½	7⁄64, ⅛, 9⁄64, 5⁄32, 3⁄16, 7⁄32, ¼ in	1¼	8 00
A 3.	7½	7⁄64, ⅛, 9⁄64, 5⁄32, 11⁄64, 3⁄16, 13⁄64, 7⁄32, 15⁄64, ¼ in	1¼	10 50

Complete in box, with tap wrench. Machine screw sizes to No. 16, same price.

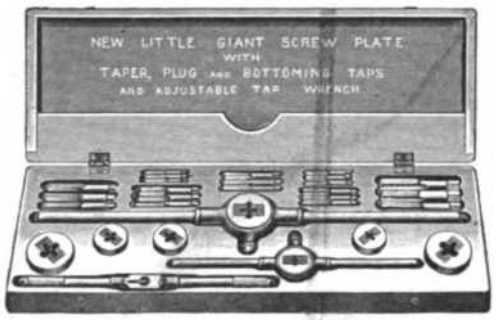


FIG. 81

Machinists' Sets, with Taper, Plug, and Bottoming Taps.

Nos.	Cutting, inches.	Prices, each
101.	¼, 5⁄16, ⅜, 7⁄16, ½	$15 50
102.	¼, ⅜, ½, ⅝, ¾	18 00
103.	⅝, ¾, ⅞, 1	22 00
104.	½, ⅝, ¾, ⅞, 1	25 00
105.	¼, 5⁄16, ⅜, 7⁄16, ½, ⅝, ¾	22 00
106.	⅜, 7⁄16, ½, ⅝, ¾, ⅞, 1	31 25
107.	¼, 5⁄16, ⅜, 7⁄16, ½, ⅝, ¾, ⅞, 1	36 00
108.	¼, 5⁄16, ⅜, 7⁄16, ½, ⅝, ¾	24 00
109.	¼, 5⁄16, ⅜, 7⁄16, ½, ⅝, ¾, ⅞, 1	38 00
140.	¼, 5⁄16, ⅜, 7⁄16, ½, ⅝, ¾, ⅞, 1, 1⅛, 1¼	55 00
150.	¼, 5⁄16, ⅜, 7⁄16, ½, ⅝, ¾, ⅞, 1, 1⅛, 1¼, 1⅜, 1½	84 00

Unless otherwise ordered, V form of thread, exact sizes, will be sent. Furnished complete in case, with adjustable tap wrenches.

PRICES OF SEPARATE PARTS, FIG. 82

COLLETS

Nos.	Size of Dies, Inches.	Diameter Collet, Inches.	Guides, Each.	Caps, Each.	Complete, Each.
A 1.	7⁄64 to ¼,	1¼	$0 15	$0 25	$0 40
1.	¼ to ½,	2	20	30	50
6.	¼ to 1,	2¾	20	30	50
20.	⅝ to 1¼,	4	50	1 00	1 50
30.	1⅛ to 1½,	4½	50	1 00	1 50

DIES

Sizes, Inches.	Each.
3⁄16	$1 00
¼	1 00
5⁄16	1 00
⅜	1 25
7⁄16	1 25
½	1 50
9⁄16	1 50
⅝	1 75
11⁄16	1 75
¾	2 00
13⁄16	2 00
⅞	2 75
15⁄16	2 75
1	2 75
1⅛	4 00
1¼	4 00
1⅜	5 00
1½	5 00

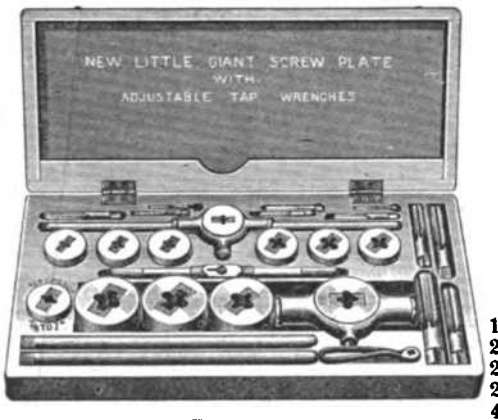


FIG. 82.

STOCKS

	Prices, each.
7½ in. for collets 1¼ in.	$0 70
14½ " " " 2 "	1 50
23 " " " 2¾ "	2 00
26 " " " 2¾ "	2 00
29 " " " 2¾ "	2 00
40 " " " 4 "	6 00
52 " " " 4½ "	8 00

Nos.	Lengths, Inches.	Cutting.	Diam. Collets, Inches.	Prices, Each.
		With adjustable tap wrench.		
1.	14½	¼, 20; 5⁄16, 18; ⅜, 16; 7⁄16, 14; ½, 12	2	$12 00
2.	23	¼, 20; ⅜, 16; ½, 12; ⅝, 11; ¾, 10	2¾	13 50
3.	26	⅝, 11; ¾, 10; ⅞, 9; 1, 8	2¾	15 00
4.	26	½, 12; ⅝, 11; ¾, 10; ⅞, 9; 1, 8	2¾	17 50
5.	23	¼, 20; 5⁄16, 18; ⅜, 16; 7⁄16, 14; ½, 12; ⅝, 11; ¾, 10	2¾	16 00
6.	26	⅜, 16; 7⁄16, 14; ½, 12; ⅝, 11; ¾, 10; ⅞, 9; 1, 8	2¾	22 00
7.	26	¼, 20; 5⁄16, 18; ⅜, 16; 7⁄16, 14; ½, 12; ⅝, 11; ¾, 10; ⅞, 9; 1, 8	2¾	25 50
8.	14½	¼, 20; 5⁄16, 18, ⅜, 16; 7⁄16, 14	2	18 00
	26	½, 12; ⅝, 11; ¾ 10	2¾	
9.	14½	¼, 20; 5⁄16, 18; ⅜, 16; 7⁄16 14	2	27 50
	29	½, 12; ⅝, 11; ¾, 10; ⅞, 9; 1, 8	2¾	
20.	40	⅝, 11; ¾, 10; ⅞, 9; 1, 8; 1⅛, 7; 1¼, 7	4	35 00
25.	52	⅞, 9; 1, 8; 1⅛, 7; 1¼, 7; 1⅜, 6; 1½, 6	4½	45 00
30.	52	1⅛, 7; 1¼, 7; 1⅜, 6; 1½, 6	4½	37 50
		With two adjustable tap wrenches.		
40.	23	¼, 20; 5⁄16, 18; ⅜, 16; 7⁄16, 14; ½, 12; ⅝, 11; ¾, 10	2¾	40 00
	40	⅞, 9; 1, 8; 1⅛, 7; 1¼, 7	4	
50.	26	¼, 20; 5⁄16, 18; ⅜, 16; 7⁄16, 14; ½, 12; ⅝, 11; ¾, 10; ⅞, 9; 1, 8	2¾	60 00
	52	1⅛, 7; 1¼, 7; 1⅜, 6; 1½, 6	4½	

Sent 1⁄32 inch oversize, V thread, unless otherwise ordered. Furnished complete in case.

For domestic trade.—Unless otherwise ordered, plates with V form of thread are sent oversize for rough iron; U. S. Standard or Whitworth forms of thread, exact sizes.

FULL STOCKED PLATES

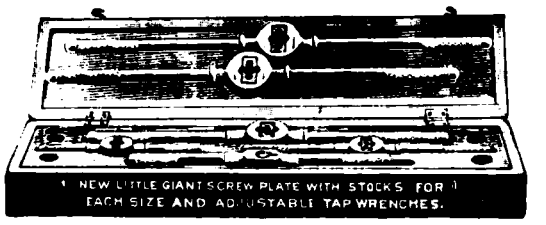


FIG. 83

A stock for each size.

LIST OF ASSORTMENTS

Each assortment is put up in a neat wood case, as shown in cut.

Nos.	Cutting.	Prices, each.
61.	¼, 20; 5⁄16, 18; ⅜, 16; 7⁄16, 14; ½, 12	$12 00
62.	¼, 20; ⅜, 16; ½, 12; ⅝, 11; ¾, 10	15 50
65.	¼, 20; 5⁄16, 18; ⅜, 16; 7⁄16, 14; ½, 12; ⅝, 11; ¾, 10	18 00
65½.	¼, 20; 5⁄16, 18; ⅜, 16; 7⁄16, 14; ½, 12; 9⁄16, 12; ⅝, 11; ¾, 10.	20 50
66.	⅜, 16; 7⁄16, 14; ½, 12; ⅝, 11; ¾, 10; ⅞, 9; 1, 8	24 00
67.	¼, 20; 5⁄16, 18; ⅜, 16; 7⁄16, 14; ½, 12; ⅝, 11; ¾, 10; ⅞, 9; 1, 8	29 50
640.	¼, 20; 5⁄16, 18; ⅜, 16; 7⁄16, 14; ½, 12; ⅝, 11; ¾, 10; ⅞, 9; 1, 8; 1⅛, 7; 1¼, 7	47 00
650.	¼, 20; 5⁄16, 18; ⅜, 16; 7⁄16, 14; ½, 12; ⅝, 11; ¾, 10; ⅞, 9; 1, 8; 1⅛, 7; 1¼, 7; 1⅜, 6; 1½, 6	67 00

Each assortment has adjustable tap wrenches for holding taps.



FIG. 84

For Export.—We furnish either U. S. Standard or Whitworth forms of thread, exact sizes. These two forms of thread can be used on either rough or exact iron.

United States Standard or Whitworth (English) forms furnished at same list prices if desired.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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SCREW PLATES

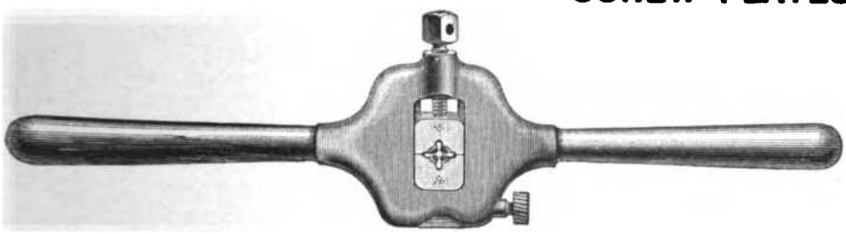


FIG. 85

BLACKSMITHS' PLATES, WITHOUT DIES

PRICES, FIG. 86

				Each.
No. 1.	Length plate, 15 inches.	Hold dies $\frac{3}{16}$ to $\frac{5}{8}$ inch, inclusive		$2 50
" 2.	" " 23 "	" $\frac{3}{8}$ to 1 " "		3 50
" 3.	" " 31 "	" $\frac{3}{4}$ to $1\frac{1}{2}$ " "		6 00

PRICES, FIG. 86

WITH DIES, IN HARDWOOD CASES

		Each.
No. 1A.	5 pairs dies, cutting, $\frac{1}{4}$, 20; $\frac{5}{16}$, 18; $\frac{3}{8}$, 16; $\frac{7}{16}$, 14; $\frac{1}{2}$, 12	$ 7 00
" 2A.	4 " " $\frac{1}{2}$, 12; $\frac{5}{8}$, 11; $\frac{3}{4}$, 10; $\frac{7}{8}$, 9	10 00
" 3A.	4 " " $\frac{7}{8}$, 9; 1, 8; $1\frac{1}{8}$, 7; $1\frac{1}{4}$, 7	14 50

WITH TAPS AND DIES, IN HARDWOOD CASES

		Each.
No. 1B.	5 pr. dies, 5 pr. taper hand taps, cutting $\frac{1}{4}$, 20; $\frac{5}{16}$, 18; $\frac{3}{8}$, 16; $\frac{7}{16}$, 14; $\frac{1}{2}$, 12	$ 9 80
" 2B.	4 pr. dies, 4 pr. taper hand taps, cutting $\frac{1}{2}$, 12; $\frac{5}{8}$, 11; $\frac{3}{4}$, 10; $\frac{7}{8}$, 9	14 40
" 3B.	4 " 4 " " " " $\frac{7}{8}$, 9; 1, 8; $1\frac{1}{8}$, 7; $1\frac{1}{4}$, 7	22 50

In ordering these sets, state whether V or U. S. Standard threads are wanted.

MACHINISTS' PLATES, WITHOUT DIES

PRICES, FIG. 85

Nos.	Lengths.	Holds Dies.	Each.
1	15 in.	$\frac{3}{16}$ to $\frac{5}{8}$ inch, inclusive	$ 3 25
2	23 "	$\frac{3}{8}$ to 1 " "	5 00
3	31 "	$\frac{3}{4}$ to $1\frac{1}{2}$ " "	7 50
4	46 "	1 to 2 " "	15 00



FIG. 86

ADJUSTABLE STOCKS

FOR HOLDING ROUND DIES



FIG. 87 (top view)



FIG. 87 (bottom view)

PRICES, FIG. 87

	Holds Round Dies.			
Nos.	No. of Dies.	Outside Diameter of Dies.	Whole Length of Stock.	Each.
2	2	$1\frac{1}{2}$ in.	17 inches	$3 25
3	3	2 "	23 "	4 00
4	4	$2\frac{1}{2}$ "	29 "	5 00
5	5	3 "	$42\frac{1}{2}$ "	10 00

ROUND DIE SETS

PRICES, FIG. 88

V STANDARD SIZES

Nos.	Length Stocks, Inches.	Cutting.	Diam. Dies, Inches.	Each.
6A.	17	$\frac{1}{4}$, 20; $\frac{5}{16}$, 18; $\frac{3}{8}$, 16; $\frac{7}{16}$, 14; $\frac{1}{2}$, 12	$1\frac{1}{2}$	$12 00
7A.	17	$\frac{5}{16}$, 24; $\frac{1}{4}$, 20; $\frac{5}{16}$, 18; $\frac{3}{8}$, 16; $\frac{7}{16}$, 14; $\frac{1}{2}$, 12	$1\frac{1}{2}$	13 50
8A.	23	$\frac{1}{4}$, 20; $\frac{5}{16}$, 18; $\frac{3}{8}$, 16; $\frac{7}{16}$, 14; $\frac{1}{2}$, 12; $\frac{5}{8}$, 11; $\frac{3}{4}$, 10	2	16 00
10A.	29	$\frac{3}{8}$, 16; $\frac{7}{16}$, 14; $\frac{1}{2}$, 12; $\frac{5}{8}$, 11; $\frac{3}{4}$, 10; $\frac{7}{8}$, 9; 1, 8	$2\frac{1}{2}$	22 00
11A.	29	$\frac{1}{2}$, 12; $\frac{5}{8}$, 11; $\frac{3}{4}$, 10; $\frac{7}{8}$, 9; 1, 8	$2\frac{1}{2}$	17 50

DOUBLE SETS

9A.	17–23	$\frac{1}{4}$, 20; $\frac{5}{16}$, 18; $\frac{3}{8}$, 16; $\frac{7}{16}$, 14; $\frac{1}{2}$, 12; $\frac{5}{8}$, 11; $\frac{3}{4}$, 10	$1\frac{1}{2}$–2	18 00
12A.	17–29	$\frac{1}{4}$, 20; $\frac{5}{16}$, 18; $\frac{3}{8}$, 16; $\frac{7}{16}$, 14; $\frac{1}{2}$, 12; $\frac{5}{8}$, 11; $\frac{3}{4}$, 10; $\frac{7}{8}$, 9; 1, 8	$1\frac{1}{2}$–$2\frac{1}{2}$	27 50

UNITED STATES STANDARD SIZES

6C.	17	$\frac{1}{4}$, 20; $\frac{5}{16}$, 18; $\frac{3}{8}$, 16; $\frac{7}{16}$, 14; $\frac{1}{2}$, 13	$1\frac{1}{2}$	12 00
7C.	17	$\frac{5}{16}$, 32; $\frac{1}{4}$, 20; $\frac{5}{16}$, 18; $\frac{3}{8}$, 16; $\frac{7}{16}$, 14; $\frac{1}{2}$, 13	$1\frac{1}{2}$	13 50
8C.	23	$\frac{1}{4}$, 20; $\frac{5}{16}$, 18; $\frac{3}{8}$, 16; $\frac{7}{16}$, 14; $\frac{1}{2}$, 13; $\frac{5}{8}$, 11; $\frac{3}{4}$, 10	2	16 00
10C.	29	$\frac{3}{8}$, 16; $\frac{7}{16}$, 14; $\frac{1}{2}$, 13; $\frac{5}{8}$, 11; $\frac{3}{4}$, 10; $\frac{7}{8}$, 9; 1, 8	$2\frac{1}{2}$	22 00
11C.	29	$\frac{1}{2}$, 13; $\frac{5}{8}$, 11; $\frac{3}{4}$, 10; $\frac{7}{8}$, 9; 1, 8	$2\frac{1}{2}$	17 50

DOUBLE SETS

9C.	17–23	$\frac{1}{4}$, 20; $\frac{5}{16}$, 18; $\frac{3}{8}$, 16; $\frac{7}{16}$, 14; $\frac{1}{2}$, 13; $\frac{5}{8}$, 11; $\frac{3}{4}$, 10	$1\frac{1}{2}$–2	18 00
12C.	17–29	$\frac{1}{4}$, 20; $\frac{5}{16}$, 18; $\frac{3}{8}$, 16; $\frac{7}{16}$, 14; $\frac{1}{2}$, 13; $\frac{5}{8}$, 11; $\frac{3}{4}$, 10; $\frac{7}{8}$, 9; 1, 8	$1\frac{1}{2}$–$2\frac{1}{2}$	27 50

These sets contain the Patent Adjustable Die Stocks shown in Fig. 87. Each set complete in case.

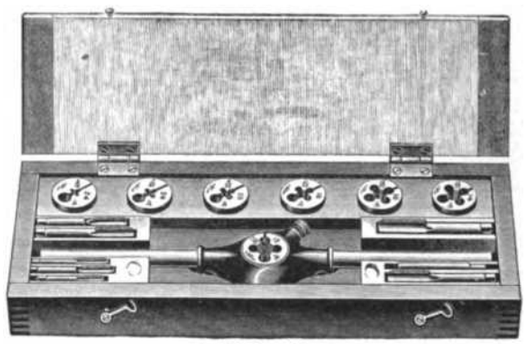


FIG. 88

ROUGH IRON SIZES

Nos.	Length Stocks. Inches.	Cutting.	Dia. Dies, Inches.	Each.
6B.	17	$\frac{9}{32}$, 20; $\frac{11}{32}$, 18; $\frac{13}{32}$, 16; $\frac{15}{32}$, 14; $\frac{17}{32}$, 12	$1\frac{1}{2}$	$12 00
7B.	17	$\frac{7}{32}$, 24; $\frac{9}{32}$, 20; $\frac{11}{32}$, 18; $\frac{13}{32}$, 16; $\frac{15}{32}$, 14; $\frac{17}{32}$, 12	$1\frac{1}{2}$	13 50
8B.	23	$\frac{9}{32}$, 20; $\frac{11}{32}$, 18; $\frac{13}{32}$, 16; $\frac{15}{32}$, 14; $\frac{17}{32}$, 12; $\frac{21}{32}$, 11; $\frac{25}{32}$, 10	2	16 00
10B.	29	$\frac{13}{32}$, 16; $\frac{15}{32}$, 14; $\frac{17}{32}$, 12; $\frac{21}{32}$, 11; $\frac{25}{32}$, 10; $\frac{29}{32}$, 9; $1\frac{1}{32}$, 8	$2\frac{1}{2}$	22 00
11B.	29	$\frac{17}{32}$, 12; $\frac{21}{32}$, 11; $\frac{25}{32}$, 10; $\frac{29}{32}$, 9; $1\frac{1}{32}$, 8	$2\frac{1}{2}$	17 50

DOUBLE SETS

9B.	17–23	$\frac{9}{32}$, 20; $\frac{11}{32}$, 18; $\frac{13}{32}$, 16; $\frac{15}{32}$, 14; $\frac{17}{32}$, 12; $\frac{21}{32}$, 11; $\frac{25}{32}$, 10	$1\frac{1}{2}$–2	18 00
12B.	17–29	$\frac{9}{32}$, 20; $\frac{11}{32}$, 18; $\frac{13}{32}$, 16; $\frac{15}{32}$, 14; $\frac{17}{32}$, 12; $\frac{21}{32}$, 11; $\frac{25}{32}$, 10; $\frac{29}{32}$, 9; $1\frac{1}{32}$, 8	$1\frac{1}{2}$–$2\frac{1}{2}$	27 50

These sets will be furnished, when so desired, with Whitworth Standard Threads, at regular prices.

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LIGHTNING BICYCLE SCREW PLATES

FURNISHED COMPLETE IN CASE

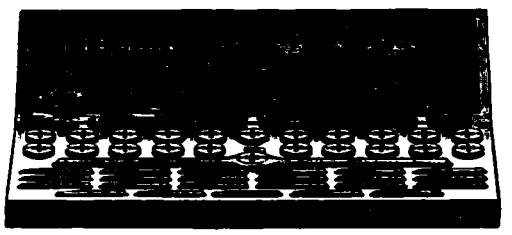


FIG. 89

No.	Length Stock, Inches.	Diam. Dies, Inches.	Cutting.	Prices, Each.
0	6	7/8	13, 48; 13, 56; 12, 40; 12, 42; 12, 50	$5 50
0	6	7/8	16, 56; 15, 56; 14, 56; 13, 48; 13, 56; 12, 40; 12, 42; 12, 50; 12, 56; 11, 56;	9 75
0	6	7/8	16, 56; 15, 56; 15, 60; 14, 56; 13, 48; 13, 54; 13, 56; 12, 40; 12, 42; 12, 50; 12, 56; 11, 40; 11, 56; 11, 38; 9, 38;	13 75
133	10	15/16	1/4, 24; 5/16, 24; 5/16, 28; 3/8, 20; 3/8, 24; 7/16, 20; 7/16, 24	11 50
134	10	15/16	Same, with adjustable tap wrench, No. 2,	13 85
135	22	2 3/16	5/16, 24; 3/8, 24; 7/16, 24; 1/2, 24; 5/8, 18; 3/4, 28.	13 00
136	22	2 3/16	Same, with adjustable tap wrench No. 3.	$16 00
137	22	2 3/16	5/16, 24; 3/8, 20; 3/8, 24; 7/16, 20; 7/16, 24; 1/2, 20; 1/2, 24; 9/16, 20; 9/16, 24; 5/8, 20; 5/8, 24; 3/4, 20; 3/4, 24; 3/4, 28.	28 50
138	22	2 3/16	Same, with adjustable tap wrench No. 3.	31 50
139	22	2 3/16	5/16, 20; 5/16, 24; 5/16, 28; 11/32, 28; 3/8, 20; 3/8, 24; 3/8, 28; 7/16, 18; 7/16, 20; 7/16, 24; 1/2, 20; 1/2, 24; 9/16, 18; 9/16, 20; 9/16, 24; 5/8, 18; 5/8, 20; 5/8, 24; 11/16, 24; 3/4, 20; 3/4, 24; 3/4, 28.	41 50
140	22	2 3/16	Same, with adjustable tap wrench No. 3.	44 50
141	6	7/8	16, 56; 15, 56; 14, 56; 13, 48; 13, 56; 12, 40; 12, 42; 12, 50; 12, 56; 11, 56; 9/64, 40; 5/32, 36; 3/16, 32; 7/32, 28; 1/4, 24.	19 25
	10	15/16	5/16, 24; 3/8, 24; 7/16, 24	
142			Same, with adjustable tap wrench	21 60
143	6	7/8	16, 56; 15, 56; 14, 56; 13, 48; 13, 56; 12, 40; 12, 42; 12, 50; 12, 56; 11, 56; 9/64, 40; 5/32, 36; 3/16, 32; 7/32, 28; 1/4, 24.	26 75
	22	2 3/16	5/16, 24; 3/8, 24; 7/16, 24; 1/2, 24; 5/8, 18; 3/4, 28.	
144			Same, with adjustable tap wrench	29 75

PRICES, FIG. 90

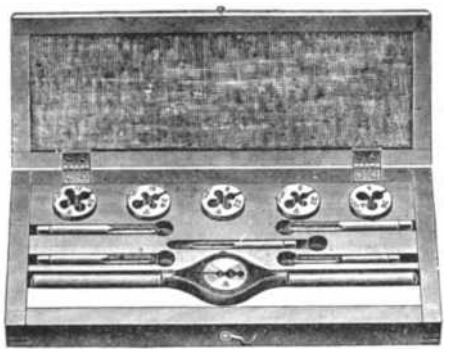


FIG. 90

COMPLETE IN HARDWOOD CASES---ONE ROUND TAP WRENCH IN EACH SET

No.	Length Stock, Inches.	Diam. Dies, Inches.	Cutting.	Prices, Each.
			WITH ADJUSTABLE DIES	
13	7	13/16	3, 56; 3/32, 54; 3, 48; 1/8, 42; 1/8, 40	$5 00
14	7	13/16	1, 64; 1 1/2, 56; 7/64, 56; 3/32, 56; 2, 48; 9/64, 40; 6, 38	6 50
15	7	13/16	1, 64; 1 1/2, 56; 3/32, 56; 3, 56; 7/64, 56; 3/32, 54; 3/32, 52; 2, 48; 3, 48; 4, 42; 1/8, 42; 1/8, 40; 9/64, 40; 6, 38	12 00
			WITH SPLIT DIES	
13A	5 1/2	5/8	3, 56; 3/32, 54; 3, 48; 1/8, 42; 1/8, 40; 6, 38	$5 00
14A	5 1/2	5/8	1, 64; 1 1/2, 56; 7/64, 56; 3/32, 56; 2, 48; 9/64, 40	5 00
15A	5 1/2	5/8	1, 64; 1 1/2, 56; 3/32, 56; 3, 56; 7/64, 56; 3/32, 54; 3/32, 52; 2, 48; 3, 48; 4, 42; 1/8, 42; 1/8, 40; 9/64, 40; 6, 38	10 00

BIRMINGHAM WIRE GAUGE SIZES

PRICES, FIG. 90

COMPLETE IN HARDWOOD CASES WITH SPLIT DIES 5/8 INCH DIAMETER---ONE ROUND TAP WRENCH IN EACH SET

No. 16A.	Length Stock 5 1/2 inches,	Cutting.	13, 48; 13, 56; 12, 40; 12, 42; 12, 50	Each, $4 25
" 17A.	" " 5 1/2 "	"	16, 56; 15, 56; 14, 56; 13, 48; 13, 56; 12, 40; 12, 42; 12, 50; 12, 56	" 6 75
" 18A.	" " 5 1/2 "	"	16, 56; 15, 56; 15, 60; 14, 56; 13, 48; 13, 54; 13, 56; 12, 40; 12, 42; 12, 50; 12, 56; 11, 40; 11, 56; 10, 38	" 10 00

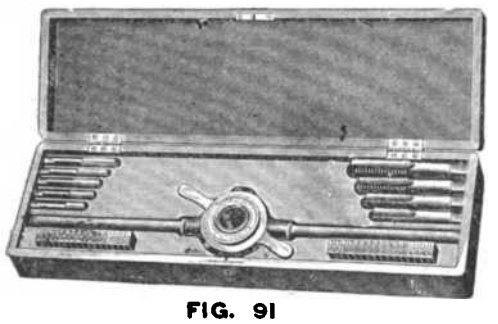


FIG. 91

DUPLEX DIE STOCKS FOR BOLTS AND RODS

MACHINISTS' SETS V UNITED STATES AND WHITWORTH STANDARD THREADS

PRICES, FIG. 91

Set No.	Cutting.	Complete in Case.	Extra Dies, Per Single Set, (4 pcs.)
AA	3/16, 24; 1/4, 20; 5/16, 18; 3/8, 16; 7/16, 14; 1/2 12*	$15 00	$1 00
A	1/4, 20; 5/16, 18; 3/8, 16; 7/16, 14; 1/2, 12*; 5/8, 11, 3/4, 10	20 00	1 25
B	1/4, 20; 5/16, 18; 3/8, 16; 7/16, 14; 1/2, 12*; 5/8, 11; 3/4, 10; 7/8, 9; 1, 8	30 00	1 50
C	1/12, 12*; 5/8, 11; 3/4, 10; 7/8, 9; 1, 8; 1 1/8, 7; 1 1/4, 7; 1 3/8, 6; 1 1/2, 6	45 00	1 75

*Sets with United States Standard Threads are furnished with 1/2 in. 13 threads.

MACHINISTS' SETS--METRIC SYSTEM OF THREADS

PRICES, FIG. 91

Set AA Threads—

Diam., MM.	6	7	8	9	10	11	12
Pitch, MM.	1	1	1.25	1.25	1.5	1.5	1.75

Complete in case, $13.00. Extra dies, per set (four pieces), $1.00.

Set A Threads—

Diam., MM.	6	7	8	9	10	11	12	14	16	18	20
Pitch, MM.	1	1	1.25	1.25	1.5	1.5	1.75	2	2	2.5	2.5

Complete in case, $21.00. Extra dies, per set (four pieces), $1.25.

Set B Threads—

Diam., MM.	6	7	8	9	10	11	12	14	16	18	20	22	24	27
Pitch, MM.	1	1	1.25	1.25	1.5	1.5	1.75	2	2	2.5	2.5	2.5	3	3

Complete in case, $30.00. Extra dies, per set (four pieces), $1.50.

Set C Threads—

Diam., MM.	12	14	16	18	20	22	24	27	30	33	36	39
Pitch, MM.	1.75	2	2	2.5	2.5	2.5	3	3	3.5	3.5	4	4

Complete in case, $45.00. Extra dies, per set (four pieces), $1.75.

Plug taps are sent unless others are specified.

BLACKSMITHS' SETS FOR ROUGH WORK AND REPAIRING V THREADS ONLY

PRICES, FIG. 91

			Complete in Case.	Extra Dies Per Set (4 Pcs.)
Set AA	Cutting.	3/16, 20; 1/4, 18; 5/16, 18; 3/8, 14; 1/16, 14; 1/2, 12	$12 00	$1 00
" A	"	1/4, 18; 5/16, 18; 3/8, 14; 7/16, 14; 1/2, 12; 5/8, 10; 3/4, 10	17 00	1 25
" B	"	1/4, 18; 5/16, 18; 3/8, 14; 7/16, 14; 1/2, 12; 5/8, 10; 3/4, 10; 7/8, 8; 1, 8	24 00	1 50
" C	"	1/2, 12; 5/8, 10; 3/4, 10; 7/8, 8; 1, 8; 1 1/8, 7; 1 1/4, 7; 1 3/8, 6; 1 1/2, 6	43 00	1 75

The dies and taps in these sets are made to cut 1/64 in. oversize up to 5/16 in.; larger sizes, 1/32 in.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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GRANT'S IMPROVED DIE-STOCK AND DIE

DESCRIPTION, FIG. 92

The die-stock is forged in one piece from good quality wrought iron, finished and case hardened. It is strong, well-proportioned and light. The dies cut very fast and easily, and should be passed once over the bolt without turning back until the desired length of thread has been cut. One die can be quickly substituted for another in the stock without a wrench. Machinist hand taper taps, furnished with die-stocks, are designed to pass once through nuts without backing out, cutting clean full threads in the operation. The taps and dies for use in the United States have the U. S. Standard right hand thread. Foreign orders are filled with U. S. or Whitworth thread. A neat wooden box is furnished with each die-stock, containing the stock, dies and taps in convenient receptacles.



FIG. 92

SET NOS. AND CONTENTS

No. 1, length 13 inches, is furnished with five dies and taper taps for cutting the following sizes and number of threads: ¼, 20; 5/16, 18; 3/8, 16; 7/16, 14; ½, 13, and one adjustable tap wrench. Weight 4 pounds, 5 ounces.

No. 2, length 20¼ inches, is furnished with six taps and dies; sizes and threads as follows: 5/16, 18; 3/8, 16; 7/16, 14; ½, 13; 5/8, 11; ¾, 10; and one adjustable tap wrench. Weight, 14 pounds.

No. 3, length 30 inches, is furnished with five taps and dies; sizes and threads as follows: ½, 13; 5/8, 11; ¾, 10; 7/8, 9; 1, 8; and one adjustable tap wrench. Weight, 30 pounds.

No. 4, length 48 inches, is furnished with six taps and dies; sizes and threads as follows: 7/8, 9; 1, 8; 1⅛, 7; 1¼, 7; 1⅜, 6; 1½, 6; and one adjustable tap wrench. Weight, 92 pounds.

PRICES

No. 1, with taper tap, $15.30; with taper and plug taps, $17.42; with taper, plug and bottoming taps, $19.54. 5/16, 32 die and tap will be furnished for this stock at $2.74.

No. 2, with taper tap, $22.50; with taper and plug taps, $25.35; with taper, plug and bottoming taps, $29.22. ¼, 20; 9/16, 12; 11/16, 11 dies will be furnished for this stock at $2.85 each, and dies for pipe ⅛, ¼, ⅜ and ½ inches at $2.85 each.

No. 3, with taper tap, $27.00; with taper and plug taps, $31.80; with taper, plug and bottoming taps, $36.60. ⅜, 16; 7/16, 14; 9/16, 12; 11/16, 11; 13/16, 10, and 15/16, 9 dies will be furnished for this stock at $3.50 each.

No. 4, with taper tap, $50.40; with taper and plug taps, $61.65; with taper, plug and bottoming taps, $72.90. ¾, 10; 13/16, 10; 15/16, 9; 1 1/16, 8; 1 3/16, 7; 1 5/16, 7; 1 7/16, 6 dies will be furnished for this stock at $4.75 each, and dies for pipe ¾, 1 and 1¼ inch at $4.75 each.

Left-hand dies always rate as special.

Dies for cutting 12 threads to the inch on patch bolts are furnished, of ½ to 1 inch diameter, for No. 3 stock, at $3.50 each; of ⅞ to 1¼ inches diameter, for No. 4 stock, at $4.75 each.

Prices include Adjustable Wrench, fitting taps with each respective die-stock. Complete in wooden case.

ARMSTRONG'S ADJUSTABLE STOCK NO. 1, AND DIES FOR THREADING BOLTS

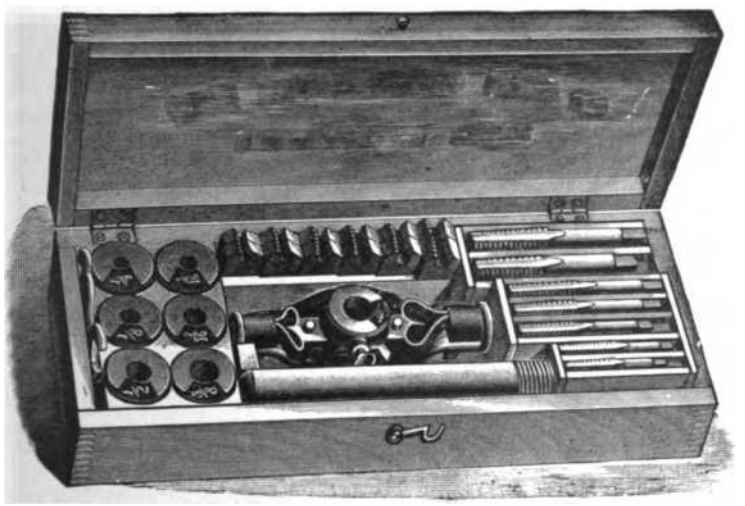


FIG. 93

		Prices. Each.
No. 1 stock,	7 bolt dies, ¼ to ¾ inch	$15 00
" 1 "	4 pipe and 7 bolt dies	20 00
" 1 "	7 bolt dies and 7 taps, ¼ to ¾ inch	20 00
" 1 "	4 pipe dies, 7 bolt dies and taps, ¼ to ¾ inch	24 80

PRICES OF PARTS

	Each.
No. 1 stock	$3 25
" 1 bolt dies, ¼, 5/16, ⅜, 7/16	1 50
" 1 bolt dies, ½, ⅝, ¾	1 75
" 1 bolt or pipe bushings	20
" 1 wrench	25
" 1 collar screw	12
" 1 adjusting screw	10
" 1 thumb screw	10

ARMSTRONG'S ADJUSTABLE STOCK NO. 2, AND DIES FOR THREADING BOLTS

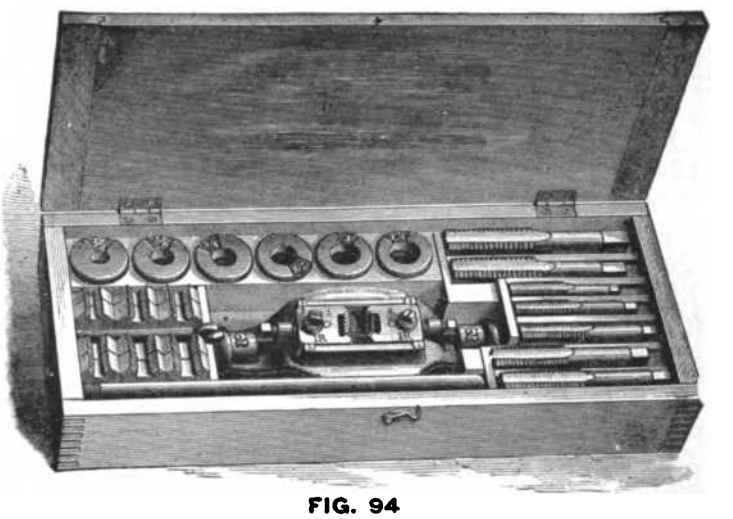


FIG. 94

		Prices. Each
No. 2 stock,	7 bolt dies, ½ to 1¼ inch	$20 00
" 2 "	7 bolt dies, ½ to 1¼ inch, and 5 pipe dies, ¼ to 1	28 50
" 2 "	7 bolt dies and 7 taps, ½ to 1¼ inch	30 00
" 2 "	7 bolt dies, 7 taps ½ to 1¼ in. and 5 pipe dies ¼ to 1 in	38 75

PRICES OF PARTS

	Each.
No. 2 stock	$4 00
" 2 bolt dies, ½ and ⅝ inch	2 00
" 2 bolt dies, ¾, ⅞ and 1 inch	2 00
" 2 bolt dies, 1⅛ and 1¼ inch	2 25
" 2 bushings	25
" 2 wrench	25
" 2 collar screw	12
" 2 set screw	10
" 2 thumb screw	10

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BLACKSMITHS' STOCKS AND DIES

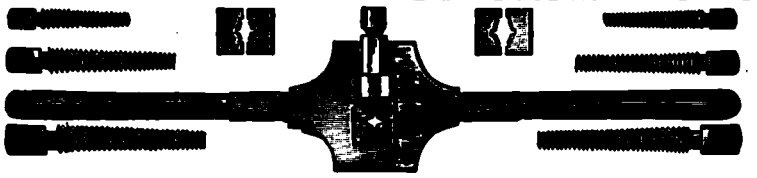


FIG. 95

Nos.	Cutting, Inches.	Hand.	Threads.	Taps.	Dies, Pairs.	Prices, Each.
1	2 to 1	Right and left.	4½ and 7	8	4	$60 00
2	2 to ⅞	Right.	4½, 6, 7, 8	8	4	60 00
3	1¾ to ⅞	Right and left.	6, 8	8	4	45 00
4	1¾ to ¾	Right.	6, 7, 8, 9	8	4	45 00
5	1½ to ¾	Right.	8, 9	8	4	35 00
	1½ to ¾	Left.				
5½	1½ to ¾	Right.	6, 7, 8, 9	8	4	35 00
7	1¼ to ⅝	Right.	8, 10	6	3	12 00
	1¼ to ⅞	Left.	8			
9	1¼ to ½	Right.	8, 10, 12	6	3	12 00
17	1 to ½	Right.	9, 12	6	3	9 00
	1 to ¾	Left.	9			
19	1 to ⅜	Right.	9, 12, 14	6	3	9 00
25	¾ to ⅜	Right.	10, 12	6	6	6 50
	¾ to ½	Left.	10			
27	¾ to ⅜	Right.	10, 12, 16	6	3	6 50
45	⅝ to 5/16	Right.	12, 16	6	3	5 50
	⅝ to 7/16	Left.	12			
47	⅝ to ¼	Right.	12, 14, 18	6	3	5 50
49	½ to ¼	Right.	14, 18	6	3	4 50
	½ to 5/16	Left.	14			
51	½ to 5/16	Right.	14, 18, 22	6	3	4 50
60	¾ to ⅛	Right.	10, 12, 14, 18	6	4	6 50



FIG. 96

No.	Cutting, Inches.	Hand.	Threads.	Taps.	Dies, Sets.	Prices, Each.
6	1½ to 1	Right and left.	8	4	2	$20 00
11	1¼ to ⅝	Right.	8, 10	4	3	10 00
	1¼ to ⅞	Left.	8			
15	1¼ to ½	Right.	8, 10, 12	5	3	10 00
21	1 to ½	Right.	9, 12	4	3	6 00
	1 to ¾	Left.	9			
23	1 to ⅜	Right.	9, 10, 14	3	3	5 00
32	¾ to ⅜	Right and left.	10, 14	4	4	5 00
33	¾ to ½	Right and left.	10	2	2	4 00
34	¾ to 5/16	Right.	10, 12, 16	3	3	4 50
34A	¾ to 5/16	Right.	10, 12, 14	3	3	4 50
34B	¾ to 5/16	Right.	12, 14, 16	3	3	4 50
35	¾ to ⅜	Right.	10, 14	2	2	4 00
37	⅝ to 3/16	Right.	14, 18, 22	6	3	4 25
37A	⅝ to 3/16	Right.	12, 14, 16	6	3	4 25
37B	⅝ to 3/16	Right.	14, 16, 18	6	3	4 25
38	⅝ to 5/16	Right.	12, 18	6	3	4 50
	⅝ to 7/16	Left.	12			
41	½ to ⅛	Right.	16, 20, 26	6	3	3 25
41A	½ to ⅛	Right.	14, 16, 18	6	3	3 25
42	½ to 3/16	Right.	14, 20	6	3	3 50
	½ to 5/16	Left.	14			
53	5/16 to 1/16	Right.	16, 20, 24, 32	4	4	2 75
55	5/16 to 1/16	Right.	18, 24, 32	4	3	2 50

PACIFIC TAP CHUCK

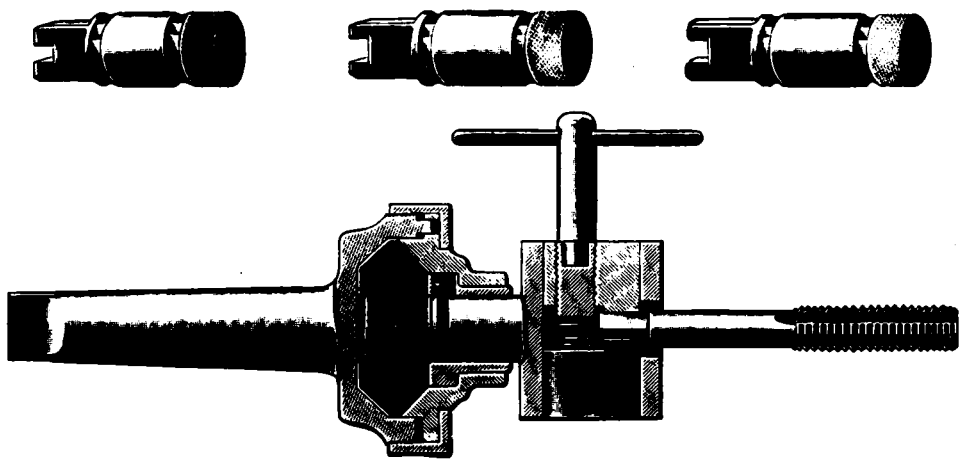


FIG. 97

This Chuck is intended for use in the upright drill, lathe, and screw machine. In construction the Chuck is very simple. The cut illustrates No. 2 Chuck and Holder complete, and its construction can be easily understood by the most ordinary mechanic.

The taper shanks are regularly made to the Morse taper, but will be turned to any desired taper or to fit any screw machine.

The tap holder will take any standard tap, and the change from drill to tap can be instantly made without stopping the machine.

No. 1 Chuck takes drills or taps ¼ in. to ¾ in. inclusive. Shank turned to No. 3 Morse taper; is furnished with one Nos. 1 and 2 Morse taper drill socket, one tap holder, and one spanner wrench.....Price each, $25 00

No. 2 Chuck takes taps or drills ⅝ in. to 1¼ in. inclusive, shank turned to No. 3 Morse taper; is furnished with one Nos. 1, 2, and 3 Morse taper drill socket, one tap holder, and one spanner wrench.....Price each, $35 00

GLOBE TAP CHUCK

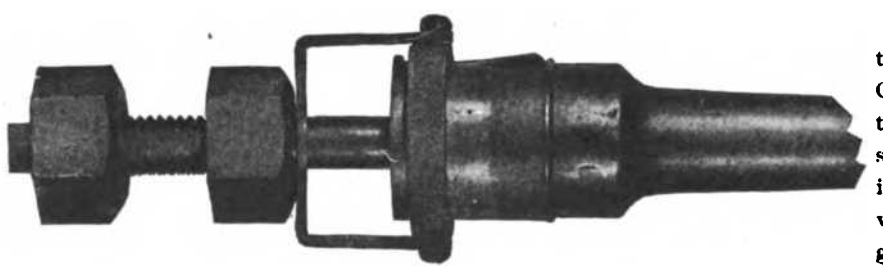


FIG. 98

PRICES OF STYLE D CHUCKS

(Price does not include Yoke.)

No. 2	Length, 6	Diameter, 1⅞	Holding tools, ¼ to ½	Price each, $7 50
" 3	" 6½	" 2⅜	" " ½ to 1	" " 10 00
" 4	" 8	" 3⅜	" " 1 to 1½	" " 12 50
Yokes fitted to any Chuck complete.....				1 00

YOKE FOR NUT TAPPING



FIG. 99

The yoke, Fig. 99, is intended to be attached only when the Chuck or Holder is in use on nut-tapping machinery, and when in such use will prevent the breaking of taps, which often occurs when the operator through negligence allows too many nuts to accumulate on the shank of the tap before undoing the set-screw, which is generally used for holding the tap in place.

It will very readily be seen that when the required number of nuts have been tapped, the following nut will raise the collar, allowing the tap to drop out of the holder, thereby avoiding all danger of breaking the tap through carelessness.

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FRICTION GRAVITY SLIP CHUCK

FOR REVERSIBLE DRILL PRESSES



FIG. 100

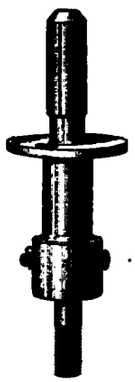


FIG. 101
Attachment for Setting Stud.



FIG. 102
Attachment for Drill.

It drills the hole, taps it, and then sets stud in, all without stopping Drill Press and without moving the work.

Tools connected by pressure against work, and disconnected by gravity, yet supported in spindle.

Tools inserted and withdrawn while spindle is rotating without danger of turning in operator's hand.

PRICES, FIG. 100

No. 2 Drills and Taps up to 1 inch	$50 00
No. 2 Stud-Setter for above	15 00
No. 3 Drills and Taps up to 1½ inch	90 00
No. 3 Stud-Setter for above	20 00

AUTO-REVERSE TAPPING CHUCK

FITS SOCKET OF ANY DRILL PRESS

Friction or positive tool-holder, right and left threads.

Tap stops automatically at depth gauged.

Just like a drill chuck; drives tap in, stops automatically at bottom of hole and backs tap out (quick return), without stopping or reversing drill press spindle.

PRICES, FIG. 103

No.	Capacity.			Positive Tool-Holder.	Friction Tool-Holder.
0	up to ¾ inch			$35 00	
1	⅛ inch to ⅝ inch			40 00	$50 00
2	5/16 " " 1	"		65 00	
3	¼ " " 1	"	(pipe taps)	70 00	80 00
4	⅜ " " 1½	"		90 00	
5	½ " " 2	"	(pipe taps)		100 00

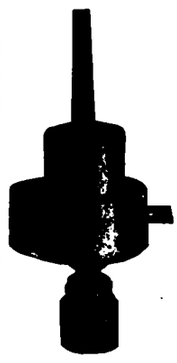


FIG. 103

CONNELLY'S STAY BOLT HOLE DRILLING AND TAPPING DEVICES

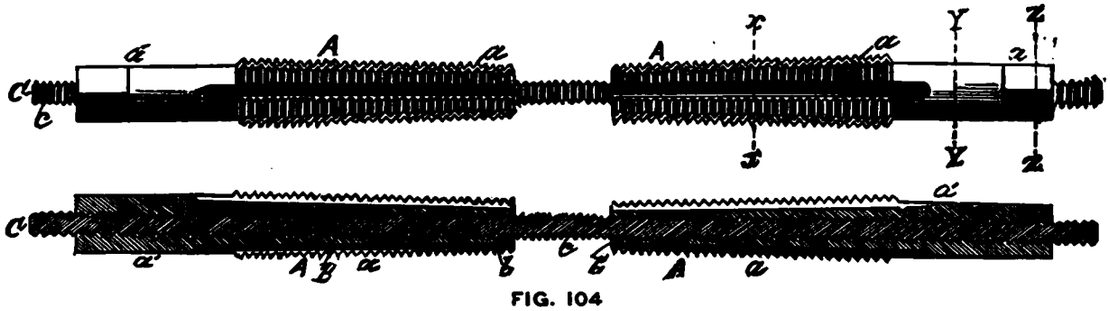


FIG. 104

Fig. 104 shows radial devices for tapping stay bolt holes in locomotive boilers, especially adapted for reaching long distances, as from outer shell to crown sheet, or from side to side of shell, and are made to suit any required size, as 1⅛ inch in shell plate to 1 inch in crown sheet.

A designates two corresponding screw taps, provided with exterior threads, *a*, and having a central bore, *B*, extending entirely through the taps, this bore being threaded at *b*. *C*, the spindle which is externally threaded at *c* to correspond to the threaded bore, *B*, of the taps. This spindle may be made of any desired length, and upon it are mounted the screw taps, *A A*, as shown, the taps being thus adapted to work upon the threaded spindle towards each other, and be perfectly guided thereby. The spindle is threaded its entire length and has the same pitch of thread as the taps, whereby the spindle serves to perfectly guide the taps in a straight line and effect a perfect relative operation as the threads are cut in the respective bolt holes.

In ordering, give the diameter of taps, number of threads per inch, and longest distance between sheets.

PRICE, PER SET, $50.00

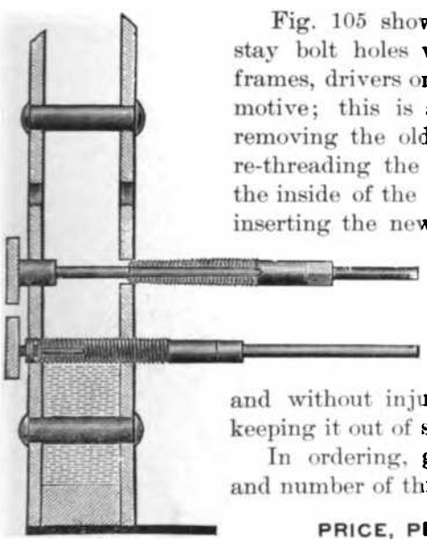


FIG. 105

Fig. 105 shows device for tapping stay bolt holes which are behind the frames, drivers or other parts of a locomotive; this is accomplished by first removing the old stay bolt, and then re-threading the stay bolt holes from the inside of the fire box, and by then inserting the new stay bolt, also from the inside of the fire box, which may be done quickly and effectively at comparatively little expense, and without injury to the engine, or keeping it out of service.

In ordering, give diameter of tap and number of threads per inch.

PRICE, PER SET, $35.00

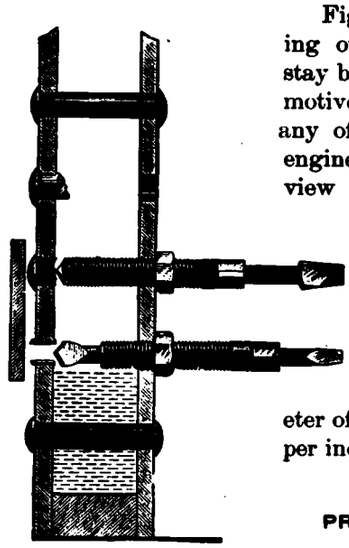


FIG. 106

Fig. 106 shows method of drilling out or removing old or broken stay bolts from the fire boxes of locomotives without the displacement of any of the intervening parts of the engine. The cut shows a sectional view of a portion of a locomotive fire box, the inner and outer sheets or shells of which are stayed by the usual stay bolts, illustrating the application of the tubular drill guide.

In ordering, give diameter of guides and number of threads per inch.

PRICE, PER SET, $35.00

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SIZES OF TAP DRILLS FOR MORSE TAPS

FOR TAPS WITH "V" THREAD

Dia. Inches.	Threads per Inch.	Size of Drill, No.	Dia. Inches.	Threads per Inch.	Size of Drill, No.	Dia. Inches.	Threads per Inch.	Size of Drill, Inches.	Dia. Inches.	Threads per Inch.	Size of Drill, Inches.
3/32	48	50	7/32	24	20	19/32	12	31/64	17/32	7	1 1/64
3/32	52	50	7/32	28	17	19/32	14	1/2	17/32	8	1 3/64
3/32	54	49	7/32	30	16	5/8	10	31/64	1 1/4	7	1 3/64
3/32	56	49	7/32	32	15	5/8	11	1/2	1 9/32	7	1 5/64
3/32	60	48	15/64	24	16	5/8	12	33/64	1 5/16	7	1 7/64
7/64	32	50	15/64	28	12	21/32	10	33/64	1 11/32	7	1 9/64
7/64	36	49	15/64	32	10	21/32	11	17/32	1 3/8	6	1 1/8
7/64	40	47	1/4	18	17	21/32	12	35/64	1 13/32	6	1 5/32
7/64	48	44	1/4	20	14	11/16	11	9/16	1 7/16	6	1 3/16
7/64	56	43	1/4	24	9	11/16	12	37/64	1 15/32	6	1 7/32
1/8	32	44	9/32	16	10	23/32	11	19/32	1 1/2	6	1 17/64
1/8	36	43	9/32	18	13/64	23/32	12	39/64	1 17/32	6	1 19/64
1/8	40	42	9/32	20	3	3/4	10	39/64	1 9/16	6	1 21/64
1/8	42	41	5/16	16	1	3/4	11	5/8	1 19/32	6	1 23/64
1/8	48	39	5/16	18	15/64	3/4	12	41/64	1 5/8	5	1 21/64
9/64	30	41	11/32	16	F	25/32	10	41/64	1 5/8	5 1/2	1 23/64
9/64	32	40	11/32	18	17/64	25/32	11	21/32	1 21/32	5	1 25/64
9/64	36	37	3/8	14	J	25/32	12	43/64	1 21/32	5 1/2	1 25/64
9/64	40	34	3/8	16	L	13/16	10	43/64	1 11/16	5	1 25/64
5/32	30	33	3/8	18	19/64	27/32	10	45/64	1 11/16	5 1/2	1 27/64
5/32	32	32	13/32	14	N	7/8	9	23/32	1 23/32	5	1 27/64
5/32	36	31	13/32	16	P	7/8	10	47/64	1 23/32	5 1/2	1 29/64
5/32	40	30	13/32	18	21/64	29/32	9	3/4	1 3/4	5	1 29/64
11/64	32	30	7/16	14	R	15/16	9	25/32	1 25/32	5	1 31/64
11/64	36	29	7/16	16	S	31/32	9	13/16	1 13/16	5	1 33/64
11/64	40	28	15/32	14	3/8	1	8	53/64	1 27/32	5	1 35/64
3/16	24	29	15/32	16	W	1 1/32	8	55/64	1 7/8	4 1/2	1 35/64
3/16	28	28	1/2	12	25/64	1 1/16	8	57/64	1 7/8	5	1 37/64
3/16	30	27	1/2	13	X	1 3/32	8	59/64	1 29/32	4 1/2	1 37/64
3/16	32	26	1/2	14	13/32	1 1/8	7	59/64	1 29/32	5	1 39/64
3/16	36	24	17/32	12	27/64	1 1/8	8	61/64	1 15/16	4 1/2	1 39/64
13/64	24	26	17/32	13	27/64	1 5/32	7	61/64	1 15/16	5	1 41/64
13/64	28	22	17/32	14	7/16	1 5/32	8	63/64	1 31/32	4 1/2	1 41/64
13/64	32	20	9/16	12	29/64	1 3/16	7	63/64	1 31/32	5	1 43/64
13/64	36	18	9/16	14	15/32	1 3/16	8	1 1/64	2	4 1/2	1 43/64

FOR TAPS WITH U. S. STANDARD THREAD

1/4	20	5/16	11/16	11	37/64	1 1/4	7	1 5/64	2 1/8	4 1/2	1 27/32
5/16	18	C	3/4	10	5/8	1 3/8	6	1 11/64	2 1/4	4 1/2	1 31/32
7/16	14	S	7/8	9	47/64	1 5/8	5 1/2	1 25/64	2 3/8	4	2 1/16
1/2	13	13/32	15/16	9	51/64	1 3/4	5	1 1/2	2 1/2	4	2 5/16
9/16	12	29/64	1	8	27/32	1 7/8	5	1 5/8			
5/8	11	33/64	1 1/8	7	61/64	2	4 1/2	1 23/32			

COMPARISON OF MILLIMETER, TWIST DRILL GUAGE AND FRACTIONAL SIZES

Millimeters.	Size in decimals of 1 inch.	Gauge No.	Size in decimals of 1 inch.	Fractions of 1 inch.	Size in decimals of 1 inch.
1	.03937	60	.0400		
1 1/10	.043307	57	.0430		
1 2/10	.047244	56	.0465		
1 3/10	.051181	55	.0520		
1 4/10	.055118	54	.0550		
1 5/10	.059055	53	.0595		
1 6/10	.062992	52	.0635	1/16	.0625
1 7/10	.066929	51	.0670		
1 8/10	.070866	50	.0700		
1 9/10	.074803	48	.0760		
2	.07874	47	.0785	5/64	.07812
2 1/10	.082677	45	.0820		
2 2/10	.086614	44	.0860		
2 3/10	.090551	43	.0890		
2 4/10	.094488	42	.0935	3/32	.09375
2 5/10	.098425	40	.0980		
2 6/10	.102362	38	.1015		
2 7/10	.106299	36	.1065		
2 8/10	.110236	35	.1100	7/64	.10937
2 9/10	.114173	33	.1130		
3	.11811	32	.1160		
3 1/10	.122047	31	.1200		
3 2/10	.125984			1/8	.125
3 3/10	.129921	30	.1285		
3 4/10	.133858	29	.1360		
3 5/10	.137795				
3 6/10	.141732	28	.1405	9/64	.14062
3 7/10	.145669	27	.1440		
3 8/10	.149606	25	.1495		
3 9/10	.153543	23	.1540		
4	.15748	22	.1570	5/32	.15625
4 1/10	.161417	20	.1610		
4 2/10	.165354	19	.1660		
4 3/10	.169291	18	.1695		
4 4/10	.173228	17	.1730	11/64	.17187
4 5/10	.177165	16	.1770		
4 6/10	.181102	14	.1820		
4 7/10	.185039	13	.1850		
4 8/10	.188976	12	.1890	3/16	.1875
4 9/10	.192913	10	.1935		
5	.19685	9	.1960		
5 1/10	.200787	7	.2010		
5 2/10	.204724	6	.2040	13/64	.20312
5 3/10	.208661	4	.2090		
5 4/10	.212598	3	.2130		
5 5/10	.216535				
5 6/10	.220472	2	.2210	7/32	.21875
5 7/10	.224409	1	.2280		
5 8/10	.228346				
5 9/10	.232283	A	.234		
6	.23622	B	.238	15/64	.23437
6 1/10	.240157	C	.242		
6 2/10	.244094	D	.246		
6 3/10	.248031	E	.250		
6 4/10	.251968			1/4	.25
6 5/10	.255905	F	.257		
6 6/10	.259842	G	.261		
6 7/10	.263779			17/64	.26562
6 8/10	.267716	H	.266		
6 9/10	.271653	I	.272		
7	.27559	J	.277		
7 1/10	.279527	K	.281	9/32	.28125
7 2/10	.283464				
7 3/10	287401				
7 4/10	.291338	L	.290		
7 5/10	.295275	M	.295	19/64	.29687
7 6/10	.299212				
7 7/10	.303149	N	.302		
7 8/10	.307086				
7 9/10	.311023			5/16	.3125
8	.31496	O	.316		
8 1/10	.318897				
8 2/10	.322834	P	.323		
8 3/10	.326771			21/64	.32812
8 4/10	.330708	Q	.332		
8 5/10	.334645				
8 6/10	.338582	R	.339		
8 7/10	.342519			11/32	.34375
8 8/10	.346456	S	.348		
8 9/10	.350393				
9	.35433				
9 1/10	.358267	T	.358	23/64	.35937
9 2/10	.362204				
9 3/10	.366141	U	.368		
9 4/10	.370078				
9 5/10	.374015			3/8	.375
9 6/10	.377952	V	.377		
9 7/10	.381889				
9 8/10	.385826	W	.386		
9 9/10	.389763			25/64	.39065
10	.39370				
10 1/10	.397637	X	.397		
10 2/10	.401574				
10 3/10	.405511	Y	.404	13/32	.40625
10 4/10	.409448				
10 5/10	.413385	Z	.413		
10 6/10	.427322				
10 7/10	.421259			27/64	.42187
10 8/10	.425196				
10 9/10	.429133				
11	.43307				
11 1/10	.437007				
11 2/10	.440944			7/16	.4375
11 3/10	.444881				
11 4/10	.448818				
11 5/10	.452755			29/64	.45312
11 6/10	.456692				
11 7/10	.460629				
11 8/10	.464566				
11 9/10	.468503			15/32	.46875
12	.47244				
12 1/10	.476377				
12 3/10	.480314				
12 8/10	.484251			31/64	.48437

TAP DRILLS

FOR MACHINE SCREW TAPS

Size of Tap, Number.	Size of Drill, Number.	Size of Tap, Number.	Size of Drill, Number.
2 x 48	50	13 x 20	15
2 56	49	13 22	15
2 64	48	13 24	13
3 40	47	14 20	13
3 48	45	14 22	11
3 56	44	14 24	9
4 32	43	15 18	10
4 36	42	15 20	8
4 40	41	15 22	6
5 30	40	15 24	5
5 32	40	16 16	7
5 36	38	16 18	6
5 40	37	16 20	5
6 30	35	17 16	6
6 32	35	17 18	2
6 36	33	17 20	2
6 40	32	18 16	2
7 28	32	18 18	1
7 30	31	18 20	B
7 32	30	19 16	A
8 24	30	19 18	C
8 30	30	19 20	D
8 32	29	20 16	D
9 24	29	20 18	F
9 28	28	20 20	H
9 30	27	22 16	J
9 32	25	22 18	L
10 24	25	24 14	M
10 30	22	24 16	N
10 32	21	24 18	O
11 24	21	26 14	P
11 28	17	26 16	R
11 30	17	28 14	S
12 20	19	28 16	U
12 22	17	30 14	V
12 24	17	30 16	
12 28	15		

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

MORSE TAPERS

Number of Taper.	Diam. of Plug at Small End.	Diam. at End of Socket.	Standard Plug Depth.	Whole Length of Shank.	Depth of Hole.	End of Socket to Key Way.	Length of Key Way.	Width of Key Way.
	D	A	P	B	H	K	L	W
1	.369	.475	2⅛	2⁹⁄₁₆	2⅜	2¹⁄₁₆	¾	.213
2	.572	.700	2⁹⁄₁₆	3¹⁄₁₆	2⅝	2½	⅞	.26
3	.778	.938	3⅜	3¾	3¼	3¹⁄₁₆	1¹⁄₁₆	.322
4	1.020	1.231	4¹⁄₁₆	4¾	4⅛	3⅞	1¼	.478
5	1.475	1.748	5³⁄₁₆	6	5¼	4¹⁵⁄₁₆	1½	.635
6	2.116	2.494	7¼	8⁵⁄₁₆	7⅜	7	1¾	.76

Number of Key.	Taper per Inch.	Taper per Foot.	Shank Depth.	Radius of Tongue.	Rad. of Mill. for Tongue.	Thickness of Tongue.	Diameter of Tongue.	Length of Tongue.
			S	a	R	t	d	T
1	.050	.600	2⅜	.05	³⁄₆₄	³⁄₁₆	.35	5⁄16
2	.05016	.602	2⅞	.06	¼	¼	17⁄32	⅜
3	.05016	.602	3⁹⁄₁₆	.08	⁹⁄₃₂	5⁄16	¾	7⁄16
4	.05191	.623	4½	.10	5⁄16	⅜	31⁄32	½
5	.0525	.630	5¾	.12	⅜	⅝	1 ¹³⁄₃₂	⅝
6	.05216	.626	8	.15	½	¾	2	⅞

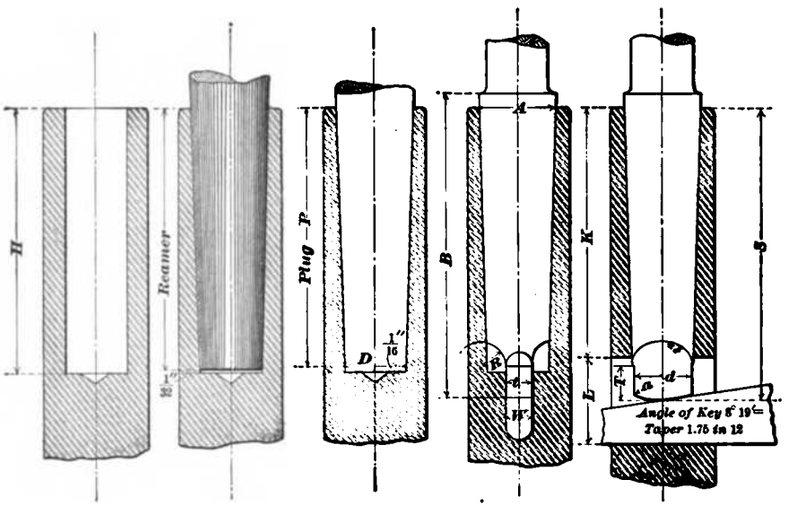


FIG. 107

MORSE TAPER SHANKS

DIMENSIONS, FIG. 108

Nos.	A	B	C	D	E	Taper in 12 inch.
1	2⁹⁄₁₆	2⅜	.356	.475	³⁄₆₄	.600
2	3¹⁄₁₆	2⅞	.556	.700	¼	.602
3	3¾	3⁹⁄₁₆	.759	.938	5⁄16	.602
4	4¾	4½	.997	1.231	¹⁵⁄₃₂	.623
5	6	5¾	1.446	1.748	⅝	.630
6	8⁵⁄₁₆	8	2.077	2.494	¾	.626

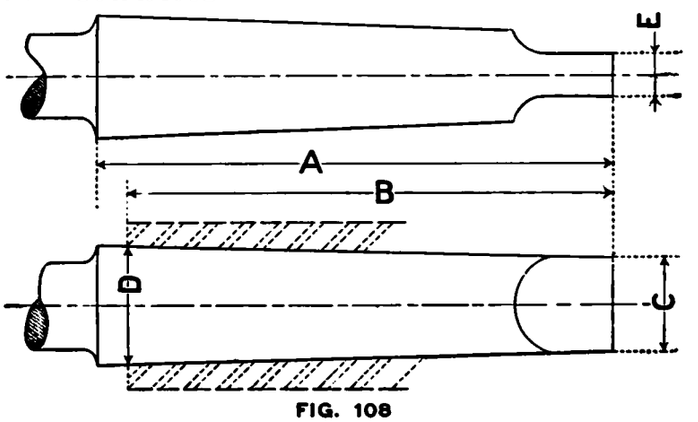


FIG. 108

CASES FOR DRILLS

We can furnish cases in three sizes for holding drills, viz.:

No. 1—Small case, holding steel wire gauge and jobbers' drills only. Price, $10.00.

No. 2—Case of dimensions, viz.: 25½ inches high, 27 inches wide, 12 inches deep at the base. This case will hold drills, viz., drills, steel wire gauge, from No. 1 to No. 65; jobbers' straight shank drills, from 1⁄16 to ½ inch, varying by 64ths; taper shank drills, from ¼ to ¾ inch, varying by 32ds; taper shank drills, from ¹³⁄₁₆ to 1¼ inches, varying by 16ths; jewelers' drills, chucks and sockets. Price of case, boxed for shipping, $14.50.

No. 3—Case of dimensions, viz., 38 inches high, 37 inches wide, 16 inches deep. This case will hold drills, viz., drills, steel wire gauge, from No. 1 to No. 65; jobbers' straight shank drills, from 1⁄16 to ½ inch, varying by 64ths; taper shank drills, from ¼ to 1¼ inch, varying by 32ds; bit stock drills, from 1⁄16 to ¹¹⁄₃₂ inch, varying by 32ds; bit stock drills, from ⅜ to ½ inch, varying by 16ths. This case has two drawers at the bottom which will hold sockets and assorted tools. Price of case, boxed for shipping, $40.00.

The above cases are of black walnut, whitewood or oak. The whitewood cases admit of being stained in color to suit store furniture.

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TAPER SHANK TWIST DRILLS

WITH INCREASE TWIST OR CONSTANT ANGLE



FIG. 109

Diam. Inches.	Prices. Each.	Length. Inches.	Socket for Morse Taper.
1/8	$0 45	5 1/8	
5/32	45	5 3/8	
3/16	50	5 3/4	
7/32	55	6	
1/4	60	6 1/4	
9/32	65	6 1/4	
5/16	70	6 3/4	
11/32	75	6 1/2	
3/8	80	6 3/4	
13/32	85	7	
7/16	90	7 1/4	
15/32	95	7 1/2	
1/2	1 00	7 3/4	
17/32	1 10	8	No. 1. $1 30
9/16	1 20	8 1/4	
19/32	1 30	8 1/2	
5/8	1 40	8 3/4	
21/32	1 50	9	
11/16	1 60	9 1/4	
23/32	1 70	9 1/2	
3/4	1 85	9 3/4	
25/32	2 00	9 7/8	
13/16	2 15	10	
27/32	2 30	10 1/4	
7/8	2 45	10 1/2	
29/32	2 60	10 3/4	
15/16	2 75	10 7/8	
31/32	2 90	10 7/8	
1	3 00	11	No. 2. $2 50
1 1/32	3 20	11 1/8	
1 1/16	3 40	11 1/4	
1 3/32	3 60	11 1/2	
1 1/8	3 80	11 3/4	
1 5/32	4 00	11 7/8	
1 3/16	4 20	12	
1 7/32	4 40	12 1/4	
1 1/4	4 50	12 1/2	
1 9/32	4 65	14 1/4	No. 3. $3 50
1 5/16	4 80	14 1/4	
1 11/32	$5 00	14 3/4	
1 3/8	5 20	14 1/2	
1 13/32	5 40	14 3/4	
1 7/16	5 60	14 3/4	
1 15/32	5 80	14 7/8	
1 1/2	6 00	15	
1 17/32	6 30	15	
1 9/16	6 60	15 1/4	
1 19/32	6 90	15 1/4	
1 5/8	7 20	15 1/2	
1 21/32	7 50	15 1/2	
1 11/16	7 80	15 3/4	
1 23/32	8 10	15 3/4	
1 3/4	8 40	16	
1 25/32	8 60	16	
1 13/16	8 80	16 1/4	
1 27/32	9 00	16 1/4	
1 7/8	9 20	16 1/2	
1 29/32	9 35	16 1/2	
1 15/16	9 50	16 1/2	
1 31/32	9 65	16 1/2	
2	9 80	16 1/2	
2 1/32	10 20	16 1/2	
2 1/16	10 60	17	
2 1/8	11 20	17	
2 1/16	12 00	17	
2 1/4	12 80	17 1/2	
2 5/16	13 60	17 1/2	
2 3/4	14 40	18	No. 4. $4 00
2 7/16	15 00	18 1/2	
2 1/2	15 60	19	
2 9/16	16 20	19 1/4	
2 5/8	16 80	19 1/2	
2 11/16	17 60	20	
2 3/4	19 00	20 1/2	
2 13/16	20 00	20 1/2	
2 7/8	21 00	21	
2 15/16	23 00	21	
3	25 00	22	

The above we furnish by 64ths if ordered.

PRICES OF TAPER SHANK DRILLS, PER SET

No. 1. Set of Taper Shank Drills, 1/4 to 1 inch varying by 16ths..... $20 00
" 2. " " " " 5/8 to 1 1/4 inches varying by 16ths.... 34 50
" 3. " " " " 5/8 to 3/4 inch by 32ds, 13/16 to 1 1/4 inches by 16ths..... 42 00
No. 4. Set of Taper Shank Drills, 5/8 to 3/4 inch by 32ds, 13/16 to 1 1/2 inches by 16ths $64 00
1 9/16 to 2 inches by 16ths..... 67 00 131 00
No. 11. Set of Taper Shank Drills, 3/4 to 1 1/2 inches by 32ds..... 109 85
1 17/32 to 2 inches by 32ds..... 132 70 242 55

STRAIGHT SHANK TAPER LENGTH TWIST DRILLS

WITH INCREASE TWIST OR CONSTANT ANGLE



FIG. 110

Diam. Inches.	Prices. Each.	Length. Inches.	Diam. Inches.	Prices. Each.	Length. Inches.
1/4	$0 45	5 1/8	1 11/32	$5 00	14 3/4
5/32	45	5 3/8	1 3/4	5 20	14 1/2
3/16	50	5 3/4	1 13/32	5 40	14 3/4
7/32	55	6	1 7/16	5 60	14 3/4
1/4	60	6 1/4	1 15/32	5 80	14 7/8
9/32	65	6 1/4	1 1/2	6 00	15
5/16	70	6 3/4	1 17/32	6 30	15
11/32	75	6 1/2	1 9/16	6 60	15 1/4
3/8	80	6 3/4	1 19/32	6 90	15 1/4
13/32	85	7	1 5/8	7 20	15 1/2
7/16	90	7 1/4	1 21/32	7 50	15 1/2
15/32	95	7 1/2	1 11/16	7 80	15 3/4
1/2	1 00	7 3/4	1 23/32	8 10	15 3/4
17/32	1 10	8	1 3/4	8 40	16
9/16	1 20	8 1/4	1 25/32	8 60	16
19/32	1 30	8 1/2	1 13/16	8 80	16 1/4
5/8	1 40	8 3/4	1 27/32	9 00	16 1/4
21/32	1 50	9	1 7/8	9 20	16 1/2
11/16	1 60	9 1/4	1 29/32	9 35	16 1/2
23/32	1 70	9 1/2	1 15/16	9 50	16 1/2
3/4	1 85	9 3/4	1 31/32	9 65	16 1/2
25/32	2 00	9 7/8	2	9 80	16 1/2
13/16	2 15	10	2 1/32	10 20	16 1/2
27/32	2 30	10 1/4	2 1/16	10 60	17
7/8	2 45	10 1/2	2 1/8	11 20	17
29/32	2 60	10 3/4	2 1/16	12 00	17
15/16	2 75	10 7/8	2 1/4	12 80	17 1/2
31/32	2 90	10 7/8	2 5/16	13 60	17 1/2
1	3 00	11	2 3/4	14 40	18
1 1/32	3 20	11 1/8	2 7/16	15 00	18 1/2
1 1/16	3 40	11 1/4	2 1/2	15 60	19
1 3/32	3 60	11 1/2	2 9/16	16 20	19 1/4
1 1/8	3 80	11 3/4	2 5/8	16 80	19 1/2
1 5/32	4 00	11 7/8	2 11/16	17 60	20
1 3/16	4 20	12	2 3/4	19 00	20 1/2
1 7/32	4 40	12 1/4	2 13/16	20 00	20 1/2
1 1/4	4 50	12 1/2	2 7/8	21 00	21
1 9/32	4 65	14 1/4	2 15/16	23 00	21
1 5/16	4 80	14 1/4	3	25 00	22

Drills 1 1/2 to 2 inches have shanks 1 1/2 inch diameter, 4 3/4 inches long.
" 2 1/32 " 3 " " " 1 3/4 " " 6 " "

MILLIMETER SIZES, TAPER AND STRAIGHT SHANK TWIST DRILLS

Diameters, MM., Straight and Taper Shank.	Prices, each.	Length. MM., Straight Shank.	Length. MM., Taper Shank.	Diameters in Decimals of 1 inch.	Length. Inches. Straight Shank.	Length. Inches. Taper Shank.	Socket for Morse Taper.
3	$0 45	80	116	.1181	3 1/2	4 9/16	
3 1/2	45	82	119	.1378	3 5/8	4 11/16	
4	45	95	124	.1575	3 3/4	4 7/8	
4 1/2	50	101	129	.1771	4	5 1/16	
5	55	108	146	.1968	4 1/4	5 3/4	
5 1/2	55	114	152	.2165	4 1/2	6	
6	60	155	155	.2362	6 1/4	6 1/8	
6 1/2	65	155	159	.2559	6 1/8	6 1/4	
		Straight & Taper Shank.			Straight & Taper Shank.		
7	65		159	.2756		6 1/4	No. 1. $1 30
7 1/2	70		162	.2953		6 3/8	
8	75		162	.3149		6 3/8	
8 1/2	75		165	.3346		6 1/2	
9	80		165	.3543		6 1/2	
9 1/2	80		172	.3740		6 3/4	
10	85		178	.3937		7	
10 1/2	90		184	.4134		7 1/4	
11	90		184	.4330		7 1/4	
11 1/2	95		191	.4527		7 1/2	
12	1 00		191	.4724		7 1/2	
12 1/2	1 00		197	.4921		7 3/4	
13	1 10		197	.5118		7 3/4	
13 1/2	1 20		203	.5315		8	
14	1 20		210	.5512		8 1/4	
14 1/2	1 30		216	.5708		8 1/2	
15	1 30		216	.5905		8 1/2	
15 1/2	1 40		222	.6102		8 3/4	
16	1 50		222	.6299		8 3/4	
16 1/2	1 50		229	.6496		9	
17	1 60		229	.6693		9	
17 1/2	1 70		241	.6890		9 1/2	
18	1 70		241	.7086		9 1/2	
18 1/2	1 85		247	.7283		9 3/4	
19	1 85		247	.7480		9 3/4	
19 1/2	2 00		251	.7677		9 7/8	
20	2 15		251	.7874		9 7/8	
20 1/2	2 15		254	.8071		10	
21	2 30		260	.8267		10 1/4	
21 1/2	2 45		267	.8464		10 1/2	
22	2 45		267	.8661		10 1/2	
22 1/2	2 60		270	.8858		10 5/8	
23	2 60		270	.9055		10 5/8	
23 1/2	2 75		273	.9252		10 3/4	
24	2 90		273	.9449		10 3/4	
24 1/2	2 90		276	.9646		10 7/8	
25	3 00		279	.9842		11	
25 1/2	3 20		282	1.0039		11 1/4	
26	3 20		282	1.0236		11 1/8	
26 1/2	$3 40		286	1.0433		11 1/4	
27	3 60		286	1.0629		11 1/4	
27 1/2	3 60		292	1.0827		11 1/2	
28	3 80		292	1.1024		11 1/2	
28 1/2	3 80		298	1.1220		11 3/4	
29	4 00		302	1.1417		11 7/8	
29 1/2	4 20		305	1.1614		12	
30	4 20		305	1.1811		12	
30 1/2	4 40		308	1.2008		12 1/8	
31	4 50		308	1.2205		12 1/8	
31 1/2	4 50		317	1.2401		12 1/2	
32	4 65		317	1.2598		12 1/2	
32 1/2	4 65		359	1.2795		14 1/8	
33	4 80		362	1.2992		14 1/4	
33 1/2	5 00		362	1.3189		14 1/4	
34	5 00		365	1.3386		14 3/8	
34 1/2	5 20		365	1.3583		14 3/8	
35	5 20		368	1.3779		14 1/2	
35 1/2	5 40		372	1.3977		14 5/8	
36	5 60		372	1.4173		14 5/8	
36 1/2	5 60		375	1.4370		14 3/4	
37	5 80		378	1.4567		14 7/8	
37 1/2	6 00		378	1.4764		14 3/4	
38	6 00		381	1.4961		15	
38 1/2	6 30		381	1.5157		15	
39	6 60		381	1.5354		15	
39 1/2	6 60		387	1.5551		15 1/4	
40	6 90		387	1.5748		15 1/4	
40 1/2	6 90		387	1.5945		15 1/4	
41	7 20		394	1.6142		15 1/2	
41 1/2	7 50		394	1.6339		15 1/2	
42	7 50		394	1.6536		15 1/2	
42 1/2	7 80		400	1.6733		15 3/4	
43	8 10		400	1.6929		15 3/4	
43 1/2	8 40		400	1.7126		15 3/4	
44	8 40		406	1.7323		16	
44 1/2	8 40		406	1.7519		16	
45	8 60		406	1.7717		16	
45 1/2	8 80		406	1.7914		16	
46	8 80		413	1.8110		16 1/4	
46 1/2	9 00		413	1.8307		16 1/4	
47	9 20		413	1.8504		16 1/4	
47 1/2	9 20		419	1.8701		16 1/2	
48	9 35		419	1.8898		16 1/2	
48 1/2	9 35		419	1.9094		16 1/2	
49	9 50		419	1.9291		16 1/2	
49 1/2	9 65		419	1.9488		16 1/2	
50	9 65		419	1.9685		16 1/2	
50 1/2	9 80		419	1.9882		16 1/2	
51	$10 20		419	2.0079		16 1/2	
51 1/2	10 20		419	2.0276		16 1/2	
52	10 60		432	2.0473		17	
52 1/2	10 60		432	2.0670		17	
53	10 90		432	2.0866		17	
53 1/2	11 20		432	2.1063		17	
54	11 20		432	2.1259		17	
54 1/2	11 60		432	2.1456		17	
55	12 00		432	2.1654		17	
55 1/2	12 00		432	2.1851		17	
56	12 40		432	2.2047		17	
56 1/2	12 80		432	2.2244		17	
57	12 80		445	2.2441		17 1/2	
57 1/2	13 20		445	2.2637		17 1/2	
58	13 60		445	2.2835		17 1/2	
58 1/2	13 60		445	2.3031		17 1/2	
59	14 00		445	2.3228		17 1/2	
59 1/2	14 40		445	2.3425		17 1/2	
60	14 40		457	2.3622		18	
60 1/2	14 70		457	2.3819		18	
61	14 70		457	2.4015		18	
61 1/2	15 00		457	2.4212		18	
62	15 30		470	2.4409		18 1/2	
62 1/2	15 30		470	2.4606		18 1/2	
63	15 60		488	2.4803		19	
63 1/2	15 60		488	2.5000		19	
64	15 90		483	2.5197		19	
64 1/2	15 90		488	2.5393		19	
65	16 20		489	2.5591		19 1/4	
65 1/2	16 50		489	2.5787		19 1/4	
66	16 80		495	2.5984		19 1/2	
66 1/2	16 80		495	2.6181		19 1/2	
67	17 20		495	2.6378		19 1/2	
67 1/2	17 20		495	2.6574		19 1/2	
68	17 60		508	2.6772		20	
68 1/2	18 30		508	2.6969		20	
69	18 30		521	2.7165		20 1/2	
69 1/2	19 00		521	2.7362		20 1/2	
70	19 00		521	2.7559		20 1/2	
70 1/2	19 50		521	2.7756		20 1/2	
71	20 00		521	2.7952		20 1/2	
71 1/2	20 00		521	2.8149		20 1/2	
72	20 50		521	2.8347		20 1/2	
72 1/2	21 00		521	2.8543		20 1/2	
73	21 00		533	2.8740		21	
73 1/2	22 00		533	2.8937		21	
74	23 00		533	2.9134		21	
74 1/2	23 00		533	2.9330		21	
75	24 00		533	2.9527		21	
75 1/2	25 00		533	2.9724		21	
76	25 00		559	2.9921		22	
76 1/2	.....		559	3.0118		22	

Length. Inches. Straight and Taper Shank. — Socket for Morse Taper.
No. 2. $1.90 — No. 3. $2.50 — No. 4. $4.00 — No. 5. $7.50

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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TWIST DRILLS

WITH INCREASE TWIST OR CONSTANT ANGLE

PRICES, FIGS. 111 AND 112

Diameters, Inches.	Each.	Lengths, Inches.	Socket for Morse Taper.
15/64	$0 60	6 1/8	
1/4	65	6 1/4	
17/64	70	6 3/8	
9/32	75	6 1/2	
19/64	80	6 3/4	
5/16	85	7	No. 1.
21/64	90	7 1/4	$1 20
11/32	95	7 1/2	
23/64	1 00	7 3/4	
3/8	1 10	8	
25/64	1 20	8 1/4	
13/32	1 30	8 1/2	
27/64	1 40	8 3/4	
7/16	1 50	9	
29/64	1 60	9 1/4	
15/32	1 70	9 1/2	No. 2,
31/64	1 85	9 3/4	$1 80
1/2	2 00	9 7/8	
33/64	2 15	10	
17/32	2 30	10 1/4	
35/64	2 45	10 1/2	
9/16	2 60	10 5/8	
37/64	2 75	10 3/4	
19/32	2 90	10 7/8	
39/64	3 00	11	No. 3,
5/8	3 20	11 1/8	$2 50
41/64	3 40	11 1/4	
21/32	3 60	11 1/2	
43/64	3 80	11 3/4	

Straight Shank Drills. 133/64 inch to 2 inches have shank 1½ inch diameter, 4¾ inches long.

PRICES, FIGS. 113 TO 117

Diameters Inches.	Each.	Lengths, Inches.	Socket for Morse Taper.
1/2	$4 00	7 3/4	
17/32	4 15	8	No. 1.
9/16	4 30	8 1/4	
19/32	4 50	8 1/2	
5/8	4 70	8 3/4	
21/32	4 80	9	
11/16	4 95	9 1/4	
23/32	5 10	9 1/2	
3/4	5 20	9 3/4	No. 2.
25/32	5 35	9 7/8	
13/16	5 50	10	
27/32	5 70	10 1/4	
7/8	5 90	10 1/2	
29/32	6 05	10 5/8	
15/16	6 20	10 3/4	
31/32	6 35	10 7/8	
1	6 50	11	
1 1/32	6 80	11 1/8	
1 1/16	7 10	11 1/4	
1 3/32	7 45	11 1/2	No. 3.
1 1/8	7 80	11 3/4	
1 5/32	8 00	11 7/8	
1 3/16	8 20	12	
1 7/32	8 40	12 1/8	
1 1/4	8 70	12 1/2	
1 9/32	9 40	14 1/8	
1 5/16	10 15	14 1/4	
1 11/32	10 95	14 3/8	
1 3/8	11 80	14 1/2	
1 13/32	12 30	14 5/8	
1 7/16	12 85	14 3/4	
1 15/32	13 35	14 7/8	
1 1/2	14 00	15	
1 17/32	14 20	15	
1 9/16	14 40	15 1/4	
1 19/32	14 70	15 1/4	
1 5/8	15 00	15 1/2	No. 4.
1 21/32	15 35	15 1/2	
1 11/16	15 70	15 3/4	
1 23/32	16 10	15 3/4	
1 3/4	16 50	16	
1 25/32	16 75	16	
1 13/16	17 00	16 1/4	
1 27/32	17 25	16 1/4	
1 7/8	17 50	16 1/2	
1 29/32	17 85	16 1/2	
1 15/16	18 20	16 1/2	
1 31/32	18 60	16 1/2	
2	19 00	16 1/2	

64TH SIZES

MORSE TAPER SHANK



FIG. 111

STRAIGHT SHANK, TAPER LENGTH



FIG. 112

Diameters, Inches.	Each.	Lengths, Inches.	Socket for Morse Taper
1 9/64	$4 00	11 7/8	
1 11/64	4 20	12	No. 3,
1 13/64	4 40	12 1/8	$2 50
1 15/64	4 50	12 1/2	
1 17/64	4 65	14 1/8	
1 19/64	4 80	14 1/4	
1 21/64	5 00	14 3/8	
1 23/64	5 20	14 1/2	
1 25/64	5 40	14 5/8	
1 27/64	5 60	14 3/4	No. 4.
1 29/64	5 80	14 7/8	$4 00
1 31/64	6 00	15	
1 33/64	6 30	15	
1 35/64	6 60	15 1/4	
1 37/64	6 90	15 1/4	

Diameters, Inches.	Each.	Lengths, Inches.	Socket for Morse Taper.
1 39/64	$7 20	15 1/2	
1 41/64	7 50	15 1/2	
1 43/64	7 80	15 3/4	
1 45/64	8 10	15 3/4	
1 47/64	8 40	16	
1 49/64	8 60	16	
1 51/64	8 80	16 1/4	No. 4,
1 53/64	9 00	16 3/8	$4 00
1 55/64	9 20	16 1/2	
1 57/64	9 35	16 1/2	
1 59/64	9 50	16 1/2	
1 61/64	9 65	16 1/2	
1 63/64	9 80	16 1/2	
2 1/64	10 20	16 1/2	No. 5.

PATENT CONSTANT ANGLE TWIST DRILLS

WITH HOLES FOR LUBRICANT THROUGH SOLID METAL

TAPER SHANK



FIG. 113



FIG. 114



FIG. 115

STRAIGHT SHANK



FIG. 116



FIG. 117

These drills have holes through the solid metal and have great advantages over any other drill devised for conveying the lubricants to the point.

Sockets fitted for oil drills are illustrated on Page 54.

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TWIST DRILLS

GROOVED SHANK STRAIGHT LIP INCREASE TWIST DRILLS



FIG. 118

No. 1 CHUCK. Diameters, Inches.	Length, Inches.	Prices, Each.
1/4	5 1/2	$0 60
17/64	5 1/2	65
9/32	5 1/2	65
19/64	5 1/2	70
5/16	5 7/8	70
21/64	5 7/8	75
11/32	5 7/8	75
23/64	5 7/8	80
3/8	6 1/4	80
25/64	6 1/4	85
13/32	6 1/4	85
27/64	6 1/4	90
7/16	6 5/8	90
29/64	6 5/8	95
15/32	6 5/8	95
31/64	6 5/8	1 00
1/2	7	1 00
33/64	7	1 10
17/32	7	1 10
35/64	7	1 20
9/16	7 3/8	1 20
37/64	7 3/8	1 30
19/32	7 3/8	1 30
39/64	7 3/8	1 40
5/8	7 7/8	1 40
41/64	7 7/8	1 50
21/32	7 7/8	1 50
43/64	7 7/8	1 60
11/16	8 3/8	1 60
45/64	8 3/8	1 70
23/32	8 3/8	1 70
47/64	8 3/4	1 85
3/4	8 7/8	1 85

No. 2 CHUCK. Diameters, Inches.	Length, Inches.	Prices, Each.
49/64	8 7/8	$2 00
25/32	8 7/8	2 00
51/64	8 7/8	2 15
13/16	9 1/4	2 15
53/64	9 1/4	2 30
27/32	9 1/4	2 30
55/64	9 1/4	2 45
7/8	9 5/8	2 45
57/64	9 5/8	2 60
29/32	9 5/8	2 60
59/64	9 5/8	2 75
15/16	10	2 75
61/64	10	2 90
31/32	10	2 90
63/64	10	3 00
1	10 3/8	3 00
1 1/64	10 3/8	3 20
1 1/32	10 3/8	3 20
1 3/64	10 3/8	3 40
1 1/16	10 3/4	3 40
1 5/64	10 3/4	3 60
1 3/32	10 3/4	3 60
1 7/64	10 3/4	3 80
1 1/8	11 1/8	3 80
1 9/64	11 1/8	4 00
1 5/32	11 1/8	4 00
1 11/64	11 1/8	4 20
1 3/16	11 1/2	4 20
1 13/64	11 1/2	4 40
1 7/32	11 1/2	4 40
1 15/64	11 1/2	4 50
1 1/4	11 7/8	4 50
1 17/64	11 7/8	4 65
1 9/32	11 7/8	4 65
1 19/64	11 7/8	4 80
1 5/16	12 1/4	4 80
1 21/64	12 1/4	5 00

No. 2 CHUCK. Diameters, Inches.	Length, Inches.	Prices, Each.
1 11/32	12 1/4	$5 00
1 23/64	12 1/4	5 20
1 3/8	12 5/8	5 20
1 25/64	12 5/8	5 40
1 13/32	12 5/8	5 40
1 27/64	12 5/8	5 60
1 7/16	13	5 60
1 29/64	13	5 80
1 15/32	13	5 80
1 31/64	13	6 00
1 1/2	13 1/2	6 00
1 17/32	13 1/2	6 30
1 9/16	13 11/16	6 60
1 19/32	13 11/16	6 90
1 5/8	13 7/8	7 20
1 21/32	13 7/8	7 50
1 11/16	14	7 80
1 23/32	14	8 10
1 3/4	14 1/4	8 40
1 25/32	14 1/4	8 60
1 13/16	14 7/16	8 80
1 27/32	14 7/16	9 00
1 7/8	14 5/8	9 20
1 29/32	14 5/8	9 35
1 15/16	14 3/4	9 50
1 31/32	14 3/4	9 65
2	15	9 80
2 1/32	15	10 20
2 1/16	15 3/8	10 60
2 1/8	15 3/4	11 20
2 3/16	16 1/8	12 00
2 1/4	16 1/2	12 80
2 5/16	16 7/8	13 60
2 3/8	17 1/4	14 40
2 7/16	17 5/8	15 00
2 1/2	17 3/4	15 60

PRICES OF GROOVED SHANK STRAIGHT LIP TWIST DRILLS

Nos.						Per Set.
1	1/4 inch to 1 inch varying by 16ths					$20 00
2	3/8	"	1 1/4	"	" " 16ths	34 50
3	3/8	"	3/4	"	" " 32nds, 3/4 inch to 1 1/4 inch varying by 16ths	42 00
4	3/8	"	3/4	"	" " 32nds, 3/4 " 2 " " " 16ths	131 00
5	3/4	"	2	"	" " 32nds	240 00
4	1/4	"	3/4	"	" " 32nds	18 75
7	1/4	"	3/4	"	" " 64ths	37 00
8	1/4	"	1 1/2	"	" " 32nds	112 00

STRAIGHT SHANK DRILLS

WITH INCREASE TWIST OR CONSTANT ANGLE



FIG. 119

LETTER SIZES

Diameters, Inches.	Prices, per Dozen.	Prices, Each.	Decimals of 1 inch.	Length, Inches.
A 15/64	$2 90	$0 26	.234	3 13/16
B	3 00	27	.238	3 13/16
C	3 10	28	.242	3 13/16
D	3 20	29	.246	3 13/16
E 1/4	3 30	30	.250	3 13/16
F	3 40	30	.257	4 1/4
G	3 50	31	.261	4 1/4
H 17/64	3 60	32	.266	4 1/4
I	3 70	33	.272	4 1/4
J	3 80	34	.277	4 1/4
K 9/32	3 90	35	.281	4 1/4
L	4 00	36	.290	4 1/4
M 19/64	4 10	36	.295	4 1/4
N	4 20	37	.302	4 1/4
O 5/16	4 30	38	.316	4 1/4
P 21/64	4 40	39	.323	4 3/8
Q	4 60	40	.332	4 5/8
R 11/32	4 80	42	.339	4 3/4
S	5 00	44	.348	4 3/4
T 23/64	5 20	45	.358	4 7/8
U	5 40	47	.368	4 7/8
V 3/8	5 60	49	.377	5
W 25/64	5 80	51	.386	5 1/8
X	6 00	53	.397	5 1/8
Y 13/32	6 40	55	.404	5 1/4
Z	6 80	59	.413	5 3/8

JOBBERS' AND MACHINISTS' SETS

Diameters, Inches.	Prices, per Dozen.	Prices, Each.	Length, Inches.
1/16	$1 00	$0 09	2 1/2
5/64	1 10	10	2 5/8
3/32	1 20	11	2 3/4
7/64	1 30	12	2 7/8
1/8	1 45	13	3
9/64	1 60	15	3 1/8
5/32	1 80	16	3 1/4
11/64	2 00	18	3 3/8
3/16	2 20	20	3 1/2
13/64	2 40	21	3 5/8
7/32	2 65	23	3 3/4
15/64	2 90	26	3 7/8
1/4	3 15	28	4
17/61	3 40	30	4 1/8
9/32	3 65	32	4 1/4
19/64	3 90	35	4 3/8
5/16	4 20	37	4 1/2
21/64	4 50	40	4 5/8
11/32	4 80	42	4 3/4
23/64	5 10	45	4 7/8
3/8	5 40	48	5
25/64	5 70	50	5 1/8
13/32	6 00	53	5 1/4
27/64	6 40	55	5 3/8
7/16	6 80	59	5 1/2
29/64	7 20	63	5 5/8
15/32	7 50	65	5 3/4
31/64	7 75	67	5 7/8
1/2	8 00	70	6

MILLIMETER SIZES

JOBBERS' AND MACHINISTS' SETS

Diameters, MM.	Per Dozen.	Each.	Diameters in Decimals of Inches.	Approximate Length, Inches.	Length MM.
1	$0 90	$0 08	.0393	1 9/16	39
1 1/2	95	09	.0590	1 13/16	46
2	1 10	09	.0787	2 1/16	53
2 1/2	1 25	12	.0984	2 3/8	60
3	1 40	14	.1181	2 3/4	70
3 1/2	1 55	15	.1378	2 7/8	73
4	1 75	17	.1575	3 1/8	79
4 1/2	1 95	19	.1771	3 3/8	86
5	2 25	21	.1968	3 11/16	93
5 1/2	2 35	22	.2165	3 15/16	100
6	2 90	26	.2362	4	102
6 1/2	3 15	28	.2559	4 1/8	105
7	3 65	32	.2756	4 1/4	108
7 1/2	3 90	35	.2953	4 3/8	111
8	4 20	37	.3149	4 1/2	114
8 1/2	4 80	42	.3346	4 5/8	117
9	5 10	45	.3543	4 7/8	124
9 1/2	5 40	48	.3740	5	127
10	5 70	50	.3937	5 1/8	130
10 1/2	6 00	53	.4134	5 1/4	133
11	6 80	59	.4330	5 1/2	140
11 1/2	7 20	63	.4527	5 5/8	143
12	7 50	65	.4724	5 3/4	146
12 1/2	8 00	70	.4921	5 7/8	149
13	10 00	85	.5118	6	152

When drills of exact size are required order by decimals.

PRICES, ENGLISH AND MILLIMETER SIZES

LETTER SIZES

Diameters, Inches.	Diameter, MM.	Per Dozen.	Each.	Decimals of 1 inch.	Length, Inches.	Length MM.
A 15/64	5.94	$2 90	$0 26	.234	3 13/16	97
B	6.05	3 00	27	.238	3 13/16	97
C	6.15	3 10	28	.242	3 13/16	97
D	6.25	3 20	29	.246	3 13/16	97
E 1/4	6.35	3 30	30	.250	3 13/16	97
F	6.53	3 40	30	.257	4 1/4	108
G	6.63	3 50	31	.261	4 1/4	108
H 17/64	6.76	3 60	32	.266	4 1/4	108
I	6.91	3 70	33	.272	4 1/4	108
J	7.04	3 80	34	.277	4 1/4	108
K 9/32	7.14	3 90	35	.281	4 1/4	108
L	7.37	4 00	36	.290	4 1/4	108
M 19/64	7.49	4 10	36	.295	4 1/4	108
N	7.67	4 20	37	.302	4 1/4	108
O 5/16	8.03	4 30	38	.316	4 1/4	108
P 21/64	8.20	4 40	39	.323	4 5/8	117
Q	8.43	4 60	40	.332	4 5/8	117
R 11/32	8.61	4 80	42	.339	4 3/4	121
S	8.84	5 00	44	.348	4 3/4	121
T 23/64	9.09	5 20	45	.358	4 7/8	124
U	9.35	5 40	47	.368	4 7/8	124
V 3/8	9.58	5 60	49	.377	5	127
W 25/64	9.80	5 80	51	.386	5 1/8	130
X	10.08	6 00	53	.397	5 1/8	130
Y 13/32	10.26	6 40	55	.404	5 1/4	133
Z	10.49	6 80	59	.413	5 3/8	136

Grooved Shank Drills, Jobbers' and Machinists' Sets, and Letter Sizes, English Measure, same list prices as Fig. 119.

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TWIST DRILLS

DECIMAL EQUIVALENTS

64ths.	32ds.	16ths.	8ths.	Decimal.	64ths.	32ds.	16ths.	8ths.	Decimal.
1	..	..	..	.015625	33	..	..	..	.515625
..	1	..	..	.03125	..	17	..	..	.53125
3	..	..	..	.046875	35	..	..	..	.546875
..	..	1	..	.0625	..	..	9	..	.5625
5	..	..	..	.078125	37	..	..	..	.578125
..	3	..	..	.09375	..	19	..	..	.59375
7	..	..	..	.109375	39	..	..	..	.609375
..	..	..	1	.125	..	..	..	5	.625
9	..	..	..	.140625	41	..	..	..	.640625
..	5	..	..	.15625	..	21	..	..	.65625
11	..	..	..	.171875	43	..	..	..	.671875
.	..	3	..	.1875	..	..	11	..	.6875
13	..	..	..	.203125	45	..	..	..	.703125
..	7	..	..	.21875	..	23	..	..	.71875
15	..	..	..	.234375	47	..	..	..	.734375
..	..	..	2	.25	..	..	..	6	.75
17	..	..	..	.265625	49	..	..	..	.765625
..	9	..	..	.28125	..	25	..	..	.78125
19	..	..	..	.296875	51	..	..	..	.796875
..	..	5	..	.3125	..	..	13	..	.8125
21	..	..	..	.328125	53	..	..	..	.828125
..	11	..	..	.34375	..	27	..	..	.84375
23	..	..	..	.359375	55	..	..	..	.859375
..	..	..	3	.375	..	..	..	7	.875
25	..	..	..	.390625	57	..	..	..	.890625
..	13	..	..	.40625	..	29	..	..	.90625
27	..	..	..	.421875	59	..	..	..	.921875
..	..	7	..	.4375	..	..	15	..	.9375
29	..	..	..	.453125	61	..	..	..	.953125
..	15	..	..	.46875	..	31	..	..	.96875
31	..	..	..	.484375	63	..	..	..	.984375
..	..	..	4	.5	64	32	16	8	1 inch

MAHOGANY CASE FOR JEWELERS' SET OF DRILLS



FIG. 121

No.		Prices, Each.
10	Jewelers' set of 36 drills, No. 36 (1/8 inch) to No. 65, steel wire gauge, mounted in a mahogany case with cap	$4 25

PRICES OF STRAIGHT SHANK DRILLS, PER SET MOUNTED AS SHOWN IN FIG. 122

Nos.		Each.
5	Drills, from 1/16 to 1/2 inch by 64ths. Fig. 119	$10 00
6	" " 1/16 " 1/2 " 32ds, " 119	5 40
7	" " 60 " 3/8 " " 120	9 90
8	" Steel wire gauge, from No. 1 to 60. Fig. 120	8 10
9	Half set drills, alternate numbers from 1 to 59, Fig. 120	4 30

STUBS' STEEL WIRE GAUGE



FIG. 120

PRICES, ENGLISH AND MILLIMETER SIZES, FIG. 120

Nos. by Gauge.	Diam. M. M.	Per Doz.	Each.	Diam. in Decimals of 1 Inch.	Approximate Length, Inches.	Length M. M.	Nos. by Gauge.	Diam. M. M.	Per Doz.	Each.	Diam. in Decimals of 1 Inch.	Approximate Length. Inches.	Length M. M.
1	5.79	$2 35	$0 22	.2280	4	1 02	41	2.44	$1 10	$0 10	.0960	2 5/16	59
2	5.61	2 35	22	.2210	3 15/16	1 00	42	2.38	1 10	10	.0935	2 5/16	58
3	5.41	2 35	22	.2130	3 15/16	99	43	2.26	1 10	10	.0890	2 1/4	57
4	5.31	2 35	22	.2090	3 7/8	98	44	2.19	1 10	10	.0860	2 3/16	56
5	5.22	2 35	22	.2055	3 13/16	97	45	2.08	1 10	10	.0820	2 3/16	55
6	5.18	2 25	21	.2040	3 13/16	96	46	2.06	95	09	.0810	2 1/8	54
7	5.11	2 25	21	.2010	3 3/4	95	47	2.00	95	09	.0785	2 1/16	53
8	5.05	2 25	21	.1990	3 11/16	94	48	1.93	95	09	.0760	2 1/16	52
9	4.98	2 25	21	.1960	3 11/16	93	49	1.85	95	09	.0730	2	51
10	4.91	2 25	21	.1935	3 5/8	92	50	1.78	95	09	.0700	1 15/16	50
11	4.85	2 10	20	.1910	3 9/16	91	51	1.70	95	09	.0670	1 15/16	49
12	4.80	2 10	20	.1890	3 9/16	90	52	1.61	95	09	.0635	1 7/8	48
13	4.70	2 10	20	.1850	3 1/2	89	53	1.51	95	09	.0595	1 13/16	47
14	4.62	2 10	20	.1820	3 7/16	88	54	1.40	95	09	.0550	1 13/16	45
15	4.57	2 10	20	.1800	3 7/16	87	55	1.32	95	09	.0520	1 3/4	44
16	4.50	1 95	19	.1770	3 3/8	86	56	1.18	95	09	.0465	1 11/16	43
17	4.39	1 95	19	.1730	3 5/16	85	57	1.09	95	09	.0430	1 11/16	42
18	4.31	1 95	19	.1695	3 5/16	84	58	1.07	95	09	.0420	1 5/8	41
19	4.22	1 95	19	.1660	3 1/4	83	59	1.04	95	09	.0410	1 9/16	40
20	4.09	1 95	19	.1610	3 3/16	81	60	1.02	95	09	.0400	1 9/16	39
21	4.04	1 75	17	.1590	3 3/16	80	61	.99	90	08	.039	1 1/2	38
22	3.99	1 75	17	.1570	3 1/8	79	62	.97	90	08	.038	1 1/2	38
23	3.91	1 75	17	.1540	3 1/16	78	63	.94	90	08	.037	1 1/2	38
24	3.86	1 75	17	.1520	3 1/16	77	64	.92	90	08	.036	1 1/2	38
25	3.80	1 75	17	.1495	3	76	65	.89	90	08	.035	1 1/2	38
26	3.73	1 55	15	.1470	2 15/16	75	66	.84	90	08	.033	1 1/2	38
27	3.66	1 55	15	.1440	2 15/16	74	67	.81	90	08	.032	1 7/16	37
28	3.57	1 55	15	.1405	2 7/8	73	68	.79	90	08	.031	1 7/16	36
29	3.45	1 55	15	.1360	2 13/16	72	69	.74	90	08	.02925	1 3/8	35
30	3.26	1 55	15	.1285	2 13/16	71	70	.71	90	08	.028	1 5/16	34
31	3.05	1 40	14	.1200	2 3/4	70	71	.66	1 00	09	.026	1 5/16	33
32	2.95	1 40	14	.1160	2 11/16	69	72	.64	1 00	09	.025	1 1/4	32
33	2.87	1 40	14	.1130	2 11/16	67	73	.61	1 00	09	.024	1 3/16	30
34	2.82	1 40	14	.1110	2 5/8	66	74	.57	1 00	09	.0225	1 1/8	29
35	2.79	1 40	14	.1100	2 9/16	65	75	.53	1 00	09	.021	1 1/16	27
36	2.71	1 25	12	.1065	2 9/16	64	76	.51	1 00	09	.020	1	25
37	2.64	1 25	12	.1040	2 1/2	63	77	.46	1 00	09	.018	15/16	24
38	2.58	1 25	12	.1015	2 7/16	62	78	.41	1 00	09	.016	7/8	22
39	2.53	1 25	12	.0995	2 7/16	61	79	.37	1 00	09	.0145	13/16	21
40	2.49	1 25	12	.0980	2 3/8	60	80	.34	1 00	09	.0135	3/4	19

Grooved shanks, English sizes, same list prices as above.

STRAIGHT SHANK DRILLS IN SETS

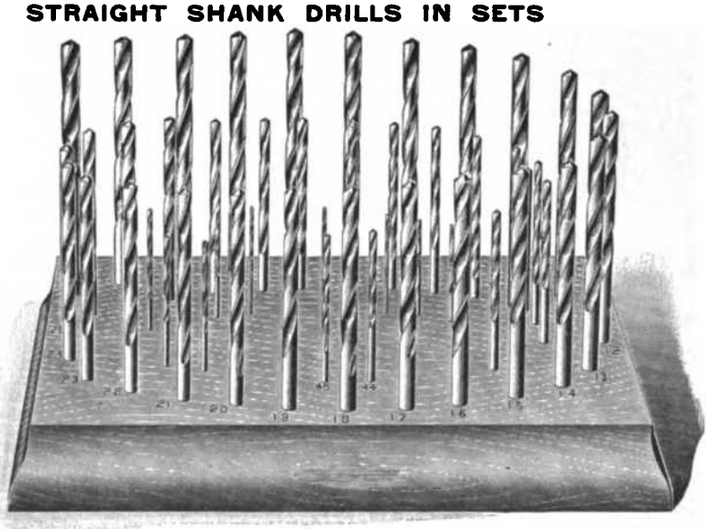


FIG. 122

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TWIST DRILLS

DESCRIPTION, FIGS. 123 TO 125

Some manufacturers, in making large holes in solid stock, consider it advisable and more economical to use two tools, a drill with two grooves, and a drill with either three or four grooves, as illustrated above. The points of the three and four groove drills show plainly that they are not to be used in drilling solid stock, but only to follow a two-groove drill, as suggested above. Two-groove drills should never be used in cored holes or for following another drill.

PRICES ON APPLICATION

TWO-GROOVE DRILL



FIG. 123

THREE-GROOVE DRILL



FIG. 124

FOUR-GROOVE DRILL



FIG. 125

OIL DRILLS OF SPECIAL LENGTHS

WITH STRAIGHT SHANKS



FIG. 126

WITH TAPER SHANKS



FIG. 127

DESCRIPTION, FIGS. 126 AND 127

These cuts are a reproduction on a small scale of drills which were actually made and used with eminent satisfaction, the proportion of the cuts to the drills being correct. The sizes of the drills from which these cuts were made are: diameter, 3 inches; whole length, 44 inches; shank, $8\frac{5}{16}$ inches.

PRICES ON APPLICATION

HOLLOW DRILLS

FOR DEEP DRILLING OR LONG HOLES



FIG. 128

The above drills have a hole lengthwise through the shank, connecting with the grooves of the drill. The shank can be threaded and fitted to a metal tube of such length as desired.

The lubricant is conveyed to the point of the drill on the outside of the tube, while the hollow tube admits of the passage of oil and chips from the point.

Tubes are made to order and to fit any size of drill. When ordering give diameter of drill and depth of hole to be drilled.

These drills are accurately ground on centers.

PRICES, FIG. 128

Diameters, Inches.	Each.	Full L'th, Inches.	Diameters, Inches.	Each.	Full L'th, Inches.
$\frac{5}{8}$	$3 20	6	$1\frac{5}{8}$	$6 40	8
$1\frac{1}{16}$	3 40	6	$1\frac{11}{16}$	6 70	8
$\frac{3}{4}$	3 60	6	$1\frac{3}{4}$	7 20	9
$1\frac{3}{16}$	3 70	$6\frac{1}{2}$	$1\frac{13}{16}$	7 60	9
$\frac{7}{8}$	3 80	$6\frac{1}{2}$	$1\frac{7}{8}$	8 00	9
$1\frac{5}{16}$	3 90	$6\frac{1}{2}$	$1\frac{15}{16}$	8 40	9
1	4 20	7	2	8 80	9
$1\frac{1}{16}$	4 30	7	$2\frac{1}{8}$	9 40	10
$1\frac{1}{8}$	4 40	7	$2\frac{1}{4}$	10 00	10
$1\frac{3}{16}$	4 50	7	$2\frac{3}{8}$	10 80	10
$1\frac{1}{4}$	4 80	$7\frac{1}{2}$	$2\frac{1}{2}$	11 60	10
$1\frac{5}{16}$	5 00	$7\frac{1}{2}$	$2\frac{5}{8}$	12 40	12
$1\frac{3}{8}$	5 20	$7\frac{1}{2}$	$2\frac{3}{4}$	13 20	12
$1\frac{7}{16}$	5 40	$7\frac{1}{2}$	$2\frac{7}{8}$	14 00	12
$1\frac{1}{2}$	5 80	8	3	15 00	12
$1\frac{9}{16}$	6 10	8			

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PATENT CONSTANT ANGLE TWIST DRILLS

FOR SCREW OR CHUCKING MACHINES

WITH HOLES FOR LUBRICANT THROUGH SOLID METAL

WITH STRAIGHT SHANKS



FIG. 129

Parties desiring drills of the lengths given below, with Morse Taper Shanks, will specify style of drill by figure number (see Page 31), and also whole length.

PRICES, FIG. 129

Diameters, Inches.		Diameters, MM.	Total Length, 8½ ins.	10½ ins.	13 ins.
31/64	1/2	12	$4 60	$5 30	$5 90
33/64	17/32	13	4 60	5 30	6 00
35/64	9/16	14	4 70	5 40	6 00
37/64	19/32	15	4 70	5 40	6 10
39/64	5/8		4 70	5 40	6 10
41/64	21/32	16	4 70	5 40	6 20
43/64	11/16	17	4 80	5 40	6 20
45/64	23/32	18	4 80	5 40	6 30
47/64	3/4	19	4 80	5 40	6 30
49/64	25/32		4 90	5 50	6 40
51/64	13/16	20	5 00	5 60	6 50
53/64	27/32	21	5 00	5 80	6 60
55/64	7/8	22	5 10	5 90	6 80
57/64	29/32	23	5 20	6 00	6 90
59/64	15/16		5 30	6 10	7 00
61/64	31/32	24	5 40	6 20	7 10
63/64	1	25	5 50	6 30	7 20
1 1/64	1 1/32	26	$5 60	$6 50	$7 40
1 3/64	1 1/16	27	5 80	6 80	7 70
1 5/64	1 3/32		6 00	7 00	7 90
1 7/64	1 1/8	28	6 10	7 20	8 10
1 9/64	1 5/32	29	6 30	7 40	8 30
1 11/64	1 3/16	30	6 50	7 60	8 60
1 13/64	1 7/32	31	6 70	7 80	8 80
1 15/64	1 1/4		6 80	7 90	9 00
1 17/64	1 9/32	32	7 10	8 30	9 30
1 19/64	1 5/16	33	7 40	8 60	9 60
1 21/64	1 11/32	34	7 70	9 00	10 00
1 23/64	1 3/8	35	8 00	9 30	10 30
1 25/64	1 13/32		8 30	9 60	10 70
1 27/64	1 7/16	36	8 60	9 90	11 20
1 29/64	1 15/32	37	8 90	10 30	11 50
1 31/64	1 1/2	38	9 20	10 50	11 90
1 33/64	1 17/32		$9 40	$10 70	$12 00
1 35/64	1 9/16	39	9 60	10 90	12 10
1 37/64	1 19/32	40	9 80	11 00	12 20
1 39/64	1 5/8	41	10 00	11 20	12 40
1 41/64	1 21/32	42	10 20	11 40	12 50
1 43/64	1 11/16		10 30	11 50	12 70
1 45/64	1 23/32	43	10 40	11 60	12 90
1 47/64	1 3/4	44	10 50	11 80	13 00
1 49/64	1 25/32	45	10 70	12 00	13 20
1 51/64	1 13/16	46	10 90	12 20	13 40
1 53/64	1 27/32		11 00	12 40	13 60
1 55/64	1 7/8	47	11 20	12 50	13 70
1 57/64	1 29/32	48	11 40	12 70	14 00
1 59/64	1 15/16	49	11 60	12 90	14 20
1 61/64	1 31/32	50	11 90	13 10	14 40
1 63/64	2		12 10	13 30	14 60

FOR SCREW OR CHUCKING MACHINES

WITH HOLES FOR LUBRICANT THROUGH SOLID METAL

WITH SHANKS 1¼ INCHES DIAMETER, 3 INCHES LONG



FIG. 130

Parties desiring drills of the lengths given below, with Morse Taper Shanks, will specify style of drill by figure number (see Page 31), and also whole length.

PRICES, FIG. 130

Diameters, Inches.		Diameters, MM.	Total Length, 8½ ins.	10½ ins.	13 ins.
31/64	1/2	12	$5 80	$6 80	$7 80
33/64	17/32	13	5 80	6 80	7 80
35/64	9/16	14	5 80	6 70	7 70
37/64	19/32	15	5 70	6 70	7 70
39/64	5/8		5 70	6 70	7 60
41/64	21/32	16	5 70	6 60	7 60
43/64	11/16	17	5 60	6 60	7 50
45/64	23/32	18	5 60	6 50	7 50
47/64	3/4	19	5 60	6 50	7 40
49/64	25/32		5 70	6 60	7 40
51/64	13/16	20	5 70	6 60	7 50
53/64	27/32	21	5 80	6 70	7 50
55/64	7/8	22	5 80	6 70	7 60
57/64	29/32	23	5 90	6 80	7 60
59/64	15/16		5 90	6 80	7 70
61/64	31/32	24	6 00	6 90	7 80
63/64	1	25	6 00	6 90	7 90
1 1/64	1 1/32	26	$6 10	$7 00	$8 00
1 3/64	1 1/16	27	6 20	7 10	8 20
1 5/64	1 3/32		6 30	7 20	8 40
1 7/64	1 1/8	28	6 40	7 40	8 50
1 9/64	1 5/32	29	6 50	7 50	8 60
1 11/64	1 3/16	30	6 60	7 60	8 80
1 13/64	1 7/32	31	6 70	7 80	8 90
1 15/64	1 1/4		6 80	7 90	9 00
1 17/64	1 9/32	32	7 10	8 40	9 40
1 19/64	1 5/16	33	7 50	8 70	9 80
1 21/64	1 11/32	34	7 80	9 20	10 20
1 23/64	1 3/8	35	8 20	9 60	10 60
1 25/64	1 13/32		8 60	9 90	11 00
1 27/64	1 7/16	36	9 00	10 20	11 40
1 29/64	1 15/32	37	9 20	10 50	11 80
1 31/64	1 1/2	38	9 50	10 80	12 20
1 33/64	1 17/32		$9 70	$11 00	$12 30
1 35/64	1 9/16	39	9 90	11 20	12 50
1 37/64	1 19/32	40	10 10	11 40	12 60
1 39/64	1 5/8	41	10 40	11 60	12 80
1 41/64	1 21/32	42	10 50	11 80	13 00
1 43/64	1 11/16		10 60	12 00	13 20
1 45/64	1 23/32	43	10 80	12 10	13 40
1 47/64	1 3/4	44	11 00	12 30	13 50
1 49/64	1 25/32	45	11 20	12 50	13 70
1 51/64	1 13/16	46	11 40	12 70	13 90
1 53/64	1 27/32		11 60	12 90	14 00
1 55/64	1 7/8	47	11 80	13 00	14 20
1 57/64	1 29/32	48	12 00	13 20	14 40
1 59/64	1 15/16	49	12 20	13 40	14 60
1 61/64	1 31/32	50	12 40	13 60	14 80
1 63/64	2		12 60	13 80	15 00

DRILLS FITTING TURRET HEAD

STRAIGHT SHANK DRILL

These drills are made to order and with shanks to fit Turret Head Machines.

PRICES ON APPLICATION



FIG. 131.

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STRAIGHT SHANK DRILLS FOR BLACKSMITHS' DRILL PRESSES

DRILLS

Fitting Coe's Blacksmiths' Drill Press and Prentice Drill Press No. 3.



FIG. 132

Diameters, Inches.	Prices, Each.	Length, Inches.	Diameters, Inches.	Prices, Each.	Length, Inches.
1/8	$0 55	4 7/8	27/32	$1 40	6
5/32	58	5 1/8	7/8	1 45	6
3/16	60	5 1/2	29/32	1 55	6
7/32	65	5 3/4	15/16	1 60	6
1/4	70	6	31/32	1 70	6
9/32	73	6	1	1 80	6
5/16	75	6	1 1/32	1 90	6
11/32	80	6	1 1/16	2 00	6
3/8	85	6	1 3/32	2 10	6
13/32	88	6	1 1/8	2 20	6
7/16	90	6	1 5/32	2 25	6
15/32	93	6	1 3/16	2 30	6
1/2	95	6	1 7/32	2 35	6
17/32	98	6	1 1/4	2 40	6
9/16	1 00	6	1 9/32	2 50	6
19/32	1 03	6	1 5/16	2 60	6
5/8	1 05	6	1 11/32	2 70	6
21/32	1 10	6	1 3/8	2 80	6
11/16	1 15	6	1 13/32*	2 90	6
23/32	1 20	6	1 7/16	3 00	6
3/4	1 25	6	1 15/32	3 10	6
25/32	1 30	6	1 1/2	3 20	6
13/16	1 35	6			

The above drills have shanks 2¼ inches long and .647 inch exact diameter (about 41/64 inch).

DRILLS WITH SHANKS AS PER FIG. 132 WILL FIT DRILL PRESSES

Boynton & Plummer, Worcester, Mass..... Nos. 3, 4 and 5
Coe Mfg. Co., Fentonville, Mich.....All sizes
Geo. Burnham & Co., Worcester, Mass ..... Nos. 3, 4, 6 and 7
Illinois Iron & Bolt Co., Carpentersville, Ill..
Bailey No. 5 and Illinois Upright
Silver Mfg. Co., Salem, Ohio.....Nos. 3 and 4
Wiley & Russell Mfg. Co., Greenfield, Mass.....Nos. 3, 4, 6 and 60
Wells Bros. & Co., Greenfield, Mass.....No. 1
Asa Goddard, Worcester, Mass.....No. 3

DRILL PRESSES HAVING SPINDLES FITTED FOR MORSE TAPER SHANKS

Prentice Bros., Worcester, Mass.
Sigourney Tool Co., Hartford, Conn.
Pond Machine Tool Co., Plainfield, N. J.
New Haven Mfg. Co., New Haven, Conn.
Niles Tool Works, Hamilton, Ohio.
Davis & Egan Machine Tool Co., Cincinnati, Ohio.
Hendey Machine Co., Torrington, Conn.
W. F. & John Barnes Co., Rockford, Ill.
Aurora Tool Works, Aurora, Ind.
Bickford Drill Co., Cincinnati, Ohio.

NOTE—In ordering drills for above, specify manufacturer and size of press.

TAPER LENGTH DRILLS

Fitting the Prentice Blacksmiths' Drill Press Nos. 1 and 2.



FIG. 133

Diameters, Inches.	Prices, Each.	Length, Inches.	Diameters, Inches.	Prices, Each.	Length, Inches.
1/8	$0 45	5 1/8	15/32	$0 95	7 1/2
5/32	45	5 3/8	1/2	1 00	7 3/4
3/16	50	5 3/4	17/32	1 10	8
7/32	55	6	9/16	1 20	8 1/4
1/4	60	6 1/8	19/32	1 30	8 1/2
9/32	65	6 1/4	5/8	1 40	8 3/4
5/16	70	6 3/8	21/32	1 50	9
11/32	75	6 1/2	11/16	1 60	9 1/4
3/4	80	6 3/4	23/32	1 70	9 1/2
13/32	85	7	3/4	1 85	9 3/4
7/16	90	7 1/4			

The above drills have shanks 2½ inches long and ½ inch diameter.

DRILLS

Fitting Silver & Deming's and Prentice Blacksmiths' Drill Presses Nos. 1 and 2, with shanks ½ inch diameter.

SHORT LENGTHS



FIG. 134

Diameters, Inches.	Prices, Each.	Length, Inches.	Diameters, Inches.	Prices, Each.	Length, Inches.
1/8	$0 45	5 1/8	7/16	$0 80	6
5/32	45	5 3/8	15/32	83	6
3/16	50	5 3/4	1/2	85	6
7/32	55	6	17/32	88	6
1/4	60	6	9/16	90	6
9/32	65	6	19/32	1 00	6
5/16	70	6	5/8	1 05	6
11/32	73	6	21/32	1 10	6
3/8	75	6	11/16	1 15	6
13/32	78	6	3/4	1 25	6

Drills larger than ¾ inch, with shanks ½ inch diameter, and drills with shanks .647 inch diameter, fitting Silver & Deming's Presses Nos. 3 and 4, same price as Fig. 132 for Coe's Drill Press. All drills 7/32 inch and larger are 6 inch entire length. Shanks for these drills 2½ inches long.

DRILLS WITH SHANKS AS PER FIGS. 133 AND 134 WILL FIT DRILL PRESSES

Boynton & Plummer, Worcester, Mass.....Nos. 1, 1½, 2, 6, 7, 8 and 9
Buffalo Forge Co., Buffalo, N. Y.....All sizes
Champion Blower & Forge Co., Lancaster, Pa.....All sizes
Geo. Burnham & Co., Worcester, Mass.....Nos. 0, 1, 2 and 5
Geo. C. Taft, Worcester, Mass.,
No. 2, old or new style, or horizontal.....Nos. 2½ and 3
Asa Goddard, Worcester, Mass.....Nos. 2 and 4
Illinois Iron & Bolt Co., Carpentersville, Ill.....Bailey, Nos. 3 and 4
Silver Mfg. Co., Salem, Ohio.....Nos. 1 and 2, and Bench Drill
Wells Bros., Greenfield, Mass.,
Nos. 3, 9, and 10, Bench Drill.....Nos. 2 and 3, horizontal
Wiley & Russell Mfg. Co., Greenfield, Mass.....Nos. 2 and 22
Potts & Weber, Lancaster, Pa.....All sizes
M. L. Edwards Mfg. Co., Salem, Ohio.....All sizes

TAPER SQUARE SHANK DRILLS



FIG. 135

Diameters, Inches.	Prices, Each.	Length, Inches.	Diameters, Inches.	Prices, Each.	Length, Inches.
1/4	$1 00	5	5/8	$1 40	6
9/32	1 05	5	11/16	1 45	6
5/16	1 10	5	3/4	1 55	6
11/32	1 15	5	25/32	1 65	6
3/8	1 20	6	13/16	1 75	6
13/32	1 25	6 1/4	27/32	1 90	6
7/16	1 25	6 1/4	7/8	2 05	6
15/32	1 30	6 1/4	29/32	2 20	6
1/2	1 30	6 1/2	15/16	2 30	6
9/16	1 35	6 1/2	31/32	2 40	6

FITTING RATCHETS

With shanks 5/8 inch by 3/8 inch and 1½ inches long, and shanks ¾ inch by ½ inch and 1¾ inches long.

Length Inches.	Diameters, Inches.	Prices, Each.	Length, Inches.
6 1/2	1	$2 55	8 1/2
6 1/2	1 1/32	2 70	8 3/4
6 1/2	1 1/16	2 85	9
6 3/4	1 1/8	3 10	9
7	1 3/16	3 35	9
7 1/4	1 1/4	3 65	9
7 1/2	1 5/16	3 90	9
7 3/4	1 3/8	4 20	9
8	1 7/16	4 50	9
8 1/4	1 1/2	4 80	9

Parties ordering Taper Square Shank Drills for Packer Ratchets, will please state whether to fit the Billings & Spencer or the Ashcroft Mfg. Co.'s make. These two patterns vary greatly in the size of shank required, so state the number of the Ratchet for which drills are required.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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BIT STOCK DRILLS FOR METAL OR WOOD

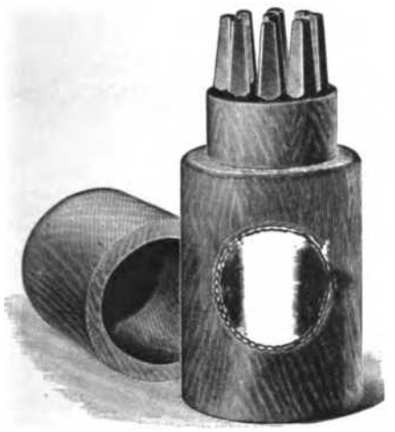


FIG. 137.

PRICES

No. 13. Set Bit Stock Drills, 1/16 to 1/4 by 32ds, 5/16 to 3/8 by 16ths, boxed, ... $2 60

No. 14. Set of Bit Stock Drills, 2/32, 3/32, 4/32, 5/32, 6/32, 7/32, 8/32, 10/32, 12/32, ... $2 75.



FIG. 136.

PRICES

Diameters, Inches.	Dozen.	Each.	Whole Length, Inches.	Length from Shank to Point, Inches.	Diameters, Inches.	Dozen.	Each.	Whole Length, Inches.	Length from Shank to Point, Inches.
2/32	$1 50	$0 14	3 5/16	1 1/2	14/32	$8 80	$0 75	6 1/4	5
3/32	1 65	16	3 5/8	1 7/8	15/32	9 60	82	6 5/8	5 3/8
4/32	2 10	20	4 1/16	2 1/4	16/32	10 30	87	6 3/4	5 1/2
5/32	2 60	24	4 3/8	2 1/2	17/32	11 00	92	7 1/2	5 5/8
6/32	3 10	29	4 3/4	2 7/8	9/16		1 20	7 1/2	5 5/8
7/32	3 60	33	5 1/4	3 1/8	5/8		1 35	7 1/2	5 5/8
8/32	4 10	38	5 3/16	3 15/16	11/16		1 50	7 1/2	5 5/8
9/32	4 70	43	5 3/8	4 1/4	3/4		1 65	7 1/2	5 5/8
10/32	5 40	48	5 1/2	4 1/4	13/16		1 80	7 1/2	5 5/8
11/32	6 30	54	5 7/8	4 5/8	7/8		1 95	7 1/2	5 5/8
12/32	7 20	62	5 7/8	4 5/8	15/16		2 15	7 1/2	5 5/8
13/32	8 00	68	5 7/8	4 5/8	1		2 35	7 1/2	5 5/8

These Bit Stock Drills will fit any brace in the market, and will drill steel, iron, or other metals as well as wood. They are not injured by contact with screws or nails, and will bore straight any kind of wood without splitting it.

MACHINE BITS FOR WOOD

TAPER LENGTHS

FITTING THE PRENTICE BLACK SMITHS' DRILL PRESS NOS. 1 AND 2



FIG. 140

PRICES, FIG. 140.

Diameters, Inches.	Each.	Length, Inches.
1/8	$0 50	4 1/2
5/32	50	4 3/4
3/16	60	5
7/32	60	5 1/4
1/4	70	6 1/8
9/32	75	6 1/4
5/16	80	6 3/8
11/32	85	6 1/2
3/8	90	6 3/4
13/32	95	7
7/16	1 00	7 1/4
15/32	1 10	7 1/2
1/2	1 20	7 3/4
17/32	1 30	8
9/16	1 40	8 1/4
19/32	1 50	8 1/2
5/8	1 60	8 3/4
21/32	1 70	9
11/16	1 80	9 1/4
23/32	1 90	9 1/2
3/4	2 00	9 3/4
25/32	2 20	9 7/8
13/16	2 40	10
27/32	2 50	10 1/4
7/8	2 60	10 1/2
29/32	2 80	10 5/8
15/16	3 00	10 3/4
31/32	3 20	10 7/8
1	3 40	11

The above drills have shanks 2 1/2 inches long and 1/2 inch diameter.

STRAIGHT SHANK



FIG. 138.

PRICES

Diameters, Inches.	Each.	Length, Inches.	Diameters, Inches.	Each.	Length, Inches.
1/8	$0 20	3	17/32	$0 95	6 1/8
5/32	25	3 1/4	9/16	1 00	6 1/4
3/16	30	3 1/2	5/8	1 15	6 1/2
7/32	35	3 3/4	11/16	1 35	7
1/4	40	4	3/4	1 65	7 1/2
9/32	45	4 1/4	13/16	1 95	8
5/16	50	4 1/2	7/8	2 30	8 1/2
11/32	55	4 3/4	15/16	2 65	9
3/8	65	5	1	3 00	9 1/2
13/32	70	5 1/4	1 1/16	3 60	11 1/4
7/16	75	5 1/2	1 1/8	4 00	11 3/4
15/32	80	5 3/4	1 3/16	4 40	12
1/2	85	6	1 1/4	4 80	12 1/2

No. 12. Set Machine Bits, 1/8 to 1/2 inch, mounted, varying by 32ds, $7 00.

WITH MORSE TAPER SHANKS



FIG. 139.

PRICES

Diameters, Inches.	Each.	Length, Inches.	Socket for Morse Taper.	Diameters, Inches.	Each.	Length, Inches.	Socket for Morse Taper.
1/8	$0 50	4 9/16		15/32	$1 10	7 1/2	
5/32	50	4 13/16		1/2	1 20	7 3/4	No. 1,
3/16	60	5 1/16		17/32	1 30	8	
7/32	60	5 5/16		9/16	1 40	8 1/4	$1 20
1/4	70	6 1/8	No. 1,	19/32	1 50	8 1/2	
9/32	75	6 1/4		5/8	1 60	8 3/4	
5/16	80	6 3/8	$1 20	21/32	1 70	9	No. 2,
11/32	85	6 1/2		11/16	1 80	9 1/4	
3/8	90	6 3/4		23/32	1 90	9 1/2	$1 80
13/32	95	7		3/4	2 00	9 3/4	
7/16	1 00	7 1/4					

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SPECIAL MACHINE POD AND ROUTING BITS FOR WOOD

When tools as illustrated below are desired, designate them by figure number, giving whole length and length of twist or pod.

MACHINE BITS



FIG. 141



FIG. 143



FIG. 145

MACHINE BITS



FIG. 142



FIG. 144

POD BIT



FIG. 146

PRICES, FIGS. 141 TO 147 GIVEN ON APPLICATION

ROUTING BITS

FOR CUTTING WOOD, SOFT METAL, ZINC, ETC.



FIG. 147

In ordering state diameter, whole length, length of cut, and style of shank required.

PAPER DRILL

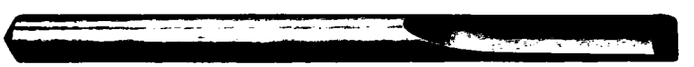


FIG. 148

PRICES ON APPLICATION

SHADE ROLLER DRILL



FIG. 149

PRICES ON APPLICATION

STRAIGHTWAY DRILLS

STRAIGHT SHANK DRILL



FIG. 150

JOBBERS' AND MACHINISTS' SETS

Diameters, Inches.	Prices, Per Dozen.	Prices, Each.	Lengths, Inches.	Diameters, Inches.	Prices, Per Dozen.	Prices, Each.	Lengths, Inches.
1/16	$1 00	$0 09	2 1/2	19/64	$3 90	$0 35	4 3/8
5/64	1 10	10	2 5/8	5/16	4 20	37	4 1/2
3/32	1 20	11	2 3/4	21/64	4 50	40	4 5/8
7/64	1 30	12	2 7/8	11/32	4 80	42	4 3/4
1/8	1 45	13	3	23/64	5 10	45	4 7/8
9/64	1 60	15	3 1/8	3/8	5 40	48	5
5/32	1 80	16	3 1/4	25/64	5 70	50	5 1/8
11/64	2 00	18	3 3/8	13/32	6 00	53	5 1/4
3/16	2 20	20	3 1/2	27/64	6 40	55	5 3/8
13/64	2 40	21	3 5/8	7/16	6 80	59	5 1/2
7/32	2 65	23	3 3/4	29/64	7 20	63	5 5/8
15/64	2 90	26	3 7/8	15/32	7 50	65	5 3/4
1/4	3 15	28	4	31/64	7 75	67	5 7/8
17/64	3 40	30	4 1/8	1/2	8 00	70	6
9/32	3 65	32	4 1/4				

GROOVED SHANK STRAIGHTWAY DRILLS

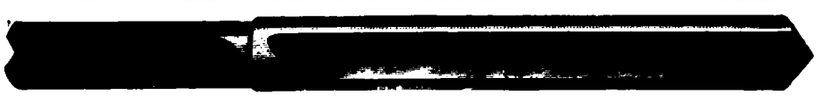


FIG. 151

Jobbers' and machinists' sets from 1/16 inch to 1/2 inch by 64ths.

PRICES SAME AS FIG. 150 ABOVE

STRAIGHTWAY DRILLS

SIZES TO STUBS' STEEL WIRE GAUGE

Numbers, by Gauge.	Prices, Per Dozen.	Prices, Each.	Lengths, Inches.
1 to 5	$2 35	$0 22	4
6 to 10	2 25	21	3 11/16
11 to 15	2 10	20	3 1/2
16 to 20	1 95	19	3 1/4
21 to 25	1 75	17	3 1/16
26 to 30	1 55	15	2 13/16
31 to 35	1 40	14	2 5/8
36 to 40	1 25	12	2 7/16
41 to 45	1 10	10	2 1/4
46 to 52	95	09	2 1/16 to 1 3/4

For size of number in decimals of 1 inch, and lengths, see Page 33, Fig. 120.

DESCRIPTION, FIG. 151

Adapted to lathe boring for brass work.

PRICES, FIG. 151

Sizes, from 1/4 inch to 1 1/4 inch, by 64ths.

PRICES SAME AS FIG. 152 ON PAGE 39

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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STRAIGHTWAY DRILL

STRAIGHT OR TAPER SHANKS



FIG. 152

PRICES, STRAIGHT OR TAPER SHANKS

Diam. Inches.	Each.	Lengths, Inches.	Socket for Morse Taper.	Diam. Inches.	Each.	Lengths, Inches.	Socket for Morse Taper.	Diam. Inches.	Each.	Lengths, Inches.	Socket for Morse Taper.	Diam. Inches.	Each.	Length, Inches.	Socket for Morse Taper.
1/4	$0 60	6 1/8		27/32	$2 30	10 1/4	No. 2, $1.80	1 7/16	$5 60	14 3/4		2 1/32	$10 20	16 1/2	
9/32	65	6 1/4		7/8	2 45	10 1/2		1 15/32	5 80	14 7/8		2 1/16	10 60	17	
5/16	70	6 3/8		29/32	2 60	10 5/8		1 1/2	6 00	15		2 1/8	11 20	17	
11/32	75	6 1/2		15/16	2 75	10 3/4		1 17/32	6 30	15		2 3/16	12 00	17	
3/8	80	6 3/4		31/32	2 90	10 7/8		1 9/16	6 60	15 1/4		2 1/4	12 80	17 1/2	
13/32	85	7	No. 1, $1.20	1	3 00	11		1 19/32	6 90	15 1/4		2 5/16	13 60	17 1/2	
7/16	90	7 1/4		1 1/32	3 20	11 1/8		1 5/8	7 20	15 1/2		2 3/8	14 40	18	
15/32	95	7 1/2		1 1/16	3 40	11 1/4		1 21/32	7 50	15 1/2		2 7/16	15 00	18 1/2	
1/2	1 00	7 3/4		1 3/32	3 60	11 1/2	No. 3, $2.50	1 11/16	7 80	15 3/4	No. 4, $4.00	2 1/2	15 60	19	No. 5, $7.50
17/32	1 10	8		1 1/8	3 80	11 3/4		1 23/32	8 10	15 3/4		2 9/16	16 20	19 1/4	
9/16	1 20	8 1/4		1 5/32	4 00	11 7/8		1 3/4	8 40	16		2 5/8	16 80	19 1/2	
19/32	1 30	8 1/2		1 3/16	4 20	12		1 25/32	8 60	16		2 11/16	17 60	20	
5/8	1 40	8 3/4		1 7/32	4 40	12 1/8		1 13/16	8 80	16 1/4		2 3/4	19 00	20 1/2	
21/32	1 50	9		1 1/4	4 50	12 1/2		1 27/32	9 00	16 1/4		2 13/16	20 00	20 1/2	
11/16	1 60	9 1/4		1 9/32	4 65	14 1/8		1 7/8	9 20	16 1/2		2 7/8	21 00	21	
23/32	1 70	9 1/2	No 2, $1.80	1 5/16	4 80	14 1/4		1 29/32	9 35	16 1/2		2 15/16	23 00	21	
3/4	1 85	9 3/4		1 11/32	5 00	14 3/8	No. 4, $4.00	1 15/16	9 50	16 1/2		3	25 00	22	
25/32	2 00	9 7/8		1 3/8	5 20	14 1/2		1 31/32	9 65	16 1/2					
13/16	2 15	10		1 13/32	5 40	14 5/8		2	9 80	16 1/2					

We furnish above by 64ths, if ordered.

CENTER DRILLS



FIG. 153

Diameters, Inches.	Prices, Per Dozen.	Lengths, Inches	Diameters, Inches.	Prices, Per dozen.	Lengths, Inches.
1/16	$0 80	1 1/4	9/64	$1 35	1 1/4
5/64	90	1 1/4	5/32	1 50	1 1/2
3/32	1 10	1 1/4	11/64	1 70	1 1/2
7/64	1 20	1 1/4	3/16	1 90	1 1/2
1/8	1 25	1 1/4	13/64	2 10	1 1/2

LITTLE GIANT COUNTERSINKS

FOR USE IN DRILLING MACHINES



FIG. 155

FOR USE IN BIT BRACE



FIG. 156

We furnish screw, sleigh shoe, and tire bolt tapers at short notice.

When ordering state what taper is wanted.

These countersinks are easily sharpened and very durable, being made from the very best material.

PRICES, FIGS. 155 AND 156

							Each.
Countersinks,	5/8	diam.,	with	1/2	or 41/64	diam. shanks..	$0 50
"	3/4	"	"	"	"	..	75
"	7/8	"	"	"	"	..	1 00
"	1	"	"	"	"	..	1 25
"	5/8	"	Shanks for Bit Brace...				50

When ordering state carefully just what is wanted.

Unless stated otherwise, countersinks for use in drilling machines will be sent with 1/2 inch diameter shanks.

COMBINED DRILLS AND COUNTERSINKS

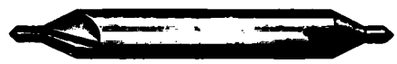


FIG 154

Angle 60°. Other angles made to order.

Nos.	Size of Body.	Size of Drill. No. or Inch.		Per Dozen.
57	1/8	57	.043	
55	13/64	55	.052	
52	13/64	52	.063	
49	15/64	49	.073	$1.50
46	15/64	46	.081	
42	3/10	42	.093	
30	3/10	30	.128	
22	7/16	22	.157	3.00
13	7/16	13	.185	

WITH NO. 1 MORSE TAPER SHANK

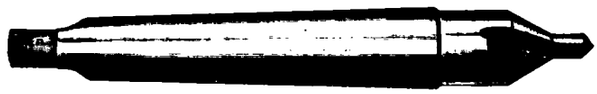


FIG. 157

	Each.
No. 22, size of body 7/16; of drill, No. 22 or .157 in.	$1 00
" 13, " 7/16; " 13 " .185 "	1 25

BIT STOCK COUNTERSINK



FIG. 158

Diameters, Inches.	Prices, Each.	Full Lengths, Inches.	Diameters, Inches.	Prices, Each.	Full Lengths, Inches.
3/8	$0 50	4 1/4	3/4	$0 90	5
1/2	60	4 1/4	7/8	1 05	5
5/8	75	4 1/4	1	1 20	5

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CENTER REAMERS

INCLUDED ANGLE OF POINT, 60 DEGREES

PRICES, FIGS. 159 AND 160

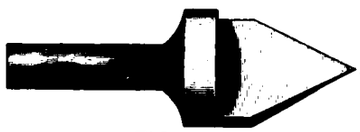


FIG. 159

Size Cut.	Each.	Per Dozen.
¼ inch	$0 22	$2 50
⅜ "	25	2 90
½ "	30	3 25
⅝ "	50	6 00
¾ "	70	8 00

Size Cut.	Each.	Per Dozen.
¼ inch	$0 25	$2 90
⅜ "	30	3 25
½ "	35	3 75
¾ "	75	8 50

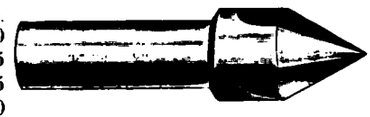


FIG. 160

WITH MORSE TAPER SHANKS



FIG. 161

THREE GROVE CHUCKING REAMERS

PRICES, FIGS. 161 AND 162

Diameters, Inches.	Each.	Lengths, Inches.	Length of Flutes, Inches.	Morse Taper Shanks.
⅜	$1 70	7	3⅞	No. 1
7/16	1 80	7	3⅞	
½	1 90	8	4⅞	
9/16	2 00	8	4⅞	
⅝	2 60	12¼	8½	No. 2
11/16	2 75	12¼	8½	
¾	2 90	12¼	8½	
13/16	3 05	12¼	8½	
⅞	3 20	12¼	8½	
15/16	3 40	13¼	8¾	No. 3
1	3 60	13¼	8¾	
1 1/16	3 80	13¼	8¾	
1⅛	4 00	13¼	8¾	
1 3/16	4 50	13¼	8¾	
1¼	4 80	14½	9	No. 4
1 5/16	5 20	14½	9	
1⅜	5 60	14½	9	
1 7/16	6 00	14½	9	
1½	6 40	14½	9	
1 9/16	6 90	14½	9	
1⅝	7 40	14½	9	
1 11/16	7 90	14½	9	
1¾	$8 40	16	9¼	No. 5
1 13/16	8 80	16	9¼	
1⅞	9 20	16	9¼	
1 15/16	9 50	16	9¼	
2	9 80	16	9¼	
2 1/16	10 60	16	9¼	
2⅛	11 20	16	9¼	
2 3/16	12 00	16	9¼	
2¼	12 80	16	9¼	
2 5/16	13 60	16	9¼	
2⅜	14 40	16½	9¾	
2 7/16	15 00	16½	9¾	
2½	15 60	16½	9¾	
2 9/16	16 20	16½	9¾	
2⅝	16 80	17	10¼	
2 11/16	17 90	17	10¼	
2¾	19 00	17	10¼	
2 13/16	20 00	17½	10¾	
2⅞	21 00	17½	10¾	
2 15/16	23 00	17½	10¾	
3	25 00	17½	10¾	

WITH STRAIGHT SHANKS



FIG. 162

THREE GROOVE CHUCKING REAMERS

WITH HOLES FOR LUBRICANT THROUGH SOLID METAL

These reamers can be made in same styles as oil drills illustrated on Page 31. If these reamers with oil holes are to be used for passing completely through the work, then so state in ordering, and provision will be made for that purpose.

The fluted portion of these reamers will be 1/64 inch under size, unless otherwise ordered.

WITH MORSE TAPER SHANKS



FIG. 163

PRICES, FIGS. 163 AND 164

Diameters, Inches.	Each.	Lengths, Inches.	Length of Flutes, Inches.	Morse Taper Shanks.
½	$2 85	8	4⅞	No. 1
9/16	3 00	8	4⅞	
⅝	3 90	12¼	8½	No. 2
11/16	4 15	12¼	8½	
¾	4 35	12¼	8½	
13/16	4 60	12¼	8½	
⅞	4 80	12¼	8½	
15/16	5 10	13¼	8¾	No. 3
1	5 40	13¼	8¾	
1 1/16	5 70	13¼	8¾	
1⅛	6 00	13¼	8¾	
1 3/16	6 75	13¼	8¾	
1¼	7 20	14½	9	No. 4
1 5/16	7 80	14½	9	
1⅜	8 40	14½	9	
1 7/16	9 00	14½	9	
1½	9 60	14½	9	
1 9/16	10 35	14½	9	
1⅝	11 10	14½	9	
1 11/16	11 85	14½	9	
1¾	$12 60	16	9¼	No. 5
1 13/16	13 20	16	9¼	
1⅞	13 80	16	9¼	
1 15/16	14 25	16	9¼	
2	14 70	16	9¼	
2 1/16	14 85	16	9¼	
2⅛	15 70	16	9¼	
2 3/16	16 80	16	9¼	
2¼	17 95	16	9¼	
2 5/16	19 00	16	9¼	
2⅜	20 15	16½	9¾	
2 7/16	21 00	16½	9¾	
2½	21 85	16½	9¾	
2 9/16	22 70	16½	9¾	
2⅝	23 50	17	10¼	
2 11/16	25 00	17	10¼	
2¾	26 60	17	10¼	
2 13/16	28 00	17½	10¾	
2⅞	29 40	17½	10¾	
2 15/16	32 20	17½	10¾	
3	35 00	17½	10¾	

WITH STRAIGHT SHANKS



FIG. 164

These Three Groove Chucking Reamers (Figs. 161 to 164) are specially adapted for reaming cored holes, and have shank and fluted portion ground on centers to size. Special lengths made to order.

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THREE GROOVE CHUCKING REAMERS

FOR SCREW OR CHUCKING MACHINES

The fluted portion of these reamers will be 1/64 inch under size, unless otherwise ordered.

PRICES, FIG. 165

Diameters, Inches.	Each.	Lengths, Inches.	Diameters Shank, Inches.	Lengths Shank, Inches.	Diameters, Inches.	Each.	Lengths, Inches.	Diameters Shank, Inches.	Lengths Shank, Inches.
3/8	$1 70	7 1/4	3/8	1 3/4	1 3/4	$8 40	14 3/4	1 1/4	3
7/16	1 80	7 1/4	3/8	1 3/4	1 13/16	8 80	14 3/4	1 1/4	3
1/2	1 90	8 3/8	1/2	2	1 7/8	9 20	15 1/4	1 1/4	3
9/16	2 00	8 3/8	1/2	2	1 15/16	9 50	15 1/4	1 1/4	3
5/8	2 60	9 1/2	5/8	2 1/4	2	9 80	15 1/4	1 1/4	3
11/16	2 75	9 1/2	5/8	2 1/4	2 1/16	10 60	16	1 1/2	3 1/2
3/4	2 90	10 1/8	3/4	2 1/4	2 1/8	11 20	16	1 1/2	3 1/2
13/16	3 05	10 1/8	3/4	2 1/4	2 3/16	12 00	16	1 1/2	3 1/2
7/8	3 20	10 3/4	7/8	2 1/2	2 1/4	12 80	16	1 1/2	3 1/2
15/16	3 40	10 3/4	7/8	2 1/2	2 5/16	13 60	16 1/2	1 1/2	3 1/2
1	3 60	11 3/8	1	2 3/4	2 3/8	14 40	16 1/2	1 1/2	3 1/2
1 1/16	3 80	11 3/8	1	2 3/4	2 7/16	15 00	16 1/2	1 1/2	3 1/2
1 1/8	4 00	12	1	2 3/4	2 1/2	15 60	16 1/2	1 1/2	3 1/2
1 3/16	4 50	12	1	2 3/4	2 9/16	16 20	17	1 1/2	3 1/2
1 1/4	4 80	12 3/4	1 1/4	3	2 5/8	16 80	17	1 1/2	3 1/2
1 5/16	5 20	12 3/4	1 1/4	3	2 11/16	17 90	17	1 1/2	3 1/2
1 3/8	5 60	13 1/4	1 1/4	3	2 3/4	19 00	17	1 1/2	3 1/2
1 7/16	6 00	13 1/4	1 1/4	3	2 13/16	20 00	17 1/2	1 1/2	3 1/2
1 1/2	6 40	13 3/4	1 1/4	3	2 7/8	21 00	17 1/2	1 1/2	3 1/2
1 9/16	6 90	13 3/4	1 1/4	3	2 15/16	23 00	17 1/2	1 1/2	3 1/2
1 5/8	7 40	14 1/4	1 1/4	3	3	25 00	17 1/2	1 3/4	4
1 11/16	7 90	14 1/4	1 1/4	3					

WITH STRAIGHT SHANK



FIG. 165

THREE GROOVE CHUCKING REAMERS

FOR SCREW OR CHUCKING MACHINES, WITH HOLES FOR LUBRICANT THROUGH SOLID METAL

These reamers can be made in same styles as oil drills illustrated on page 31. If these reamers with oil holes are to be used for passing completely through the work, then so state in ordering, and provision will be made for that purpose.

The fluted portion of these reamers will be 1/64 inch under size, unless otherwise ordered.

PRICES, FIG. 166

Diameters, Inches.	Each.	Lengths, Inches.	Diameters Shank, Inches.	Lengths Shank, Inches.	Diameters, Inches.	Each.	Lengths, Inches.	Diameters Shank, Inches.	Lengths Shank, Inches.
1/2	$2 85	8 3/8	1/2	2	1 13/16	$13 20	14 3/4	1 1/4	3
9/16	3 00	8 3/8	1/2	2	1 7/8	13 80	15 1/4	1 1/4	3
5/8	3 90	9 1/2	5/8	2 1/4	1 15/16	14 25	15 1/4	1 1/4	3
11/16	4 15	9 1/2	5/8	2 1/4	2	14 70	15 1/4	1 1/4	3
3/4	4 35	10 1/8	3/4	2 1/4	2 1/16	14 85	16	1 1/2	3 1/2
13/16	4 60	10 1/8	3/4	2 1/4	2 1/8	15 70	16	1 1/2	3 1/2
7/8	4 80	10 3/4	7/8	2 1/2	2 3/16	16 80	16	1 1/2	3 1/2
15/16	5 10	10 3/4	7/8	2 1/2	2 1/4	17 95	16	1 1/2	3 1/2
1	5 40	11 3/8	1	2 3/4	2 5/16	19 00	16 1/2	1 1/2	3 1/2
1 1/16	5 70	11 3/8	1	2 3/4	2 3/8	20 15	16 1/2	1 1/2	3 1/2
1 1/8	6 00	12	1	2 3/4	2 7/16	21 00	16 1/2	1 1/2	3 1/2
1 3/16	6 75	12	1	2 3/4	2 1/2	21 85	16 1/2	1 1/2	3 1/2
1 1/4	7 20	12 3/4	1 1/4	3	2 9/16	22 70	17	1 1/2	3 1/2
1 5/16	7 80	12 3/4	1 1/4	3	2 5/8	23 50	17	1 1/2	3 1/2
1 3/8	8 40	13 1/4	1 1/4	3	2 11/16	25 00	17	1 1/2	3 1/2
1 7/16	9 00	13 1/4	1 1/4	3	2 3/4	26 60	17	1 1/2	3 1/2
1 1/2	9 60	13 3/4	1 1/4	3	2 13/16	28 00	17 1/2	1 1/2	3 1/2
1 9/16	10 35	13 3/4	1 1/4	3	2 7/8	29 40	17 1/2	1 1/2	3 1/2
1 5/8	11 10	14 1/4	1 1/4	3	2 15/16	32 20	17 1/2	1 1/2	3 1/2
1 11/16	11 85	14 1/4	1 1/4	3	3	35 00	17 1/2	1 3/4	4
1 3/4	12 60	14 3/4	1 1/4	3					

WITH STRAIGHT SHANK



FIG. 166

These Three Grooved Chucking Reamers, Figs. 165 and 166, are specially adapted for reaming cored holes, and have shank and fluted portion ground on centers to size. Special lengths made to order.

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FLUTED CHUCKING REAMERS

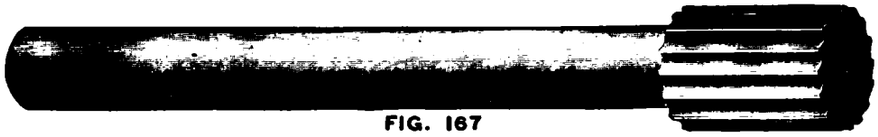


FIG. 167

PRICES

Diameters, Inches, Less .005.	Each.	Full Lengths, Inches.	Length of Flutes, Inches.
1/4	$0 90	6	7/8
9/32	95	6	7/8
5/16	1 00	6	7/8
11/32	1 05	6	7/8
3/8	1 10	7	1
13/32	1 15	7	1
7/16	1 20	7	1
15/32	1 25	7	1
1/2	1 30	8	1 1/8
17/32	1 35	8	1 1/8
9/16	1 40	8	1 1/8
19/32	1 45	8	1 1/8
5/8	1 50	9	1 1/4
21/32	1 55	9	1 1/4
11/16	1 60	9	1 1/4
23/32	1 65	9	1 1/4
3/4	1 70	9 1/2	1 3/8
25/32	1 80	9 1/2	1 3/8
13/16	1 85	9 1/2	1 3/8

PRICES

Diameters, Inches, Less .005.	Each.	Full Lengths, Inches.	Length of Flutes, Inches.
27/32	$1 90	9 1/2	1 3/8
7/8	2 00	10	1 1/2
29/32	2 10	10	1 1/2
15/16	2 15	10	1 1/2
31/32	2 25	10	1 1/2
1	2 30	10 1/2	1 5/8
1 1/32	2 40	10 1/2	1 5/8
1 1/16	2 45	10 1/2	1 5/8
1 3/32	2 55	10 1/2	1 5/8
1 1/8	2 60	11	1 3/4
1 5/32	2 70	11	1 3/4
1 3/16	2 75	11	1 3/4
1 7/32	2 85	11	1 3/4
1 1/4	2 90	11 1/2	1 7/8
1 5/16	3 05	11 1/2	1 7/8
1 3/8	3 20	12	2
1 7/16	3 35	12	2
1 1/2	3 50	12 1/2	2 1/8
1 9/16	3 65	12 1/2	2 1/8

PRICES

Diameters, Inches, Less .005.	Each.	Full Lengths, Inches.	Length of Flutes, Inches.
1 5/8	$3 80	13	2 1/4
1 11/16	4 00	13	2 1/4
1 3/4	4 20	13 1/2	2 3/8
1 13/16	4 40	13 1/2	2 3/8
1 7/8	4 60	14	2 1/2
1 15/16	4 80	14	2 1/2
2	5 00	14	2 1/2
2 1/16	5 30	14 1/2	2 3/4
2 1/8	5 60	14 1/2	2 3/4
2 3/16	5 90	14 1/2	2 3/4
2 1/4	6 20	14 1/2	2 3/4
2 5/16	6 50	15	3
2 3/8	6 80	15	3
2 7/16	7 10	15	3
2 1/2	7 40	15	3
2 9/16	7 70	15 1/2	3 1/4
2 5/8	8 00	15 1/2	3 1/4
2 11/16	8 35	15 1/2	3 1/4
2 3/4	8 70	15 1/2	3 1/4
2 13/16	9 00	16	3 1/2
2 7/8	9 35	16	3 1/2
2 15/16	9 70	16	3 1/2
3	10 00	16	3 1/2

The above reamers are finished .005 of an inch under standard and are slightly tapered on end of flutes.

FLUTED CHUCKING REAMERS

WITH MORSE TAPER SHANKS

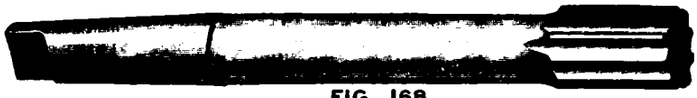


FIG. 168

They are not tapered on end of flutes.

PRICES

Diams., Inches, Less .004.	Each.	Lengths, Inches.	Length of Flutes, Inches.	Socket for Morse Taper.
1/4	$1 20	6	1 1/2	
9/32	1 20	6	1 1/2	
5/16	1 30	6	1 1/2	
11/32	1 30	6	1 1/2	
3/8	1 45	7	1 3/4	
13/32	1 50	7	1 3/4	
7/16	1 55	7	1 3/4	No. 1
15/32	1 60	7	1 3/4	
1/2	1 65	8	2	
17/32	1 70	8	2	
9/16	1 75	8	2	
19/32	1 80	8	2	
Less .005				
5/8	1 90	9	2 1/4	
21/32	1 95	9	2 1/4	
11/16	2 00	9	2 1/4	
23/32	2 10	9	2 1/4	
3/4	2 20	9 1/2	2 1/2	No. 2
25/32	2 30	9 1/2	2 1/2	
13/16	2 40	9 1/2	2 1/2	
27/32	2 50	9 1/2	2 1/2	

PRICES

Diams., Inches, Less .005.	Each.	Lengths, Inches.	Length of Flutes, Inches.	Socket for Morse Taper.
7/8	$2 55	10	2 5/8	
29/32	2 60	10	2 5/8	No. 2
15/16	2 65	10	2 5/8	
31/32	2 70	10	2 5/8	
1	2 75	10 1/2	2 3/4	
1 1/32	2 80	10 1/2	2 3/4	
1 1/16	2 85	10 1/2	2 3/4	
1 3/32	2 95	10 1/2	2 3/4	No. 3
Less .006				
1 1/8	3 10	11	2 7/8	
1 5/32	3 20	11	2 7/8	
1 3/16	3 30	11	2 7/8	
1 7/32	3 40	11	2 7/8	
1 1/4	3 50	11 1/2	3	
1 5/16	3 70	11 1/2	3	
1 3/8	3 95	12	3 1/4	
1 7/16	4 15	12	3 1/4	
1 1/2	4 40	12 1/2	3 1/2	No. 4
1 9/16	4 60	12 1/2	3 1/2	
Less .007				
1 5/8	4 85	13	3 3/4	
1 11/16	5 10	13	3 3/4	

PRICES

Diams., Inches, Less .007.	Each.	Lengths, Inches.	Length of Flutes, Inches.	Socket for Morse Taper.
1 3/4	$5 30	13 1/2	4	
1 13/16	5 50	13 1/2	4	
1 7/8	5 70	14	4 1/4	
1 15/16	5 95	14	4 1/4	
2	6 20	14	4 1/4	
2 1/16	6 50	14 1/2	4 1/2	
Less .008				
2 1/8	6 80	14 1/2	4 1/2	
2 3/16	7 10	14 1/2	4 1/2	
2 1/4	7 40	14 1/2	4 1/2	
2 5/16	7 70	15	4 3/4	
2 3/4	8 00	15	4 3/4	No. 5
2 7/16	8 40	15	4 3/4	
2 1/2	8 80	15	4 3/4	
2 9/16	9 20	15 1/2	5	
Less .010				
2 5/8	9 60	15 1/2	5	
2 11/16	10 00	15 1/2	5	
2 3/4	10 40	15 1/2	5	
2 13/16	10 80	16	5 1/4	
2 7/8	11 20	16	5 1/4	
2 15/16	11 60	16	5 1/4	
3	12 00	16	5 1/4	

FLUTED CHUCKING REAMERS

WITH GROOVED SHANKS

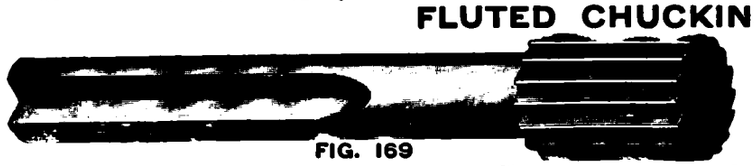


FIG. 169

These reamers are finished 1/200 of an inch smaller than Whitworth's Standard Gauges.

Diameters, Inches, Less .005.	Full Lengths, Inches.	Length of Flutes, Inches.	Each.
1/4	6	7/8	$ 90
5/16	6	7/8	1 00
3/8	7	1	1 10
7/16	7	1	1 20
1/2	8	1 1/8	1 30
9/16	8	1 1/8	1 40
5/8	9	1 1/4	1 50
11/16	9	1 1/4	1 60
3/4	9 1/2	1 3/8	1 70

Diameters, Inches, Less .005.	Full Lengths, Inches.	Length of Flutes, Inches.	Each.
13/16	9 1/2	1 3/8	$1 85
7/8	10	1 1/2	2 00
15/16	10	1 1/2	2 15
1	10 1/2	1 5/8	2 30
1 1/16	10 1/2	1 5/8	2 45
1 1/8	11	1 3/4	2 60
1 3/16	11	1 3/4	2 75
1 1/4	11 1/2	1 7/8	2 90
1 5/16	11 1/2	1 7/8	3 05

Diameters, Inches, Less .005.	Full Lengths, Inches.	Length of Flutes, Inches.	Each.
1 3/8	12	2	$3 20
1 7/16	12	2	3 35
1 1/2	12 1/2	2 1/8	3 50
1 9/16	12 1/2	2 1/8	3 65
1 5/8	13	2 1/4	3 80
1 11/16	13	2 1/4	4 00
1 3/4	13 1/2	2 3/8	4 20
1 13/16	13 1/2	2 3/8	4 40
1 7/8	14	2 1/2	4 60
1 15/16	14	2 1/2	4 80
2	14	2 1/2	5 00

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FLUTED CHUCKING REAMERS
WITH STRAIGHT SHANKS

For screw or chucking machines.

These reamers are slightly tapered on end of flutes.

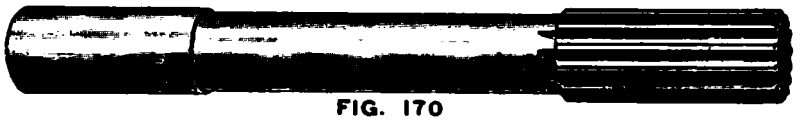


FIG. 170

PRICES

Diams., Inches. Less .004.	Each.	Full Lengths, Inches.	Length of Flutes, Inches.	Diams. Shanks, Inches.	Length Shanks, Inches.
1/4	$1 20	6	1 1/2	1/4	1 1/2
9/32	1 20	6	1 1/2	1/4	1 1/2
5/16	1 30	6	1 1/2	1/4	1 1/2
11/32	1 30	6	1 1/2	1/4	1 1/2
3/8	1 45	7	1 3/4	3/8	1 3/4
13/32	1 50	7	1 3/4	3/8	1 3/4
7/16	1 55	7	1 3/4	3/8	1 3/4
15/32	1 60	7	1 3/4	3/8	1 3/4
1/2	1 65	8	2	1/2	2
17/32	1 70	8	2	1/2	2
9/16	1 75	8	2	1/2	2
19/32	1 80	8	2	1/2	2
Less .005.					
5/8	1 90	9	2 1/4	5/8	2 1/4
21/32	1 95	9	2 1/4	5/8	2 1/4
11/16	2 00	9	2 1/4	5/8	2 1/4
23/32	2 10	9	2 1/4	5/8	2 1/4
3/4	2 20	9 1/2	2 1/2	3/4	2 1/4
25/32	2 30	9 1/2	2 1/2	3/4	2 1/4
13/16	2 40	9 1/2	2 1/2	3/4	2 1/4
27/32	2 50	9 1/2	2 1/2	3/4	2 1/4
7/8	2 55	10	2 5/8	7/8	2 1/2

PRICES

Diams., Inches. Less .005.	Each.	Full Lengths, Inches.	Length of Flutes, Inches.	Diams. Shanks, Inches.	Length Shanks, Inches.
29/32	$2 60	10	2 5/8	7/8	2 1/2
15/16	2 65	10	2 5/8	7/8	2 1/2
31/32	2 70	10	2 5/8	7/8	2 1/2
1	2 75	10 1/2	2 3/4	1	2 3/4
1 1/32	2 80	10 1/2	2 3/4	1	2 3/4
1 1/16	2 85	10 1/2	2 3/4	1	2 3/4
1 3/32	2 95	10 1/2	2 3/4	1	2 3/4
Less .006.					
1 1/8	3 10	11	2 7/8	1	2 3/4
1 5/32	3 20	11	2 7/8	1	2 3/4
1 3/16	3 30	11	2 7/8	1	2 3/4
1 7/32	3 40	11	2 7/8	1	2 3/4
1 1/4	3 50	11 1/2	3	1 1/4	3
1 5/16	3 70	11 1/2	3	1 1/4	3
1 3/8	3 95	12	3 1/4	1 1/4	3
1 7/16	4 15	12	3 1/4	1 1/4	3
1 1/2	4 40	12 1/2	3 1/2	1 1/4	3
1 9/16	4 60	12 1/2	3 1/2	1 1/4	3
Less .007.					
1 5/8	4 85	13	3 3/4	1 1/4	3
1 11/16	5 10	13	3 3/4	1 1/4	3
1 3/4	5 30	13 1/2	4	1 1/4	3

PRICES

Diams., Inches. Less .007.	Each.	Full Lengths, Inches.	Length of Flutes, Inches.	Diams. Shanks, Inches.	Length Shanks, Inches.
1 13/16	$5 50	13 1/2	4	1 1/4	3
1 7/8	5 70	14	4 1/4	1 1/4	3
1 15/16	5 95	14	4 1/4	1 1/4	3
2	6 20	14	4 1/4	1 1/4	3
2 1/16	6 50	14 1/2	4 1/2	1 1/2	3 1/2
Less .008.					
2 1/8	6 80	14 1/2	4 1/2	1 1/2	3 1/2
2 3/16	7 10	14 1/2	4 1/2	1 1/2	3 1/2
2 1/4	7 40	14 1/2	4 1/2	1 1/2	3 1/2
2 5/16	7 70	15	4 3/4	1 1/2	3 1/2
2 3/8	8 00	15	4 3/4	1 1/2	3 1/2
2 7/16	8 40	15	4 3/4	1 1/2	3 1/2
2 1/2	8 80	15	4 3/4	1 1/2	3 1/2
2 9/16	9 20	15 1/2	5	1 1/2	3 1/2
Less .010.					
2 5/8	9 60	15 1/2	5	1 1/2	3 1/2
2 11/16	10 00	15 1/2	5	1 1/2	3 1/2
2 3/4	10 40	15 1/2	5	1 1/2	3 1/2
2 13/16	10 80	16	5 1/4	1 1/2	3 1/2
2 7/8	11 20	16	5 1/4	1 1/2	3 1/2
2 15/16	11 60	16	5 1/4	1 1/2	3 1/2
3	12 00	16	5 1/4	1 3/4	4

ROSE CHUCKING REAMERS
WITH STRAIGHT SHANKS

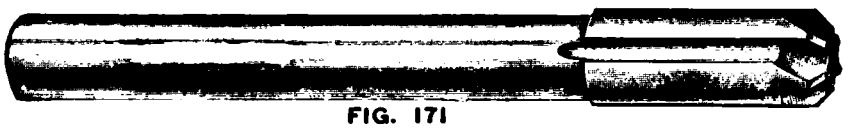


FIG. 171

PRICES

Diameters, Inches.	Each.	Full Lengths, Inches.	Length of Flutes, Inches.
1/4	$0 80	6	1 1/2
9/32	85	6	1 1/2
5/16	90	6	1 1/2
11/32	95	6	1 1/2
3/8	1 00	7	1 3/4
13/32	1 05	7	1 3/4
7/16	1 10	7	1 3/4
15/32	1 15	7	1 3/4
1/2	1 20	8	2
17/32	1 25	8	2
9/16	1 30	8	2
19/32	1 35	8	2
5/8	1 40	9	2 1/4
21/32	1 45	9	2 1/4
11/16	1 50	9	2 1/4
23/32	1 55	9	2 1/4
3/4	1 60	9 1/2	2 1/2
25/32	1 65	9 1/2	2 1/2
13/16	1 70	9 1/2	2 1/2
27/32	1 75	9 1/2	2 1/2
7/8	1 80	10	2 5/8
29/32	1 90	10	2 5/8
15/16	1 95	10	2 5/8
31/32	2 05	10	2 5/8

PRICES

Diameters, Inches.	Each.	Full Lengths, Inches.	Length of Flutes, Inches.
1	$2 10	10 1/2	2 3/4
1 1/32	2 20	10 1/2	2 3/4
1 1/16	2 25	10 1/2	2 3/4
1 3/32	2 35	10 1/2	2 3/4
1 1/8	2 40	11	2 7/8
1 5/32	2 50	11	2 7/8
1 3/16	2 55	11	2 7/8
1 7/32	2 65	11	2 7/8
1 1/4	2 70	11 1/2	3
1 5/16	2 85	11 1/2	3
1 3/8	3 00	12	3 1/4
1 7/16	3 15	12.	3 1/4
1 1/2	3 30	12 1/2	3 1/2
1 9/16	3 45	12 1/2	3 1/2
1 5/8	3 60	13	3 3/4
1 11/16	3 75	13	3 3/4
1 3/4	3 90	13 1/2	4
1 13/16	4 05	13 1/2	4
1 7/8	4 20	14	4 1/4

PRICES

Diameters, Inches.	Each.	Full Lengths, Inches.	Length of Flutes, Inches.
1 15/16	$4 40	14	4 1/4
2	4 60	14	4 1/4
2 1/16	4 90	14 1/2	4 1/2
2 1/8	5 20	14 1/2	4 1/2
2 3/16	5 50	14 1/2	4 1/2
2 1/4	5 80	14 1/2	4 1/2
2 5/16	6 10	15	4 3/4
2 3/8	6 40	15	4 3/4
2 7/16	6 80	15	4 3/4
2 1/2	7 20	15	4 3/4
2 9/16	7 50	15 1/2	5
2 5/8	7 80	15 1/2	5
2 11/16	8 10	15 1/2	5
2 3/4	8 40	15 1/2	5
2 13/16	8 80	16	5 1/4
2 7/8	9 20	16	5 1/4
2 15/16	9 60	16	5 1/4
3	10 00	16	5 1/4

ROSE CHUCKING REAMERS
WITH GROOVED SHANKS

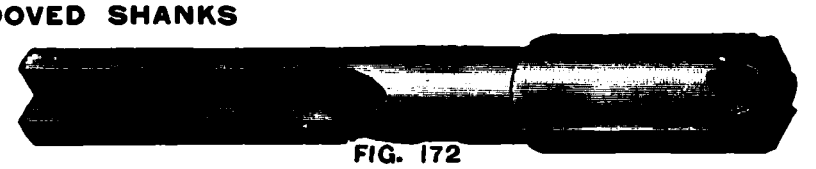


FIG. 172

PRICES

Diameters. Inches.	Full Lengths, Inches.	Each.
1/4	6	$0 80
5/16	6	90
3/8	7	1 00
7/16	7	1 10
1/2	8	1 20
9/16	8	1 30
5/8	9	1 40
11/16	9	1 50
3/4	9 1/2	1 60

PRICES

Diameters, Inches.	Full Lengths, Inches.	Each.
13/16	9 1/2	$1 70
7/8	10	1 80
15/16	10	1 95
1	10 1/2	2 10
1 1/16	10 1/2	2 25
1 1/8	11	2 40
1 3/16	11	2 55
1 1/4	11 1/2	2 70
1 5/16	11 1/2	2 85
1 3/8	12	3 00

PRICES

Diameters, Inches.	Full Lengths, Inches.	Each.
1 7/16	12	$3 15
1 1/2	12 1/2	3 30
1 9/16	12 1/2	3 45
1 5/8	13	3 60
1 11/16	13	3 75

PRICES

Diameters, Inches.	Full Lengths, Inches.	Each.
1 3/4	13 1/2	$3 90
1 13/16	13 1/2	4 05
1 7/8	14	4 20
1 15/16	14	4 40
2	14	4 60

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ROSE CHUCKING REAMERS
WITH MORSE TAPER SHANKS



FIG. 173

Diameters, Inches.	Prices, Each.	Full Lengths, Inches.	Length of Flutes, Inches.	Socket for Morse Taper.
1/4	$1 20	6	1 1/2	
9/32	1 20	6	1 1/2	
5/16	1 30	6	1 1/2	
11/32	1 30	6	1 1/2	
3/8	1 45	7	1 3/4	
13/32	1 50	7	1 3/4	No. 1
7/16	1 55	7	1 3/4	
15/32	1 60	7	1 3/4	
1/2	1 65	8	2	
17/32	1 70	8	2	
9/16	1 75	8	2	
19/32	1 80	8	2	
5/8	1 90	9	2 1/4	
21/32	1 95	9	2 1/4	
11/16	2 00	9	2 1/4	
23/32	2 10	9	2 1/4	No. 2
3/4	2 20	9 1/2	2 1/2	
25/32	2 30	9 1/2	2 1/2	
13/16	2 40	9 1/2	2 1/2	
27/32	$2 50	9 1/2	2 1/2	
7/8	2 55	10	2 5/8	No. 2
29/32	2 60	10	2 5/8	
15/16	2 65	10	2 5/8	
31/32	2 70	10	2 5/8	
1	2 75	10 1/2	2 3/4	
1 1/32	2 80	10 1/2	2 3/4	
1 1/16	2 85	10 1/2	2 3/4	No. 3
1 3/32	2 95	10 1/2	2 3/4	
1 1/8	3 10	11	2 7/8	
1 5/32	3 20	11	2 7/8	
1 3/16	3 30	11	2 7/8	
1 7/32	3 40	11	2 7/8	
1 1/4	3 50	11 1/2	3	
1 5/16	3 70	11 1/2	3	
1 3/8	3 95	12	3 1/4	No. 4
1 7/16	4 15	12	3 1/4	
1 1/2	4 40	12 1/2	3 1/2	
1 9/16	$4 60	12 1/2	3 1/2	
1 5/8	4 85	13	3 3/4	No. 4
1 11/16	5 10	13	3 3/4	
1 3/4	5 30	13 1/2	4	
1 13/16	5 50	13 1/2	4	
1 7/8	5 70	14	4 1/4	
1 15/16	5 95	14	4 1/4	
2	6 20	14	4 1/4	
2 1/16	6 50	14 1/2	4 1/2	
2 1/8	6 80	14 1/2	4 1/2	
2 3/16	7 10	14 1/2	4 1/2	
2 1/4	7 40	14 1/2	4 1/2	
2 5/16	7 70	15	4 3/4	
2 3/8	8 00	15	4 3/4	No. 5
2 7/16	8 40	15	4 3/4	
2 1/2	8 80	15	4 3/4	
2 9/16	9 20	15 1/2	5	
2 5/8	9 60	15 1/2	5	
2 11/16	10 00	15 1/2	5	
2 3/4	10 40	15 1/2	5	
2 13/16	10 80	16	5 1/4	
2 7/8	11 20	16	5 1/4	
2 15/16	11 60	16	5 1/4	
3	12 00	16	5 1/4	

ROSE CHUCKING REAMERS
WITH STRAIGHT SHANKS

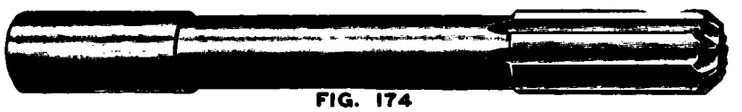


FIG. 174

For screw or chucking machines.

Diams., Inches.	Prices, Each.	Full Length, Inches.	Length of Flutes, Inches.	Diams. Shanks, Inches.	Length Shanks, Inches.
1/4	$1 20	6	1 1/2	1/4	1 1/2
9/32	1 20	6	1 1/2	1/4	1 1/2
5/16	1 30	6	1 1/2	1/4	1 1/2
11/32	1 30	6	1 1/2	1/4	1 1/2
3/8	1 45	7	1 3/4	3/8	1 3/4
13/32	1 50	7	1 3/4	3/8	1 3/4
7/16	1 55	7	1 3/4	3/8	1 3/4
15/32	1 60	7	1 3/4	3/8	1 3/4
1/2	1 65	8	2	1/2	2
17/32	1 70	8	2	1/2	2
9/16	1 75	8	2	1/2	2
19/32	1 80	8	2	1/2	2
5/8	1 90	9	2 1/4	5/8	2 1/4
21/32	1 95	9	2 1/4	5/8	2 1/4
11/16	2 00	9	2 1/4	5/8	2 1/4
23/32	2 10	9	2 1/4	5/8	2 1/4
3/4	2 20	9 1/2	2 1/2	3/4	2 1/4
25/32	2 30	9 1/2	2 1/2	3/4	2 1/4
13/16	2 40	9 1/2	2 1/2	3/4	2 1/4
27/32	2 50	9 1/2	2 1/2	3/4	2 1/4
7/8	2 55	10	2 5/8	7/8	2 1/2
29/32	$2 60	10	2 5/8	7/8	2 1/2
15/16	2 65	10	2 5/8	7/8	2 1/2
31/32	2 70	10	2 5/8	7/8	2 1/2
1	2 75	10 1/2	2 3/4	1	2 3/4
1 1/32	2 80	10 1/2	2 3/4	1	2 3/4
1 1/16	2 85	10 1/2	2 3/4	1	2 3/4
1 3/32	2 95	10 1/2	2 3/4	1	2 3/4
1 1/8	3 10	11	2 7/8	1	2 3/4
1 5/32	3 20	11	2 7/8	1	2 3/4
1 3/16	3 30	11	2 7/8	1	2 3/4
1 7/32	3 40	11	2 7/8	1	2 3/4
1 1/4	3 50	11 1/2	3	1 1/4	3
1 5/16	3 70	11 1/2	3	1 1/4	3
1 3/8	3 95	12	3 1/4	1 1/4	3
1 7/16	4 15	12	3 1/4	1 1/4	3
1 1/2	4 40	12 1/2	3 1/2	1 1/4	3
1 9/16	4 60	12 1/2	3 1/2	1 1/4	3
1 5/8	4 85	13	3 3/4	1 1/4	3
1 11/16	5 10	13	3 3/4	1 1/4	3
1 3/4	5 30	13 1/2	4	1 1/4	3
1 13/16	5 50	13 1/2	4	1 1/4	3
1 7/8	$5 70	14	4 1/4	1 1/4	3
1 15/16	5 95	14	4 1/4	1 1/4	3
2	6 20	14	4 1/4	1 1/4	3
2 1/16	6 50	14 1/2	4 1/2	1 1/2	3 1/2
2 1/8	6 80	14 1/2	4 1/2	1 1/2	3 1/2
2 3/16	7 10	14 1/2	4 1/2	1 1/2	3 1/2
2 1/4	7 40	14 1/2	4 1/2	1 1/2	3 1/2
2 5/16	7 70	15	4 3/4	1 1/2	3 1/2
2 3/8	8 00	15	4 3/4	1 1/2	3 1/2
2 7/16	8 40	15	4 3/4	1 1/2	3 1/2
2 1/2	8 80	15	4 3/4	1 1/2	3 1/2
2 9/16	9 20	15 1/2	5	1 1/2	3 1/2
2 5/8	9 60	15 1/2	5	1 1/2	3 1/2
2 11/16	10 00	15 1/2	5	1 1/2	3 1/2
2 3/4	10 40	15 1/2	5	1 1/2	3 1/2
2 13/16	10 80	16	5 1/4	1 1/2	3 1/2
2 7/8	11 20	16	5 1/4	1 1/2	3 1/2
2 15/16	11 60	16	5 1/4	1 1/2	3 1/2
3	12 00	16	5 1/4	1 3/4	4

SPIRAL FLUTED ROSE CHUCKING REAMERS



FIG. 175

Either full standard sizes, or with allowance for finishing cuts, as given below. State on order whether wanted exact size or under size.

Diameters, Inches, Less .005.	Prices, Each.	Length of Flute, Inches.	Full Length, Inches.
1/4	$0 90	1	6
5/16	1 00	1	6
3/8	1 10	1 1/8	7
7/16	1 20	1 1/8	7
1/2	1 30	1 1/4	8 1/8
Less .007.			
9/16	1 40	1 1/4	8 1/8
5/8	1 50	1 3/8	9 1/8
11/16	1 60	1 3/8	9 1/8
3/4	1 70	1 1/2	9 5/8

Diameters, Inches, Less .007.	Prices, Each.	Length of Flute, Inches.	Full Length, Inches.
13/16	$1 85	1 1/2	9 5/8
7/8	2 00	1 3/4	10 1/4
15/16	2 15	1 3/4	10 1/4
1	2 30	1 7/8	10 3/4
1 1/16	2 45	1 7/8	10 3/4
1 1/8	2 60	2	11 1/4
1 3/16	2 75	2	11 1/4
1 1/4	2 90	2 1/8	11 3/4
1 5/16	3 05	2 1/8	11 3/4
1 3/8	3 20	2 1/4	12 1/4

Diameters, Inches, Less .007.	Prices, Each.	Length of Flute, Inches.	Full Length, Inches.
1 7/16	$3 35	2 1/4	12 1/4
1 1/2	3 50	2 3/8	12 3/4
1 9/16	3 65	2 3/8	12 3/4
1 5/8	3 80	2 1/2	13 1/4
1 11/16	4 00	2 1/2	13 1/4
1 3/4	4 20	2 5/8	13 3/4
1 13/16	4 40	2 5/8	13 3/4
1 7/8	4 60	2 3/4	14 1/4
1 15/16	4 80	2 3/4	14 1/4
2	5 00	2 3/4	14 1/4

We can furnish these to 4 inches in size. Special sizes also supplied. Prices furnished on application.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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JOBBERS' REAMERS

STRAIGHT SHANKS, STRAIGHT FLUTED



FIG. 176

Diams., Inches.	Prices, Each.	Full Lengths, Inches.	Lengths of Flutes, Inches.
1/8	$1 00	3	1 1/2
5/32	1 10	3 1/4	1 5/8
3/16	1 20	3 1/2	1 3/4
7/32	1 30	3 3/4	1 7/8
1/4	1 40	4	2
9/32	1 45	4 1/4	2 1/8
5/16	1 50	4 1/2	2 1/4
11/32	1 55	4 3/4	2 3/8
3/8	1 60	5	2 1/2
13/32	1 70	5 1/4	2 5/8
7/16	1 75	5 1/2	2 3/4
15/32	1 85	5 3/4	2 7/8
1/2	1 90	6	3
17/32	1 95	6 1/4	3 1/8
9/16	2 00	6 1/2	3 1/4
19/32	2 10	6 3/4	3 3/8
5/8	2 20	7	3 1/2
21/32	2 30	7 11/32	3 43/64
11/16	2 40	7 11/16	3 27/32
23/32	2 50	8 1/8	4 1/16
3/4	2 60	8 3/8	4 3/16
25/32	2 70	8 23/32	4 23/64
13/16	2 80	9 1/16	4 17/32
27/32	2 95	9 3/8	4 11/16
7/8	3 10	9 11/16	4 27/32
29/32	3 25	10 3/32	5 3/64
15/16	$3 40	10 1/4	5 1/8
31/32	3 55	10 11/16	5 11/32
1	3 70	10 7/8	5 7/16
1 1/32	3 85	11 1/16	5 17/32
1 1/16	4 00	11 1/4	5 5/8
1 3/32	4 15	11 7/16	5 23/32
1 1/8	4 30	11 5/8	5 13/16
1 5/32	4 45	11 13/16	5 29/32
1 3/16	4 60	12	6
1 7/32	4 75	12 1/8	6 1/16
1 1/4	4 90	12 1/4	6 1/8
1 9/32	5 05	12 1/32	6 11/64
1 5/16	5 20	12 7/16	6 7/32
1 11/32	5 40	12 17/32	6 17/64
1 3/8	5 60	12 5/8	6 5/16
1 13/32	5 80	12 23/32	6 23/64
1 7/16	6 00	12 13/16	6 13/32
1 15/32	$6 20	12 29/32	6 29/64
1 1/2	6 40	13	6 1/2
1 17/32	6 60	13	6 1/2
1 9/16	6 80	13	6 1/2
1 19/32	7 00	13	6 1/2
1 5/8	7 20	13	6 1/2
1 21/32	7 40	13 1/2	6 3/4
1 11/16	7 60	13 1/2	6 3/4
1 23/32	7 80	13 1/2	6 3/4
1 3/4	8 00	13 1/2	6 3/4
1 25/32	8 20	13 1/2	6 3/4
1 13/16	8 40	13 1/2	6 3/4
1 27/32	8 60	13 1/2	6 3/4
1 7/8	8 80	14	7
1 29/32	9 00	14	7
1 15/16	9 20	14	7
1 31/32	9 40	14	7
2	9 60	15	7
2 1/16	10 00	15 1/2	7 1/4
2 1/8	10 40	15 1/2	7 1/4
2 3/16	10 80	15	7 1/2
2 1/4	11 30	15	7 1/2
2 5/16	11 80	15	7 1/2
2 3/8	12 30	15	7 1/2
2 7/16	12 80	15 1/2	7 3/4
2 1/2	13 40	15 1/2	7 3/4
2 9/16	14 00	15 1/2	7 3/4
2 5/8	14 60	16	8
2 11/16	15 40	16	8
2 3/4	16 20	16	8
2 13/16	17 00	16 1/2	8 1/4
2 7/8	17 80	16 1/2	8 1/4
2 15/16	18 60	16 1/2	8 1/4
3	19 40	16 1/2	8 1/4

Reamers of any style, size or length made to order; also furnished by 64ths.

PRICES OF JOBBERS' REAMERS, PER SET

Set, 1/4 to 1 inch in diameter, by 16ths.....$30 00
" 1/4 " 1 1/4 " " " " 16ths..... 48 00
" 1/4 " 1 1/2 " " " " 16ths..... 70 00
" 1/4 " 2 " " " " 16ths.....135 00

Set, 1/4 to 1 inch in diameter, by 32ds.....$57 50
" 1/4 " 1 1/4 " " " " 32ds..... 92 00
" 1/4 " 1 1/2 " " " " 32ds.....137 00
" 1/4 " 2 " " " " 32ds.....265 00

JOBBERS' REAMERS

WITH MORSE TAPER SHANKS

STRAIGHT FLUTED

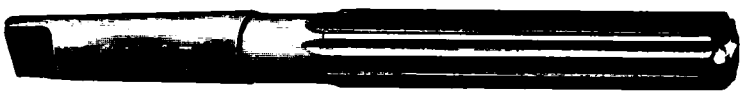


FIG. 177

Diams., Inches.	Prices, Each.	Full Lengths, Inches.	Lengths of Flutes, Inches.	Socket for Morse Taper.
1/4	$1 50	5 3/16	2	
9/32	1 55	5 3/16	2	
5/16	1 60	5 1/2	2 1/4	
11/32	1 65	5 1/2	2 1/4	
3/8	1 70	5 13/16	2 1/2	
13/32	1 80	5 13/16	2 1/2	No. 1 $1 20
7/16	1 85	6 1/8	2 3/4	
15/32	1 95	6 1/8	2 3/4	
1/2	2 00	6 7/16	3	
17/32	2 10	6 7/16	3	
9/16	2 15	6 3/4	3 1/4	
19/32	2 25	6 3/4	3 1/4	
5/8	2 30	7 9/16	3 1/2	
21/32	2 40	7 9/16	3 1/2	
11/16	2 50	8	3 7/8	
23/32	2 60	8	3 7/8	
3/4	2 70	8 3/8	4 3/16	No. 2 $1 80
25/32	2 80	8 3/8	4 3/16	
13/16	2 90	8 13/16	4 9/16	
27/32	3 05	8 13/16	4 9/16	
7/8	3 20	9 3/16	4 7/8	
29/32	3 35	9 3/16	4 7/8	
15/16	3 50	10	5 1/8	
31/32	3 65	10	5 1/8	
1	3 80	10 3/8	5 7/16	
1 1/32	3 95	10 3/8	5 7/16	No. 3 $2 50
1 1/16	4 10	10 5/8	5 5/8	
1 3/32	4 25	10 5/8	5 5/8	
1 1/8	4 40	10 7/8	5 13/16	
1 5/32	$4 55	10 7/8	5 13/16	No. 3 $2 50
1 3/16	4 70	11 1/8	6	
1 7/32	4 85	11 1/8	6	
1 1/4	5 00	12 9/16	6 1/8	
1 9/32	5 15	12 9/16	6 1/8	
1 5/16	5 30	12 11/16	6 1/4	
1 11/32	5 50	12 11/16	6 1/4	
1 3/8	5 70	12 13/16	6 5/16	
1 13/32	5 90	12 13/16	6 5/16	
1 7/16	6 10	13	6 7/16	
1 15/32	6 30	13	6 7/16	No. 4 $4 00
1 1/2	6 50	13 1/8	6 1/2	
1 17/32	6 70	13 1/8	6 1/2	
1 9/16	6 90	13 1/8	6 1/2	
1 19/32	7 10	13 1/8	6 1/2	
1 5/8	7 30	13 1/8	6 1/2	
1 21/32	7 50	13 1/8	6 1/2	
1 11/16	7 70	14 11/16	6 3/4	
1 23/32	7 85	14 11/16	6 3/4	
1 3/4	8 00	14 11/16	6 3/4	
1 25/32	8 20	14 11/16	6 3/4	No. 5 $7 50
1 13/16	8 40	14 11/16	6 3/4	
1 27/32	$8 60	14 11/16	6 3/4	
1 7/8	8 80	15	7	
1 29/32	9 00	15	7	
1 15/16	9 20	15	7	
1 31/32	9 40	15	7	
2	9 60	15	7	
2 1/16	10 00	15 1/2	7 1/4	
2 1/8	10 40	15 1/2	7 1/4	
2 3/16	10 80	15 1/2	7 1/4	
2 1/4	11 30	15 1/2	7 1/4	
2 5/16	11 80	16	7 1/2	No. 5 $7 50
2 3/8	12 30	16	7 1/2	
2 7/16	12 80	16	7 1/2	
2 1/2	13 40	16	7 1/2	
2 9/16	14 00	16 1/2	7 3/4	
2 5/8	14 60	16 1/2	7 3/4	
2 11/16	15 40	16 1/2	7 3/4	
2 3/4	16 20	16 1/2	7 3/4	
2 13/16	17 00	17	8	
2 7/8	17 80	17	8	
2 15/16	18 60	17	8	
3	19 40	17	8	

Reamers of any style, size or length made to order.

SOLID SPIRAL FLUTED REAMER



FIG. 178

Jobbers with straight shanks. Prices same list as Fig. 176
" " Morse taper shanks. " " " " Fig. 177

GROOVED SHANK, STRAIGHT FLUTED REAMER

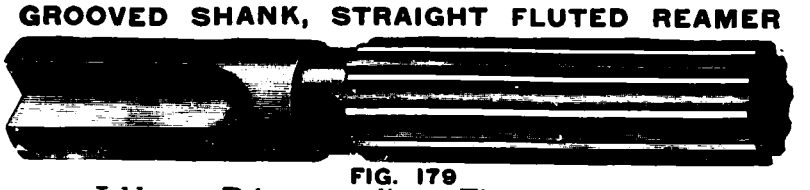


FIG. 179

Jobbers. Prices same list as Fig. 176, above.
Short set. " " " " Fig. 180, on page 46.

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SOLID REAMERS

SHORT SET

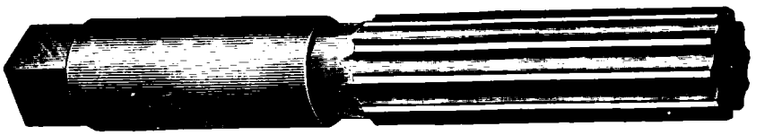


FIG. 180

PRICES OF SOLID REAMERS, FIG. 180, PER SET

Set, ¼ to 1 inch in diameter, by 16ths..... $25 50
" ¼ " 1¼ " " " " 16ths..... 39 00
" ¼ " 1½ " " " " 16ths..... 56 00

Diams., Inches.	Each.	Full Lengths, Inches.	Lengths of Flutes, Inches.
¼	$1 30	3¾	2 3/16
5/16	1 40	4	2¼
⅜	1 50	4¼	2⅜
7/16	1 60	4½	2 7/16
½	1 70	4¾	2 9/16
9/16	1 80	5	2⅝
⅝	1 90	5¼	2¾
11/16	2 05	5½	2⅞
¾	2 20	5¾	3
13/16	2 35	6	3⅛
⅞	$2 50	6⅜	3¼
15/16	2 70	6¾	3 7/16
1	2 90	7⅛	3⅝
1 1/16	3 10	7½	3¾
1⅛	3 30	7⅞	4
1 3/16	3 50	8¼	4¼
1¼	3 70	8⅝	4½
1 5/16	3 90	9	4¾
1⅜	4 10	9⅜	5
1 7/16	4 35	9¾	5¼
1½	$4 70	10	5½
1 9/16	5 20	10¼	5⅝
1⅝	5 70	10½	5¾
1 11/16	6 20	10¾	5⅞
1¾	6 70	11	6
1 13/16	7 10	11¼	6⅛
1⅞	7 50	11½	6¼
1 15/16	7 90	11¾	6⅜
2	8 30	12	6½

SHELL REAMERS

STRAIGHT FLUTED SHELL REAMER



FIG. 181

ROSE SHELL REAMER

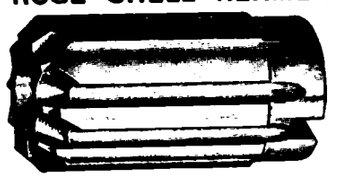


FIG. 182

SPIRAL FLUTED SHELL REAMER

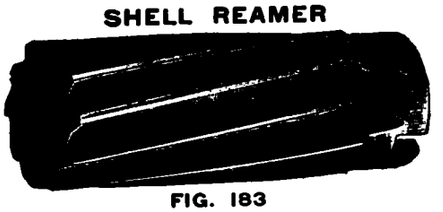


FIG. 183

ROSE SHELL REAMER

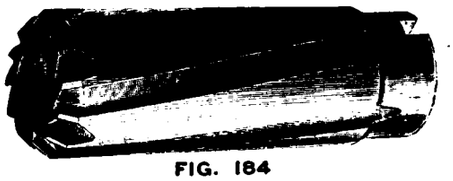


FIG. 184

PRICES, FIG. 181 TO 184

Diameters, Inches.	Each.	Lengths, Inches.	Sizes Holes, Inches.
¼	$1 10	1½	⅛
5/16	1 10	1½	⅛
⅜	1 20	1¾	3/16
7/16	1 30	1¾	3/16
½	1 40	2	¼
9/16	1 50	2	¼
⅝	1 60	2¼	⅜
11/16	1 60	2¼	⅜
¾	1 60	2½	½
13/16	1 60	2½	½
⅞	1 70	2½	½
15/16	1 70	2½	½
1	1 80	2¾	⅝
1 1/16	1 80	2¾	⅝
1⅛	1 90	2¾	⅝
1 3/16	2 00	2¾	⅝
1¼	2 20	2¾	⅝
1 5/16	2 40	3	¾
1⅜	2 60	3	¾
1 7/16	2 80	3	¾
1½	3 00	3	¾
1 9/16	3 20	3	¾
1⅝	3 50	3	¾
1 11/16	3 80	3½	1
1¾	4 10	3½	1
1 13/16	4 40	3½	1
1⅞	4 70	3½	1
1 15/16	5 00	3½	1
2	5 20	3½	1
2 1/16	5 40	3¾	1¼
2⅛	5 60	3¾	1¼
2 3/16	5 80	3¾	1¼
2¼	6 00	3¾	1¼
2 5/16	6 20	3¾	1¼
2⅜	6 40	3¾	1¼
2 7/16	6 60	3¾	1¼
2½	6 80	3¾	1¼
2 9/16	7 00	4	1½
2⅝	7 30	4	1½
2 11/16	$7 60	4	1½
2¾	8 00	4	1½
2 13/16	8 40	4	1½
2⅞	8 80	4	1½
2 15/16	9 20	4	1½
3	9 60	4	1½
3 1/16	9 90	4½	1¾
3⅛	10 20	4½	1¾
3 3/16	10 60	4½	1¾
3¼	11 00	4½	1¾
3 5/16	11 50	4½	1¾
3⅜	12 00	4½	1¾
3 7/16	12 50	4½	1¾
3½	13 00	4½	1¾
3 9/16	13 50	5	2
3⅝	14 00	5	2
3 11/16	14 50	5	2
3¾	15 00	5	2
3 13/16	15 50	5	2
3⅞	16 00	5	2
3 15/16	17 00	5	2
4	18 00	5	2
4 1/16	18 30	5½	2¼
4⅛	18 60	5½	2¼
4 3/16	19 00	5½	2¼
4¼	19 40	5½	2¼
4 5/16	19 80	5½	2¼
4⅜	20 20	5½	2¼
4 7/16	20 60	5½	2¼
4½	21 00	5½	2¼
4 9/16	21 60	6	2½
4⅝	22 20	6	2½
4 11/16	22 80	6	2½
4¾	23 40	6	2½
4 13/16	24 00	6	2½
4⅞	24 60	6	2½
4 15/16	25 20	6	2½
5	26 00	6	2½

Shell Reamers have taper holes, the diameter given being at the large end.

ARBORS FOR SHELL REAMERS

STRAIGHT SHANK



FIG. 185

GROOVED SHANK



FIG. 186

PRICES, FIGS. 185 AND 186

Nos.	Each.	Fitting Sizes, Inches.	Full Lengths, Inches.
1	$1 20	¼ to 5/16	6
2	1 40	⅜ " 7/16	7
3	1 60	½ " 9/16	8
4	1 80	⅝ " 11/16	9
5	2 00	¾ " 15/16	9½
6	2 20	1 " 1¼	10
7	2 40	1 5/16 " 1⅝	11
8	$2 70	1 11/16 to 2	12
9	3 00	2 1/16 " 2½	13
10	3 40	2 9/16 " 3	14
11	5 00	3 1/16 " 3½	15
12	7 00	3 9/16 " 4	16
13	9 00	4 1/16 " 4½	17
14	12 00	4 9/16 " 5	18

Fig. 186, not made above No. 10 size.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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SHELL REAMER, WITH ADJUSTABLE BLADES

DESCRIPTION, FIG. 187

The shell is of steel and the blades of the best tool steel. From six to twelve cutters are inserted in each reamer, and unevenly spaced; they are fitted into dove tailed slots, the bottoms of which are inclined planes. By driving the blades toward the shank, the cutting diameter can be expanded to compensate for the wear. Straight or taper holes, as may be required. Reamers larger than 5 inches made to order.

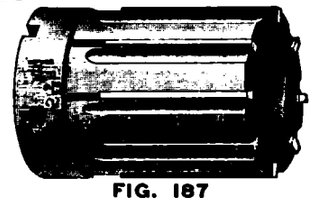


FIG. 187

Diameters, Inches.	PRICES Each.	Lengths, Inches.	*Holes, Inches.
5/8	$2 30	2	5/16
11/16	2 30	2	5/16
3/4	2 43	2	5/16
13/16	2 70	2	5/16
7/8	3 09	2	5/16
15/16	3 48	2	5/16
1	3 87	2 1/2	1/2
1 1/16	4 26	2 1/2	1/2
1 1/8	4 65	2 1/2	1/2
1 3/16	5 04	2 1/2	1/2
1 1/4	5 43	2 1/2	1/2
1 5/16	5 83	2 1/2	1/2
1 3/8	6 35	3 1/4	3/4
1 7/16	6 88	3 1/4	3/4
1 1/2	7 41	3 1/4	3/4
1 9/16	7 58	3 1/4	3/4
1 5/8	7 77	3 1/4	3/4
1 11/16	7 96	3 1/4	3/4
1 3/4	8 15	3 1/4	3/4
1 13/16	8 34	3 1/4	3/4
1 7/8	8 50	3 1/4	3/4
1 15/16	8 68	3 1/4	3/4
2	8 75	4	1
2 1/16	9 00	4	1
2 1/8	9 25	4	1
2 3/16	9 50	4	1
2 1/4	9 75	4	1
2 5/16	10 00	4	1
2 3/8	10 25	4	1
2 7/16	10 50	4	1
2 1/2	10 75	4	1
2 9/16	11 00	4	1
2 5/8	11 50	4 1/2	1 1/4
2 11/16	12 00	4 1/2	1 1/4
2 3/4	12 50	4 1/2	1 1/4
2 13/16	13 00	4 1/2	1 1/4
2 7/8	13 50	4 1/2	1 1/4
2 15/16	14 00	4 1/2	1 1/4
3	14 50	4 1/2	1 1/4
3 1/16	15 00	4 1/2	1 1/4
3 1/8	15 50	4 1/2	1 1/4
3 3/16	16 00	4 1/2	1 1/4
3 1/4	16 50	4 3/4	1 1/2
3 5/16	17 00	4 3/4	1 1/2
3 3/8	17 50	4 3/4	1 1/2
3 7/16	18 00	4 3/4	1 1/2
3 1/2	18 50	4 3/4	1 1/2
3 9/16	19 00	4 3/4	1 1/2
3 5/8	$19 50	4 3/4	1 1/2
3 11/16	20 00	4 3/4	1 1/2
3 3/4	20 50	4 3/4	1 1/2
3 13/16	21 00	4 3/4	1 1/2
3 7/8	21 50	4 3/4	1 1/2
3 15/16	22 00	4 3/4	1 1/2
4	22 50	4 3/4	1 1/2
4 1/16	23 00	5	1 3/4
4 1/8	23 50	5	1 3/4
4 3/16	24 00	5	1 3/4
4 1/4	24 50	5	1 3/4
4 5/16	25 00	5	1 3/4
4 3/8	25 50	5	1 3/4
4 7/16	26 00	5	1 3/4
4 1/2	26 50	5	1 3/4
4 9/16	27 00	5	1 3/4
4 5/8	27 50	5	1 3/4
4 11/16	28 00	5	1 3/4
4 3/4	28 50	5	1 3/4
4 13/16	29 00	5	1 3/4
4 7/8	29 50	5	1 3/4
4 15/16	30 00	5	1 3/4
5	30 50	5	1 3/4

If for reaming brass, please so state.

*Morse Taper. Diameter of large end.

ADJUSTABLE SHELL REAMER

DESCRIPTION, FIG. 188

The cut shows the construction of the patent Adjustable Shell Reamer. The wedge shaped blades are held rigidly in slots by means of taper keys. The bottom of the slots is inclined to the axis of the reamer, and the size may be adjusted by first driving back the keys and turning the nut in the required direction. The keys should then be driven home to lock the blades. This style of Adjustable Shell Reamer is not made smaller than 1 3/8 inches, but can be made solid as small as 3/4 inch.

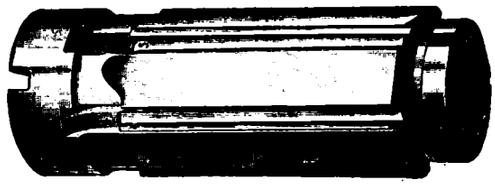


FIG. 188

Diameters, Inches.	PRICES Each.	Full Lengths, Inches.	Hole for Morse Taper.
1 3/8	$10 60	4 7/8	No. 2
1 7/16	11 05		
1 1/2	11 55		
1 9/16	12 05		
1 5/8	12 65		
1 11/16	13 20	5 7/16	No. 3
1 3/4	13 80		
1 13/16	14 65		
1 7/8	15 50		
1 15/16	16 40		
2	17 25	5 15/32	No. 3
2 1/16	17 55		
2 1/8	17 85		
2 3/16	18 15		
2 1/4	18 40		
2 5/16	$18 70	5 3/4	No. 4
2 3/8	19 00		
2 7/16	19 25		
2 1/2	19 55		
2 9/16	19 85		
2 5/8	20 10		
2 11/16	20 40		
2 3/4	20 70		
2 13/16	20 95		
2 7/8	21 25		
2 15/16	21 55		
3	21 85		
3 1/16	22 40		
3 1/8	23 00		
3 3/16	$23 55	5 3/4	No. 4
3 1/4	24 15		
3 5/16	24 70		
3 3/8	25 30	6 7/16	No. 5
3 7/16	25 85		
3 1/2	26 45		
3 9/16	27 00		
3 5/8	27 60		
3 11/16	28 15		
3 3/4	28 75		
3 13/16	29 60		
3 7/8	30 45		
3 15/16	31 30		
4	32 20		

EXPANDING SHELL REAMER

PRICES. FIG. 189

Diameters, Inches.	Each.	Full Lengths, Inches.	Hole for Morse Taper.
3/4	$6 00	5 7/16	No. 1
13/16	6 25		
7/8	6 50		
15/16	6 75		
1	7 00		
1 1/16	$7 2[illegible]	5 15/16	No. 2
1 1/8	7 60		
1 3/16	8 00		
1 1/4	8 40		
1 5/16	8 80		

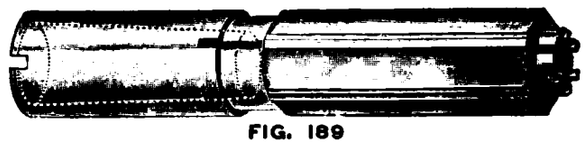


FIG. 189

These reamers are not made smaller than 3/4 inch. For sizes larger than 1 5/16 inches, see Fig. 190, p. 48.

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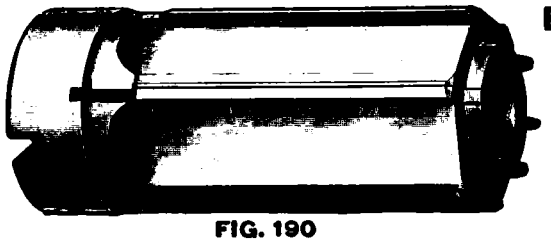


FIG. 190

EXPANDING SHELL REAMERS

DESCRIPTION, FIG. 190

This cut shows the construction of the Expanding Shell Reamer. Wedge shaped pins are adjusted to the blades and driving the pins increases the diameter of the reamer. When new blades or pins are required, the reamer should accompany the order. The reamers can be increased but not reduced in size. Special sizes of larger diameter than 4 inches furnished to order. For sizes smaller than 1⅜ inches, see Fig. 189, page 47.

PRICES

Diameters, Inches.	Each.	Full Length, Inches.	Hole for Morse Taper.
1⅜	$9 20	4 11/16	No. 2
1 7/16	9 60		
1½	10 00		
1 9/16	10 50		
1⅝	11 00		
1 11/16	11 50		
1¾	12 00		
1 13/16	12 75		No. 3
1⅞	13 50		
1 15/16	14 25	5 3/16	
2	15 00		
2 1/16	15 25		
2⅛	15 50		No. 3
2 3/16	15 75		
2¼	16 00		
2 5/16	16 25		
2⅜	16 50		
2 7/16	16 75		
2½	17 00	5 7/16	No. 4
2 9/16	17 25		
2⅝	17 50		
2 11/16	17 75		
2¾	$18 00	5 7/16	No. 4
2 13/16	18 25		
2⅞	18 50		
2 15/16	18 75		
3	19 00		
3 1/16	19 50		
3⅛	20 00		
3 3/16	20 50		
3¼	21 00		
3 5/16	21 50		
3⅜	22 00		
3 7/16	22 50		
3½	23 00		
3 9/16	23 50		
3⅝	24 00		
3 11/16	24 50	6	No. 5
3¾	25 00		
3 13/16	25 75		
3⅞	26 50		
3 15/16	27 25		
4	28 00		

These reamers are furnished with a straight hole if desired, and, if so ordered, size of hole should be given.

EXPANDING REAMERS

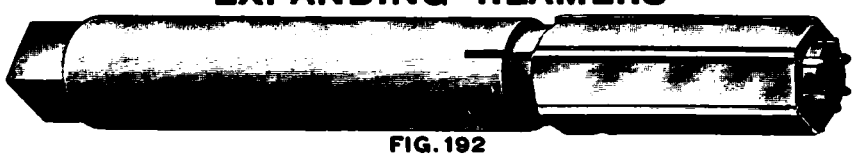


FIG. 192

Wedge shaped pins are adjusted to the blades and driving the pins increases the diameter of the reamer. When new blades or pins are required, the reamer should accompany the order. Expanding reamers are not furnished smaller than ¾ inch diameter.

PRICES

Diameters, Inches.	Each.	Full Length, Inches.
¾	$4 00	7⅝
13/16	4 40	8
⅞	4 70	8⅜
15/16	5 00	8¾
1	5 30	9¼
1 1/16	5 60	9⅝
1⅛	5 90	10
1 3/16	6 20	10⅜
1¼	6 50	10¾
1 5/16	6 80	11¼
1⅜	7 10	11⅝
1 7/16	$7 40	12
1½	7 80	12⅜
1 9/16	8 20	12¾
1⅝	8 50	13⅛
1 11/16	8 80	13½
1¾	9 10	14
1 13/16	9 40	14⅜
1⅞	9 60	14¾
1 15/16	9 80	15⅛
2	10 00	15½

EXPANSION REAMERS



FIG. 191

The guides to these reamers are ground .005 of an inch under size.

PRICES

Diameters, Inches.	Each.	Full Length, Inches.	Length of Flutes, Inches.
¼	$2 50	4	1½
9/32	2 50	4	1½
5/16	2 50	4	1½
11/32	2 75	5	1¾
⅜	2 75	5	1¾
13/32	2 75	5	1¾
7/16	2 75	5	1¾
15/32	3 25	6	2¼
½	3 25	6	2¼
17/32	3 25	6	2¼
9/16	3 25	6	2¼
19/32	3 75	7	2½
⅝	3 75	7	2½
21/32	3 75	7	2½
11/16	3 75	7	2½
23/32	3 75	7	2½

CRITCHLEY EXPANDING REAMER

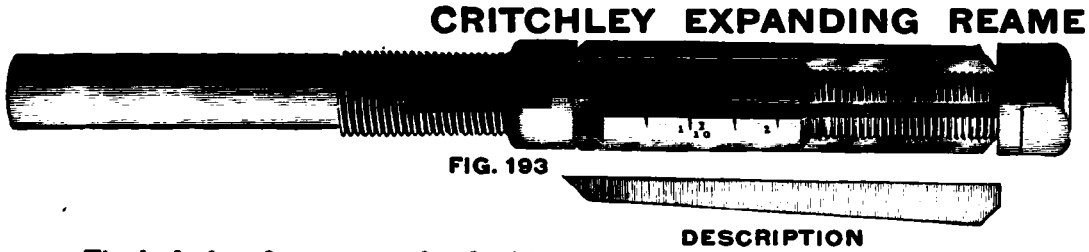


FIG. 193

For a repair shop, where there are so many different sized holes, it will prove indispensable in saving a great deal of time and vexation in making fits where the holes are a little small and no ready facilities for making them larger.

DESCRIPTION

The body has five grooves fitted with cutters; a screw thread is cut on the body of the tool, and a portion of it is left in the center to strengthen and prevent springing; the cutters are beveled at each end and confined in their places by nuts, so that it is only necessary to slacken them off and slide the cutters up or down in the tapered grooves to expand or contract their outside diameters, and thus adapt them to all kinds of work.

PRICES

Nos.	Diam. Expansion, Inches.	Length Cutter, Inches.	Full Length, In.	Each.
0	⅝ to ¾	2½	6½	$7 25
1	¾ " 27/32	2⅝	7	7 50
2	27/32 " 31/32	2¾	8	7 75
3	31/32 " 1⅛	3	9	8 25
4	1⅛ " 1 3/32	3¼	10	9 25
5	1 3/32 to 1 15/32	3¾	11	$10 50
6	1 15/32 " 1 11/16	4	12	12 00
7	1 11/16 " 1 15/16	4¼	14	13 75
8	1 15/16 " 2¼	4¾	16	16 00
9	2¼ to 2⅝	5¼	18	$18 50
10	2⅝ " 3 1/16	6¼	20	21 50
11	3 1/16 " 3 9/16	7	22	25 20
12	3 9/16 " 4⅛	7¾	24	29 00

WHOLE SET, $175.00

MANNING, MAXWELL & MOORE, 85, 87 AND 89 LIBERTY STREET, NEW YORK

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EXPANDING REAMERS

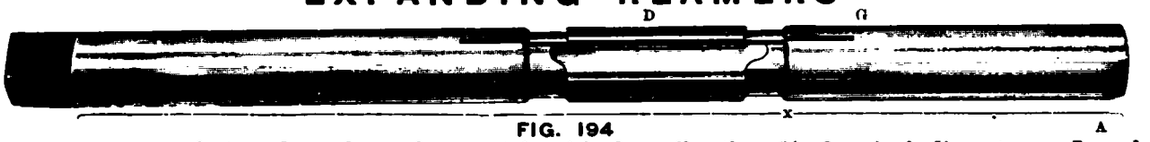


FIG. 194

These reamers are made to order only, and are not furnished smaller than ¾ of an inch diameter. In ordering state diameter at letters D and G, and the lengths as by letters A and B. Wedge shaped pins are adjusted to the blades of the reamer, and driving the pins increases its diameter.

ADJUSTABLE BLADE REAMERS

STRAIGHT SHANK



FIG. 195

TAPER SHANK



FIG. 196

DESCRIPTION

Where fixed gauges are systematically used with hardened steel mandrels, reamers with adjustable blades are necessary to finish holes. Solid reamers are of no practical use for accurate work after finishing a few holes. Aside from the advantage of adjusting to size, special attention is invited to the fact that the shanks are ground to serve as a limit gauge, so that holes below the standard size can not be made. The blades are of the finest steel, and are hardened with special care. They are fitted into dove tailed slots, the bottoms of which are inclined planes. By driving the blades toward the shank the cutting edges can be expanded to compensate for wear. The blades being interchangeable, they can be removed when worn to the limit of end adjustment, and new ones inserted. From four to eight blades are inserted in each reamer, and unevenly spaced.

PRICES

Diameters, Inches.	Each.	Total Lengths, Inches.	Diameters, Inches.	Each.	Total Lengths, Inches.
½	$3 30	6⅝	1 13/16	$11 06	13⅜
9/16	3 30	6⅝	1⅞	11 59	13⅜
⅝	3 30	6⅝	1 15/16	12 12	13⅜
11/16	3 30	6⅝	2	12 65	14⅛
¾	3 43	8⅛	2 1/16	13 18	14⅛
13/16	3 70	8⅛	2⅛	13 71	14⅛
⅞	4 09	8⅛	2 3/16	14 24	14⅛
15/16	4 48	8⅛	2¼	14 77	14⅝
1	4 87	9⅝	2 5/16	15 30	14⅝
1 1/16	5 26	9⅝	2⅜	15 83	14⅝
1⅛	5 65	9⅝	2 7/16	16 36	14⅝
1 3/16	6 04	9⅝	2½	16 89	14⅝
1¼	6 43	11⅛	2 9/16	17 42	15⅛
1 5/16	6 82	11⅛	2⅝	17 95	15⅛
1⅜	7 35	11⅛	2 11/16	18 48	15⅛
1 7/16	7 88	11⅛	2¾	19 01	15⅛
1½	8 41	12⅜	2 13/16	19 54	15⅛
1 9/16	8 94	12⅜	2⅞	20 07	15⅛
1⅝	9 47	12⅜	2 15/16	20 60	15⅛
1 11/16	10 00	12⅜	3	21 13	15⅛
1¾	10 53	13⅜			

Total cost of set of reamers, ½ inch to 2½ inches, inclusive, by 16ths.....$294 25

If tools are wanted for reaming brass, please so state.

PRICES

Diameters, Inches.	Each.	Total Lengths, Inches.	Morse Taper.
½	$3 65	8⅝	
9/16	3 65	8⅝	
⅝	3 70	8⅝	No. 1
11/16	3 70	8⅝	
¾	3 93	10⅜	
13/16	4 25	10⅜	
⅞	4 64	10⅜	
15/16	4 98	10⅜	
1	5 32	11¾	No. 2
1 1/16	5 66	11¾	
1⅛	6 15	11¾	
1 3/16	6 59	11¾	
1¼	7 03	13¾	
1 5/16	7 47	13¾	
1⅜	8 10	13¾	
1 7/16	8 68	13¾	
1½	9 31	14⅞	No. 3
1 9/16	9 89	14⅞	
1⅝	10 52	14⅞	
1 11/16	11 10	14⅞	
1¾	11 63	16¾	
1 13/16	12 16	16¾	
1⅞	12 69	16¾	
1 15/16	13 27	16¾	
2	13 85	17⅜	No. 4
2 1/16	14 38	17⅜	
2⅛	14 91	17⅜	
2 3/16	15 44	17⅜	
2¼	15 97	17⅜	
2 5/16	16 50	17⅜	
2⅜	17 03	17⅜	
2 7/16	17 66	17⅜	
2½	18 29	17⅜	
2 9/16	18 92	18	
2⅝	19 55	18	No. 5
2 11/16	20 13	18	
2¾	20 71	18	
2 13/16	21 34	18	
2⅞	21 92	18½	
2 15/16	22 50	18½	
3	23 08	18½	

If tools are wanted for reaming brass, please so state.

ADJUSTABLE REAMERS WITH STRAIGHT SHANKS

Adjustable Reamers are not furnished smaller than ¾ inch diameter.



FIG. 197

DESCRIPTION

The construction of the reamer is shown by the above cut. A ground tapered plug, acting upon the chasers, adjusts the reamer to the size desired. To operate the plug, the head nut should be loosened; the plug then turned until the size desired is obtained. The head nut should then be tightened. The reamer is well and accurately made, and will be found a serviceable tool, readily adjusted to compensate for wear, and meeting cases in which a limited variation in size is desired, or a definite size of hole maintained.

Diams., Inches.	Full Lengths, Inches.	Prices, Each.	Diams., Inches.	Full Lengths, Inches.	Prices, Each.	Diams., Inches.	Full Lengths, Inches.	Prices, Each.
¾	9	$4 60	1 3/16	10	$6 80	1⅝	12	$9 30
13/16	9	5 00	1¼	10	7 10	1 11/16	12	9 60
⅞	9	5 30	1 5/16	11	7 40	1¾	12	9 90
15/16	9	5 60	1⅜	11	7 80	1 13/16	13	10 20
1	9	5 90	1 7/16	11	8 20	1⅞	13	10 40
1 1/16	10	6 20	1½	11	8 60	1 15/16	13	10 60
1⅛	10	6 50	1 9/16	12	9 00	2	13	10 80

Reamers ¾ inch to 1 inch diameter will adjust .02 inch; and from 1 1/16 inches to 2 inches will adjust 1/32 inch.

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ADJUSTABLE REAMERS

WITH MORSE TAPER SHANKS



FIG. 198

PRICES

Diameters, Inches.	Each.	Full Length, Inches.	Nos. of Morse Taper.	Diameters, Inches.	Each.	Full Length, Inches.	Nos. of Morse Taper.
15/16	$6 60	9¾		1½	$10 00	12⅛	
1	7 00	10¼		1 9/16	10 30	12⅛	No. 4
1 1/16	7 40	10¼	No. 3	1⅝	10 60	12⅝	
1⅛	7 80	10⅝		1 11/16	10 90	12⅝	
1 3/16	8 20	10⅝		1¾	11 20	13½	
1¼	8 60	11⅛		1 13/16	11 60	13⅝	
1 5/16	9 00	11¼	No. 4	1⅞	12 00	14⅛	No. 5
1⅜	9 40	11⅝		1 15/16	12 40	14⅛	
1 7/16	9 70	11⅝		2	12 80	14⅛	

TAPER BRIDGE REAMERS.



FIG. 199

PRICES

Diameters, Inches.	Each.	Length of Flutes, Inches.	Length of End Tapered, Inches.	Full Length, Inches.
9/16 — 15/32 — 5/16	$2 80	7	2	9½
5/8 — 17/32 — 3/8	2 90	7	2	9½
11/16 — 19/32 — 7/16	3 00	7	2	9½
3/4 — 21/32 — 1/2	3 10	7	2	9½
13/16 — 23/32 — 9/16	3 30	7	2	9½
7/8 — 25/32 — 5/8	3 50	7	2	9½
15/16 — 27/32 — 11/16	3 70	7	2	9½
1 — 29/32 — 3/4	3 90	7	2	9½
1 1/16 — 31/32 — 13/16	4 00	7	2	9½

Special sizes made to order.

TAPER PIN REAMERS

TAPER 1/4 INCH PER FOOT



FIG. 202

PRICES

Sizes, Nos.	Each.	Diameters, at Small Ends, Inches.	Length of Flutes, Inches.	Total Length, Inches.
0	$1 00	0.135	1½	2¼
1	1 00	0.146	1¾	2½
2	1 25	0.162	2	3
3	1 50	0.183	2¼	3½
4	1 75	0.208	2½	4
5	2 00	0.240	3	4½
6	2 25	0.279	3⅝	5
7	2 50	0.331	4½	6
8	3 00	0.398	5¼	6¾
9	3 50	0.482	6⅛	8
10	4 00	0.581	7	9
11	4 75	0.706	8¼	11¼
12	5 50	0.842	10	13⅜
13	6 50	1.009	12	16

These reamers have the same taper, and each will overlay in convenient measure the size next smaller. Special sizes made to order. The diameter of the small end is taken ¼ inch from the extreme end of the reamers.

STANDARD TAPER REAMERS

FOR LOCOMOTIVE WORK

The following list embraces reamers tapering 3/32 inch per foot.

PRICES, FIG. 200

Diameter ½ inch from Small end, Inches.	Each.	Length Flutes, Inches.	Total Length, Inches.
¼	$2 20	4	5 5/16
9/32	2 20	4	5 5/16
5/16	2 25	4	5 5/16
11/32	2 25	4	5 5/16
⅜	2 30	5	6 5/16
13/32	2 40	5	6 5/16
7/16	2 55	6	7 5/16
15/32	2 70	6	7 5/16
½	3 00	7	8⅝
9/16	3 20	8	9⅞
5/8	3 50	8	9⅞
11/16	3 80	8	9⅞
¾	4 10	8	9⅞
13/16	4 50	9	11¼
⅞	4 80	9	11¼
15/16	5 10	9	11¼
1	5 40	9	11¼
1 1/16	5 70	9	11¼
1⅛	6 20	10	12¼
1 3/16	6 60	10	12¼
1¼	7 00	10	12¼
1 5/16	7 60	12	14½
1⅜	8 00	12	14½
1 7/16	8 50	12	14½
1½	9 00	12	14½
1 9/16	9 75	12	14½
1⅝	10 50	14	16½
1 11/16	11 25	14	16½
1¾	12 00	14	16½



FIG. 200

Reamers of other taper per foot than as specified above furnished as desired. These reamers have an increased taper at the end ½ inch in length.

MORSE TAPER REAMERS

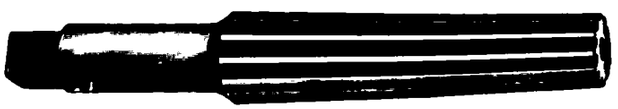


FIG. 201

PRICES

Nos.....	0	1	2	3	4	5	6
Each....	$1 60	$2 00	$2 60	$3 40	$4 20	$6 60	$12 00

Morse Taper Reamers, larger than No. 1, can be made with oil holes, as illustrated in Three Groove Chucking Reamers, Figs. 163 and 164, page 40.

DIMENSIONS OF MORSE TAPER REAMERS

Taper Nos.	Full Length, Inches.	Length of Flute, Inches.	Taper.
0	3¾	2¼	.375 by .258
1	5½	3	.517 " .369
2	7	3½	.7455 " .572
3	8	4¼	.989 " .778
4	9	5¼	1.290 " 1.020
5	10	6¼	1.801 " 1.475
6	12	8½	2.557 " 2.116
7	16	12	3.373 " 2.750

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TAPER ROUGHING AND FINISHING REAMERS

ROUGHING REAMER



FIG. 205

FINISHING REAMER

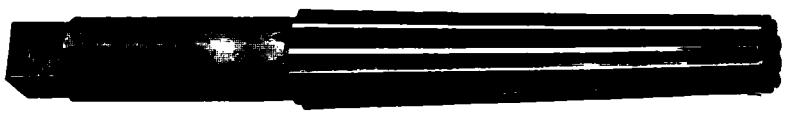


FIG. 206

These reamers are usually required of special dimensions. Prices furnished on application.

TAPER REAMERS

With shanks ½ and 41/64 inch diameters.



FIG. 207

PRICES

Sizes	¼	5/16	⅜	7/16	½	9/16	⅝	11/16
Each	$0 45	$0 50	$0 55	$0 60	$0 70	$0 80	$0 90	$1 05
Sizes	¾	13/16	⅞	15/16	1	1⅛	1¼	
Each	$1 20	$1 40	$1 60	$1 80	$2 00	$2 25	$2 60	

In ordering, specify size shank wanted.

BIT STOCK TAPER REAMERS

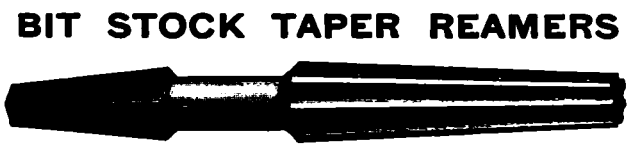


FIG. 208

Taper 1 inch to the foot. Diameter at large end of flutes is 1/16 larger than nominal size.

PRICES

Nominal Sizes, Inches.	Each.	Length Flutes, Inches.	Total Lengths, Inches.	Nominal Sizes, Inches.	Each.	Length Flutes, Inches.	Total Lengths, Inches.
¼	$0 45	1¾	3⅞	9/16	$0 80	2⅜	4½
5/16	50	1⅞	4	⅝	90	2½	4⅝
⅜	55	2	4⅛	11/16	1 05	2⅝	4¾
7/16	60	2⅛	4¼	¾	1 20	2¾	4⅞
½	70	2¼	4⅜				

These reamers are furnished with straight round shanks 2 inches long, ½ inch diameter, if so ordered.

COUNTERBORES AND COUNTERSINKS

FOR STANDARD MACHINE SCREW HEADS

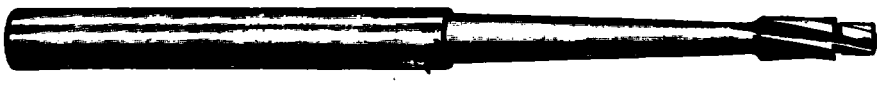


FIG. 210

The above are made with taper or straight shanks, and to order only. When ordering, state whether for taper or straight shank, and furnish the diameter of the head of the screw, and whether for filister, round or flat head, and give the diameter of the guide.

Countersinks for flat heads are made with included angle of eighty-two degrees (82°), and without guide, and each will apply to several sizes of heads. Will be furnished with guides if so ordered.

The included angle for wood screws, machine screws and stove bolts is 82 degrees; tire bolts, 54 degrees; and sleigh shoe bolts, 23 degrees.

SPIRAL FLUTED TAPER REAMERS

Taper ½ inch to foot.



FIG. 203

Taper ⅝ inch to foot.

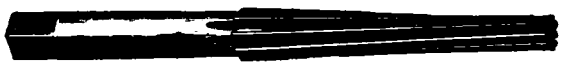


FIG. 204

We offer two tapers in these reamers—½ inch and ⅝ inch—as being useful for a variety of purposes.

These tools will be found very accurately ground to gauge, and being fluted spirally (left hand), they can be depended upon to make smooth, even cuts, and not draw themselves into the work.

PRICES, FIGS. 203 AND 204

Sizes.	Each.	Full Length, Inches.	Length of Flute, Inches.
¼	$0 80	4¼	2½
5/16	85	4½	2⅝
⅜	95	4¾	2¾
7/16	1 10	5	2⅞
½	1 25	5¼	3
9/16	1 40	5½	3⅛
⅝	1 60	5¾	3¼
11/16	1 85	6	3⅜
¾	2 10	6¼	3½
13/16	2 45	6½	3⅝
⅞	2 80	6¾	3¾
15/16	3 15	7	3⅞
1	3 50	7¼	4
1 1/16	3 85	7½	4⅛
1⅛	4 20	7¾	4¼
1 3/16	4 55	8	4⅜
1¼	4 90	8¼	4½

In ordering these be sure to state which taper is wanted.

TAPER SHANK COUNTERBORES

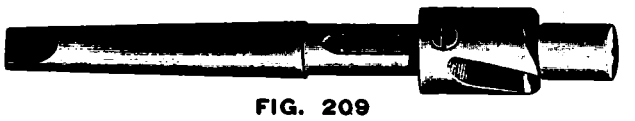


FIG. 209

The counterbores are furnished to the diameters of the heads of the cap screws in use, and the guide bushings to the diameters of the body size of the screws corresponding.

PRICES, FIG. 209, COMPLETE

Diameters Centerbore, Inches.	Diameters Guides, Inches.	Shank for Morse Taper, Nos.	Each.	Full Length, Inches.
⅜	¼	1	$1 40	4 9/16
7/16	5/16	1	1 40	4 9/16
½	⅜	1	1 40	4 13/16
9/16	⅜	1	1 40	4 13/16
⅝	7/16	1	1 40	4 13/16
11/16	7/16	1	1 50	5 3/16
¾	½	1	1 50	5 3/16
13/16	½	1	1 50	5 3/16
⅞	9/16	2	1 80	6 1/16
15/16	⅝	2	1 80	6 1/16
1	¾	2	1 80	6 1/16
1 1/16	¾	2	1 80	6 5/16
1⅛	13/16	2	2 00	6 5/16
1 3/16	13/16	2	2 00	6 5/16
1¼	⅞	2	2 00	6 5/16
1 5/16	⅞	3	2 20	7 1/16
1⅜	15/16	3	2 40	7 1/16
1 7/16	15/16	3	2 60	7 1/16
1½	1	3	2 80	7 1/16

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COUNTERBORES

TAPER SHANK



FIG. 211

STRAIGHT SHANK

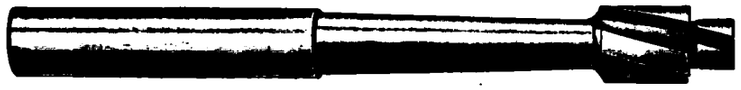


FIG. 212

DESCRIPTION, FIGS. 211 AND 212

These Counterbores are carried in stock of sizes given in the table below, with taper and straight shanks, and are furnished either singly or in sets consisting of one counterbore for head of screw with guide of body size, one counterbore for head with guide of tap drill size, and one counterbore to enlarge a tap drill hole to body size. Counterbores of other sizes are made to order.

PRICES, FIGS. 211 AND 212

Diameter of Screw and Pitch, U. S. Standard.		Diameter of Counterbore, Inch. For Head of Screw.	For Body of Screw.	Diameter of Guide, Inches. For Body Size Hole.	For Tap Drill Hole.	Length over all, Inches.	Morse Taper, No.	Straight Shank. Length, Inches.	Diameter, Inches.	Prices.
¼	20	⅜	....	¼	....	5¾	1	2 9/16	½	$1 50
¼	20	⅜	....	....	.1865	5¾	1	2 9/16	½	1 50
¼	20	....	¼	....	.1865	5¾	1	2 9/16	½	1 50
5/16	18	7/16	....	5/16	....	6⅛	1	2 9/16	½	1 50
5/16	18	7/16	....	....	.241	6⅛	1	2 9/16	½	1 50
5/16	18	....	5/16	....	.241	6⅛	1	2 9/16	½	1 50
⅜	16	9/16	....	⅜	....	6½	1	2 9/16	½	1 50
⅜	16	9/16	....	....	.301	6½	1	2 9/16	½	1 50
⅜	16	....	⅜	....	.301	6½	1	2 9/16	½	1 50
7/16	14	⅝	....	7/16	....	7	2	3 1/16	1 1/16	1 60
7/16	14	⅝	....	....	.347	7	2	3 1/16	1 1/16	1 60
7/16	14	....	7/16	....	.347	7	2	3 1/16	1 1/16	1 60
½	13	¾	....	½	....	7¼	2	3 1/16	1 1/16	1 60
½	13	¾	....	....	.4057	7¼	2	3 1/16	1 1/16	1 60
½	13	....	½	....	.4057	7¼	2	3 1/16	1 1/16	1 60
9/16	12	13/16	....	9/16	....	7½	2	3 1/16	1 1/16	1 75
9/16	12	13/16	....	....	.452	7½	2	3 1/16	1 1/16	1 75
9/16	12	....	9/16	....	.452	7½	2	3 1/16	1 1/16	1 75
⅝	11	⅞	....	⅝	....	7¾	2	3 1/16	1 1/16	2 00
⅝	11	⅞	....	....	.5146	7¾	2	3 1/16	1 1/16	2 00
⅝	11	....	⅝	....	.5146	7¾	2	3 1/16	1 1/16	$2 00
11/16	11	15/16	....	11/16	....	8½	3	3¾	1 5/16	2 10
11/16	11	15/16	....	....	.5771	8½	3	3¾	1 5/16	2 10
11/16	11	....	11/16	....	.5771	8½	3	3¾	1 5/16	2 10
¾	10	1	....	¾	....	9	3	3¾	1 5/16	2 20
¾	10	1	....	....	.624	9	3	3¾	1 5/16	2 20
¾	10	....	¾	....	.624	9	3	3¾	1 5/16	2 20
13/16	10	1 1/16	....	13/16	....	9	3	3¾	1	2 30
13/16	10	1 1/16	....	....	.6865	9	3	3¾	1	2 30
13/16	10	....	13/16	....	.6865	9	3	3¾	1	2 30
⅞	9	1 1/8	....	⅞	....	9¼	3	3¾	1	2 40
⅞	9	1 1/8	....	....	.7333	9¼	3	3¾	1	2 40
⅞	9	....	⅞	....	.7333	9¼	3	3¾	1	2 40
15/16	9	1 3/16	....	15/16	....	9¼	3	3¾	1	2 40
15/16	9	1 3/16	....	....	.7958	9¼	3	3¾	1	2 40
15/16	9	....	15/16	....	.7958	9¼	3	3¾	1	2 40
1	8	1¼	....	1	....	9½	3	3¾	1	2 60
1	8	1¼	....	....	.8427	9½	3	3¾	1	2 60
1	8	....	1	....	.8427	9½	3	3¾	1	2 60

See page 28 for sizes of tap drills for above screws.

SOLID AND ADJUSTABLE COUNTERBORES AND DRILLS FOR WOOD



FIG. 213

When ordering give diameter and length of large and small parts.

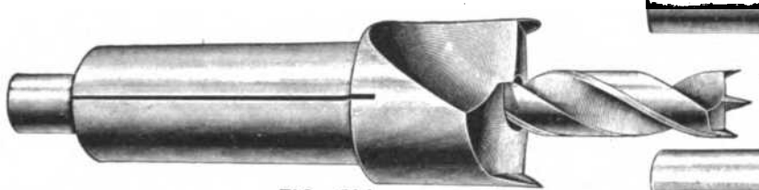


FIG. 214

When ordering give diameter and length of drill, as well as diameter and length of both body and cutting parts of counterbore.

PRICES, FIGS. 213 TO 215 GIVEN ON APPLICATION

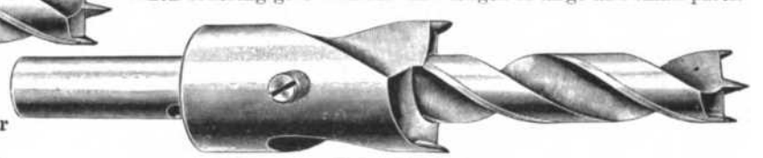


FIG. 215

When ordering give diameter and length of drill, as well as diameter and length of counterbore.

COMMON SENSE COUNTERBORE OR FACING BAR

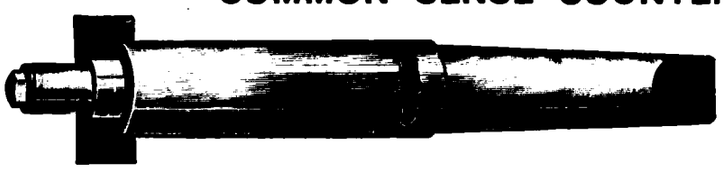


FIG. 216

Every machine shop should have one or more of these Common Sense Counterbore or Facing Bars. The tool complete consists of four pieces: The socket or driver having a notch milled on the end to receive and drive the cutter; the cutter holder, a taper steel plug fitting any drill socket or drill press of modern make; the cutter or blade; and a bushing to fit the various holes of standard sizes. The blade is held central in the holder by means of a small conical pointed set screw, shown in cut. The duty which this screw performs is to center the cutter, to keep it from falling out of the holder and to retain the bushing in place.

All of the driving is done by the socket or driver, as the cutter fits nicely into the notch or groove cut in the end of the driver for that purpose. This method of driving insures ample strength, as the taper shank of the driver is one size larger than that of the cutter holder.

PRICES, FIG. 216

Driver and Holder complete, with one Blade and four Bushings. Size.	Each.	Holder, with one Blade and four Bushings. Size.	Length Blade.	Each.	Driver only. Size.	Each.
1	$6 30	1	1 inch.	$4 30	1	$2 00
2	7 50	2	1¼ "	5 00	2	2 50
3	8 80	3	1½ "	5 60	3	3 20
4	11 80	4	2 "	7 00	4	4 80

We can furnish bushings for No. 1 cutter holder from ⅜ to ⅝ inclusive; for No. 2 holder, ⅝ to 13/16 inclusive; for No. 3 holder, 13/16 to 1 inch inclusive; for No. 4 holder, 1 to 1½ inch inclusive, and blades of any reasonable length.

CUTTER HOLDER

PRICES, FIG. 217

Extra blades up to 1 inch length, 35c.; from 1 to 1½ inch, 40c.; from 1½ to 2 inches, 50c. each. Holders same price as Fig. 216.

When ordering always give diameter of guide A, and length of blade wanted, and state if you want holder or driver, or the two complete.

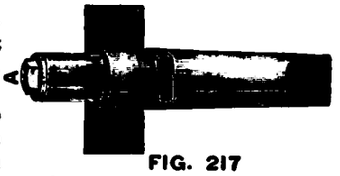


FIG. 217

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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HARDENED AND GROUND STEEL MANDRELS

The mandrels are tapered .010 of an inch in 12 inches, and correspond in size to reamers, and will fit holes reamed by them.

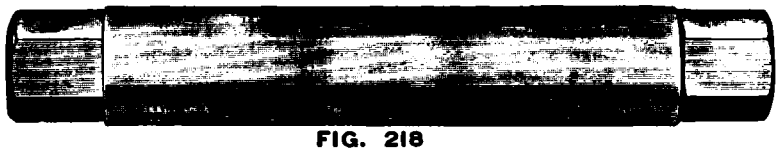


FIG. 218

Diams., Inches.	PRICES Each.	Lengths, Inches.	Diams., Inches.	PRICES Each.	Lengths, Inches.	Diams., Inches.	PRICES Each.	Lengths, Inches.	Diams., Inches.	PRICES Each.	Lengths, Inches.	Diams., Inches.	PRICES Each.	Lengths, Inches.
1/4	$0 65	3¾	1 1/16	$2 10	7¼	1 13/16	$4 10	10¼	2 9/16	$8 90	12½	3 5/16	$14 40	15
5/16	75	4	1 1/8	2 20	7½	1 7/8	4 35	10½	2 5/8	9 40	12½	3 3/8	14 70	15
3/8	85	4¼	1 3/16	2 30	7¾	1 15/16	4 60	10¾	2 11/16	9 90	13	3 7/16	15 00	15
7/16	95	4½	1¼	2 45	8	2	4 80	11	2¾	10 50	13	3½	15 30	15
½	1 05	5	1 5/16	2 60	8¼	2 1/16	5 15	11½	2 13/16	11 00	13	3 9/16	15 60	16
9/16	1 15	5¼	1⅜	2 75	8½	2⅛	5 60	11½	2⅞	11 50	13	3⅝	15 90	16
5/8	1 25	5½	1 7/16	2 90	8¾	2 3/16	6 00	12	2 15/16	12 00	13	3 11/16	16 20	16
11/16	1 35	5¾	1½	3 10	9	2¼	6 50	12	3	12 50	13	3¾	16 50	16
¾	1 45	6	1 9/16	3 30	9¼	2 5/16	6 90	12	3 1/16	13 00	14	3 13/16	16 80	17
13/16	1 55	6¼	1⅝	3 50	9½	2⅜	7 40	12	3⅛	13 40	14	3⅞	17 20	17
⅞	1 70	6½	1 11/16	3 70	9¾	2 7/16	7 90	12½	3 3/16	13 80	14	3 15/16	17 60	17
15/16	1 85	6¾	1¾	3 90	10	2½	8 40	12½	3¼	14 10	14	4	18 00	17
1	2 00	7												

TAPER MANDRELS WITH EXPANDING SLEEVES

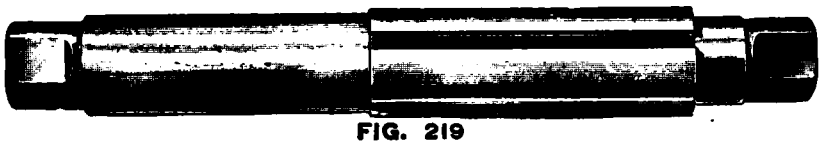


FIG. 219

Diameters Sleeves, Inches.	PRICES Each.	Lengths, Inches.	Taper Mandrels, Nos.	PRICES Each.	Lengths, Inches.	Diameters Sleeves, Inches.	PRICES Each.	Lengths, Inches.	Taper Mandrels, Nos.	PRICES Each.	Lengths, Inches.
½	$0 95	1½	4	$1 85	5	1 25/32	$3 90	3½	22	$6 50	10½
17/32	95	1½	4	1 85	5	1 13/16	4 00	3½	22	6 50	10½
9/16	1 05	1⅝	6	2 00	5¼	1 27/32	4 00	3½	22	6 50	10½
19/32	1 05	1⅝	6	2 00	5¼	1⅞	4 10	3½	22	6 50	10½
5/8	1 15	1¾	8	2 15	5½	1 29/32	4 10	3½	22	6 50	10½
21/32	1 15	1¾	8	2 15	5½	1 15/16	4 40	3¾	24	7 75	11½
11/16	1 25	1⅞	10	2 30	5¾	1 31/32	4 40	3¾	24	7 75	11½
23/32	1 25	1⅞	10	2 30	5¾	2	4 50	3¾	24	7 75	11½
¾	1 35	2	12	2 50	6	2 1/32	4 50	3¾	24	7 75	11½
25/32	1 35	2	12	2 50	6	2 1/16	4 60	3¾	24	7 75	11½
13/16	1 45	2⅛	14	2 70	6½	2 3/32	4 60	3⅞	24	7 75	11½
27/32	1 45	2⅛	14	2 70	6½	2⅛	4 70	3⅞	24	7 75	11½
⅞	1 55	2¼	14	2 70	6½	2 5/32	4 70	3⅞	24	7 75	11½
29/32	1 55	2¼	14	2 70	6½	2 3/16	4 80	3⅞	24	7 75	11½
15/16	1 80	2⅜	16	3 00	7½	2 7/32	4 80	3⅞	24	7 75	11½
31/32	1 80	2⅜	16	3 00	7½	2¼	5 10	4	26	9 00	12½
1	1 95	2⅜	16	3 00	7½	2 9/32	5 10	4	26	9 00	12½
1 1/32	1 95	2½	16	3 00	7½	2 5/16	5 20	4	26	9 00	12½
1 1/16	2 10	2½	16	3 00	7½	2 11/32	5 20	4	26	9 00	12½
1 3/32	2 10	2½	16	3 00	7½	2⅜	5 30	4	26	9 00	12½
1⅛	2 40	2⅝	18	4 15	8½	2 13/32	5 30	4¼	26	9 00	12½
1 5/32	2 40	2⅝	18	4 15	8½	2 7/16	5 40	4¼	26	9 00	12½
1 3/16	2 50	2⅝	18	4 15	8½	2 15/32	5 40	4¼	26	9 00	12½
1 7/32	2 50	2⅝	18	4 15	8½	2½	5 50	4¼	26	9 00	12½
1¼	2 60	2¾	18	4 15	8½	2 17/32	5 50	4¼	26	9 00	12½
1 9/32	2 60	2¾	18	4 15	8½	2 9/16	5 90	4½	28	12 10	13½
1 5/16	2 70	2¾	18	4 15	8½	2 19/32	5 90	4½	28	12 10	13½
1 11/32	2 70	2¾	18	4 15	8½	2⅝	6 00	4½	28	12 10	13½
1⅜	3 10	3	20	5 30	9½	2 21/32	6 00	4½	28	12 10	13½
1 13/32	3 10	3	20	5 30	9½	2 11/16	6 10	4½	28	12 10	13½
1 7/16	3 20	3	20	5 30	9½	2 23/32	6 10	4½	28	12 10	13½
1 15/32	3 20	3	20	5 30	9½	2¾	6 20	4¾	28	12 10	13½
1½	3 30	3¼	20	5 30	9½	2 25/32	6 20	4¾	28	12 10	13½
1 17/32	3 30	3¼	20	5 30	9½	2 13/16	6 30	4¾	28	12 10	13½
1 9/16	3 40	3¼	20	5 30	9½	2 27/32	6 30	4¾	28	12 10	13½
1 19/32	3 40	3¼	20	5 30	9½	2⅞	6 40	4¾	28	12 10	13½
1⅝	3 70	3⅜	22	6 50	10½	2 29/32	6 40	4¾	28	12 10	13½
1 21/32	3 70	3⅜	22	6 50	10½	2 15/16	6 80	5	30	15 50	14½
1 11/16	3 80	3⅜	22	6 50	10½	2 31/32	6 80	5	30	15 50	14½
1 23/32	3 80	3⅜	22	6 50	10½	3	6 90	5	30	15 50	14½
1¾	3 90	3⅜	22	6 50	10½	3 1/32	6 90	5	30	15 50	14½

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STEEL SOCKETS

FOR TAPER SHANK DRILLS



FIG. 220

Nos.	Holds, Inches.	Entire Length, Inches.	Diameter of Blank End, Inches.	Each.
1	¼ to 19/32 inclusive.	7	1⅛	$1 20
2	⅝ " 29/32 "	8	1¼	1 80
3	15/16 " 1¼ "	10	1½	2 50
4	19/32 " 2 "	13	2	4 00
5	2 1/16 " 3 "	15	2½	7 50
6	3 1/16 " 4 "	18	3	14 00

STEEL SOCKETS

FOR MORSE TAPER SHANK DRILLS



FIG. 222

Nos.		Each.
1	With Shank fitted to No. 2 Socket	$2 00
1	" " " " " 3 "	2 00
2	" " " " " 3 "	2 50
2	" " " " " 4 "	3 20
3	" " " " " 4 "	3 20
4	" " " " " 5 "	4 80
5	" " " " " 6 "	12 00

MORSE TAPER SOCKETS

FOR OIL DRILLS



FIG. 224

Nos.	Holds, Inches.	Entire Length, Inches.	Diameter of Blank End, Inches.	Each.
1	¼ to 19/32 inclusive,	7	1⅛	$ 4 00
2	⅝ " 29/32 "	8	1¼	5 00
3	15/16 " 1¼ "	10	1½	6 50
4	19/32 " 2 "	13	2	9 25
5	2 1/16 " 3 "	15	2½	10 25

PRICES MILLIMETER SIZES, FIG. 224

Nos.	Holds, Millimeters.	Entire Length, Millimeters.	Diameter of Blank End, Millimeters.	Each.
1	3 to 15 inclusive.	178	28½	$4 00
2	15½ " 23 "	203	32	5 00
3	23½ " 32 "	254	38	6 50
4	32½ " 50½ "	330	50½	9 25
5	51 " 76½ "	381	63½	10 25

LATHE SOCKETS



FIG. 221

Nos.	Holds, Inches.	Each.
1	¼ to 19/32 inclusive.	$1 20
2	39/64 " 29/32 "	1 80
3	59/64 " 1¼ "	2 50
4	1 17/64 " 2 "	4 00
5	2 1/16 " 3 "	7 50

PRICES MILLIMETER SIZES, FIG. 220

Nos.	Holds, Millimeters.	Entire Length, Millimeters.	Diameter of Blank End, Millimeters.	Each.
1	3 to 15 inclusive,	178	28½	$1 20
2	15½ " 23 "	203	32	1 80
3	23½ " 32 "	254	38	2 50
4	32½ " 50½ "	330	50½	4 00
5	51 " 76½ "	381	63½	7 50
6	77 " 101 "	457	76	14 00

STEEL SLEEVES

FOR MORSE TAPER SHANK DRILLS



FIG. 223

Nos.		Each.
1	Fitted to No. 2 Socket	$1 80
1	" " " 3 "	1 80
1	" " " 4 "	3 00
2	" " " 3 "	2 40
2	" " " 4 "	3 00
3	" " " 4 "	3 00
4	" " " 5 "	4 40

MORSE TAPER SOCKETS

FOR OIL DRILLS

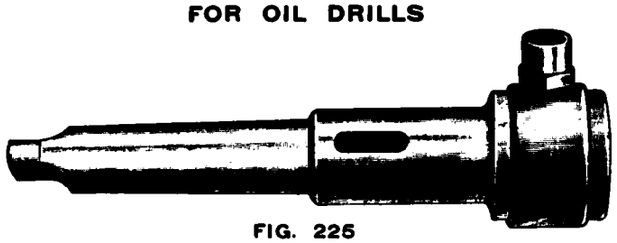


FIG. 225

Nos.		Each.
1	With Shank fitted to No. 2 Socket	$4 50
1	" " " " " 3 "	4 50
2	" " " " " 3 "	5 50
2	" " " " " 4 "	6 75
3	" " " " " 4 "	7 00
4	" " " " " 5 "	10 00

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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ANDREW'S PATENT DRILL SOCKETS

The accompanying cuts represent the style of socket and shank of drill used in this socket. The drills are held in place by the key in the socket. As the groove extends the entire length of the shank, there is no difficulty in placing the shank in the proper position.

There are obvious advantages to be gained by the use of this style of socket.

We can furnish Drills, Fig. 227, or other tools to fit.

Prices and further particulars furnished on application.

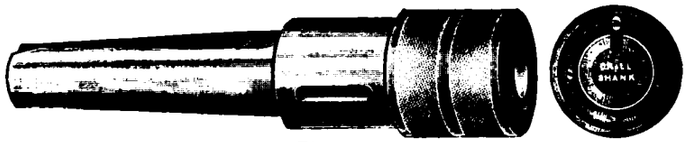


FIG. 226

DRILLS, WITH GROOVED SHANKS TO FIT ANDREW'S SOCKETS



FIG. 227

PRICES, FIG. 226

SOCKETS FOR TAPER SHANK DRILLS
WITH UNFINISHED SHANKS

Nos.	Holds.	Each.
1	¼ to 19/32 inch, inclusive	$5 00
2	39/64 to 29/32, inch, "	6 50
3	59/64 to 1¼ inches, "	9 00
4	1 9/32 to 2 inches, "	12 00
5	2 1/32 to 3 inches, "	15 00

Same style as Fig. 220, page 54, except hole is fitted for grip as shown.

SOCKETS FOR STRAIGHT SHANK DRILLS
WITH UNFINISHED SHANKS

Nos.	Holds.	Each.
1	¼ to 19/32 inch, inclusive	$4 50
2	39/64 to 29/32 inch, "	5 50
3	59/64 to 1¼ inches, "	7 50
4	1 9/32 to 2 inches, "	10 00
5	2 1/32 to 3½ inches, "	12 50

SOCKETS FOR TAPER SHANK DRILLS
WITH FINISHED SHANKS

Nos.	Holds.	Each.
1	With shank fitted to No. 2 Socket	$5 80
1	" " No. 3 "	5 80
2	" " No. 3 "	7 20
2	" " No. 4 "	8 60
3	" " No. 4 "	9 70
4	" " No. 5 "	12 80
5	" " No. 6 "	19 50

SLEEVES FOR STRAIGHT SHANK DRILLS

Nos.		Each.
1	Fitted to No. 3 Socket	$3 00
2	" No. 4 "	4 00
3	" No. 4 "	5 00
3	" No. 5 "	6 00
4	" No. 5 "	6 00

COOK GRIP SOCKET

DESCRIPTION, FIG. 228

This Grip Socket not only prevents breaking of the tangs but saves the drills, and will hold and drive tangless drills as securely as new ones. It applies the driving power to the drill at its heaviest and most rigid part, and at a point close down to the work. It can be fitted to any drill press spindle.

Drills can be fitted to the Cook Grip Socket in a few minutes, the only tool necessary being an ordinary hand file.

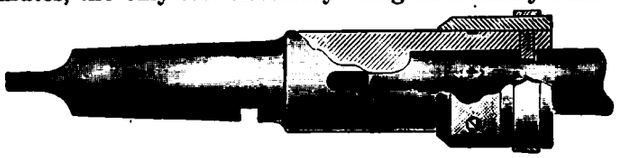


FIG. 228



GRIP SOCKET OPEN

DIRECTIONS FOR OPERATING GRIP SOCKET



GRIP SOCKET CLOSED

To operate the grip socket, turn the sleeve to the left, which raises the latch; insert the drill, with the notch opposite the screw in sleeve; reverse to the right, which forces the latch into the slot, holding the drill securely. To release the drill, reverse the operation, as the drill cannot be driven out until the sleeve is turned to the left, which raises the latch.

IS MADE IN THREE FORMS

With shanks of Nos. 2, 3 and 4 Morse taper taking Nos. 1, 2, and 3 Morse taper shank drills.

With rough, straight, unfitted shanks taking Nos. 1, 2, and 3 Morse taper shank drills.

With one-half inch straight, fitted shanks, taking one-half straight shank or blacksmiths' drills.

DIRECTIONS FOR FITTING DRILLS TO GRIP SOCKET

Loosen screw in sleeve and turn the latter until the notch in it registers with punch mark in bottom of socket. The sleeve can then be slipped up. Remove the latch. Set the drill firmly into its socket and scribe it, using transverse slot in socket as a templet. Remove drill and place it in vise, then fit carefully cutting notch in shank of drills as indicated by scriber. The lower edge of the notch should be one-sixteenth inch below the transverse slot in the body of the chuck, in order to allow the perfect fitting of the taper, and only deep enough to allow the seating of the latch.

GRIP SOCKET WITH HALF-INCH STRAIGHT SHANK
FOR USE IN BLACKSMITHS' DRILL PRESSES AND WOOD BORING MACHINES

These grip sockets will allow the quick changing of drills without the use of set screws or wrenches, saving time and preventing the mutilation of the drill shanks by frequent tightening and loosening of the set screws.

No. 0, for taking one-half inch straight shank drill....$5 00

GRIP SOCKET FOR TAPER SHANK DRILLS

		Finished Shank.	Rough Shank.
No. 1, holding drills,	⅛ in. to 19/32 in. each..	$5 00	$4 50
" 2, " "	⅝ " 29/32 " ..	6 00	5 50
" 3, " "	15/16 " 1¼ " ..	7 50	7 00

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IMPROVED GRIP SOCKET

A PERFECT DEVICE FOR DRIVING TAPER SHANK DRILLS

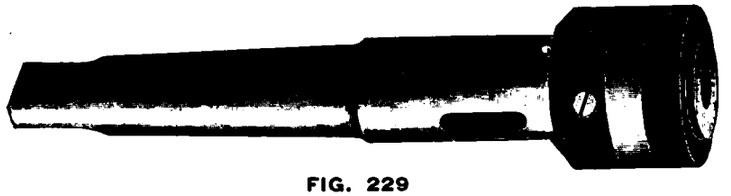


FIG. 229

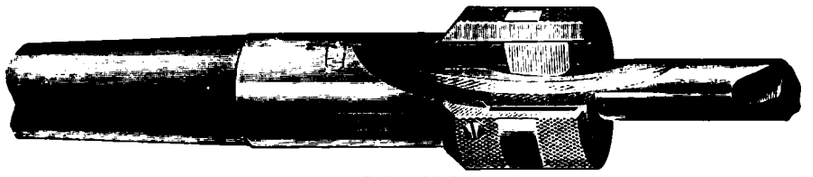


FIG. 229

Section cut away to show grip of key on the shank.

DESCRIPTION, FIG. 229

This grip socket is designed to hold and drive taper shank drills and other tools. A groove, which is an arc of a true circle, is milled in the shank of the drill or tool—as shown in illustration; a key let into the body of the socket fits into the groove, and is locked securely in place by a turn of the revolving internally eccentrically counterbored collar.

After the key is locked, it is impossible for the tool to slip in the socket or to be pulled out until the collar is turned back again to release the key. The end of the collar is beveled, and a plain index mark on it and on the body of the socket shows when the key is released.

To insert the drill, turn the collar till the two marks coincide, slip the shank into the socket with the keyway in the shank exactly under the index marks, and turn the collar to the right or left till it bears solidly on the key. Drills or tools that have had the tangs on the shanks twisted off can be used in these grip sockets successfully. Boring bars for under cutting can be used without any danger of their pulling out of the sockets.

We furnish cutters for milling the grooves in the shanks. Printed instructions for correctly cutting such grooves on application.

STYLE A SOCKETS WITH ROUGH SHANKS

Sizes Hole.	Prices.
No. 1	$4 00
" 2	5 00
" 3	6 50
" 4	9 25
" 5	10 25

STYLE B SOCKETS WITH FITTED SHANKS

Sizes Hole.	Prices.
No. 1, fitted to No. 2 or No. 3	$4 50
" 2, " " 3	5 50
" 3, " " 4	7 00
" 4, " " 5	10 00

STYLE B SOCKETS WITH FITTED SHANKS

Sizes Hole.	Prices.
No. 1, fitted to No. 4	$5 25
" 1, " " 5	8 50
" 2, " " 4	6 75
" 2, " " 5	9 00
" 3, " " 5	9 50

When ordering twist drills to be used in these sockets always specify grip shanks.

OLD RELIABLE DRILL HOLDER

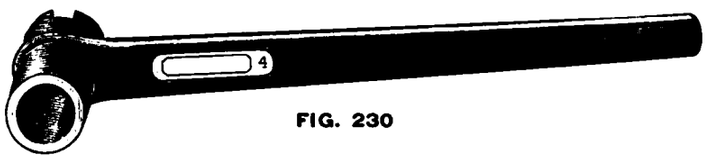


FIG. 230

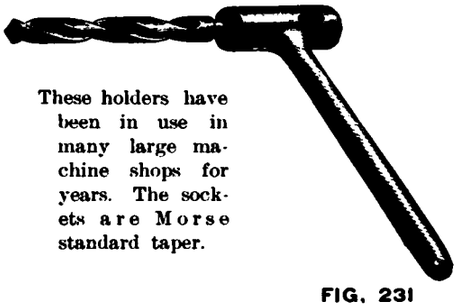
If, by accident, the hole in the shank of the drill has become marred or destroyed, use a holder one size larger than the shank of the drill and insert one of our sleeve-sockets—putting the drill shank in the sleeve.

We carry these drill holders in stock, to hold drills from ¼ to 2 inches inclusive, as follows:

Sizes.	Each.	Holds Drills.		Lengths.	Weights.
No. 1	$0 80	¼ to	9/16	8½ in.	½ lb.
" 2	1 00	19/32	29/32	10 "	1 "
" 3	1 20	15/16	1¼	11¾ "	2 "
" 4	1 40	19/32	2	14¼ "	4 "

Please note that when buying this drill holder it is not necessary to buy the shell sockets or sleeves—one price covers the tool complete ready for use.

WALKER'S DRILL AND REAMER HOLDER



These holders have been in use in many large machine shops for years. The sockets are Morse standard taper.

FIG. 231

Numbers.	Holds Drills.		Weights.	Each.
1	¼ to 19/32	inch	1 lb. 12 oz.	$0 90
2	5/8 29/32	"	2 " 9 "	1 20
3	15/16 1¼	"	4 " 3 "	1 60
4	19/32 2	"	7 " 8 "	2 60
5	21/32 3	"	14 " 8 "	4 00

SLEEVE HOLDER

NO. 3 SLEEVE HOLDER

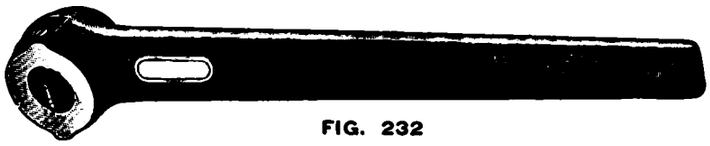


FIG. 232

HOLDER WITH NO. 3 SLEEVE IN PLACE

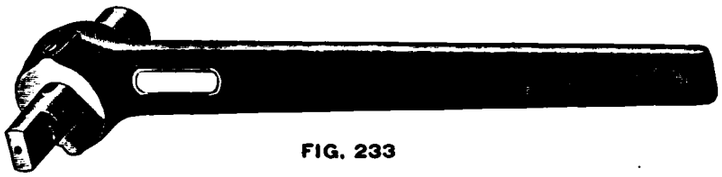


FIG. 233

These drill holders are made of malleable iron, reamed perfectly true, and the shell sockets are made of steel accurately fitted up. The strain is taken up by two steel screws which are turned to fit into the slot in shell socket or sleeve, and so arranged that they do not interfere in any way with the shank of the drill when in its place.

Fig. 232	No. 1 Sleeve Holder, $0 60.	No. 2 Sleeve Holder, $0 90.	No. 3 Sleeve Holder, $1 00
" 233	No. 1 Sleeve fitted to No. 2 or 3 Sleeve or No. 1 Holder		1 80
" "	" 2 " " "	3 Sleeve or No. 2 Holder	2 40
" "	" 3 " " "	3 Holder	3 00

We can furnish shell sockets or sleeves to fit all sizes of twist drills from ¼ to 1¼ inclusive, with No. 3 Holder, and all sizes from ¼ to ⅞, with No. 2 Holder. All sizes from ¼ to 9/16 with No. 1 Holder.

STEEL CHUCK DRILL HOLDERS

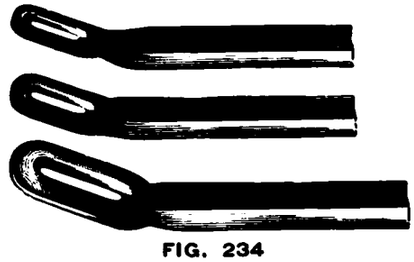


FIG. 234

Numbers.					Prices, Each.
1, taking drills from	⅜	to	9/16	inch	$0 50
2, " " "	9/16		¾	"	50
3, " " "	¾		1⅛	"	60
4, " " "	1⅛		1⅝	"	75
5, " " "	1⅝		2	"	90
Full set					3 25

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DRILL CHUCKS FOR HOLDING GROOVED SHANK DRILLS

DESCRIPTION, FIG. 235

These chucks are made of special steel, expressly for this purpose. The jaws are carefully hardened and ground to finish. The stop serves as a rest for the drill, preventing a possible strain to the jaws; it is also hardened, the wearing surfaces of the chucks being fully protected.

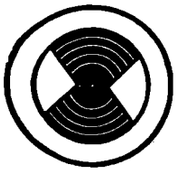


FIG. 236

This end view (Fig. 236) shows how different sizes of drills are held in the same chuck; no more pressure being required to tighten or release one drill than another, the web and angle of the shanks of the drills for each chuck being the same.

The shank of these chucks can be fitted to any drill press or lathe spindle. The shank of No. 1 chuck can be grooved to fit in No. 2 chuck, and No. 0 chuck can likewise be fitted to the No. 1 or 2 chuck, when so desired, although the reducers serve a similar purpose and are probably more convenient in most cases.

PRICES, FIG. 235

Nos.	Size. Length, in.	Dia., in.	Size Blank Shank (to be fitted to spindle). Length, in.	Dia., in.	Holds Grooved Shank Drills.	Each.
2	4	2 7/16	5	1 15/16	3/4 to 2 1/2	$12 00
1 1/2	4	1 7/8	5	1 1/2	49/64 to 1/16	10 50
1	2 3/4	1 5/16	4	1	1/4 to 3/4	6 00
0	1 3/4	1 3/16	2 1/2	5/8	3/32 to 1/4	4 50

(Nos. 1 to 42 wire gauge)

By the use of Reducers (Fig. 237) chucks Nos. 2, 1½ and 1 can be made to hold drills as small as 3/32 inch.

Chucks with special shanks furnished to order. Unless otherwise ordered all chucks will be sent with center stops and straight shanks, to be fitted by purchasers to their own spindles. We should be pleased to furnish specifications for chucks of special design for special work.

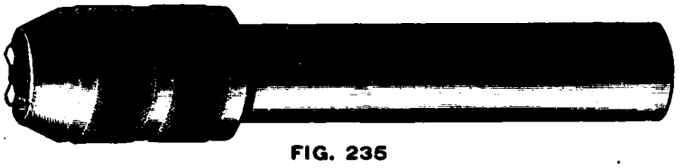


FIG. 235

SECTIONAL VIEW OF CHUCK

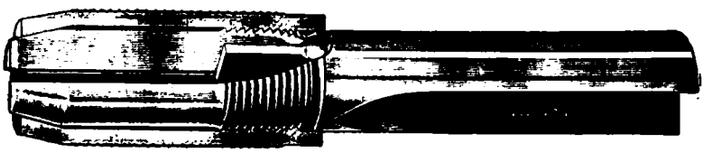


FIG. 235

Showing three parts used in construction: solid jaws, shell and stop.

REDUCERS



FIG. 237

These Reducers are designed to increase the range of sizes taken by the various chucks (Fig. 235). They are made of steel, carefully hardened and will not wear out or get out of true.

PRICES, FIG. 237

No. 221. To be fitted in No. 2 chuck and No. 1½ chuck, making it possible to take drills as small as ¼ inch in these chucks. Each, $1.50.

No. 120. To be fitted in No. 1 chuck (or No. 221 reducer), making it possible to take drills in that chuck as small as 3/32 inch. (No. 42 wire gauge.) Each, $1.50.

COLLETS FOR TAPER SHANK DRILLS MORSE TAPERS

NO. 1 NO. 2 NO. 3

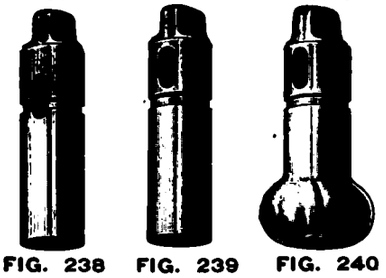


FIG. 238 FIG. 239 FIG. 240

PRICES, COLLETS

	Each.
Fig. 238, No. 1	$1 60
Fig. 239, No. 2	1 65
Fig. 240, No. 3	2 10

COLLET BLANKS AS USED FOR NOS. 1 AND 2



FIG. 241

Collet blanks are centered and may be bored for special tapers, straight shank drills, special taps, etc.

MORSE TAPERS FOR NO. 3



FIG. 242

PRICES, COLLET BLANKS

Fig. 241, for Nos. 1 and 2 Morse Taper	$1 00
Fig. 242, for No. 3 Morse Taper	1 30

CHUCK

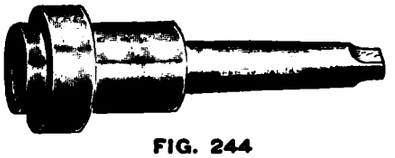


FIG. 244

Chucks are furnished with shanks fitted to No. 3 or No. 4 Morse Taper, or with shanks left blank.

Fig. 244, each.....$6 00

PRESTO DRILL CHUCK AND COLLETS

The accompanying illustration (Fig. 243) shows the chuck in position in the spindle of the drill press. The lifting of the ring releases the collet holding the drill, allowing it to drop out and be replaced by another without stopping the spindle.

The dropping of the ring locks the new collet and drill in place. The locking ring is so made that it may be held stationary while the chuck revolves in it.

The Presto Chucks and Collets may be used to advantage in lathes and screw machines.

A complete set is composed of a chuck (Fig. 244) and nine collets (Figs. 238 to 240), three each of the Morse Standard Tapers, Nos. 1, 2 and 3.

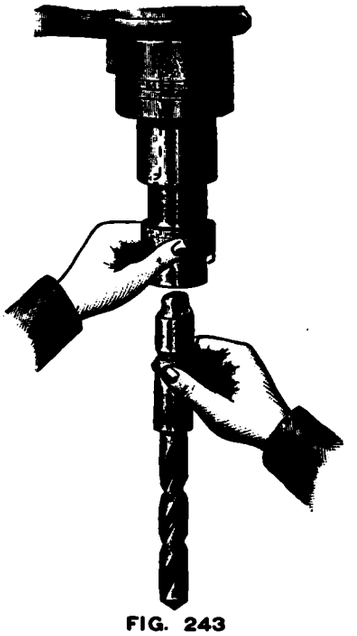


FIG. 243

Price of one set.....$22 00

When chuck is required for drill spindle, having No. 5 Morse Taper, use a chuck with No. 4 Morse Taper, and a Morse steel sleeve or reducing collet, having No. 5 taper outside and No. 4 taper inside.

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DRILL CHUCKS

BEACH DRILL CHUCK

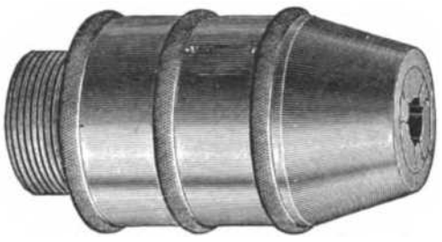


FIG. 245

No. 0 CHUCK

(FULL SIZE)



FIG. 246

PRICES 245 AND 246

Fig. 246.	No. 0, holding from 0	to	1/8	inch	diameter	.....	....	$8 00
" 245.	" 1, "	"	0	"	1/4	"	"	8 00
	2, "	"	0	"	3/8	"	"	8 50
" "	" 3, "	"	1/16	"	1/2	"	"	10 00
" "	" 4, "	"	3/16	"	5/8	"	"	11 00

STETSON DRILL CHUCK

(FULL SIZE)

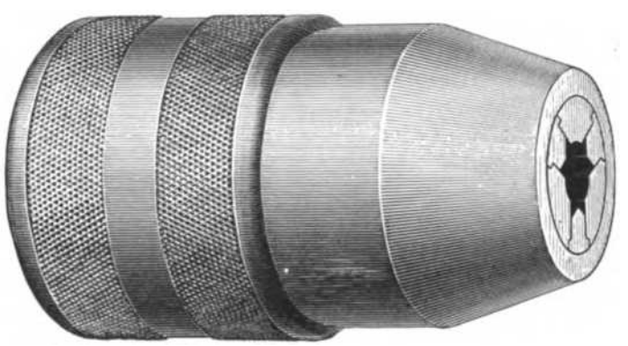


FIG. 247

This construction has advantages over the old style, in that the jaws are much stronger, and move in that part of the chuck which is attached to the driving spindle. Great firmness and accuracy are gained to the chuck by this arrangement.

The threaded and working parts of the chuck are covered, and thereby secured from injury or dirt. Only one size is made.

Fig. 247. No. 2, holding from 0 to 3/8 inch.....Price, each, $8 50

ARBOR FOR BEACH DRILL CHUCKS



FIG. 248

	Prices
Arbor for Beach Drill Chuck, No. 0, without nut.....each,	$0 80
Arbor for Beach Drill Chuck, No. 1..... "	1 00
Arbor for Beach and Stetson Drill Chucks, No. 2..... "	1 00
Arbor for Beach Drill Chucks, Nos. 3 and 4..... "	1 20
(The Arbors above have one end blank to be fitted to the Lathe Spindle)	
Arbor with No. 1 Morse Taper Shank, fitting Chuck No. 1.....each,	$1 30
Arbor with No. 2 Morse Taper Shank, fitting Chuck No. 2..... "	1 40

IMPROVED STAR DRILL CHUCKS

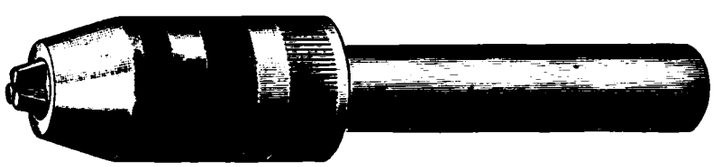


FIG. 250

Arranged with three jaws set in solid sockets. There are no springs to get out of order or out of place. The latest improvement in connection with these chucks is a device to hold the jaws firmly in place, and move them forward and backward by the motion of the screw. Put up one in a box.

No. 1 holds from 0 to 3/16, has shank 1 1/2 x 1/2.....each,	$1 00
No. 2 holds from 0 to 17/64, shank is 3 3/8 x 41/64..... "	1 50

We can furnish No. 1 Chuck with 41/64 inch shank, or No. 2 with 1/2 inch shank, without extra charge. Special sizes, either straight or taper, to order for additional 50 cents each.

No. 3 is same style as Nos. 1 and 2, but holds up to and including 1/2 inch. Shank is 4 1/2 x 7/8 inches. Weight, 2 1/4 pounds. Each, $3 00.

1/2 inch or 41/64 inch shank furnished with this Chuck instead of 7/8 inch, when so ordered, without additional charge. Special shanks, straight or taper, to order at 50 cents extra.

CENTER DRILL CHUCKS

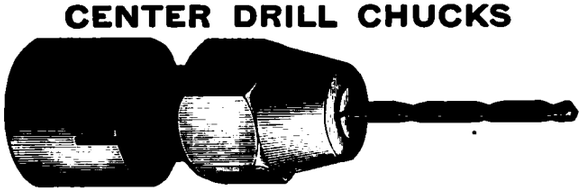


FIG. 249

Center Drill Chucks are made of steel, have hardened jaws, and are made in two sizes. Each chuck will hold but one size of drill—that for which it is specially made.

No. 1 Chuck can be made to hold any one size drill from 1/16 to 5/16 inch. Outside diameter of chuck is 7/8 inch, whole length 2 1/16 inches.

No. 2 Chuck can be made to hold any one size drill from 5/16 to 9/16 inch. Outside diameter of chuck is 1 1/8 inches, whole length 2 1/8 inches.

Each Chuck.....	$2 50
Arbor for Center Drill Chuck, without nut.....	80

DRILL CHUCKS—SELF CENTERING

THREE JAWS, CAREFULLY MADE, DURABLE AND CONVENIENT



FIG. 251

The wearing parts are hardened, the jaws have a good bearing on the drill, and hold securely either straight or taper shanks.

They are made on solid steel plug, centered, and can be readily fitted to Lathe or Drill Press.

Plug or Shank of	No. 1 Chuck (Standard)	is	2	in.	long x	15/32	in. dia.
" "	No. 2 " "		2 3/4	"		9/16	"
" "	No. 3 " "		6	"		15/16	"

We can furnish special length and size of plug, when desired, at slight extra charge.

No. 1 Chuck (Standard)	for drills	1/8	and	under	.....	each,	$1 50
No. 2 "	"	"	"	1/4	"	"	.....	"	2 50
No. 3 "	"	"	"	3/8	"	"	.....	"	4 50

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DRILL CHUCKS

ALMOND DRILL CHUCK

DESCRIPTION, FIG. 252

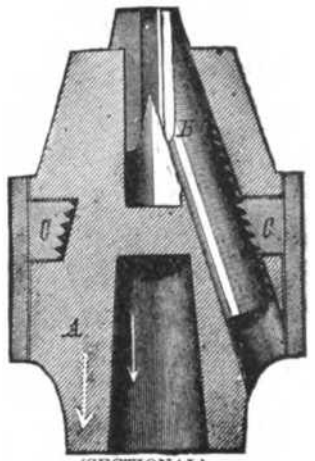


5/16" ALMOND CHUCK, FULL SIZE.

FIG. 252

The Almond Drill Chuck has now been in use many years, and has been received with favor in this and all other countries where drill chucks are used. In this chuck are embodied almost all the features of an ideal tool, which, to be satisfactory, should be simple in construction, perfect in its action, strong, durable, true and cheap.

The body of the chuck, A, is one continuous piece of machinery steel, and is provided with three converging guideways into which the jaws, B, are fitted. There is also a recess around the center of the body for the nut, C. The front ends of the jaws are made to match each other, as shown in sectional cut, their back ends being provided with teeth which fit the screw thread of the nut. The shape of the jaw teeth is such as to present a square surface to the thread of the nut when under pressure, so that no power is lost by the threads riding upon each other. The nut, C, after being hardened, is broken in two across its diameter for the purpose of allowing it to be placed in the recess, and the outside ring or ferrule, which is slightly tapering, is driven over the two halves of the nut in the direction of the arrow, the largest diameter of the ferrule being towards the back end of the chuck. In this way the nut assumes its original form, before broken, and being securely held by the ferrule will, upon being turned, cause the jaws to open or close. The jaws are made of Stubs' steel, and their gripping edges are left as hard as possible, the rear ends or threaded portion being drawn to a blue temper. No damage is done to this chuck by drilling a full size hole through the center.



(SECTIONAL).

SECTIONAL FIG. 252

PRICES, FIG. 252

No. 1. 5/16 inch to 0.....$5.50 each

No. 2. 5/16 inch to 0.....$5.50 each

No. 3. 1/2 inch to 0.....$9.00 each

ACME DRILL CHUCK

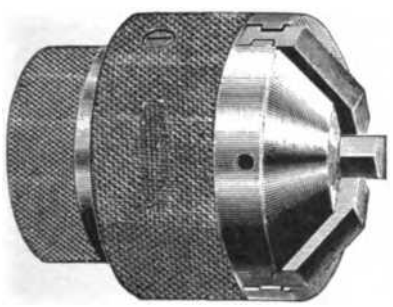


FIG. 253

The working parts of this chuck are of steel, and it is made in a most thorough manner. It is a self-tightening chuck, and needs no spanner wrench to make it hold.

Diameter, 2 inches. Holds from 0 to 1/2 inch.

Each.....$4.00

MODEL DRILL CHUCK



FIG. 254

This chuck is operated by hand and works on the self-tightening principle, the resistance of the cut tending to close the jaws still more firmly upon the shank of the drill. It is easily attached to lathe or drill by means of a taper mandrel, and will hold drills firmly and true. It may be fitted to screw on if desired.

Number.	Size.	Capacity.	Prices, Each.
C101	2 in.	0 to 9/16 in.....	$4 00
C102	2 1/2 "	1/64 3/4 "	5 00

CZAR DRILL CHUCK



FIG. 255

This chuck is light but strong, evenly balanced, durable and accurate. Particular attention is called to the fact that it is dust proof, and hence all dirt and chips are excluded from its working parts. This feature of its construction will commend itself to the mechanic.

Number.	Capacity.	Prices, Each.
1.	0 to 3/16	$5 50
2.	0 5/16	5 50
3.	0 1/2	9 00

KEY DRILL CHUCK

DESCRIPTION AND PRICES, FIG. 258

JAWS FOR KEY DRILL CHUCK

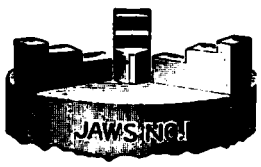


FIG. 256—NO. 1

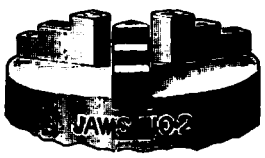


FIG. 257—NO. 2

This is a regular Geared Scroll Chuck, having a hub adapted for taper arbor, and jaws designed for holding drills and rods.

These chucks will hold drills firmly and true, and will hold work equally well running forward or backward.

They are made with jaws same as shown in Fig. 258, and unless otherwise specified such style will be sent. We can, however, furnish them with either No. 1 or No. 2 Step Jaws (Figs. 256 and 257), or with both sets, as may be desired. When chucks are ordered with "two sets of jaws," we will send one set each of No. 1 and No. 2 style.

Nos.	Diameters, Inches.	Capacity, Inches.	Price with One Set of Jaws.	Price with Two Sets of Jaws.	Extra Sets of Jaws Ordered Without Chuck.
1	2	0 to 1/2	$6 50	$8 00	$2 25
2	2 1/2	1/64 5/8	8 00	9 50	2 25

KEY DRILL CHUCK

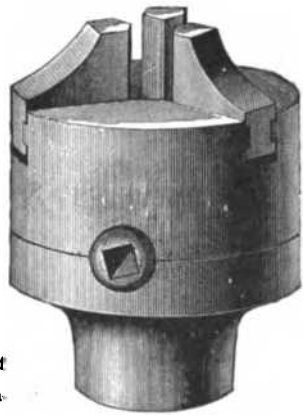


FIG. 258

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DRILL CHUCKS

HARTFORD DRILL CHUCK

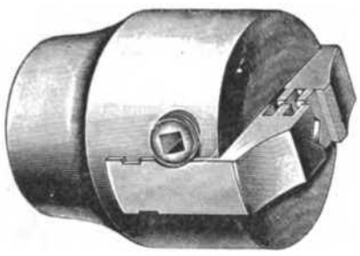


FIG. 259

It will hold not only drills, but taps, reamers, etc., by the round or square part. It is also adapted for wood-boring tools.

DIMENSIONS, ETC.

Nos	Diameter, Inches.	Length, Inches.	Weight, Lbs.	Capacity Inches.
0	1¾	2½	1¼	0 to ¼
1	2⅛	2¾	2¼	0 ½
2	2⅞	3¼	4½	0 ¾

PRICES

Nos.	Each.	Extra Jaws, per Pair.	Extra Screws, Each.
0	$6 00	$2 00	$0 80
1	7 00	2 25	1 00
2	8 00	2 50	1 20

PEQUOT DRILL CHUCK

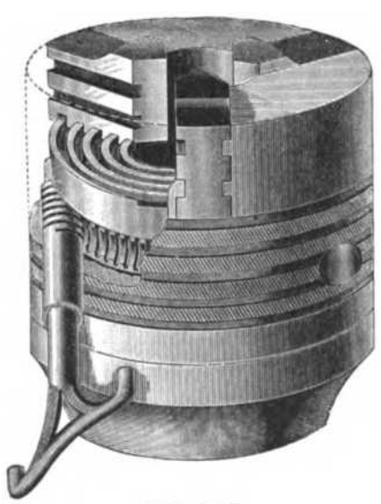


FIG. 262

These chucks are made in the best manner throughout, great pains being taken to provide sufficient strength to withstand the strains of tightening. It is especially desirable for heavy drilling or boring, where the utmost gripping power is required, as in holding counterboring or facing tools, etc.

The cut above shows part of the chuck broken away, leaving the centerpiece exposed, and showing the key as applied in one of the openings.

Nos.	Size.	Capacity.	Prices, Each.
C301	2 inch	0 to ⅝ inch	$7 50
C302	2½ "	0 ¾ "	9 00
C303	3½ "	0 1⅛ "	11 00

REID DRILL CHUCK

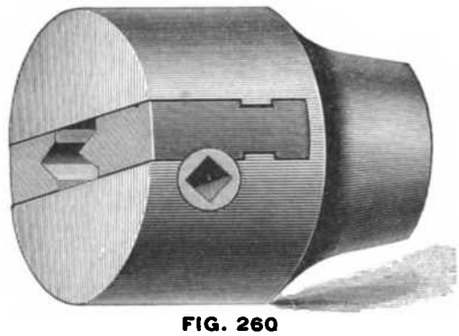


FIG. 260

Nos.	Capacity.	Prices, Each.
0	0 to ½ inch	$6 00
1	0 ¾ "	8 00
2	0 1 "	10 00

BLACKSMITHS' DRILL CHUCK

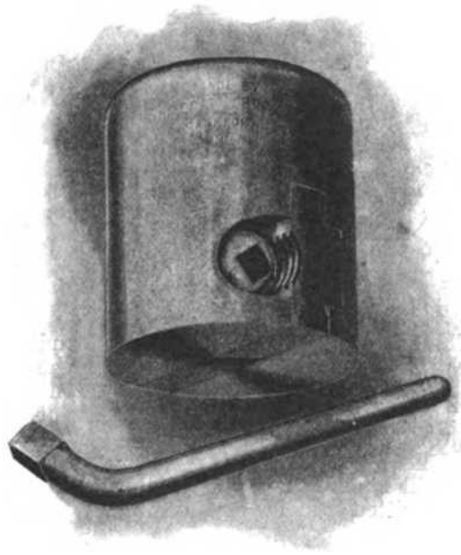


FIG. 263

The Blacksmith Drill Press Chuck was designed in response to calls from a great many of our customers in all parts of the country for a low-priced, substantial chuck for blacksmiths' drill presses.

We have this chuck in two sizes, as per list below.

Prices include arbors.

No. 13, 2¼ inches diameter, holds from 0 to ⅜ inch.....Each $3 65
" 14, 3 inches diameter, holds from 0 to ⅝ inch .....Each 4 55

Arbors are made with shanks ½ inch, ⅝ inch, 41/64 inches diameter, 2¼ inches long. Unless ordered otherwise we send ½ inch arbor. Extra arbors, list, 50 cents each.

UNIVERSAL CHUCK FOR DRILLS

DESCRIPTION, FIG. 261

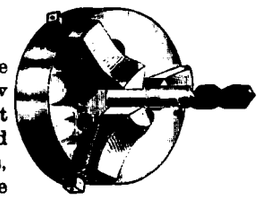


FIG. 261

The cut shows the Universal Three-Jaw Chuck holding a twist drill. It is operated by means of screws, pinions and rack, the same as the regular Universal Lathe Chuck. It is used very extensively by brass finishers, and gives perfect satisfaction.

We can furnish it in any size required, from 3 inches up.

PRICES, FIG. 261

Diameter of body.	Swing over all.	Will hold drill.	Each.
3 9/16 inches.	4¼ inches.	11/16 inches.	$18 00
4⅜ "	5⅝ "	⅞ "	22 00
7 1/16 "	7 13/16 "	1¼ "	26 00

EMPIRE FRICTION CHUCK

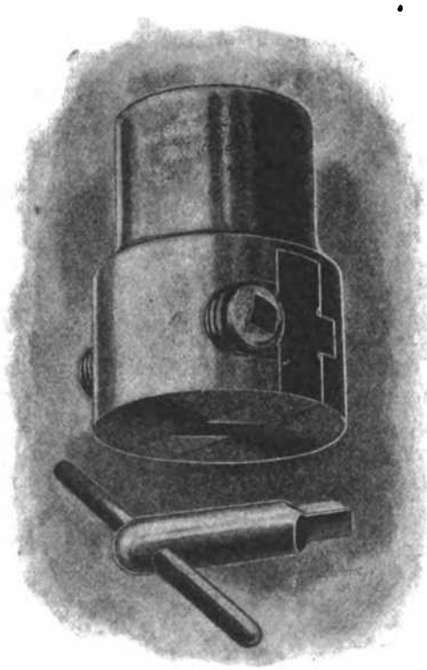


FIG. 264

The Empire is a first-class friction chuck, made to meet a demand for certain classes of work.

This chuck, attached to the spindles of cutting-off machines, monitor and hollow spindle lathes and screw machines, will hold bars and rods of square, round, hectagonal, and octagonal cross section firmly and securely.

Nos.	Diameter.	Capacity.	Prices, Each.
6	1¼ inches.	0 to ¼ inch.	$5 00
7	2¼ "	0 ½ "	6 00
8	3 "	0 ¾ "	7 00
9	3¾ "	0 1 "	8 00
10	5¼ "	0 1½ "	17 00
11	6¾ "	0 2 "	19 00

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DRILL CHUCKS

IMPROVED POSITIVE DRIVING DRILL CHUCK

DESCRIPTION, FIG. 265

The distinctive feature of this chuck is the patented equalizing driver in which the end of the drill is inserted, giving positive rotation to the drill independently of the jaws of the chuck. This driver is self-adjusting, permitting the jaws to center and align the drill accurately in the chuck, so that it is always true and absolutely impossible for the drill to slip while in work.

The Patent Improved Positive Driving Drill Chuck is especially useful on the turret head of screw machines, for holding such tools as reamers, drills, rose reamers and single pointed tools, chamfering tools, and for outside finishing mills.

It is especially useful on old turret machines where the turret holes are out of line with the spindle. The jaws of the chuck can be partially tightened, thereby permitting the reamer or other tool, on finishing cuts, to float; the equalizing driver preventing tool from slipping and allowing it to assume a position in line with the spindle, thus accomplishing perfect work on an imperfect machine, in a very simple and inexpensive manner.

There is a Taper Steel Split Sleeve, (Fig. 269) which enables the chuck to drive taper shank drills as positively and truly as straight shank drills.

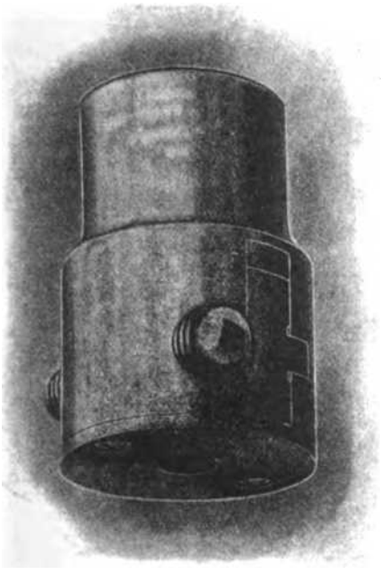
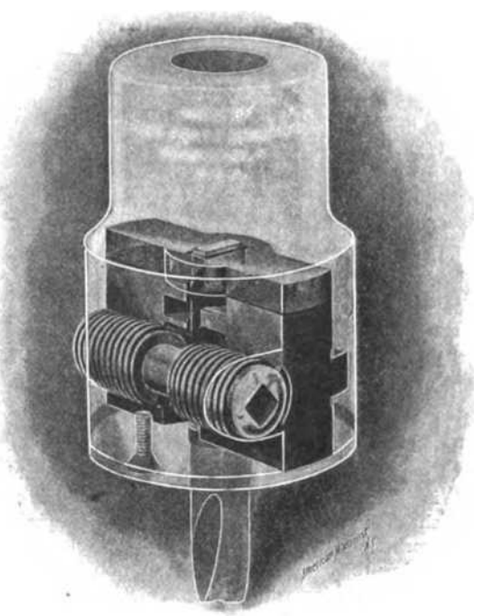


FIG. 265



SECTIONAL FIG. 265
(Showing working parts.)

It is not necessary to have the end of the drill flattened centrally; the recess in chuck body for driver permits the driver to adjust itself to any inaccuracy of this kind.

We will furnish flattened straight-shank drills for this chuck when so ordered, without extra charge. The driver will receive flattened taper-shank drills without alteration. This driver will handle either right or left hand drills, reamers, taps, etc., equally well.

This chuck has been designed for hard, continuous service.

PRICES

Nos.	Diameters.	Capacity.	Each.
1	2¼ inch	0 to ½ inch.....	$8 00
2	3 "	0 to ¾ "	9 00
3	3¾ "	0 to 1 "	10 00
4	5¼ "	0 to 1½ "	20 00
5	6¾ "	0 to 2 "	25 00

UNION DRILL CHUCK

WITH PATENT TRANSVERSE SLOT

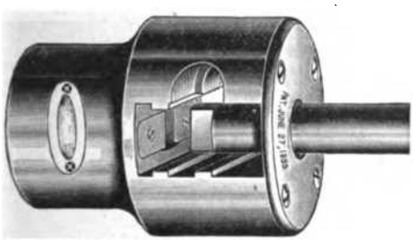


FIG. 266

The Union Drill Chuck is now made in seven sizes, holding from 0 to 2 inch. They are also fitted with our Patent Transverse Slot, so that drills with tenons can be inserted, thus making a positive drive and accurate friction chuck.

By the use of the Taper Steel Split Sleeves, shown below (Fig. 269), drills with taper shanks, and other special tools, can be used in these chucks.

PRICES

Nos.	Diameters.	Capacity.	Each.
000	1¼ inch	0 to ¼ inch.....	$7 00
00	1⅝ "	0 to ⅜ "	7 50
100	2¼ "	0 to ½ "	8 00
101	2¾ "	0 to ¾ "	9 00
102	3½ "	0 to 1 "	10 00
103	5 "	0 to 1½ "	18 00
104	6 "	0 to 2 "	20 00

NEW DRILL CHUCK

FOR HOLDING EITHER A STRAIGHT OR TAPER SHANK DRILL

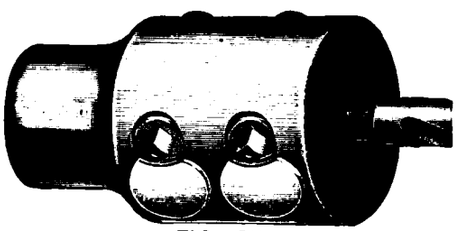


FIG. 267

The forward set of jaws are constructed for receiving a cylindrical shank, and the rearward set of jaws the taper shank of a drill, and grip it by its flattened end. A very slight turn of the wrench is sufficient to hold the drill from turning. Another slight turn on the screw that actuates the forward jaws grips the shank of drill at forward edges, and brings the drill into line ready for use. The drill can neither turn nor crowd up into the chuck.

This chuck is useful for many other jobs than holding drills, as it will hold any piece of varying diameter that will go into the chuck.

PRICE

Style C. 2⅜ in. dia. 0 to ½ in. cap...each, $16 00

STANDARD DRILL CHUCK

IMPROVED PATTERN

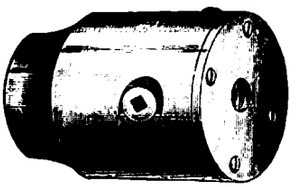


FIG. 268

The Standard Drill Chuck will hold drills and other tools within their capacity, as listed below; have a hole entirely through them, and are made to fit a taper arbor, or can be threaded to fit machine spindle.

Nos.	Diameters.	Capacity.	Each.
000	1⅜ inches.	0 to ¼ inch..	$6 00
00	1 11/16 "	0 to ⅜ " ..	6 50
100	2 3/16 "	0 to ½ " ..	7 00
101	2⅞ "	0 to ¾ " ..	8 00
102	3 7/16 "	0 to 1 " ..	10 00

ARBORS FOR STANDARD CHUCKS

No.		Each.
000 to 100	chucks with ½ inch shank....	$0 50
000 to 100	" " ¾ " " ...	75
101 to 102	" " ¾ " " ...	1 00
000 to 100	" " Morse Taper Shank,	1 00
101 to 102	" " " " "	1 25

TAPER STEEL SPLIT SLEEVES

FOR DRIVING TAPER SHANK DRILLS



FIG. 269

PRICES, FIG. 269

Nos.					Each.
100	Holds Taper Drills,			¼ to 1 9/32 inches.....	$0 40
101	"	"	"	¼ to 2 9/32 "	80
102	"	"	"	¼ to 1¼ "	1 30
103	"	"	"	¼ to 2 "	2 30
104	"	"	"	¼ to 2½ "	3 60

(Above applies to Morse and Standard Tapers.)

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LITTLE GIANT DRILL CHUCKS

LITTLE GIANT IMPROVED

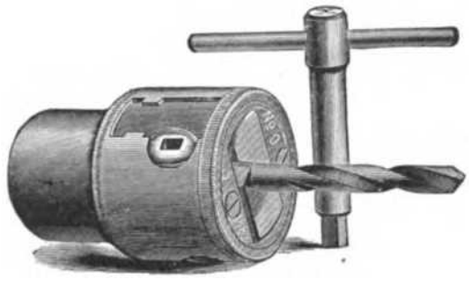


FIG. 270

This chuck has no projections. The jaws and screws are all within the body. The jaws are of the best tool steel, carefully hardened.

A guard ring prevents the jaws from being opened so as to take in larger work than is designed for the chuck. It is very powerful, and is guaranteed to hold true and not to injure or shear the finest drill. It holds round or square work, and is adapted for holding wood-boring tools. The hole in the hub is made to fit the Morse taper, but can be bored out and threaded to suit the customer's templet at small cost.

The jaws are guided by three strong gibs, which prevent their canting when taking a short bite.

NOS. 3 AND 4 STYLE.

FRONT AND REAR VIEW

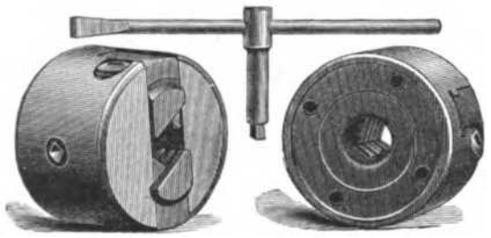


FIG. 273

DESCRIPTION

These chucks are designed for hollow spindle lathes, screw machines, and turret head lathes, taking the place of the more costly lathe chucks which have been used for cutting-off chucks.

These chucks have also the patent side screws, D (shown in cuts to the right, Fig. 274), an auxiliary help to hold work where the strain is unusually heavy. After closing the jaws, B, down upon the work, E, then, if doing heavy work, set up the independent screws, D. This gives double holding power. In the Nos. 2 and 2½ the screws reach to ⅝ inch, in the No. 3 to ¾ inch, and in the No. 4 to 1 inch drills. When using smaller drills the screws, D, must be drawn back out of the way to let the jaws pass.

Nos.	Diameters.	Capacity.	Prices, Each.
3	6 inch.	0 to 1½ inch.	$18 00
4	6½ "	0 2 "	20 00

STRAIGHT BODY CHUCKS

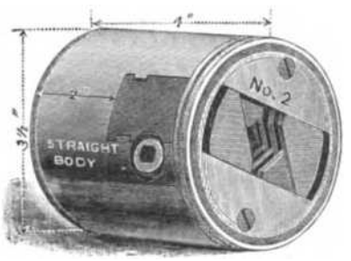


FIG. 271

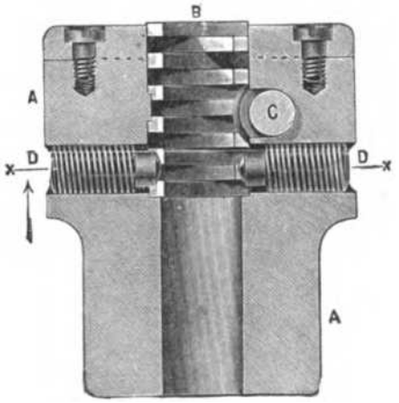
The straight body chucks (Fig. 271) are especially adapted for hollow spindle lathes, for holding rods, round or square, which are to be turned or cut off.

If you wish to cut a thread in the hub of the Little Giant Chuck for lathe spindle, by no means hold the chuck in another chuck, but screw the jaws down upon a perfectly true live center.

PRICES, EITHER FIG. 270 OR 271

Nos.	Diameters.	Capacity.	Each.
00	1 5/16 inch.	0 to ¼ inch.	$7 00
0	2½ "	0 ½ "	8 00
1	3 "	0 ¾ "	9 00
2	3½ "	0 1 "	10 00
2½	4 "	0 1 in., ex. strong	11 00
3	6 "	0 1½ inch.	18 00
4	6½ "	0 2 "	20 00

SHOWING SIDE SCREWS
(SEE DESCRIPTION, FIG. 273)



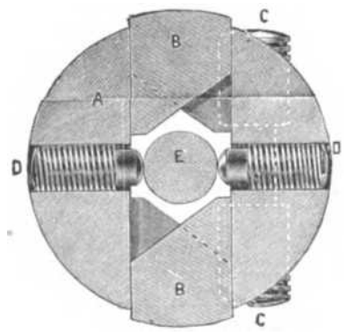


FIG. 274

Illustration of manner of using the side screws as applied to the Nos. 2, 2½, 3 and 4. (Figs. 270 and 271.)

LITTLE GIANT IMPROVED DOUBLE GRIP

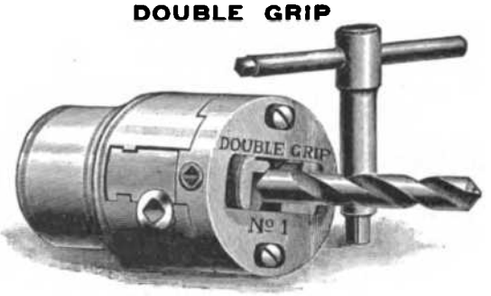


FIG. 272

Many machinists demand a drill chuck with the grip so strong that a drill will break before it will slip. Other machinists prefer the drill to slip before breaking. The above differing demands have been satisfied in the new "Double Grip" Chuck here shown by putting on a drop forged steel tie plate, that acts not only as a clamp, but, having flanges, makes of it a tie plate, thus rendering it an impossibility to spread or spring the chuck body.

This tie plate (or extra stay) applied to the back of the jaws is independent of their other adjustment. This is accomplished by each plate having lateral motion across the face of chuck body, thereby doing away with the liability of throwing drills or work out of true. This chuck will be found to be a powerful chuck for use on Bolt Cutting Machines and on Screw Machines for holding iron to be threaded with a die, or for any work where a chuck of extra strength is needed, as well as for the many uses required of a drill chuck.

The "Double Grip" Chuck can be used in the ordinary way without using the tie plate, but when it is used for extra heavy work center the chuck in the usual manner, then by setting up the set screws in the tie plate it will have a great holding power. When the tie plate is used the screws which hold same to face of chuck should be eased a little so as to allow tie plate to move freely across face of chuck.

By the use of this tie plate the heaviest of work can be done without injury to chuck, i. e., without straining the screw that operates the jaws.

We can furnish the "Double Grip" Chuck with diagonal jaws, as shown above, or with regular straight jaws, as shown in Fig. 270.

Taps can be held by the round part of the shanks, for tapping in tapping machines and in turret head machines. Can furnish any of these Drill Chucks with special jaws suitable for holding the Grooved Shank Drill, if ordered. No extra charge.

For holding rough iron will furnish any of these Drill Chucks with the jaws serrated to order at $1.00 extra. When Drill Chucks are wanted for holding square shank drills or taps, it should be so stated in the order, and it should also be stated whether chuck is wanted to hold down to nothing or not, as regular straight jaws made with a square V will not hold down to nothing.

Nos.	Approximate Diameter.	Holding Drills.	Prices, Each.	Unf'd Face Plates.
0	2½ inch.	0 to ½ inch.	$8 00	
1	3 "	0 to ¾ "	9 00	
2	3½ "	0 to 1 "	10 00	
2½	4 "	0 to 1 in., ex. strong.	11 00	
3	6 "	0 to 1½ inch.	18 00	$0 75
4	6½ "	0 to 2 "	20 00	75

SCREWS FOR LITTLE GIANT IMPROVED AND DOUBLE GRIP CHUCKS



FIG. 275

Nos.	00	0	1	2	2½	3	4
Each.	$1 00	1 00	1 00	1 10	1 50	2 50	3 00

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LITTLE GIANT AUXILIARY SCREW DRILL CHUCKS

DESCRIPTION, FIGS. 276 AND 277

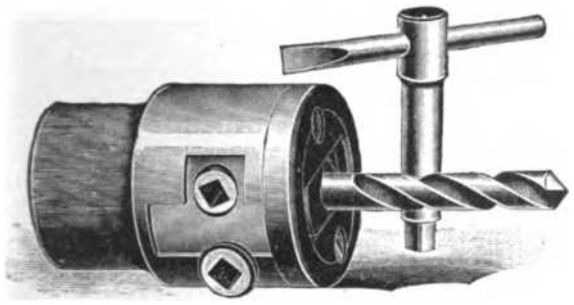


FIG. 276

In addition to the Little Giant Improved, Little Giant Double Grip, and Oneida Drill Chucks, we can now furnish the Little Giant Auxiliary Screw Drill Chuck, as shown in illustrations. In all drill chucks with side screws, the inner or gripping part of jaws has a tendency to crowd away from the right and left hand screw, and the outer end of jaws has a tendency to draw toward the right and left hand screw. The auxiliary screw (in this new Little Giant Auxiliary Screw Drill Chuck) entirely overcomes said tendencies.

After closing jaws on drill in the usual manner (by turning right and left hand screw), then tighten the auxiliary screw. This will greatly increase the gripping power of chuck. The effect of the auxiliary screw is similar to that of a bolt, as it virtually bolts the two jaws together. The ½ inch, ¾ inch, and 1 inch sizes are made of pattern shown in Fig. 276. The hole in the hub is made to fit the Morse taper, but can be bored out and threaded to suit the customer's templet at small cost. We can also furnish these chucks made with straight bodies, which are especially adapted to hollow spindle lathes, for holding rods, round or square, which are to be turned or cut off. When a chuck is wanted for holding square work, it should be so stated in order.

The 1½ inch and larger sizes are made of pattern shown in Fig. 277. These six sizes are designed for hollow spindle lathes, screw machines, and turret head lathes, taking the place of the more costly lathe chucks which have been used for cutting-off chucks. They are made with straight bodies only, and can be attached only by means of a face plate.

When the lathe spindle is light and it is important that the chuck should not overhang, the center hole can be bored out so as to admit of reversing the face plate, bringing the hub inside the chuck.

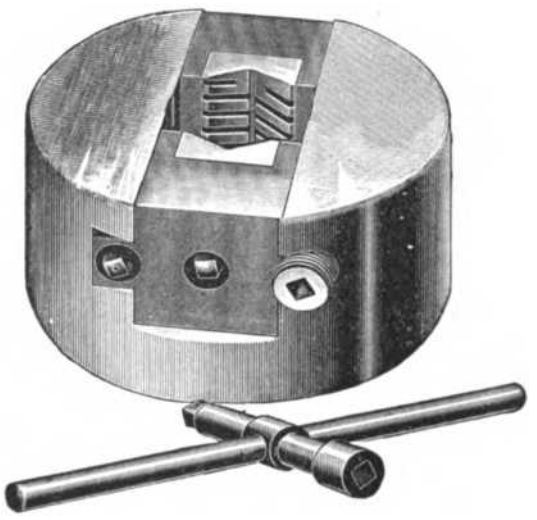
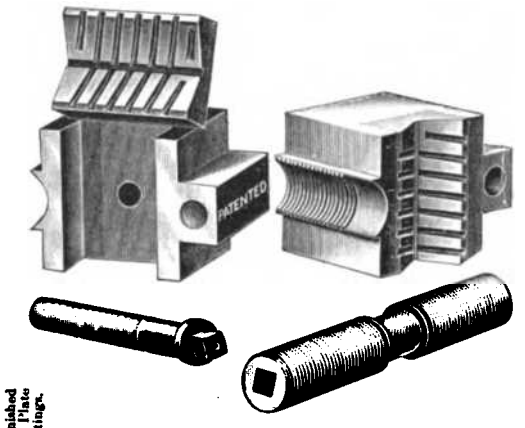


FIG. 277

SHOWING PARTS, FIG. 276



SHOWING PARTS FIG. 277



SHOWING DIAGONAL TONGUED JAWS

(See Description, Fig. 279)

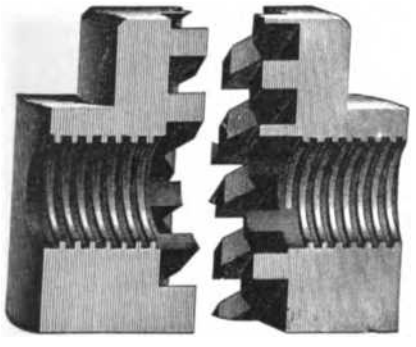


FIG. 278

This style of jaw can be put into any of the Little Giant Improved or Double Grip Chucks when required.

PRICES, FIGS. 276 AND 277

Sizes No.		Approximate Diameters.	Capacity.		Diameters of Screws for Face Plate.	Prices.	Extra V Bit's, for holding Square, per Set	Unfinished Face Plate Castings.
Fig. 276	½ in.	2¼ in.	0	to ½ in.		$8 00		
	¾	3	0	¾		9 00		
	1	3½	0	1		10 00		
Fig. 277	1½	6	¼	1½	5¼ in.	18 00	$2 00	$0 75
	2	6½	⅜	2	5⅝	20 00	3 00	75
	2⅝	7¼	½	2⅝	6½	30 00	4 00	1 00
	3	9	⅝	3	8	35 00	4 00	2 00
	3⅝	11	¾	3⅝	10	50 00	5 00	3 00
	4	13¼	⅞	4	10	60 00	5 00	3 00

THE "ONEIDA" DRILL CHUCK

DESCRIPTION, FIG. 279

This Chuck was designed with a view to increase the grip, and to lessen the tendency to shear the drill which exists in some side-screw chucks now in use. In this Chuck the tongues are disposed obliquely across the axis of the drill (see cut on the left) and in this way get a long bite on the drill, which will not groove if the drill should possibly slip. The body is made of spindle steel, and the jaws of the best tool steel, carefully hardened.

This chuck is also made with regular straight jaws as shown in chuck, Page 62, Fig. 271.

This chuck is especially adapted for holding wood bits in boring machines and for blacksmiths' drill presses.

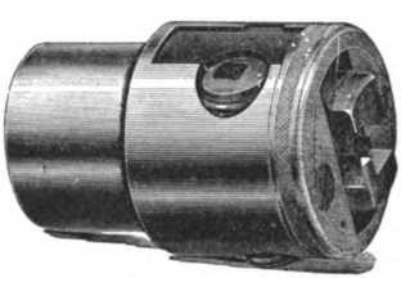


FIG. 279

PRICES

No.	Appr'x Diams.	Lengths.	Weight.	Capacity.	Each.
0	1 1/16 in.	2⅛ in.	17 oz.	0 to 13/32 in.	$7 00
1	2¼ "	3 "	2 lbs. 7 oz.	0 to ½ "	8 00

LITTLE GIANT DRILL CHUCK EXTRAS

CENTER ARBORS FOR ATTACHING DRILL CHUCKS TO LATHES, DRILL PRESSES, ETC.

BLANK SHANK



FIG. 281

4½ in. long, 1 in. in Diameter.....each, 50 cts.

SHANK FOR BLACKSMITHS' DRILL PRESSES

(½, ⅝ and 41/64 inch.)



FIG. 280

One end of the arbor is made to fit Morse taper hole in hub of chuck. The other end is intended to be fitted to the machine on which chuck is to be used. Each, 50 cents.

ARBOR WITH NUT



FIG. 282

By turning nut one way chuck may be forced off of arbor, and by turning it the other way arbor may be drawn out of socket.

Each..... $1 25

BIT BRACE ARBOR



FIG. 284

Each..... $0 50

MORSE TAPER ARBORS

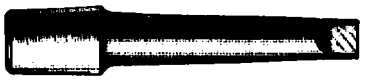


FIG. 283

PRICES

No. 1	each,	$1 00
No. 2	"	1 00
No. 3	"	1 25
No. 4	"	1 50
No. 5	"	2 00

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NATIONAL DRILL CHUCKS

NATIONAL REGULAR CHUCK

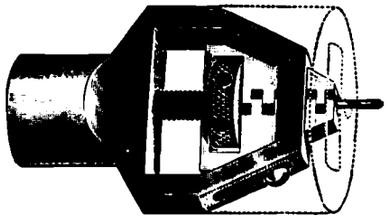
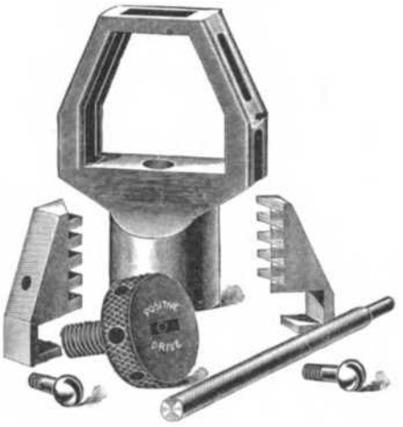


FIG. 285

This chuck is positive, powerful, simple, durable, economical, reliable, substantial and accurate. You can always see your work, no shadow cast, a positive drive when desired by flattening end of drill shank so it will enter positive drive slot in jaw screw.

The dotted lines in the above cut represent the diameter of the face of the ordinary drill chuck compared with the National, the diameter being from three to five times greater.



SHOWING PARTS, FIGS. 285 AND 286

The advantage can readily be seen in the National Drill Chuck when using small drills, no shadow will be cast on your work, and the workman can see what he is doing. This chuck is balanced so it can be run at a high speed, and very small drills can be used in large chucks, enabling one chuck to do the work of two, saving the price of another chuck and the time of making the change.

NATIONAL BLACKSMITH DRILL CHUCK

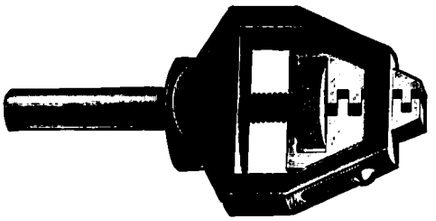


FIG. 286

This chuck is so simple in construction that any one can take it apart to clean or repair without being an experienced machinist. It will soon save its cost in the saving of time, drills and repairs.

The positive drive is worked automatically by the chuck revolving without use of wrench, as all jaw screws are now made with left hand thread, so the greater the strain on drill the tighter the jaw is forced to grip the drill.

PRICES, FIG. 285

POLISHED

Nos.	Capacity, Inches.	Each.
1	0 to ¼	$6 00
2	0 " ⅜	7 00
3	0 " ½	8 00
4	0 " ¾	9 00
5	0 " 1	11 00
6	0 " 1½	18 00
7	0 " 2	20 00

6 and 13 fitted for face plate unless ordered for arbor.

UNPOLISHED

For heavy, rough work, or where polished tools are not desired. Quality being the same but less in price.

Nos.	Capacity, Inches.	Each.
8	0 to ¼	$5 00
9	0 " ⅜	5 50
10	0 " ½	6 50
11	0 " ¾	7 50
12	0 " 1	10 00
13	0 " 1½	16 00
14	0 " 2	18 00

7 and 14 go on with face plate only.

PRICES, FIG. 286

UNPOLISHED STRAIGHT ARBOR

(With Arbor)

Nos.	Capacity, Inches.	Each.
15	0 to ⅜	$5 50
16	0 " ½	6 50
17	0 " ¾	7 50

When ordering be sure and give size of arbor.

Extra charge for taper arbors and straight arbors above ¾ inch diameter.

When ordering, if taper jaws (as Fig. 287) are wanted, so state. If not specified, regular jaws will be sent.

MORSE TAPER JAWS FOR NATIONAL DRILL CHUCKS

FOR HOLDING TAPER SHANK DRILLS

DESCRIPTION, FIG. 287

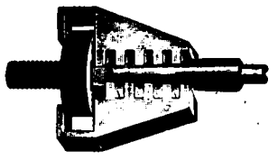


FIG. 287

When using taper jaws in chuck you have a positive drive, doing away with sockets, also the liability of breakage. If you have broken off the flat end of Morse taper, all you have to do is to flatten end again, making it as good as new without the expense of turning of taper. Straight shank drills must not be used in taper jaws, or Morse taper with straight jaws. Morse taper drill only to capacity of chuck should be used.

National chucks with hollow spindle capacity as follows may be had when ordered:

Nos.			
1	Capacity,	⅛ rod	} 50 cents extra.
2	"	3/16 "	
3	"	5/16 "	
4	"	7/16 "	} 75 cents extra.
5	"	9/16 "	
6	"	11/16 "	

PRICES, FIG. 287

Nos.	Chucks.	When Ordered Extra.	Nos.	Each.
3	10	Holding Morse Taper 1		$3 00
4	11	" " "	1 to 2	3 75
5	12	" " "	1 " 3	4 50
6	13	" " "	1 " 4	6 50
7	14	" " "	1 " 5	8 00

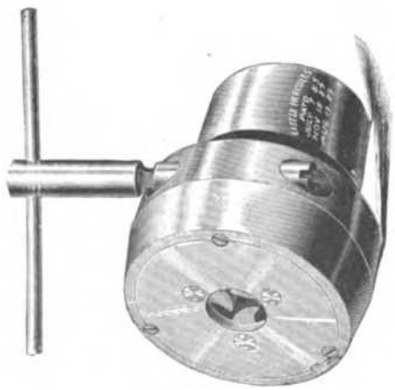


FIG. 288

HERCULES IMPROVED DRILL CHUCK

WITH SERRATED JAWS

These chucks are adapted for drill presses, milling machines, cut off machines, wood boring machines, lathes, centering machines, and, in fact, any place where drills are to be driven, or small pieces to be held for turning, filing or polishing.

They are especially convenient in tool making where rods are to be cut, ends threaded, or other work done on them of like character.

PRICES, FIG. 288

Nos.	Diameters.	Holding Drills.	Each.
1	1⅝	0 to 5/16 inch.	$7 00
1½	2⅜	0 " ½	8 00
2	2¾	0 " ⅝	9 00
3	3½	0 " 13/16	10 00
4	4	0 " 1 1/16	11 00

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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STANDARD INTERNAL AND EXTERNAL CYLINDRICAL GAUGES

INTERNAL



FIG. 289

EXTERNAL

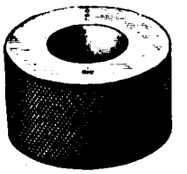


FIG. 290

The Standard Internal and External Cylindrical Gauges have exceptionally large wearing surfaces, and are made in the most careful manner. They are recommended for exact measurements.

The larger sizes are unusually light in proportion to their size.

These gauges are furnished separately of any desired size. We also carry them in stock arranged in sets containing sizes from ¼ inch to 2 inches, varying by 16ths. Each full set is neatly arranged in a substantial box.

Metric gauges are also carried in stock, in sizes from 6 mm. to 50 mm., varying by 1 mm.; and from 55 mm. to 100 mm., varying by 5 mm.

PRICES OF FIGS. 289 AND 290

Sizes, inches.	¼	5/16	⅜	7/16	½	9/16	⅝	11/16	¾	13/16
Fig. 289, Internal.	$3 00	3 00	3 10	3 20	3 30	3 40	3 50	3 60	3 70	3 80
Fig. 290, External.	4 45	4 60	4 75	4 90	5 05	5 20	5 35	5 50	5 65	5 80
Sizes, inches.	⅞	15/16	1	1 1/16	1 ⅛	1 3/16	1 ¼	1 5/16	1 ⅜	1 7/16
Fig. 289, Internal.	$3 90	4 00	4 10	4 20	4 30	4 40	4 50	4 65	4 80	4 95
Fig. 290, External.	5 95	6 10	6 25	6 50	6 75	7 00	7 25	7 50	7 75	8 00
Sizes, inches.	1 ½	1 9/16	1 ⅝	1 11/16	1 ¾	1 13/16	1 ⅞	1 15/16	2	
Fig. 289, Internal.	$5 10	5 25	5 40	5 55	5 70	5 85	6 00	6 15	6 30	
Fig. 290, External.	8 25	8 50	8 75	9 00	9 25	9 50	9 75	10 00	10 25	

SPECIAL SIZES

Sizes, inches.	2 1/16	2 ⅛	2 3/16	2 ¼	2 5/16	2 ⅜	2 7/16	2 ½	2 9/16
Fig. 289, Internal.	$7 00	7 15	7 30	7 45	7 60	7 85	8 10	8 25	8 40
Fig. 290, External.	11 00	11 25	11 50	11 75	12 00	12 25	12 50	12 75	13 00
Sizes, inches.	2 ⅝	2 11/16	2 ¾	2 13/16	2 7/8	2 15/16			
Fig. 289, Internal.	$8 55	8 70	8 85	9 00	9 15	9 30			
Fig. 290, External.	13 25	13 50	13 75	14 00	14 25	14 50			

Price per set, containing sizes from ¼ inch to 2 inches, $825 00.

CORRECTIVE GAUGE STANDARDS

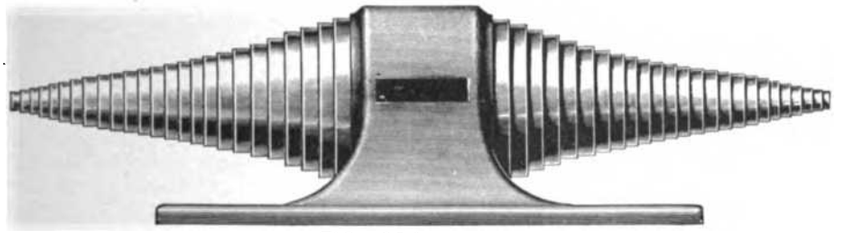


FIG. 294

These disks are employed for testing and correcting fixed gauges, for setting calipers, and also as a reference to prove dimensions within their range. Each disk is separate and is ground independently to size. Any combination of sizes from ¼ to 6 inches can be furnished.

PRICES

49 sizes, ¼ inch to 2½ inches by 16ths, 2⅝ inches to 4 inches by 8ths	$84 00
61 sizes, ¼ inch to 4 inches inclusive by 16ths	107 00
93 sizes, ¼ inch to 6 inches inclusive by 16ths	260 00

Walnut cases, extra.



FIG. 296

PRICES

13 sizes, ¼ inch to 1 inch inclusive by 16ths	$18 50
29 sizes, ¼ inch to 2 inches inclusive by 16ths	37 50

DESCRIPTION, FIG. 297

A complete set consists of 45 disks, varying by 16ths of an inch, from ¼ inch to 3 inches diameter, and six handles. Disks ¼ inch and 5/16 inch in diameter have handles attached. The other handles are used respectively with the disks varying in diameter from ⅜ inch to 9/16 inch, ⅝ inch to 1 1/16 inch, 1⅛ inch to 1¾ inch, and from 1 13/16 inch to 3 inches.

Special sizes made to order.

STANDARD PLUG AND RING CYLINDRICAL GAUGES



FIG. 291

We can furnish hardened plug and ring standard gauges (Figs. 291 and 292) as ordered.

Prices furnished on application.



FIG. 292

INTERNAL CYLINDRICAL GAUGES

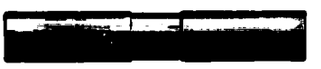


FIG. 293

PRICES

Sizes, Inches.	Each.	Sizes, Inches.	Each.	Sizes, Inches.	Each.	Sizes, Inches.	Each.
½x5/8	$3 70	1 1/16x1 3/16	$5 54	1 5/8x1 3/4	$6 84	2 3/16x2 5/16	$8 48
9/16x1 1/16	3 94	1 ¼x1 ¼	5 64	1 11/16x1 13/16	7 00	2 ¼x2 ⅜	8 68
5/8x¾	4 14	1 3/16x1 5/16	5 74	1 ¾x1 7/8	7 16	2 5/16x2 7/16	8 88
1 1/16x 1 3/16	4 34	1 ¼x1 ⅜	5 84	1 13/16x1 15/16	7 36	2 ⅜x2 ½	9 10
¾x7/8	4 54	1 5/16x1 7/16	5 94	1 7/8x2	7 56	2 7/16x2 9/16	9 80
13/16x15/16	4 74	1 ⅜x1 ½	6 04	1 15/16x2 1/16	7 76	2 ½x2 ⅝	10 50
7/8x1	4 94	1 7/16x1 9/16	6 24	2x2 1/8	7 96		
15/16x1 1/16	5 14	1 ½x1 ⅝	6 44	2 1/16x2 3/16	8 12		
1x1 ⅛	5 34	1 9/16x1 11/16	6 64	2 1/8x2 ¼	8 28		

Prices for single end gauges furnished on application.

STANDARD REFERENCE DISKS

The disk shown, Fig. 295, is valuable for general use in testing holes, adjusting calipers, and as a reference to prove dimensions within its range. Any size from ¾ to 6 inches can be furnished. The ¼ and 5/16 inch made either on a screw or handle.

The width of disk increases with its diameter.

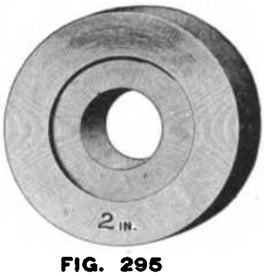


FIG. 295

PRICES

	Each.		Each.
¼ in. to 2 in. inclusive	$1 20	4 9/16 in. to 5 in. inclusive	$3 60
2 1/16 " 3 "	1 60	5 1/16 " 5 ½ "	4 80
3 1/16 " 4 "	2 10	5 9/16 " 6 "	6 00
4 1/16 " 4 ½ "	2 80		

STANDARD REFERENCE DISKS IN SETS

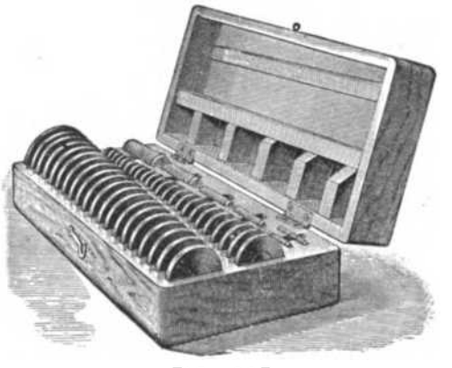


FIG. 297

Price per set..... $50 00

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FIXED CALIPER GAUGES

COMBINED PATTERNS

CLASS B



FIG. 298

CLASS C



FIG. 299

DESCRIPTION, FIGS. 298 AND 299

These gauges are carefully hardened to prevent wear, and are accurately ground to size. The Class B gauges have larger wearing surfaces, are more substantial in design and are guaranteed against all imperfections. Special and millimeter sizes made to order. A specially made case is furnished with a standard set of Class B gauges ¼ inch to 3 inches by 16ths.

PRICES, FIG. 298 AND 299, IN SETS

	Per Set.
¼ to 2 inches by 16ths, Class B	$68 10
¼ " 2 " " " C	54 60
¼ " 3 " " " B	134 66
¼ " 3 " " " C	107 89
¼ " 4 " " " B	220 58
¼ " 4 " " " C	176 69
¼ " 6 " " " B	442 02
¼ " 6 " " " C	354 02

PRICES, FIGS. 298 AND 299

Sizes.	Class B.	Class C.	Sizes.	Class B.	Class C.	Sizes.	Class B.	Class C.	Sizes.	Class B.	Class C.	Sizes.	Class B.	Class C.	Sizes.	Class B.	Class C.	Sizes.	Class B.	Class C.	Sizes.	Class B.	Class C.
¼	$1 44	$1 15	1	$2 16	$1 74	1¾	$3 17	$2 54	2½	$4 13	$3 31	3¼	$5 03	$4 03	4	$5 93	$4 75	4¾	$6 65	$5 32	5½	$7 37	$5 90
5/16	1 44	1 15	1 1/16	2 25	1 81	1 13/16	3 25	2 60	2 9/16	4 21	3 37	3 5/16	5 11	4 09	4 1/16	5 99	4 80	4 13/16	6 71	5 37	5 9/16	7 43	5 95
⅜	1 44	1 15	1⅛	2 34	1 88	1⅞	3 33	2 67	2⅝	4 28	3 43	3⅜	5 18	4 15	4⅛	6 05	4 85	4⅞	6 77	5 42	5⅝	7 49	6 00
7/16	1 44	1 15	1 3/16	2 43	1 95	1 15/16	3 41	2 73	2 11/16	4 36	3 49	3 7/16	5 26	4 21	4 3/16	6 11	4 90	4 15/16	6 83	5 47	5 11/16	7 55	6 05
½	1 44	1 15	1¼	2 52	2 02	2	3 49	2 79	2¾	4 43	3 55	3½	5 33	4 27	4¼	6 17	4 94	5	6 89	5 51	5¾	7 61	6 09
9/16	1 53	1 23	1 5/16	2 61	2 09	2 1/16	3 57	2 86	2 13/16	4 51	3 61	3 9/16	5 41	4 33	4 5/16	6 23	4 99	5 1/16	6 95	5 56	5 13/16	7 67	6 14
⅝	1 62	1 30	1⅜	2 69	2 16	2⅛	3 65	2 92	2⅞	4 58	3 67	3⅝	5 48	4 39	4⅜	6 29	5 04	5⅛	7 01	5 61	5⅞	7 73	6 19
11/16	1 71	1 37	1 7/16	2 77	2 23	2 3/16	3 73	2 98	2 15/16	4 66	3 73	3 11/16	5 56	4 45	4 7/16	6 35	5 09	5 3/16	7 07	5 66	5 15/16	7 79	6 24
¾	1 80	1 44	1½	2 85	2 29	2¼	3 81	3 05	3	4 73	3 79	3¾	5 63	4 51	4½	6 41	5 13	5¼	7 13	5 71	6	7 85	6 28
13/16	1 89	1 52	1 9/16	2 93	2 35	2 5/16	3 89	3 11	3 1/16	4 81	3 85	3 13/16	5 71	4 57	4 9/16	6 47	5 18	5 5/16	7 19	5 76			
⅞	1 98	1 59	1⅝	3 01	2 41	2⅜	3 97	3 18	3⅛	4 88	3 91	3⅞	5 78	4 63	4⅝	6 53	5 23	5⅜	7 25	5 81			
15/16	2 07	1 67	1 11/16	3 09	2 47	2 7/16	4 05	3 24	3 13/16	4 96	3 97	3 15/16	5 86	4 69	4 11/16	6 59	5 28	5 7/16	7 81	5 86			

When ordering please state clearly how sizes are to vary, whether by 16ths, 8ths, or 4ths of inches, also what pattern of gauge is wanted. When not otherwise stated, Class B will be sent. For sizes not listed, price of next size above is charged.

FIXED CALIPER GAUGES

DESCRIPTION, FIGS. 300 AND 301

These gauges are carefully hardened to prevent wear. Made in sizes ranging from ¼ inch to 12 inches by 16ths. Special sizes made to order.

PRICES, FIG. 300 AND 301, IN SETS

	Per Set.
¼ to 2 inches by 16ths, Class B	$86 88
¼ " 2 " " " C	69 57
¼ " 4 " " " B	279 56
¼ " 4 " " " C	223 78
¼ " 6 " " " B	534 60
¼ " 6 " " " C	427 84

CRESCENT PATTERN

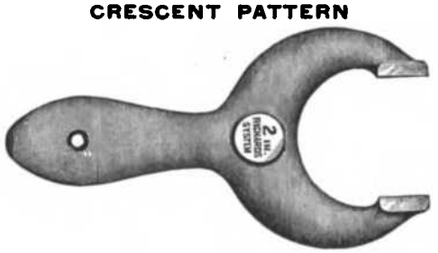


FIG. 300

FLAT BAR PATTERN

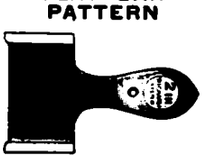


FIG. 301

PRICES, FIGS. 300 AND 301

Prices are for two gauges, one of each pattern. When only one gauge is desired, the price is one-half of this list.

Sizes.	Class B.	Class C.	Sizes.	Class B.	Class C.	Sizes.	Class B.	Class C.	Sizes.	Class B.	Class C.	Sizes.	Class B.	Class C.	Sizes.	Class B.	Class C.	Sizes.	Class B.	Class C.	Sizes.	Class B.	Class C.
¼	$1 80	$1 44	1	$2 76	$2 21	1¼	$4 06	$3 25	2½	$5 26	$4 21	3¼	$6 35	$5 08	4	$7 43	$5 95	4¾	$7 82	$6 26	5½	$8 21	$6 57
5/16	1 80	1 44	1 1/16	2 88	2 31	1 13/16	4 16	3 33	2 9/16	5 35	4 28	3 5/16	6 44	5 16	4 1/16	7 47	5 98	4 13/16	7 86	6 29	5 9/16	8 25	6 60
⅜	1 80	1 44	1⅛	3 00	2 40	1⅞	4 26	3 41	2⅝	5 44	4 35	3⅜	6 53	5 23	4 1/4	7 50	6 00	4⅞	7 89	6 31	5⅝	8 28	6 62
7/16	1 80	1 44	1 3/16	3 12	2 50	1 15/16	4 36	3 49	2 11/16	5 53	4 43	3 7/16	6 62	5 30	4 3/16	7 53	6 03	4 15/16	7 92	6 34	5 11/16	8 31	6 65
½	1 80	1 44	1¼	3 24	2 60	2	4 46	3 57	2¾	5 62	4 50	3½	6 71	5 37	4¼	7 56	6 05	5	7 95	6 36	5¾	8 34	6 67
9/16	1 92	1 54	1 5/16	3 36	2 69	2 1/16	4 56	3 65	2 13/16	5 71	4 57	3 9/16	6 80	5 44	4 5/16	7 60	6 08	5 1/16	7 99	6 39	5 13/16	8 38	6 70
⅝	2 04	1 64	1⅜	3 46	2 77	2⅛	4 66	3 73	2⅞	5 80	4 64	3⅝	6 89	5 51	4⅜	7 63	6 10	5⅛	8 02	6 42	5⅞	8 41	6 72
11/16	2 16	1 73	1 7/16	3 56	2 85	2 3/16	4 76	3 81	2 15/16	5 89	4 71	3 11/16	6 98	5 59	4 7/16	7 66	6 13	5 3/16	8 05	6 45	5 15/16	8 44	6 75
¾	2 28	1 83	1½	3 66	2 93	2¼	4 86	3 89	3	5 98	4 78	3¾	7 07	5 66	4½	7 69	6 15	5¼	8 08	6 47	6	8 47	6 77
13/16	2 40	1 92	1 9/16	3 76	3 01	2 5/16	4 96	3 97	3 1/16	6 08	4 86	3 13/16	7 16	5 73	4 9/16	7 73	6 18	5 5/16	8 12	6 50			
⅞	2 52	2 02	1⅝	3 86	3 09	2⅜	5 06	4 05	3⅛	6 17	4 94	3⅞	7 25	5 80	4⅝	7 76	6 21	5⅜	8 15	6 52			
15/16	2 64	2 11	1 11/16	3 96	3 17	2 7/16	5 16	4 13	3 3/16	6 26	5 01	3 15/16	7 34	5 88	4 11/16	7 79	6 24	5 7/16	8 18	6 55			

When ordering please state clearly how sizes are to vary, whether by 16ths, 8ths or 4ths of inches; also what pattern of gauge is wanted. In the absence of instructions, Class B will be sent.

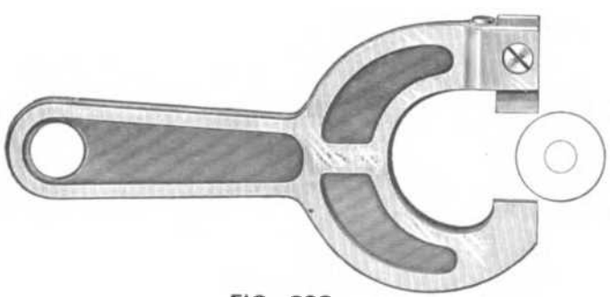


FIG. 302

ADJUSTABLE CALIPER GAUGES

DESCRIPTION, FIG. 302

These gauges are hardened and accurately ground to size, and are fitted with an adjustable jaw. A disk accurately ground to size is furnished with each gauge for testing and correcting the same. Sizes kept in stock from ¼ inch to 2 inches.

PRICES FURNISHED ON APPLICATION

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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LIMIT GAUGES

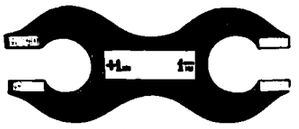


FIG. 303

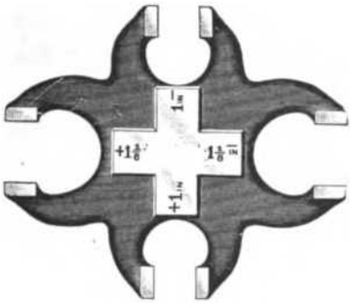


FIG. 304

PRICES, FIG. 303

Sizes, Inches.	Each.	Sizes, Inches.	Each.
¼	$1 80	1 7/16	$3 56
5/16	1 80	1½	3 66
3/8	1 80	1 9/16	3 76
7/16	1 80	1⅝	3 86
½	1 80	1 11/16	3 96
9/16	1 92	1¾	4 06
⅝	2 04	1 13/16	4 16
11/16	2 16	1⅞	4 26
¾	2 28	1 15/16	4 36
13/16	2 40	2	4 46
⅞	2 52	2 1/16	4 56
15/16	2 64	2⅛	4 66
1	2 76	2 3/16	4 76
1 1/16	2 88	2¼	4 86
1⅛	3 00	2 5/16	4 96
1 3/16	3 12	2⅜	5 06
1¼	3 24	2 7/16	5 16
1 5/16	3 36	2½	5 26
1⅜	3 46		

PRICES, FIG. 304

Sizes, Inches.	Each.	Sizes, Inches.	Each.
¼	$2 25	1 7/16	$4 12
5/16	2 25	1½	4 25
3/8	2 25	1 9/16	4 37
7/16	2 25	1⅝	4 50
½	2 25	1 11/16	4 60
9/16	2 37	1¾	4 70
⅝	2 49	1 13/16	4 80
11/16	2 62	1⅞	4 90
¾	2 75	1 15/16	5 00
13/16	2 87	2	5 18
⅞	3 00	2 1/16	5 36
15/16	3 12	2⅛	5 54
1	3 25	2 3/16	5 74
1 1/16	3 37	2¼	5 94
1⅛	3 50	2 5/16	6 14
1 3/16	3 62	2⅜	6 34
1¼	3 75	2 7/16	6 54
1 5/16	3 87	2½	6 75
1⅜	4 00		

These gauges are made with any desired limit of variation.

STANDARD MEASURING MACHINE

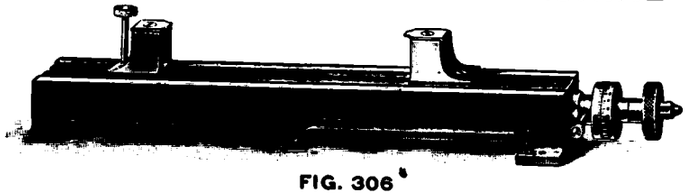


FIG. 306

This is a standard form of Measuring Machine for use in the tool room in preparing templates, reamers, mandrels, etc., etc. It will measure differences of the 1/10000 of an inch. Adjustments in the machine provide for the wear of measuring points.

Machine to measure from 0 to 4 in. without test bars..... $60 00
" " " " 0 " 12 " with 3 " " 120 00
" " " " 0 " 24 " " 4 " " 150 00

Cases are furnished with the 24 inch machines.

SIX INCH CALIPERING MACHINE

DESCRIPTION, FIG. 305

Calipering Machines are used to transmit sizes, and differ from fixed calipers in that they record as the size is approached, and show how much a piece is to be reduced. Machines of this type are used in connection with standard sizes as an accurate pair of calipers, and have the features of a measuring machine, as they will measure accurately above and below a certain size after having been adjusted and the index set for a standard size. The machine shown above will caliper to six inches. The index wheel is divided to read to ten thousandths of an inch.

Price complete.....$175.00

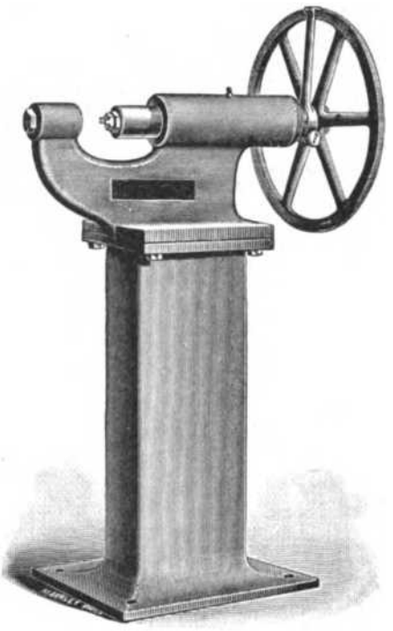


FIG. 305

PATENT MEASURING MACHINE

CRESCENT FORM

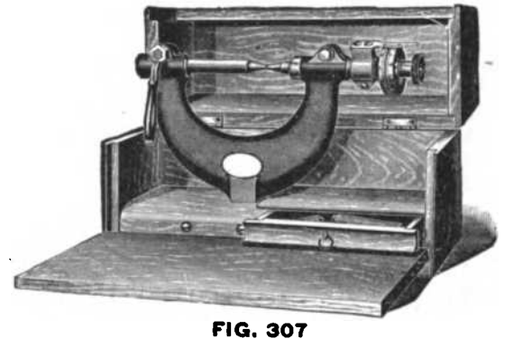


FIG. 307

Measuring screw 10 or 20 threads to the inch or one millimeter pitch

Complete, in mahogany case, with wrench and distance pieces:
Capacity, 4 inches or 10 centimeters..... $40 00
" 6 " 15 " 50 00
" 8 " 20 " 60 00

PATENT INSPECTOR'S GAUGES

DESCRIPTION, FIGS. 308 AND 309

These gauges were designed at the suggestion of a government inspector that there was no tool or instrument made suited for their needs for measuring the thickness of ship plates, boiler plates, etc., where measure had to be taken through a bolt hole, or hole drilled for the purpose.

The cuts show the shape of the hook end when inserted through a hole. The contact point is carried in beyond any burr formed by drilling, insuring correct measurement.

The slide measuring rod is graduated on two opposite sides, one side reading 32ds, the other 40ths. Reading from the top of the knurled friction slide, which, after the contact ends of the gauge are brought together against the thing being measured, is slipped down against the top, the graduations above it show the exact measure. Then the measuring rod may be instantly withdrawn, the hook part removed, and all taken to the light and the correct measure, indicated above the friction slide, easily read.

The knurled nut over the split hub serves to contract same to fit close on the slide or to lock firm, making a solid gauge, convenient for any mechanic.

They are adapted for the vest pocket.

NO. 30

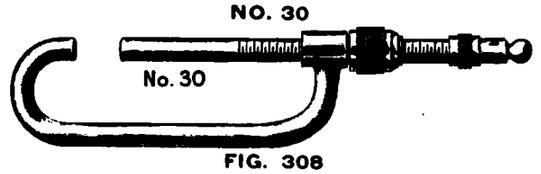


FIG. 308

No. 30. Weight about 1 ounce. Width, 1 inch. Capacity, 1⅞ inches. Each, $2.00.

NO. 31

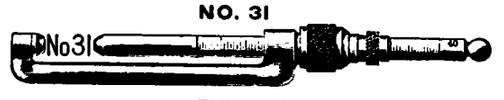


FIG. 309

This gauge is similar to Fig. 308, but is made narrower for use in smaller holes.

No. 31. Width, 7/16 inch. Capacity, 1 13/16 inches. Each, $2.00.

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ADJUSTABLE CALIPER GAUGE

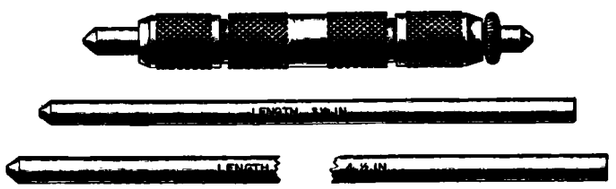


FIG. 310

Designed for internal measurements of large cylinders and of distances between uprights. The body of the tool is a steel tube provided with a binding chuck on each of its ends. Into one end is clamped a plain rod, that, when the chuck is loosened, can be quickly adjusted to any approximate size. Into the other end is screwed a threaded anvil for fine adjustment.

To set the gauge, loosen the chuck that clamps the wire rod, slide the rod out or in to the required size, and clamp it. If not quite correct, loosen the chuck on the opposite end and turn the anvil out or in what little is needed.

Made from steel throughout, and nicely finished.

No.		Prices.
125	2½ inch with three rods, capacity from 2½ inch to 6¾ inch	$1 00
	6 " " " " 6 " 16 "	1 25

The diameter of the steel rods is .150 inch. Extra rods furnished at 2 cents per inch.

INSIDE MICROMETER

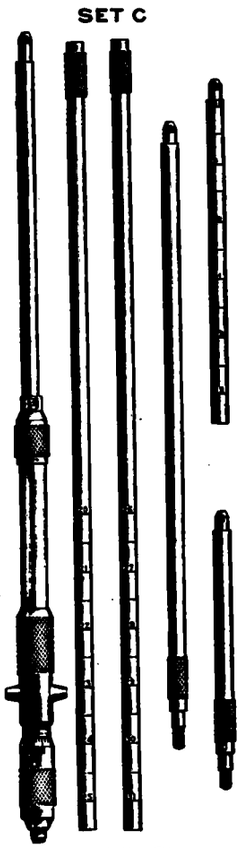


FIG. 314

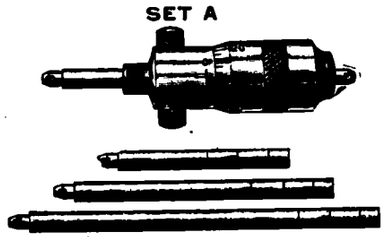


FIG. 312

DESCRIPTION, FIGS. 312 AND 314

Both have screw and nut same as the Improved No. 3 Micrometer Caliper (Fig. 316, Page 69) and read in thousandths. Set A (Fig. 312) measures from 2 inches to 8 inches, has ½ inch movement of screw, and requires four extension rods. The rods are provided with a hardened steel adjustable anvil in ends, which permits adjusting for wear. A small binding screw locks rods when set. Rods are marked in ½ inch divisions and set to a similar line on a projection of the barrel.

Set C (Fig. 314) is similar in all respects with the exception that it measures from 8 inches to 32 inches, with four extension rods, and has a lock for screw as well as rods, and has one inch movement of the screw. This is a very strong and serviceable tool as well as an accurate one. We can furnish rods of extra lengths for these tools when desired.

An auxiliary handle accompanies Sets A, B, and D, which is used by removing the nut opposite the lock nut and screwing the handle in place of same, thereby enabling one to take measurements in holes and other places where the micrometer could not otherwise be used.

PRICES, FIGS. 312 AND 314

No.		Prices.
120	Set A. With 4 rods, to measure from 2 to 8 inches, in case	$4 50
	Set B. " 7 " " " 2 to 12 " "	5 50
	Set C. " 4 " " " 8 to 32 " "	6 50
	Set D. Comprising sets A and C	10 50
	Handle, extra	50

Extra rods at 5 cents per inch.

MICROMETER CALIPER GAUGE

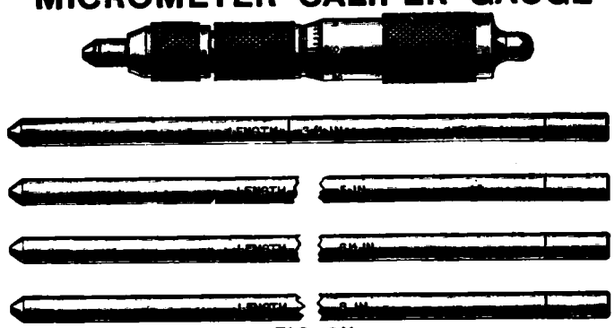


FIG. 311

Designed for close internal measurements, indicating thousandths where a definite distance in inches is not essential. The body of the tool is a steel tube, provided at one end with a binding chuck in which are fastened the plain rods, and it can quickly be adjusted to any approximate size. The other end has sleeve and body of barrel marked and graduated, giving a reading in thousandths, and has ¼ inch movement of screw. Anvil in end of sleeve is hardened, as are those in ends of rods.

No.		
126	Capacity 2½ inch to 10 inch (with five rods)	$2 00
	Leatherette case, extra	75

Extra rods at 2 cents per inch.

METRIC

126M	Capacity 7 cm. to 25 cm.	$2 00
	Leatherette case, extra	75

MICROMETER GAUGE
(UNITED STATES GOVERNMENT)

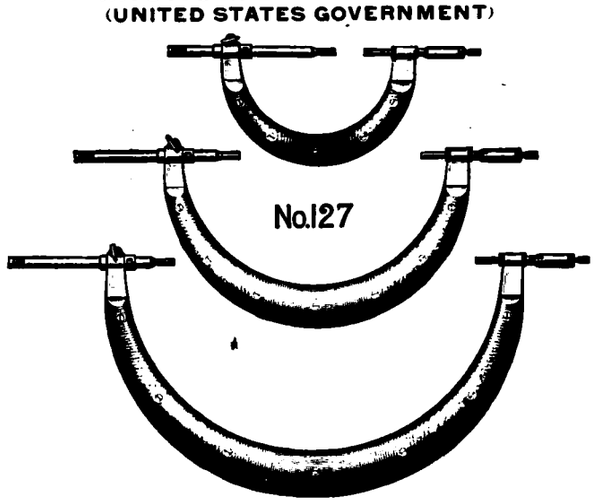


FIG. 313

These gauges were designed and made to meet the requirements of the Government in making big guns and other work in the Ordnance Departments of Government shops, where they are now used. The frames are cut from steel plates, nicely finished. The sides are covered with hard fiber, put on with brass screws, preventing inaccuracy through expansion caused by change in temperature when held in warm hands. The micrometer screw adjusts 1 inch, reading 1/1000 of an inch, and is provided with patent lock nut. The tail spindle has fine graduation marks one inch apart, and may be accurately set to sizes required within its scope. Contact ends of spindles are slightly convex to prevent catching on cylindrical work.

No.		Prices.
127	0 inch to 4 inch	$25 00
	4 " 8 inch	37 00
	8 " 12 inch	50 00
	Corresponding sizes in metric measure at the same prices.	

PRICES, FIGS. 312 AND 314, CONTINUED

	For measurement by hundredths of a millimeter.	
120M	Set A. To measure from 5 cm. to 20 cm. in case	$4 50
	Set B. " " 5 " 30 "	5 50
	Set C. " " 20 " 76½ "	6 50
	Set D. Comprising sets A and C	10 50
	Handle, extra	50
	This tool is similar to No. 120, has one inch adjustment of the screw, and is put up in a plush lined oak case.	
121	Set A. Stock with 1 rod, 32 to 57 inches	$25 00
	Set B. " 2 " 32 to 82 "	30 00
	Set C. " 3 " 32 to 107 "	35 00
	This tool can be obtained in the corresponding metric sizes at the prices given above.	

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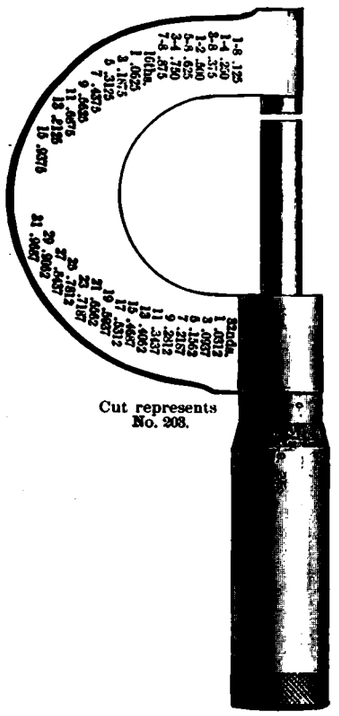
PLAIN

SPEEDED SCREW MICROMETERS

WITH LOCK NUT AND THUMB ATTACHMENT

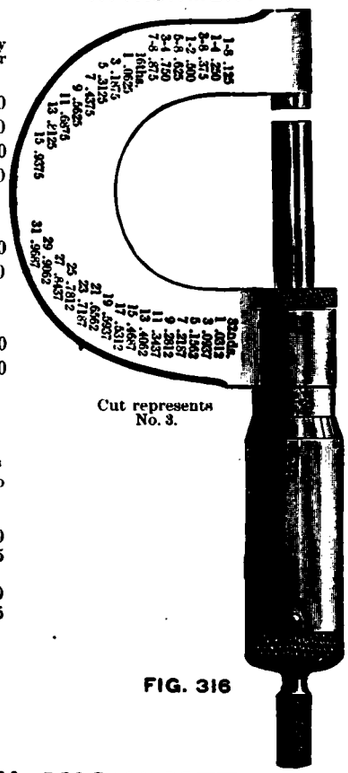
PRICES, FIGS. 315 AND 316

One inch; for measurement by thousandths up to one inch.	One inch: for measurement by ten thousandths up to one inch.	Metric; for measurement by hundredths of a millimeter up to 25 millimeters
No. 3.....$6 00	No. 113 .....$7 00	No. 3M.....$6 00
In leather case 6 50	In leather case 7 50	In leather case. 6 50
No. 201. Same as No. 3 but without thumb attachment..... 5 50	No. 207 ..... 6 50	No. 204M..... 5 50
In leather case 6 00	In leather case 7 00	In leather case. 6 00
No. 202. Same as No. 3 but without lock nut.... 5 50	No. 208. Same as 113 but without lock nut..... 6 50	No. 205M. Same as No. 3M but without lock nut.... 5 50
In leather case 6 00	In leather case 7 00	In leather case. 6 00
No. 203. Same as No. 201 but without lock nut.... 5 00	No. 209. Same as No. 207 but without lock nut.... 6 00	No. 206M. Same as No. 204M but without lock nut 5 00
In leather case.. 5 50	In leather case. 6 50	In leather case. 5 50



Cut represents No. 203.

FIG. 315



Cut represents No. 3.

FIG. 316

TWO INCHES AND METRIC

For measurement by thousandths from 1 inch to 2 inches.	For measurement by ten thousandths from 1 inch to 2 inches, with thumb piece.
No. 2.....$6 50	No. 213..... $7 50
In leather case..... 7 25	In leather case..... 8 25
No. 217..... 6 00	No. 214. Same as above without thumb piece..... 7 00
In leather case..... 6 75	In leather case..... 7 75
Nos. 2M and 217M, for measurement by hundredths of a millimeter, from 25 to 50 millimeters, prices same as above.	

ALL SENT IN CASE UNLESS OTHERWISE ORDERED

ATTACHMENT FOR TWO INCH MICROMETERS

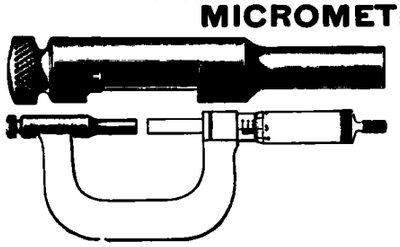


FIG. 317

By using this attachment, any of the 2 inch micrometers listed above, may be instantly converted into a 1 inch micrometer.

Price .....Each $2 00

SPEEDED SCREW MICROMETERS

WITH FINGER RING

PRICES, FIG. 319



FIG. 319

	Each.
No. 220. For measurement by thousandths up to 1 inch, with lock nut and thumb attachment.....$6 75	
In leather case..... 7 25	
No. 221. For measurement by thousandths up to one-half inch, with lock nut and thumb attachment 5 75	
In leather case..... 6 25	

Note.—The finger ring will be furnished on any of the speeded screw micrometers, Figs. 315, 316, 318 and 320, when ordered, at an additional cost of 75 cents.

SPEEDED SCREW MICROMETERS

HALF INCH

For measurement by thousandths up to one-half inch, also by hundredths of a millimeter up to 13 millimeters.

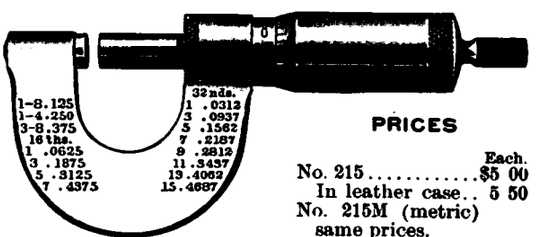


FIG. 318

PRICES

	Each.
No. 215.....	$5 00
In leather case..	5 50
No. 215M (metric) same prices.	

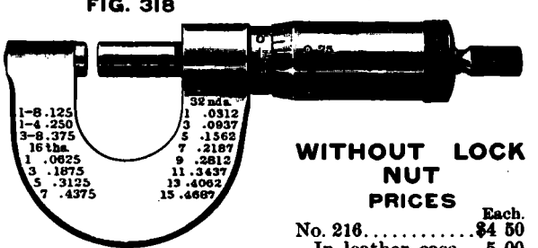


FIG. 320

WITHOUT LOCK NUT

PRICES

	Each.
No. 216.....	$4 50
In leather case..	5 00
No. 216 M (metric) same prices.	

Both Figs. 318 and 320 sent in case unless otherwise ordered.

RATCHET STOP FOR MICROMETERS

DESCRIPTION, FIG. 321

In using this device the ratchet slips by the pawl when more than a certain amount of pressure is applied, and so prevents the measuring spindle from turning further and perhaps springing the instrument.

It is valuable where a number of measurements have to be taken quickly, and especially where measurements are taken by more than one person with the same micrometer, as by its use the same amount of pressure is applied to the objects measured, in each case.

This ratchet stop will be furnished in place of the speeded screw thumb attachment on any of the above micrometers, when so ordered, without extra charge.

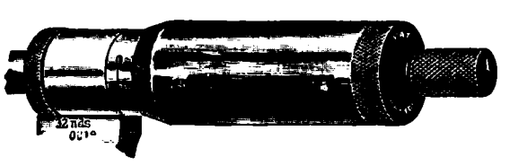


FIG. 321

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MICROMETER AND WEIGHT INDICATOR

U.S. STANDARD METAL PLATE

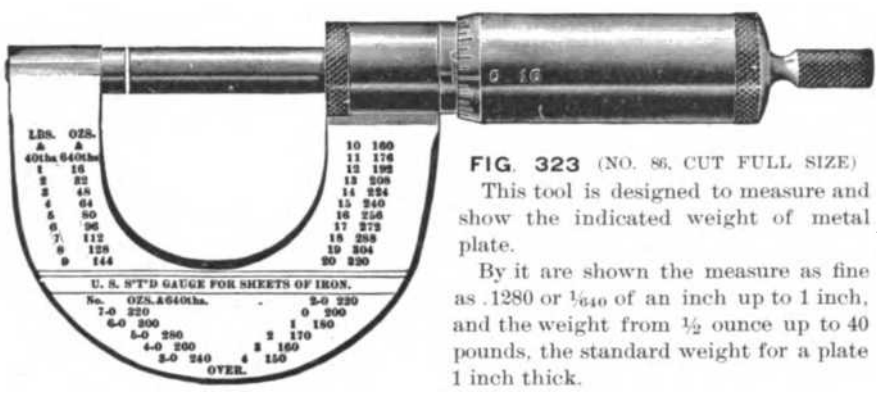


FIG. 323 (NO. 86, CUT FULL SIZE)

This tool is designed to measure and show the indicated weight of metal plate.

By it are shown the measure as fine as .1280 or 1/640 of an inch up to 1 inch, and the weight from ½ ounce up to 40 pounds, the standard weight for a plate 1 inch thick.

The numbers and figures on the frame, in connection with graduations upon stem and sleeve, will show the above results when read according to the directions sent with each indicator.

No. 86.....Each $6 50
" in leather case..... " 7 00
Sent with case unless otherwise ordered.

PATENT SIX INCH MICROMETER

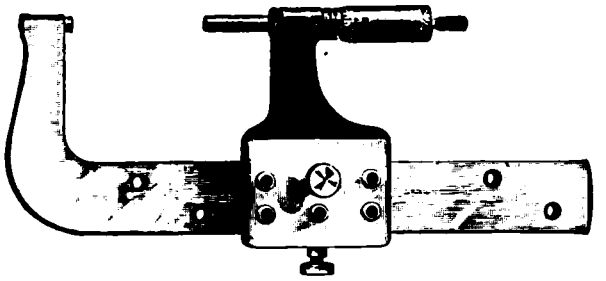


FIG. 322

This micrometer will measure round work to 4¼ inches, and flat work to 6 inches. It weighs 21 ounces, and is rigid and accurate. It can be quickly set to exact position, from 1 inch to 6 inches, by inserting a plug, as shown. A valuable feature of this tool is a set of six independent holes through both the movable part and the beam, each hole being bushed with hardened steel bushings, ground and lapped to fit the plug which locates to exactness the various inch settings.

Each.....$20 00
With leatherette case, extra..... 1 50

For measurement by hundredths of a millimeter to 15 cm. The holes are 25 mm. apart. Prices as above.

MICROMETER CALIPERS

PLAIN

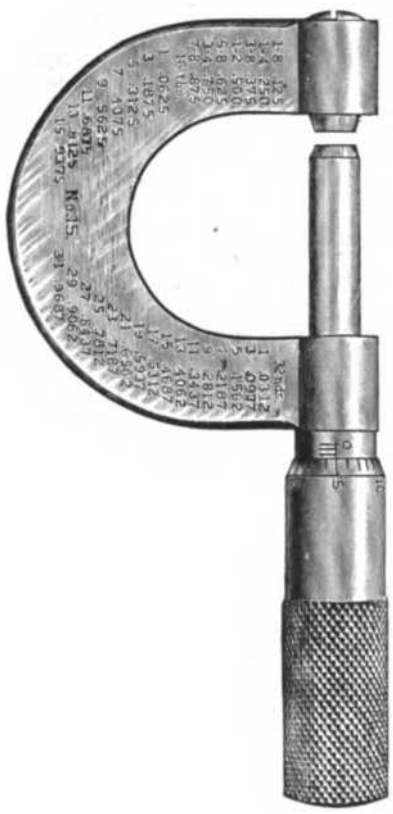


FIG. 324
Cut represents Nos. 15, 16, 19 and 20.

PRICES AND DESCRIPTION, FIGS. 324 AND 325

Nos.	Description.	Price each.	Cases, price each.
1.	Measures to 5/10 inch by 1,000ths, 1⅞ inches long, beveled points....	$4 00	$0 50
2.	Measures to ½ inch by 1,000ths and mm. less than 13 by 100ths, 2⅝ inches long, beveled points	4 50	50
3.	" ½ " 10,000ths, 2⅝ inches long, beveled points....	5 50	50
4.	" ½ " 1,000ths, same as No. 2, flat points	4 50	50
5.	" ½ " 10,000ths, 2⅝ inches long, flat points.....	5 50	50
6.	" sizes to 0000, Brown & Sharpe gauge, by 10ths of millimeters, 2 9/16 inches long, beveled points.....	5 50	50
8.	Measures to 1 inch by 1,000ths, 4½ inches long, flat points, also to 25 mm. by 100ths, clamp nut.....	5 50	50
14.	Measuring tubing from 5/16 inch diameter inside by 1.000ths, 2⅞ inches long, flat points.....	4 50	50
15.	Measuring to 1 inch by 1.000ths, also 25 mm. by 100ths, 3⅞ inches long, beveled points	5 00	50
16.	Measuring to 1 inch by 10,000ths, 3⅞ inches long, beveled points....	6 00	50
17.	" 1 " 1.000ths, same as No. 15, with clamp screw, 3⅞ inches long, beveled points.....	5 50	50
18.	Measuring to 1 inch by 10,000ths, 3⅞ inches long, beveled points....	6 50	50
19.	" 1 " 1.000ths, also 25 mm. by 100ths, 3⅞ inches long, flat points.....	5 00	50
20.	Measuring to 1 inch by 10,000ths, 3⅞ inches long, flat points.....	6 00	50
21.	" 1 " 10,000ths, with clamp screw, 3⅞ inches long, flat points	6 50	50
22.	Measuring to 1 inch by 1,000ths, with clamp screw, 3⅞ inches long, flat points.....	5 50	50
30.	Measuring to 2 inches by 1,000ths, also 50 mm. by 100ths, with standard gauge, about 5¼ inches long, beveled points.....	8 00	75
31.	Measuring to 2 inches by 1,000ths, same as No. 30, with clamp screw, about 5¼ inches long, beveled points	8 50	75
32.	Measuring to 2 inches by 10,000ths, about 5¼ inches long, beveled points	9 00	75
33.	Measuring to 2 inches by 10,000ths, with clamp screw about 5¼ inches long, beveled points.....	9 50	75
38.	Measuring from 1 to 2 inches by 1,000ths, also from 25 to 50 mm. by 100ths, about 5¼ inches long, beveled points.....	6 50	75
39.	Measuring from 1 to 2 inches by 1,000ths, same as No. 38, with clamp screw	6 50	75
40.	Measuring from 1 to 2 inches by 10,000ths, with standard gauge, about 5¼ inches long, beveled points	7 00	75
41.	Measuring from 1 to 2 inches by 10,000ths, with clamp screw and standard gauge, about 5¼ inches long, beveled points.....	7 50	75
60.	Measuring to 6 inches length or 4 inches diameter by 1,000ths, also all sizes less than 150 mm. in length and 100 mm. in diameter by 100ths of a mm., about 8½ inches long, flat points.....	30 00	....
64.	Measuring to 12 inches length or 6 inches diameter by 1,000ths also all sizes less than 300 mm. in length and 150 mm. in diameter by 100ths of a mm., flat points	35 00	....
70.	Measuring to ⅜ inch by 1,000ths, paper gauge, large, flat points, also less than 9 mm. by 100ths.....	5 50	50
71.	Measuring to ¼ inch by 1,000ths, paper gauge, 2⅝ inches long, large, flat points	5 00	50

WITH CLAMP SCREW



FIG. 325
Cut represents Nos. 17, 18, 21, 22, 31, 33, 39 and 41.

RATCHET STOP

Can be furnished with any micrometer in list above at an addition of 50 cents to regular price. It is an advantage in measuring a number of pieces, for if more than a certain amount of pressure is exerted the ratchet will slip and measuring spindle stops.

COLUMBIA SCREW MICROMETER

CLAMP SCREW, IMPROVED FRICTION BARREL

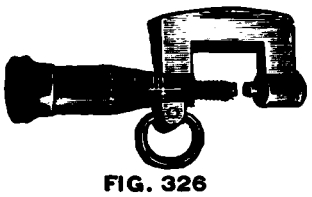


FIG. 326

PRICES, FIG. 326

	Each.
No. 80. Reads to ½ inch by 1000ths.	$4 00
" 1 " "	5 00
" 90. " 20 millimeters by 100ths	6 00

METRIC EXTENSION SCREW MICROMETER

DESCRIPTION, FIG. 327

Reads up to 40 millimeters by 100ths, with clamp screw and improved friction barrel.

PRICE, FIG. 327

No. 93.....Each $10 00

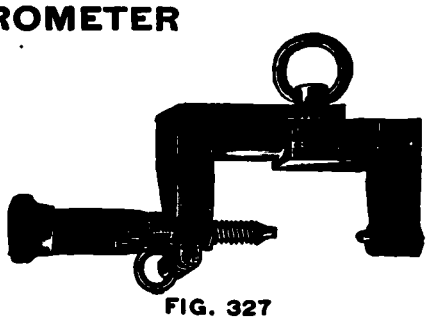


FIG. 327

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MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

OUTSIDE MICROMETER CALIPER

DESCRIPTION, FIG. 328

The illustration is of a new Micrometer Caliper having a bow of I section and with its anvil formed solidly with the frame, which is of steel; the adjustment commonly made by an anvil screw is made in this tool at the other end. The cut shows the one inch caliper full size, which measures from 0 to 1 inch by thousandths. The two inch size starts at one inch and measures two inches, it being the same as the one inch in other respects.

The anvil being the same size as the screw and end of the frame makes the caliper convenient for measuring very close to a shoulder, and this, with the proportion of opening of the bow, allows a shoulder $\frac{3}{16}$ inch high to be measured up to the full capacity of the tool. The anvil is also made higher than common so that measuring can be done in a recess, or back of a rib or other slight projection.

There are no decimal equivalents stamped upon the bow or frame, a similar result being accomplished in another way. As brought out in the cut (Fig. 328), graduations on the under side are extended on every $\frac{1}{8}$ inch division or those that read decimally .125 inch. These lines are numbered on the lower side from 1 to 8, so that the tool is readily set by eighths without considering the decimal graduation at all, and without any manner of calculation. Decimal equivalents within $\frac{1}{8}$ inch are stamped upon the thimble, so if a person chooses he need not use the decimal system except for measurements between eighths, but this arrangement in no way interferes with reading the tool in decimals the regular way. They are made for everyday use in the machine shop, so some points of finish not necessary to the satisfactory working of the tool are omitted. The bows or frames, like ordinary snap gauges, are not finished, further than being nicely japanned. A special machine has been constructed for cutting the threads upon the screws, and with this accurate and smooth threads are secured upon unannealed tool steel.

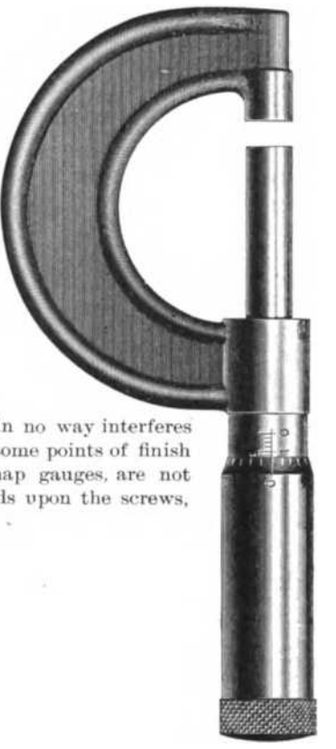


FIG. 328

PRICES, FIG. 328	Each.
One inch	$8 50
Two inch	3 50
End measure for adjusting 2 inch if desired	75
Morocco case for 1 inch	75
" " " 2 inch	1 00

HALF-INCH MICROMETER CALIPER

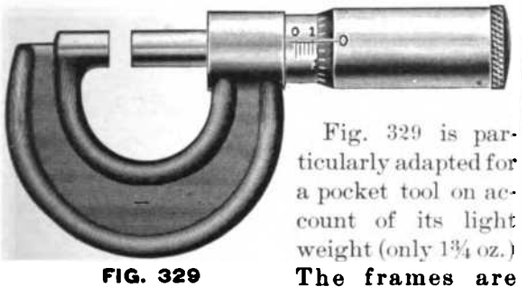


FIG. 329

Fig. 329 is particularly adapted for a pocket tool on account of its light weight (only $1\frac{3}{4}$ oz.) The frames are drop forged from bar steel and finished by nickel plating.

This tool we recommend particularly for a wire and sheet metal gauge.

Price.....each, $3.00

LARGE MICROMETER CALIPERS

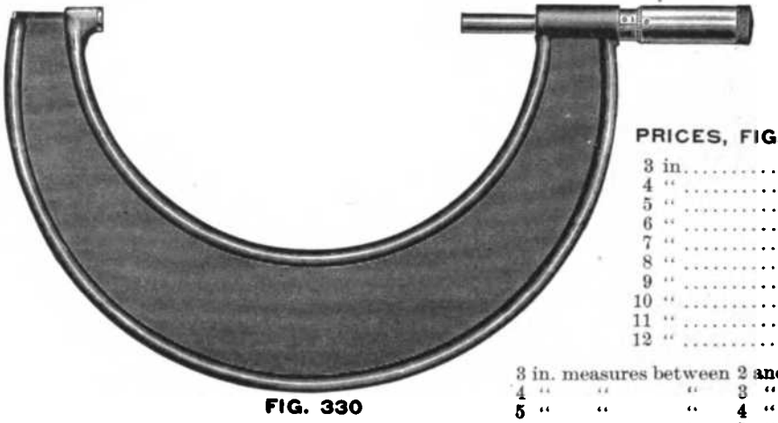


FIG. 330

PRICES, FIG. 330	
3 in.	$5 00
4 "	6 00
5 "	7 00
6 "	8 00
7 "	13 50
8 "	14 50
9 "	15 50
10 "	16 50
11 "	17 50
12 "	18 50

3 in. measures between 2 and 3 in.
4 " " " 3 " 4 "
5 " " " 4 " 5 "
6 " " " 5 " 6 "

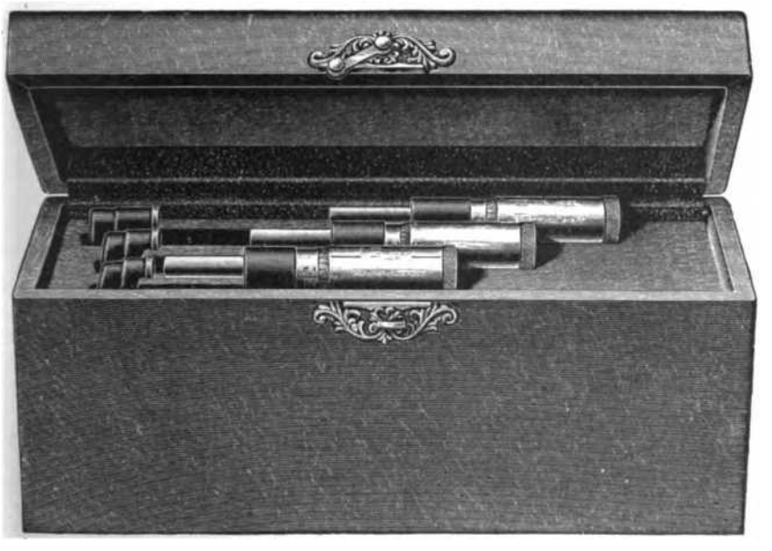


FIG. 331

MICROMETER CALIPERS IN SETS

PRICES, FIG. 331

	Prices.
No. 18—Set of Micrometer Calipers, from 0 to 3 inch, in morocco leather case, as shown in cut	$12 00
No. 19—Set of Micrometer Calipers, from 0 to 6 inch, in polished oak case	35 00

SPECIAL MICROMETER HEADS

We are prepared to furnish special micrometer heads for purposes of fine adjustments in parts of tools or machines at reasonable rates.

As the adjusting screw in the above micrometers, for wear on end of screw and anvil, is inside the thimble, the micrometer heads are complete in themselves, with adjustment, so they are especially suited for such a purpose.

Send us rough sketch of what is wanted.

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MICROMETER CALIPER

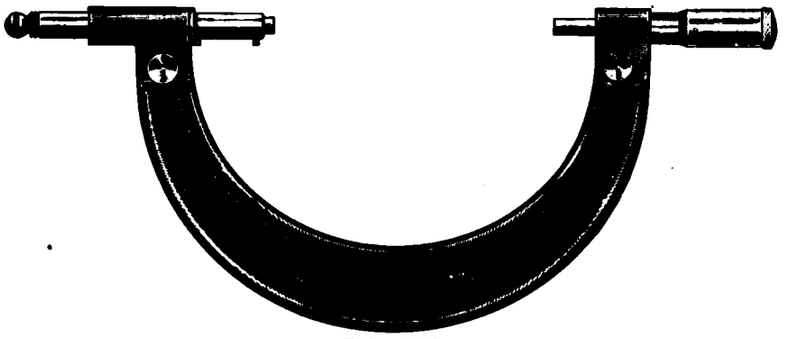


FIG 332

DESCRIPTION AND PRICES, FIG. 332

The screw has a range of one inch, as in ordinary micrometers, and the anvil has a series of accurately adjusted stops by which it can be set to caliper the size of work desired within the range of the tool; all contact points are hardened, working parts are protected, and compensation for wear is provided.

Nos.		Inches.	Prices, Each
2	Calipers, Diameters from	0 to 3	$ 8 00
3	" " "	3 to 6	10 00
4	" " "	6 to 9	20 00
5	" " "	9 to 12	30 00
Cases finished in natural wood and lined			75

BELLOWS' BEAM MICROMETER

DESCRIPTION, FIG. 333

This is a light, convenient and valuable instrument for mechanics desiring close measurements. It has all of the accuracy of the ordinary micrometer, and is only limited in range by the length of its beam. The beam is provided with two heads, one fast, the other loose. The loose head is dovetailed to the beam, open on one side and flush with face of the beam, which greatly facilitates its adjustment, and is provided with a micrometer screw having one-half inch adjustment. Set in the face of the loose head on an angle of ten degrees, and held in place by a thumb nut on the reverse side, is a hardened stop, which being angular on its sides and having no bearing on its bottom, will always adjust itself in exactly the same position. The beam is divided in half inches by the insertion of steel pins, and the loose head is quickly and accurately set by bringing the stop in its face to bear against them, and when set is held in position by a locking screw and nut which acts like a gib, bringing the head to place without any crowding or twisting, such as is liable to occur when held in the usual manner.

Fig. 333A is a section of the micrometer screw, nut and fastening device.

A is a tapering nut split through on one side its entire length, and part through on the other, and, in case of wear, is contracted by means of the nut, B. To compensate for wear on the micrometer screw and anvil, the shell is made adjustable; and is held by the taper-headed screw, C, expanding the micrometer screw. D is a split bushing which is contracted by the cam pin, E, thus holding the screw fast and making a set gauge.

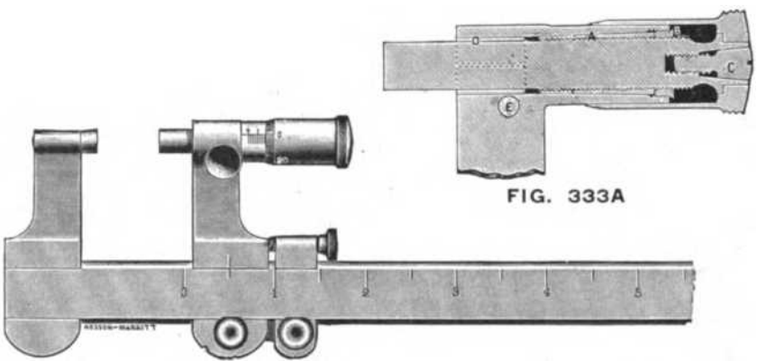
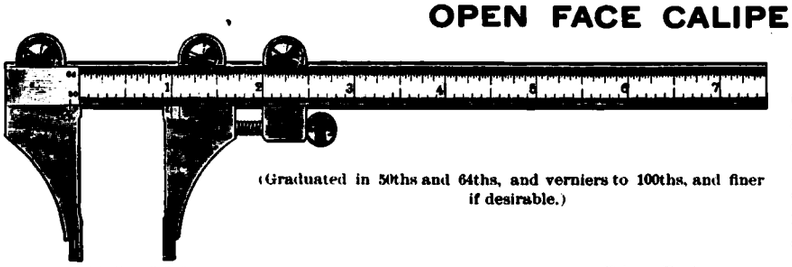


FIG. 333A

FIG. 333

	Prices, Each.
4 inch	$12 00
6 "	15 00
Morocco cases, extra	1 25

OPEN FACE CALIPER GAUGE



(Graduated in 50ths and 64ths, and verniers to 100ths, and finer if desirable.)

FIG. 334

	Prices, Each. Not Hardened.	Hardened.
4 inch	$4 00	$5 00
6 "	5 00	6 00
Morocco cases for above	each, 1 25	

DESCRIPTION, FIG. 334

The advantage of this tool consists in having heads dovetailed, so that the heads are flush with the beam on the face and the graduations show the entire length. The heads are quickly and accurately adjusted, and are firmly locked in position by a screw, with beveled head bearing on the beveled edge of the blade and drawn to its seat by a thumb nut on the reverse side, thus avoiding the inaccuracy which is so liable to occur when fastened with a set-screw in the usual manner. Both heads are movable, but tools with one fast head will be furnished if ordered.

Six inch.....Calipers Six inches
Four inch.....Calipers Four inches

BOSS CALIPER GAUGE

DESCRIPTION AND PRICES, FIG. 335

The sliding jaw, having an open face, its position on the blade is accurately known and any desired adjustment can be made at once; while being adjusted from the center of the heads with the sliding head held vertical by the adjusting rod, the heads are always parallel to each other and to the graduations in the blade. Very fine adjustments can be made by the use of the thumb nut on the end of the adjusting rod, and the sliding head can be firmly locked in position with the thumb nut on reverse side.

Inches.	Prices, Each.
6	$3 50
9	4 00
12	4 50

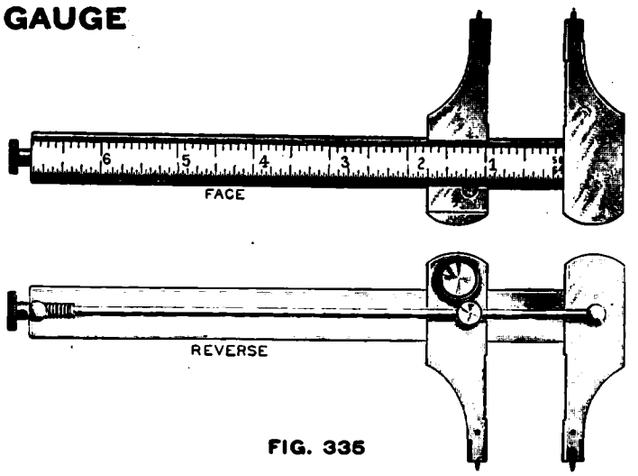


FIG. 335

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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STEEL CALIPER RULE

ENGLISH OR METRIC MEASURE



FIG. 336

These rules are found convenient for use in the stock room or store, in selecting sheet or bar stock, wire, tubing, etc.

They are made in two sizes, 3 inch or 75 millimeters, and 4 inch or 100 millimeters, when closed; and about ⅛ inch thick. The slide of the 3 inch or 75 millimeter can be drawn out to measure 2¼ inches, or 50 millimeters; and of the 4 inch or 100 millimeters, to measure 3¼ inches or 75 millimeters.

The English Rules are divided into parts of an inch as follows:

	A	B	C	D
1st cor.	8, 14, 28	8, 14, 28	8	8
2d cor.	12, 24, 48	12, 24, 48	16	16
3d cor.	16, 32, 64	16, 32, 64	32	32
4th cor.	20, 50, 100	20, 50, 100	64	64
Slide,	64, 32	64, 100	32, 64	64, 100

The Metric Rules are graduated to millimeters and half millimeters.

Nos.		Each.
360.	3 inch	$2 00
361.	4 "	2 50
362.	75 millimeter	2 00
363.	100 "	2 50

SLIDE CALIPER RULE

ENGLISH OR METRIC MEASURE



FIG. 337

The Slide Caliper Rule shown in cut is of steel, about 4³⁄₁₆ inches long and 1⁄₁₆ inch thick. It is graduated on both corners to 32ds of an inch.

The slide is held in place by a tongue and groove.

The jaws are ⅜ of an inch deep.

The Metric Rules are graduated to half millimeters.

Nos.		Each.
365.	English measure	$1 25
367.	Metric measure	1 25

LOCK SLIDE CALIPER RULE

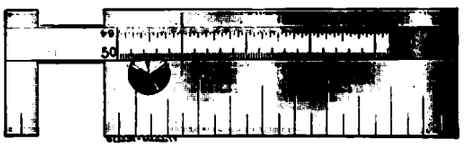


FIG. 338

The slide in this rule is graduated in 50ths and 64ths and verniers to 100ths, is quickly and accurately adjusted, and when adjusted can be firmly locked in position by a thumb nut on reverse side.

No.		Each.
527	3 inch	$2 00
	4 "	2 50

INSIDE CALIPER RULE

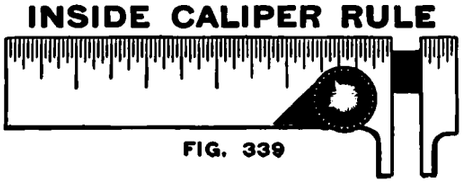


FIG. 339

No.		Each.
528	3 inch	$2 50
	4 "	3 00

POCKET SLIDE CALIPER

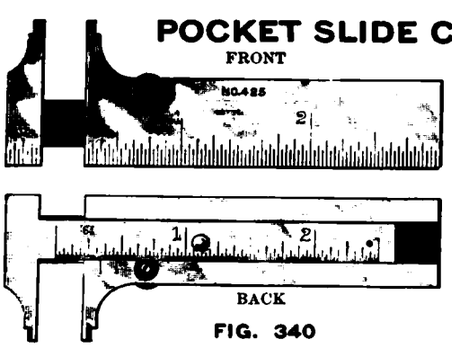


FIG. 340

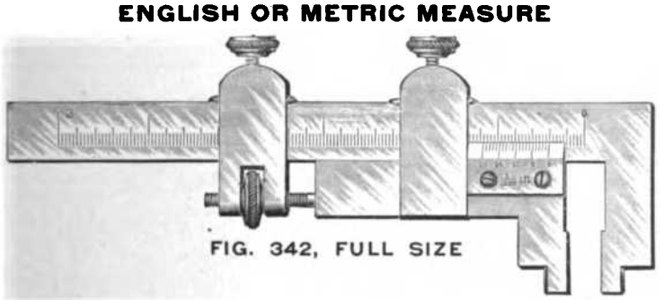
DESCRIPTION, FIG. 340

Graduated in 32ds and 64ths. The improved clamping device is a valuable feature.

No.		Each.
425.	3 inch	$2 00

POCKET VERNIER CALIPER

ENGLISH OR METRIC MEASURE



No.	Each.		Each.
680	$10 00	In morocco case	$10 50

The Pocket Vernier Caliper, shown above, is a light and convenient tool for machinists' and toolmakers' use in obtaining accurate measurements. It is graduated on the front to read, by means of a vernier, to thousandths of an inch, and on the back to 64ths of an inch.

The jaws are of steel hardened and accurately ground, are ¾ of an inch long, ¼ of an inch wide when closed, and can be used either for inside or outside measurements. The caliper will measure 1¹¹⁄₁₆ inches, outside diameter, when the jaws are open full size.

Metric Measure. This caliper is also furnished graduated to millimeters in place of 64ths of an inch, with a vernier to read to 50ths of a millimeter.

An explanation of the vernier is sent with each caliper.

VERNIER CALIPERS

ENGLISH OR METRIC MEASURE

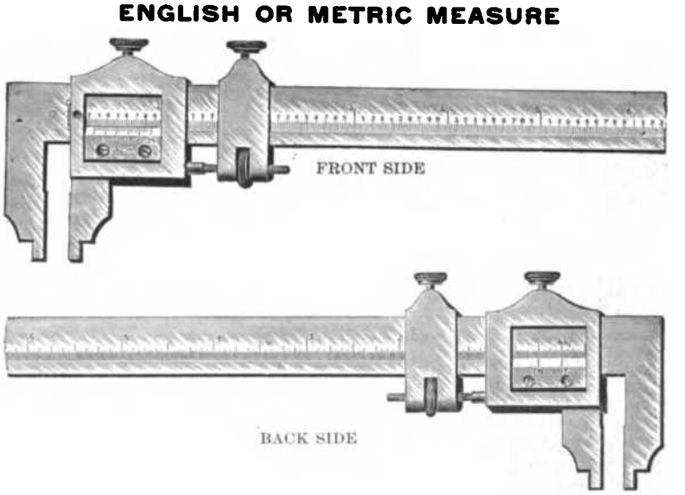


FIG. 341

These calipers are graduated on the front side to read, by means of a vernier, to thousandths of an inch; and on the back to 64ths of an inch. The jaws are hardened, accurately ground, and can be used for either outside or inside measurements. Points are placed on the bars and slide so that dividers can be used to transfer distances.

Metric Measure. These calipers are also furnished graduated on one side to read to ⅒th of a millimeter, and on the other to thousandths of an inch.

An explanation of the vernier is sent with each caliper.

PRICES, FIG. 341

In morocco case

Nos.	Sizes, Inches.	Prices.	Lengths of Jaws, Inches.	Widths of Jaws When Closed, Inches.
682	6	$15 00	1½	¼
684	12	20 00	1¾	3⁄10
686	12	25 00	2¼	3⁄10
688	24	25 00	1¾	3⁄10

A standard for testing the accuracy of the adjustment of the caliper is furnished when desired. Price, $3.00 each.

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COLUMBIA VERNIER CALIPERS

NO. 9

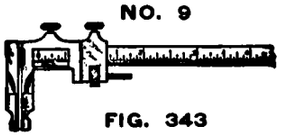


FIG. 343

NO. 10

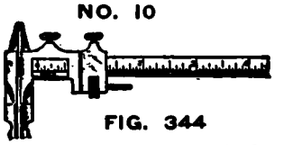


FIG. 344

Graduated into 50ths with vernier to read 1,000ths of an inch, the other side into 16ths with vernier to read 64ths and 128ths.

				Fig. 343.	Fig. 344.	Walnut Case.
4 inches with	1¾	jaw,	5/32	thick.....	$6 00	$7 00	$1 50
6 "	1¾	"	3/16	"	7 00	8 00	1 75
8 "	2⅛	"	7/32	"	8 00	9 00	2 00
10 "	2¾	"	¼	"	9 00	10 50	2 25
12 "	3⅞	"	⅜	"	10 00	12 00	2 50
14 "	3⅞	"	⅜	"	11 00	13 00	3 00

We also furnish a pocket size No. 9 Caliper 2½ inches long, with 1 inch jaws, in chamois case, $6.00.

COLUMBIA CALIPERS

NO. 1

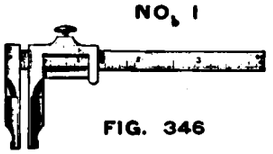


FIG. 346

Graduated in 16ths and 64ths of an inch.

Sizes.	Jaws—Long.	Jaws—Thick.	Each.
4 in.	1¼ in.	5/32 in.	$2 00
6 "	1¾ "	3/16 "	2 50

NO. 3

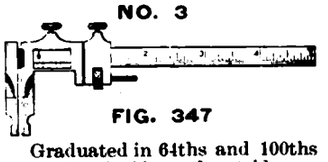


FIG. 347

Graduated in 64ths and 100ths for inside and outside measurements.

Sizes.	Jaws—Long.	Jaws—Thick.	Without Adjusting Screws.	
4 in.	1¼ in.	5/32 in.	$4 00	$3 00
6 "	1¾ "	3/16 "	5 00	3 50
8 "	2⅛ "	7/32 "	5 50	4 00
10 "	2¾ "	¼ "	6 50	5 00
12 "	3¾ "	⅜ "	7 50	6 00

CALIPER SQUARE

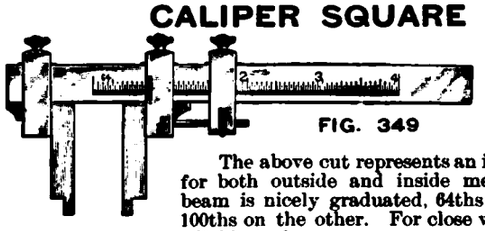


FIG. 349

The above cut represents an improved tool for both outside and inside measures. The beam is nicely graduated, 64ths on one side, 100ths on the other. For close work this is a reliable tool.

No. 25.	3 inch with adjusting screw.....	$3 50;	without, $3 00
"	4 " " "	4 00; "	3 50
"	6 " " "	5 50; "	5 00
	With hardened jaws, extra		1 50
	In leatherette case, extra		75

No. 25M. The 4 inch Caliper Square, with adjusting screw, is also graduated to ½ millimeters on one side and 64ths inch on the other. Each 4 00

MICROMETER CALIPER SQUARE

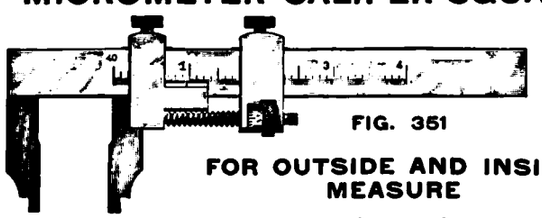


FIG. 351

FOR OUTSIDE AND INSIDE MEASURE

This instrument enables one to enlarge or decrease work one or more thousandths from that calipered, and fills the bill for both a first-class caliper square and micrometer of large scope and quick adjustment. The jaws are 1⅝ inches long, hardened, and open four inches. One side of the beam is graduated in 64ths and the other in 40ths; and either side may be used as a common caliper square, or, through the micrometer, to show 1,000ths full length, on either inside or outside work.

No. 28. In leatherette case.....each, $8 75
" Without case..... " 8 00
Sent with case unless otherwise ordered.

No. 28M. This tool is made with graduations to ½ mm. on one side, and either 50ths or 100ths of an inch on the other. The micrometer nut is graduated to read to hundredths of a millimeter.
Prices same as No. 28.

COLUMBIA CALIPER

NO. 5



FIG. 345

Graduated in 16ths with vernier to read 32ds, 64ths and 128ths, and 32ds of an inch for deep measurements.

All sizes except the 4 inch (which has ¼ inch offset) are made to read inside and outside measurements without mental calculation, by using the last line of the vernier for inside dimensions.

HOW TO READ THE VERNIER

The vernier on the No. 5 Caliper consists of a number of equally divided spaces on the sliding head, in this case 7/16 of the space being divided into eight parts; consequently on each one of the spaces is a difference of a 128th of an inch, on every two a 64th, every four a 32d, etc. The scale itself is divided into 16ths, and the first or index line of the vernier is used to read the 16ths, and when it shows beyond a graduation on the scale and the line next to it corresponds with any line on the scale you add 1/128th to the size indicated by the index line, or if the line after the second space corresponds add 3/128ths or 1/64th; if the line after the seventh space corresponds as shown in cut add 7/128ths, etc.

4 inch with	1¼	jaw,	5/32	thick....	$2 50	10 inch with	2¾	jaw,	¼	thick...	$4 50
6 "	1¾	"	3/16	"	3 00	12 "	3¾	"	⅜	" ...	6 00
8 "	2⅛	"	7/32	"	3 50						

Clamp and screw adjustment $1.50 extra, and will graduate them in addition into 20ths with vernier to read 100ths of an inch.

GEAR TOOTH CALIPER

DESCRIPTION
FIG. 348

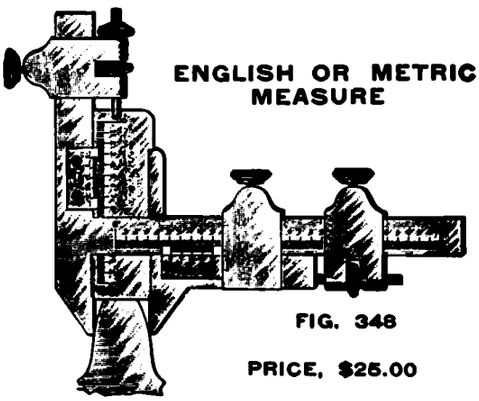
This caliper is for the purpose of accurately measuring the distance from top to pitch line, and thickness at pitch line of gear teeth.

It will measure all pitches to 2 diametral pitch.

The sliding jaw moves upon a bar graduated to read, by means of a vernier, to thousandths of an inch. A tongue, moving at right angles with the jaws, is graduated in the same manner.

Both the sliding jaw and tongue are provided with adjusting screws.

Metric measure. This caliper is also graduated to read to 1/50th of a millimeter.



ENGLISH OR METRIC MEASURE

FIG. 348

PRICE, $25.00

MICROMETER CALIPER GAUGE WITH ATTACHMENT

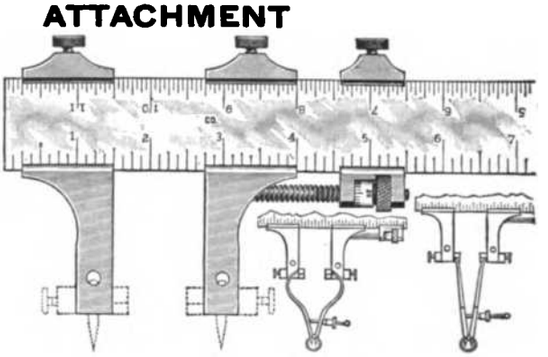


FIG. 350

This gauge is made to fit scales 1¼ inches wide, .085 thick, and 12, 18 or 24 inches long, affording longer scope than anything of the kind heretofore made. The head of the gauge carries auxiliary tram points. Attachments are also made to slip on and off the ends of the caliper, so that they may be used for making close or drive fits. These attachments are made of the best tool steel, hardened and ground. The inside calipers are set against the inside face of gauge and resting on the seat of the attachments, which keep them in perfect line. The outside calipers are set against an extended seat of the attachment in line with the inside faces of the gauge, so that both inside and outside calipers may be set to exactly agree with each other.

For measuring distances, the gauge may not only be set by the graduated scale but varied by the micrometer adjusting nut to read additional thousandths. The scale and all necessary working parts are hardened, making a first-class tool in every respect.

NO. 24

12 inches.....each, $11 00
18 " ..... " 12 50
24 " ..... " 14 00
36 " ..... " 25 00

NO. 24M

The same as No. 24, except the scales are graduated in millimeters, and the nut to hundredths of a millimeter.

30 cm.....each, $11 00
50 " ..... " 12 50
60 " ..... " 14 00
90 " ..... " 25 00

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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COMBINATION MICROMETER, NO. 80

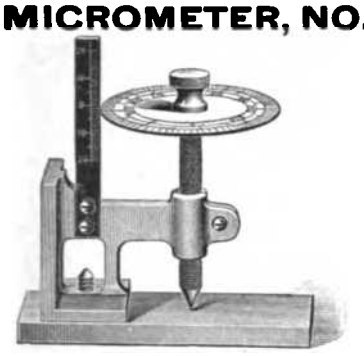


FIG. 352

This micrometer can be used as micrometer for measuring grain, etc., as a depth gauge, and many other purposes; by fastening two on a block, long side of square down, it makes an excellent extension micrometer.

Price, each, $10 00.

SPHEROMETER, NO. 50

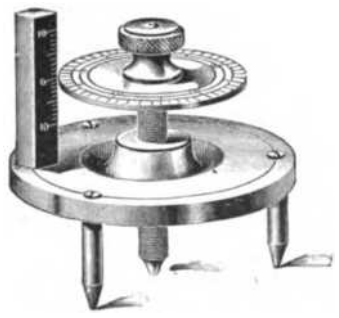


FIG. 353

This is a very popular instrument; screw has 2 threads to each millimeter, and is divided into 50 parts.

Price, each, $6 00.

COLUMBIA SPHEROMETERS

DESCRIPTION AND PRICES, FIG. 354

These instruments are all nicely finished, and made very accurate.

The three feet stand over a 2 inch circle, and the measuring screw takes in 40 millimeters.

	Each.
No. 55, reading 100ths of millimeters, for students' use,	$5 00
No. 60, reading 100ths of millimeters	10 00
No. 65, reading 1000ths of millimeters	25 00

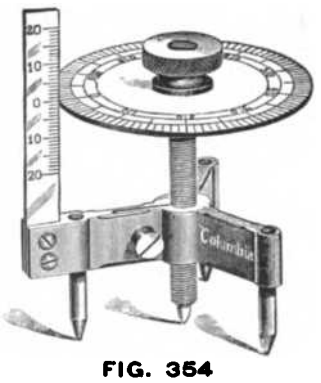


FIG. 354

DEPTH GAUGE

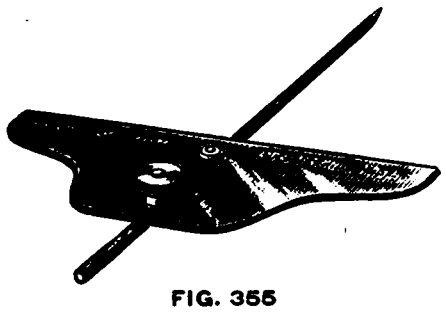


FIG. 355

Price, 50 cents.

This tool is made of sheet steel, nicely finished. The edge is ground straight and beveled. By removing the needle it makes a good straight edge for filing short work. The needle is ground flat on one side and pointed.

DEPTH GAUGE, NO. 45

The wire in this gauge is held to a groove by a friction spring inside the nut while adjusting, and may be used close to the end as well as in the middle of the straight edge.

By loosening the nut, the gauge may be neatly folded.

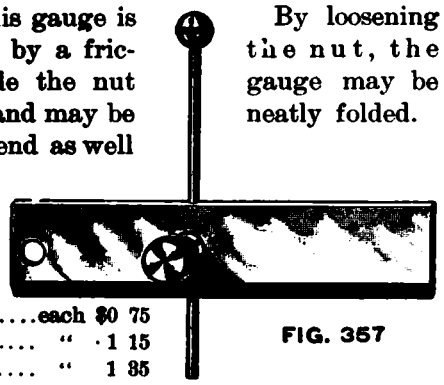


FIG. 357

3½ inch stock	each	$0 75
6 " "	"	1 15
10 " "	"	1 35

DEPTH GAUGE, NO. 46

Has in place of the round wire to slide in the groove, as shown with No. 45, a 4 inch or 6 inch scale, 3/16 inch wide, graduated in either 32ds and 64ths, 50ths and 100ths, or 64ths and 100ths, indicating exact measurements, and may be used separately from the gauge.

This gauge is also made in corresponding metric sizes at these prices.

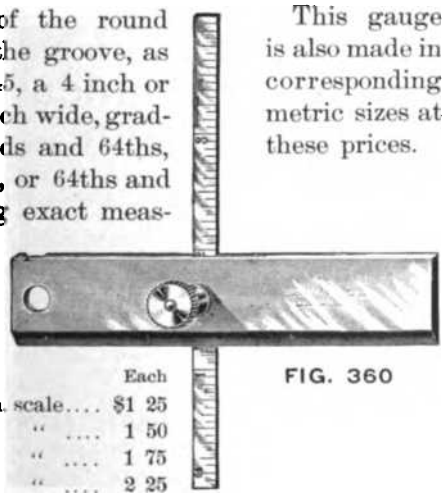


FIG. 360

		Each
3½ in. stock and 4 in.	scale	$1 25
6 " " " 4 "	"	1 50
6 " " " 6 "	"	1 75
10 " " " 6 "	"	2 25

DEPTH GAUGE

ENGLISH OR METRIC MEASURE

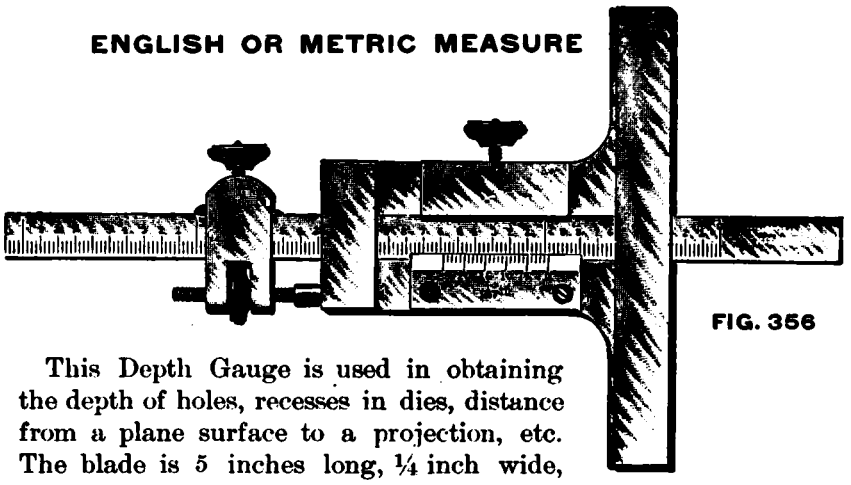


FIG. 356

This Depth Gauge is used in obtaining the depth of holes, recesses in dies, distance from a plane surface to a projection, etc. The blade is 5 inches long, ¼ inch wide, allows of measurements to 3½ inches being made, and is graduated on the front to read, by means of a vernier, to 1000ths of an inch; the back of blade is graduated to 64ths of an inch.

This Depth Gauge is also furnished graduated to read to 1/50th of a millimeter on one side, and to 1/5 millimeter on the other.

No. 714. Price in morocco case.....$10 00

DEPTH GAUGE

ENGLISH OR METRIC MEASURE

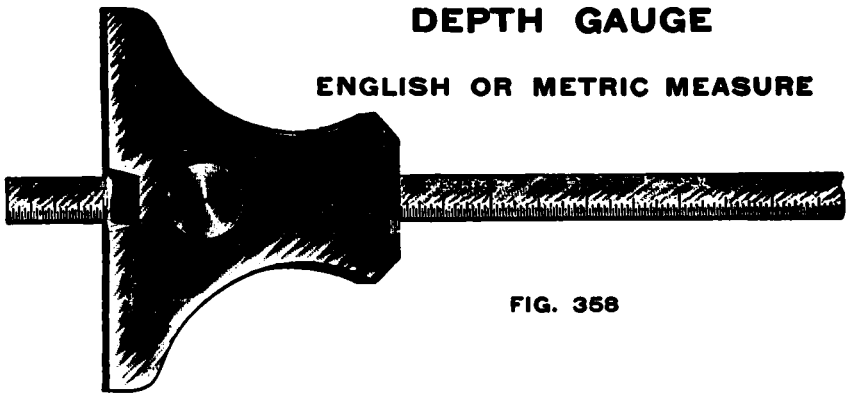


FIG. 358

The above is a full sized cut of the head and a portion of the blade of a 6 inch rule Depth Gauge.

The head can be conveniently held. It is made of steel ⅛ inch thick, hardened.

The blade is a 6 inch, narrow, tempered steel rule.

The blade sent with the gauge is divided into 64ths and 100ths of inches.

Will furnish, if desired, blades divided into 32ds and 64ths, or 50ths and 100ths of inches.

This Depth Gauge is also furnished with a blade 15 cm. long, graduated on one corner to 1/5 mm. and on the other corner to 1 mm.

No. 715. 6 inch rule .....each, $1 25

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TWIST DRILL AND STEEL WIRE GAUGE

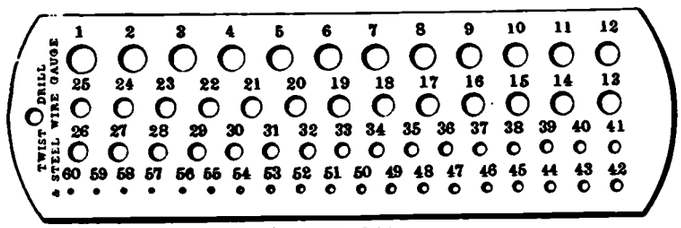


FIG. 361

PRICE, $1.50

Sizes of Gauge in Decimals of 1 inch.

No.	Sizes of Number.	No.	Sizes of Number.	No.	Sizes of Number.	No.	Sizes of Number.
1	.2280	16	.1770	31	.1200	46	.0810
2	.2210	17	.1730	32	.1160	47	.0785
3	.2130	18	.1695	33	.1130	48	.0760
4	.2090	19	.1660	34	.1110	49	.0730
5	.2055	20	.1610	35	.1100	50	.0700
6	.2040	21	.1590	36	.1065	51	.0670
7	.2010	22	.1570	37	.1040	52	.0635
8	.1990	23	.1540	38	.1015	53	.0595
9	.1960	24	.1520	39	.0995	54	.0550
10	.1935	25	.1495	40	.0980	55	.0520
11	.1910	26	.1470	41	.0960	56	.0465
12	.1890	27	.1440	42	.0935	57	.0430
13	.1850	28	.1405	43	.0890	58	.0420
14	.1820	29	.1360	44	.0860	59	.0410
15	.1800	30	.1285	45	.0820	60	.0400

JOBBERS' DRILL GAUGE

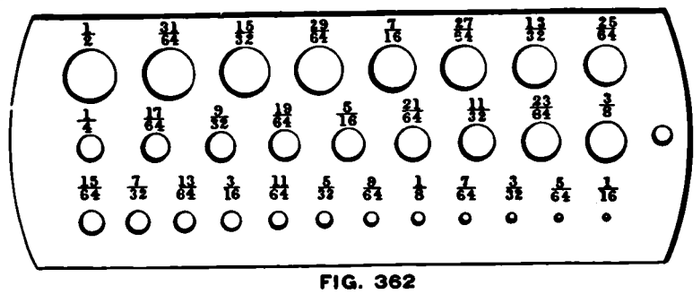


FIG. 362

PRICE, $2.25

Sizes of Gauge in Decimals.

Sizes.	Decimal.	Sizes.	Decimal.	Sizes.	Decimal.
1/16	.0625	7/32	.21875	3/8	.375
5/64	.07812	15/64	.23437	25/64	.39062
3/32	.09375	1/4	.25	13/32	.40625
7/64	.10937	17/64	.26562	27/64	.42187
1/8	.125	9/32	.28125	7/16	.4375
9/64	.14062	19/64	.29687	29/64	.45312
5/32	.15625	5/16	.3125	15/32	.46875
11/64	.17187	21/64	.32812	31/64	.48437
3/16	.1875	11/32	.34375	1/2	.50
13/64	.20312	23/64	.35937		

DRILL AND TAP DRILL GAUGE

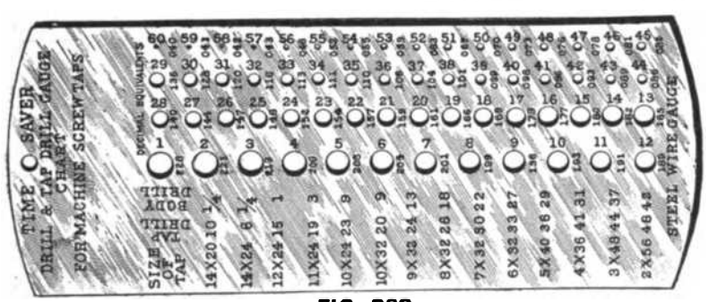


FIG. 363

PRICE, $1.75

DESCRIPTION, FIG. 363

By the use of this gauge one is enabled to select at once the right sized drill to suit machine screw tap most commonly used, leaving just stock enough for the tap to cut as near a full thread as is practicable for one tap without breaking it, thus saving much time and uncertainty of result attending the former crude ways of making a selection.

Explaining the chart, the first row of figures, for an example, read thus: 14x20 10 ¼: 14 (in the first row of figures) means the number or size of tap; 20, the pitch or size of thread; 10, the size of drill to use which will leave the right stock for proper thread; and ¼, size of drill to use to let this tap or screw through outside of the thread.

The figures 1, etc., up to 60, designate the number of drill (size agreeing with the holes). Other figures, 228, 221, etc., designate the size of hole in 1000ths of an inch.

STUBS' STEEL WIRE GAUGE

The steel wire gauges are used exclusively for gauging Stubs' bright steel wire, twist drills, pinion wire, curriers' steels, etc.

PRICES, FIG 364

Nos. 1 to 60	each,	$2 50
" 1 " 70	"	3 00
" 1 " 80	"	4 25
A to Z	"	2 50

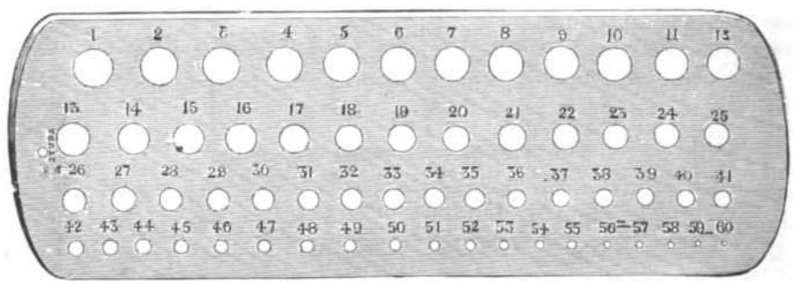


FIG. 364

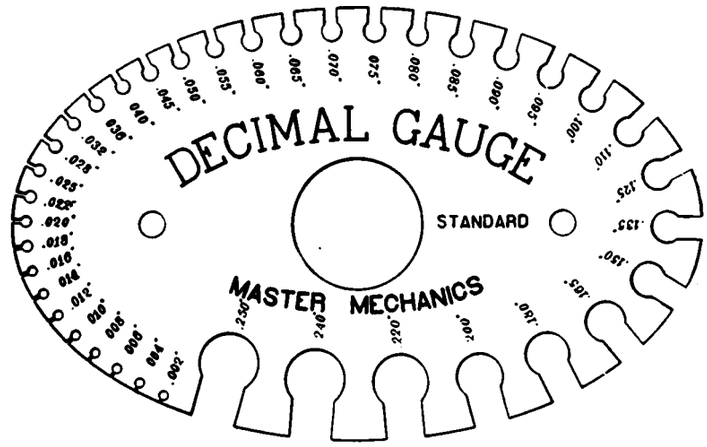


FIG. 365

MASTER MECHANICS' DECIMAL GAUGE

Adopted by the American Railway Master Mechanics' Association, and the Association of American Steel Manufacturers.

All slots accurately ground after hardening.

Limit of accuracy, .0001 inch.

PRICE EACH, $5.00

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AMERICAN STANDARD WIRE GAUGE

(Adopted by the Brass Manufacturers, January, 1858.)

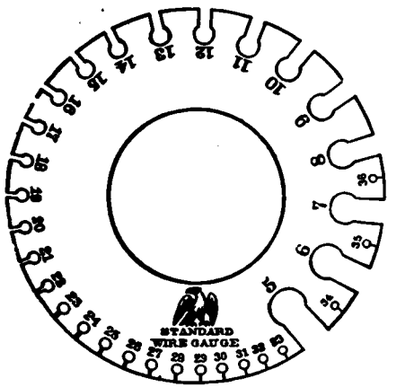


FIG. 366 (FULL SIZE)

These gauges are made from the best steel, and are tempered, adjusted, and warranted accurate.

☞ None genuine unless stamped as in the engraving with our trade marks.

No. 730. Sizes, 0 to 36.....each, $2 50
No. 732. " 5 to 36..... " 2 00

ENGLISH STANDARD WIRE GAUGE

(The same as Stubs' Wire, or Birmingham Guage.)

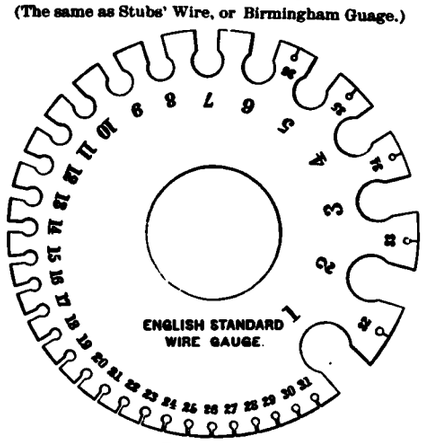


FIG. 367

No. 734. 1 to 36.. $2 00 No. 736. 6 to 36.. $1 50

U. S. STANDARD GAUGE

FOR SHEET AND PLATE IRON AND STEEL

(Adopted by Congress, March 3, 1893.)

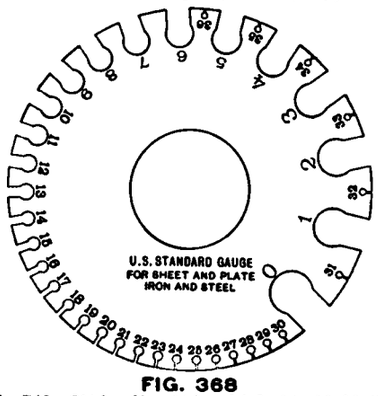


FIG. 368

No. 740. 3¼ in. dia., ⅛ in. thick, 0 to 36. $2 50

STEEL MUSIC WIRE GAUGE



PRICE, FIG. 370

No. 738. Each, $1 50

FIG. 370 (FULL SIZE)

STUBS' OBLONG WIRE GAUGE

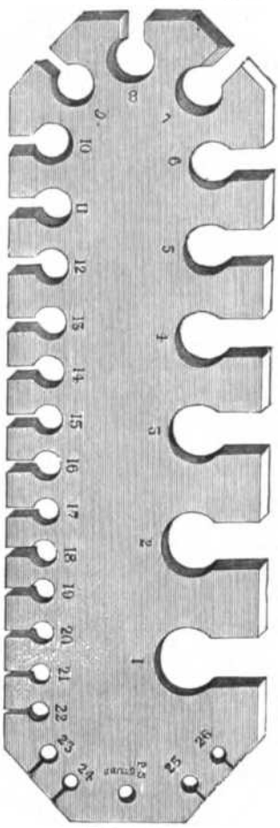


FIG. 372

WIRE GAUGE AND CALIPER

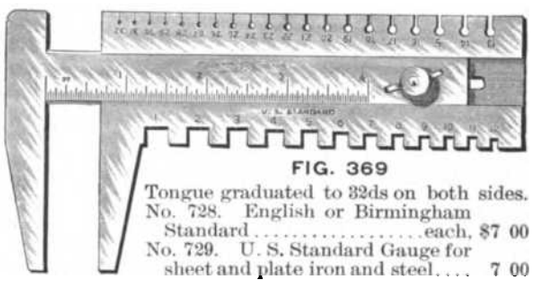


FIG. 369

Tongue graduated to 32ds on both sides.
No. 728. English or Birmingham Standard.....each, $7 00
No. 729. U. S. Standard Gauge for sheet and plate iron and steel.... 7 00

ROUND STUBS' WIRE GAUGE



FIG. 373

DOUBLE ROUND STUBS' GAUGES

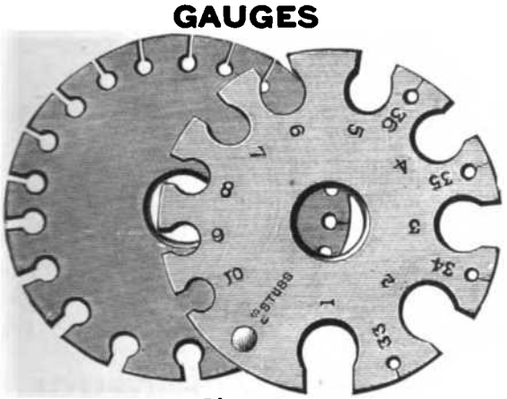


FIG. 371

PRICES, FIGS. 371, 372 AND 373

Sizes.....	1 to 26	0 to 26	1 to 36	0 to 36	00 to 26	00 to 36	000 to 26	000 to 36
Each.....	$2 75	$3 00	$3 50	$3 75	$3 25	$4 00	$3 50	$4 25

(The circular style are made all sizes except 1 to 26. Nos. 1 to 26 and 0 to 36.) The oblong are only made

Small oblong pocket Gauge, 1 to 26.....each, $2 75
Small double, round pocket Gauge, 1 to 36..... " 3 75
Small double, round pocket Gauge, 0 to 36..... " 4 25

ROLLING MILL GAUGE

PRICES, FIG. 374

ENGLISH OR BIRMINGHAM STANDARD

No. 744. Sizes 000 to 25..... each, $2 50
No. 746. " 1 to 32..... " 3 00

U. S. STANDARD GAUGE FOR SHEET AND PLATE IRON AND STEEL

(Adopted by Congress, March 3, 1893.)

No. 747. Sizes 000 to 25.....each, $2.50

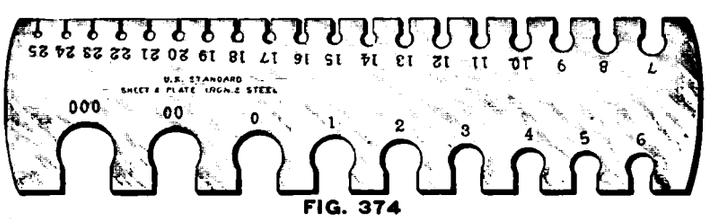


FIG. 374

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JEWELERS' WIRE GAUGE

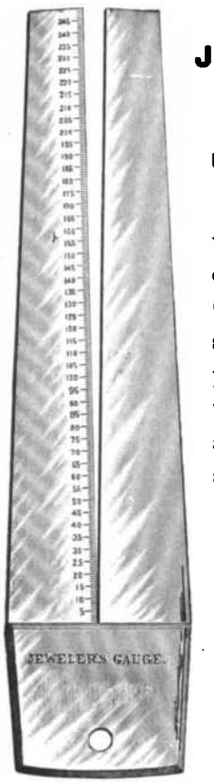


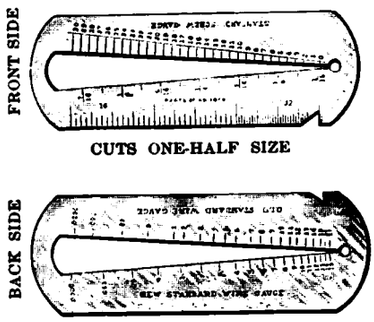
FIG. 377. ONE-HALF SIZE

DESCRIPTION, FIG. 377

These Gauges are made with reference to the wants of manufacturing jewelers. One edge of the angular slot is graduated into 250 parts, and figured to give the size in thousandths of an inch. For example, a size of wire which passes down half-way into the slot, and stops opposite 125, is $^{125}/_{1000}$ of an inch in diameter. The angular slot has no sharp edge to injure the stock gauged.

No. 770.....each, $5 00

POCKET SCREW AND WIRE GAUGE

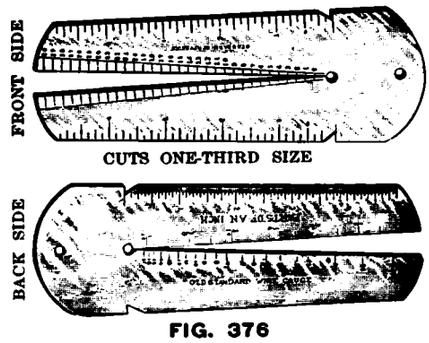


CUTS ONE-HALF SIZE

FIG. 375

No. 760.....each, $2 50

LARGE SCREW AND WIRE GAUGE



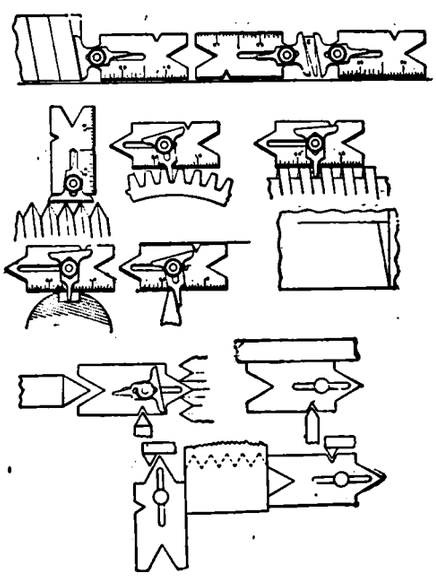
CUTS ONE-THIRD SIZE

FIG. 376

No. 762.....each, $3 50
No. 764, Extra Thick..... .... " 4 50

SCREW CUTTING, CENTER, DEPTH, ANGLE AND TWIST DRILL GAUGE

DIAGRAMS SHOWING USES OF GAUGE, FIG. 378



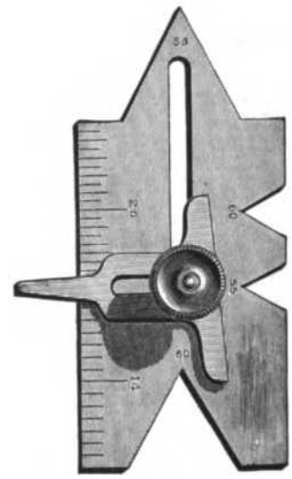


FIG. 378

No. 1 size, 2¼ in., long, 1¼ in., wide.
No. 2 " 4 " " 1½ " "

PRICES, FIG. 378

No. 1. U. S. Standard, angle 60 degrees.....each, $0 75
No. 1. Whitworth or English Standard, angles 55 and 60 degrees..... " 1 00
No. 2. U. S. Standard, angle 60 degrees..... " 1 50
No. 2. Whitworth or English Standard, angles 50, 55, and 60 degrees..... " 1 75

STANDARD SCREW THREAD GAUGE



FIG. 379. FULL SIZE

This Gauge is to be used as a standard for grinding tools to cut threads according to the United States Standard.

The angles are 60 degrees, and the flat surfaces at top and bottom of threads are equal to one-eighth of the pitch.

Tables for screw threads, bolts and nuts are furnished with the gauge.

No. 825.....each, $2 00

WORM THREAD TOOL GAUGE

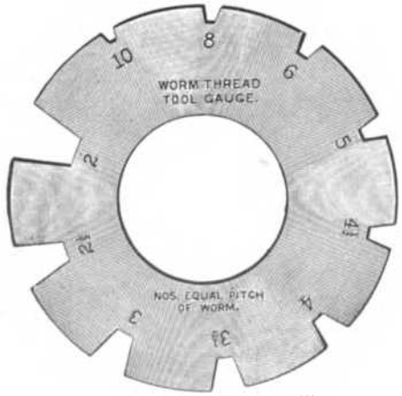


FIG. 381. FULL SIZE

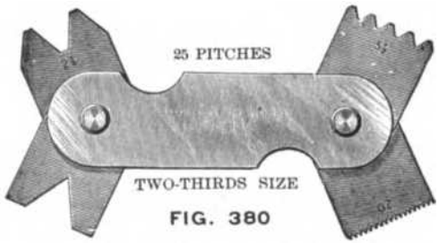
DESCRIPTION, FIG. 381

This gauge furnishes the correct form for tools used in turning the threads of worms when the worm wheels are cut with involute cutters. The figures on the gauge correspond to the number of threads per inch of the worm. The slots in the gauge are also of the proper depth for their respective threads.

No. 831. Price.....each, $2 50
No. 832. Price, with Tool Setting Gauge," 2 75

SCREW PITCH GAUGE

U. S. STANDARD THREAD



TWO-THIRDS SIZE

FIG. 380

The Gauge contains 26 blades, with pitches 2¼, 2⅜, 2½, 2⅝, 2¾, 2⅞, 3, 3¼, 3½, 4, 4½, and 5 on one end, and 5½, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 18, and 20 on the other. It also contains a blade with a gauge for grinding Thread Tools.

No. 767.....each, $1 50

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SCREW PITCH GAUGE

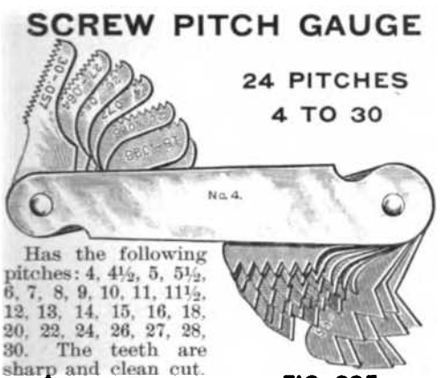


This screw pitch gauge will measure the threads of nuts as well as of screws, and contains the pitches 9, 10, 11, 11½, 12, 13, 14, 15, 16, 18, 20 on one end, and 22, 24, 26, 27, 28, 30, 32, 34, 36, 38 and 40 on the other end.

FIG. 382. FULL SIZE

No. 20.....Price, $1 00

SCREW PITCH GAUGE



Has the following pitches: 4, 4½, 5, 5½, 6, 7, 8, 9, 10, 11, 11½, 12, 13, 14, 15, 16, 18, 20, 22, 24, 26, 27, 28, 30. The teeth are sharp and clean cut. Like No. 40, Fig. 384, it can be used inside of a nut as well as on outside of a screw or bolt. It is also a convenient and reliable tool to use as a 60 degree center gauge and gauge to test the grinding of either an inside or outside threading tool.

FIG. 385 FULL SIZE

No. 4.....Price, $1 25

SCREW PITCH GAUGE NO 6

30 PITCHES, 4 TO 42

Of the same form as No. 4 screw pitch gauge, Fig. 385. Has the following pitches: 4, 4½, 5, 5½, 6, 7, 8, 9, 10, 11, 11½, 12, 13, 14, 15, 16, 18, 20, 22, 24, 26, 27, 28, 30, 32, 34, 36, 38, 40, 42.

Price.....$1 50

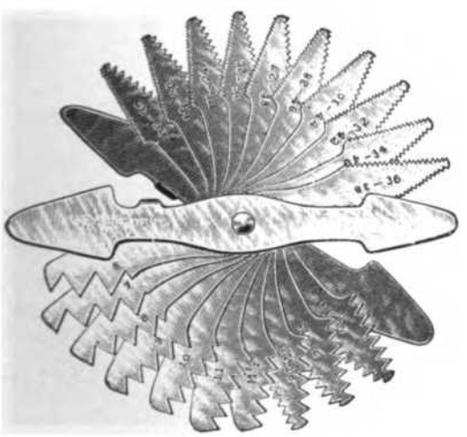


FIG. 389, NO. 85

SCREW PITCH GAUGE

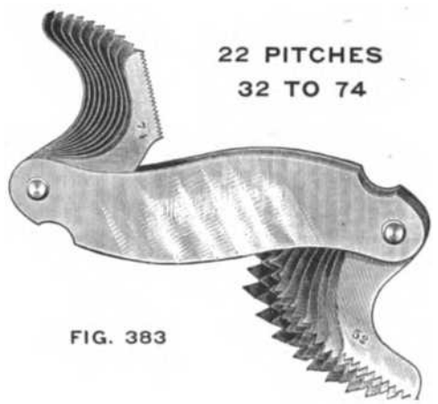


FIG. 383

This screw pitch gauge, shown full size, is similar in design to the No. 20, shown in Fig. 382, and is designed especially to meet the requirements of bicycle manufacturers, electricians and others using screws with fine V threads.

The gauge contains 22 blades, with pitches 32, 34, 36, 38, 40, 42, 44, 46, 48, 50 and 52 on one end, and 54, 56, 58, 60, 62, 64, 66, 68, 70, 72 and 74 on the other.

No. 22.....Price, $1 00

U. S. STANDARD SCREW PITCH GAUGE

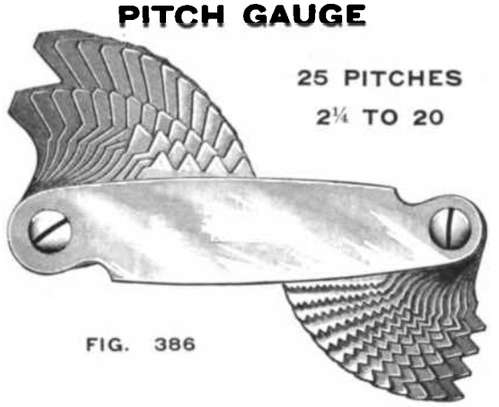


FIG. 386

This gauge has 25 pitches, viz.: 2¼, 2⅜, 2½, 2⅝, 2¾, 2⅞, 3, 3¼, 3½, 4, 4½, 5, 5½, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 18, 20.

Also a center gauge with coarse and fine notch.

No. 155.....Price, $1 50

IMPROVED SCREW PITCH GAUGE

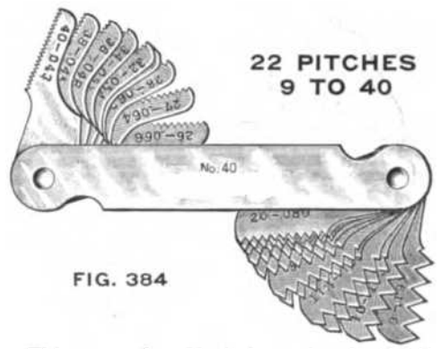


FIG. 384

This gauge has 22 pitches, viz.: 9, 10, 11, 11½, 12, 13, 14, 15, 16, 18, 20, 22, 24, 26, 27, 28, 30, 32, 34, 36, 38, 40.

No. 40.....Price, $1 00

SCREW PITCH GAUGE NO 5

26 PITCHES, 32 TO 82

Of the same form as the No. 40 screw pitch gauge, Fig. 384, for inside and outside work. Has the following pitches: 32, 34, 36, 38, 40, 42, 44, 46, 48, 50, 52, 54, 56, 58, 60, 62, 64, 66, 68, 70, 72, 74, 76, 78, 80, 82.

Price.....$1 25

WHITWORTH SCREW PITCH GAUGE

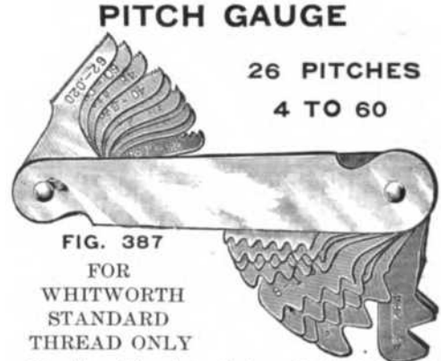


FIG. 387 FOR WHITWORTH STANDARD THREAD ONLY

Has the following pitches: 4, 4½, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 18, 19, 20, 22, 24, 25, 26, 28, 30, 32, 40, 48, 60.

No. 7.....Price, $1 25

PATENT SCREW PITCH GAUGE

PRICES AND DESCRIPTION FIG. 389, NO. 85. V THREAD

The form of the blades allows the points to be very narrow, for determining the pitch of internal threads. It is also very quick and easy to find the desired pitches. It contains all of the screw pitches in general use, from 6 to 56, so that it is of no advantage to have more than one tool. It can be used in any place and will meet any requirement.

Price.....$1 00

NO. 86. WHITWORTH THREAD

This gauge is similar to No. 85, and has the following pitches: 6, 7, 8, 9, 10, 11, 12, 13, 14, 16, 18, 19, 20, 22, 24, 25, 26, 28, 30, 32, 36, 38, 40, 48.

Price.....$1 00

THICKNESS GAUGE OR FEELER



FIG. 388

This gauge has 22 leaves, varying in thickness by thousandths, running from .004 to .025. The thickness of each leaf is designated by the number upon it. Each leaf may be used singly or in combination with others, and any thickness in thousandths within their limits may be quickly obtained. The leaves fold within the case, which is 2¾ inches long, a convenient size to carry in the pocket.

No. 72.....Price, $1 50

NO. 172

This thickness gauge has 8 leaves, viz.: .002, .003, .004, .006, .008, .010, .012, .015. The leaves are tempered, and have the thickness marked upon them. Size of case, 3⅜ inches long, ½ inch wide; leaves, 3 1/16 inches long, ½ inch wide.

Price.....$1 00

NOTE.—We can also furnish Metric Screw Pitch Gauges, and Gauges after the Systeme Francais and the Systeme International.

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POCKET CENTER GAUGE

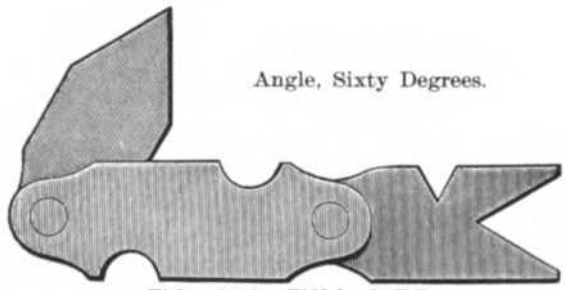


FIG. 390, FULL SIZE

This gauge being made with folding blades will be found convenient in many places where an ordinary center gauge could not be used.

No. 534. Price, each.....40c.

KEY SEAT RULE

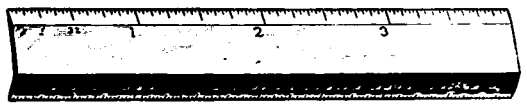


FIG. 393

Parallel lines for key seats, mortises, etc., can be readily and accurately drawn with these rules on shafts not less than ⅞ inch in diameter.

The edges are beveled. One edge is graduated into 16ths and the other into 32ds of an inch.

Nos.	Lengths.	Prices.
254	4 inches	$2 50
256	6 "	3 00
258	8 "	3 75

KEY SEAT RULE

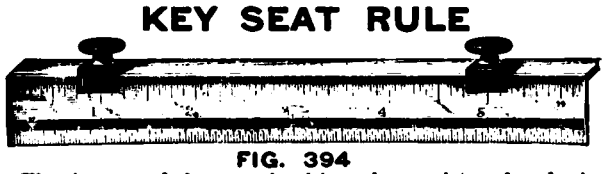


FIG. 394

The improved feature in this rule consists of a device for holding two straight edges in the form of a box square (or key seat rule) securely together. One of said straight edges is a spring-tempered scale, with one edge beveled, graduated in 8ths, 16ths, 32ds, 64ths, the other a plain straight edge with two or three clamps (according to its length) which are operated by knurled eccentrics clamping corner and edge of straight edge and scale together; thus not only allowing the scale to be used as such independently from the other part, but being in two straight pieces it admits of being made from spring-tempered stock and accurately ground, also of inserting in place of the regular width rule a narrow auxiliary one, adapting it for use on very small shafts, etc. This narrow auxiliary straight edge is either plain or graduated in 32ds and 64ths, and sent when ordered.

No. 105.		Prices.
6 inch	Each	$2 25
6 " with auxiliary straight edge, plain	"	2 75
6 " " " " " graduated	"	3 00
9 "	"	3 00
9 " with auxiliary straight edge, plain	"	3 75
9 " " " " " graduated	"	4 25

CAST IRON STRAIGHT EDGE



FIG. 396

These straight edges are of a form best adapted to retain a straight line.

The edge of each is scraped to form a true surface, and the straight edges when thus made are indispensable in the proper scraping of the ways of planer and lathe beds, etc.

The price includes a box with cover.

Sizes, Inches.	Weights.	Each.
18 x 1½	5 lbs.	$7 00
24 x 1⅝	8 "	9 50
30 x 1¾	13 "	12 00
36 x 1⅞	17 "	15 00
48 x 2	35 "	20 50
60 x 2⅛	48 "	26 50
72 x 2¼	72 "	33 00
96 x 2⅜	145 "	39 00
120 x 2½	195 "	50 00

CENTER GAUGE



FIG. 391

	Each.
No. 390. Not tempered, graduated one corner each in 32ds, 24ths, 20ths and 14ths	$0 25
No. 391. Spring-tempered	35
No. 395. Whitworth, not tempered	25
No. 397. Metric, not tempered	25
No. 398. " spring-tempered	35

The angles are 60°, except in No. 395, in which they are 55°.

PRICES, FIG. 392

With table for determining the size of tap drills for 60° V threads.

U. S. Standard, 60°.

No. 510. Price 25 cents. No. 511. Tempered, Price 35 cents.

Whitworth or English Standard, 55°.

No. 512. Price 25 cents. No. 513. Tempered, Price 35 cents.

Metric, 60°.

No. 508. Price 25 cents. No. 509. Tempered, Price 35 cents

CENTER GAUGE

AND GAUGES FOR GRINDING AND SETTING SCREW CUTTING TOOLS

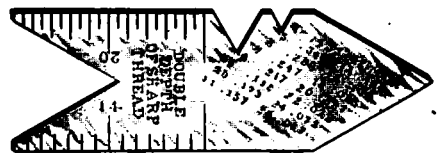


FIG. 392, FULL SIZE

The angles used on these gauges are 60° for the U. S. Standard and Metric Gauges, and 55° for the Whitworth or English Standard. The four divisions, 14, 20, 24 and 32 parts to the inch, are useful in measuring the number of threads to the inch. The following parts to the inch can be determined by them, viz.: 2, 3, 4, 5, 6, 7, 8, 10, 12, 14, 16, 20, 24, 28 and 32.

The metric gauge is graduated to read to millimeters and half millimeters. When so graduated the table for determining the size of tap drills is omitted.

PATENT KEY SEAT OR SPLINING GAUGE

A NEW TOOL FOR THE USE OF ENGINEERS AND MACHINISTS

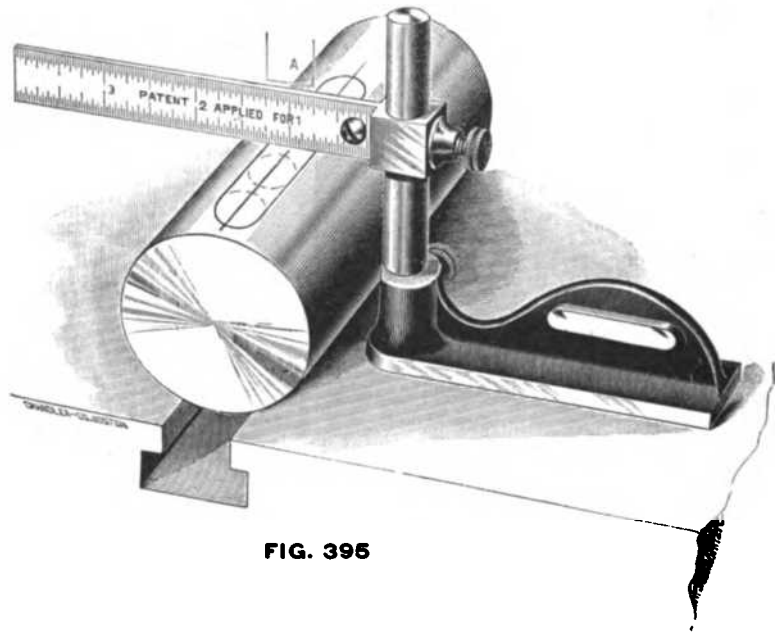


FIG. 395

The above cut represents a new tool for setting shafting on the planing, shaping, milling or drilling machine, when about to have slots, splines or key seats cut into it; also for setting the tools, whether for planing or milling out the slots. The above cut shows the operation of the tool so clearly that little explanation is necessary. It enables the artisan to work rapidly, correctly and mechanically, and is so simple that any one can understand it.

The No. 1 gauge is for shafting 1 to 6 inches in diameter.

The No. 2 gauge is for shafting 3 to 12 inches in diameter.

Two bars, 3⅝ and 6⅝ inches long, are sent with each No. 1 gauge; the short bar is to be used for shafts 3 inches or less in diameter, the long bar is for shafts 3 inches to 6 inches diameter.

The No. 2 gauge is for shafts from 3 inches to 12 inches in diameter; three bars are sent with this gauge, 6⅜, 9⅝, 12⅝ inches long.

These bars are made in various lengths so they will not come in contact with the tool boxes of the machines.

PRICES

No. 1.	With two upright bars	Each $3 00
No. 2.	With three upright bars	" 5 00

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STANDARD STEEL STRAIGHT EDGES



FIG. 397

These straight edges are made from the best quality of steel, and every care is taken to insure their being straight and parallel.

Nos.	Lengths.	Widths.	Prices.	Nos.	Lengths.	Widths.	Prices.
370	6 inch	1 inch	$0 60	380	36 inch	2⅝ inch	$5 00
372	9 "	1⅛ "	90	382	48 "	3 "	8 00
374	12 "	1¼ "	1 25	384	60 "	3 "	12 00
376	18 "	1½ "	2 00	386	72 "	3 "	16 00
378	24 "	2 "	2 75				

STEEL STRAIGHT EDGES

PLAIN

Made in pairs where two are wanted of exactly the same width. The prices given are for single straight edges.

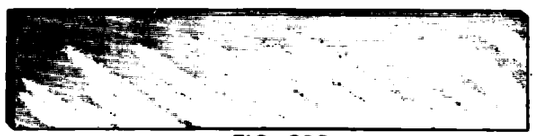


FIG. 398

	Prices.
12 in. long, 1 in. wide, 3/16 in thick	$1 20
18 " " 1¼" " 3/16 " "	1 80
24 " " 1½" " 3/16 " "	2 40
36 " " 2 " " ¼ " "	5 00
48 " " 2½" " ¼ " "	8 00

DRAFTSMEN'S STEEL STRAIGHT EDGES

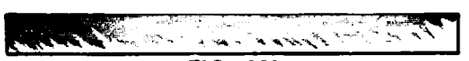


FIG. 401

Nos.	Lengths.	Widths.	Prices.	Nos.	Lengths.	Widths.	Prices.
450	15 inch	1¼ inch	$0 90	460	42 inch	2¼ inch	$4 00
452	18 "	1½ "	1 00	462	48 "	2½ "	6 00
454	24 "	1½ "	1 50	464	60 "	2¾ "	8 00
456	30 "	1¾ "	2 25	465	72 "	2¾ "	10 00
458	36 "	2 "	3 00				

STANDARD SURFACE PLATES

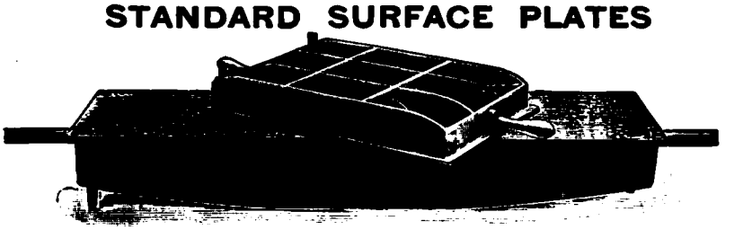


FIG. 404

These plates are made in a superior manner, and are of such a design as to prevent inaccuracy of surface by flexure.

Slight variations in size can be made from those given and new sizes made to order.

Price includes but one single plate with wooden box and cover.

Sizes.	Weight about	Prices.	Sizes.	Weight about	Prices.
6 in. x10 in.	15 lbs.	$9 00	14 in. x 14 in.	50 lbs.	$27 00
6 " x12 "	20 "	10 00	16 " x 24 "	125 "	52 00
8 " x12 "	25 "	13 00	18 " x 18 "	73 "	43 00
10 " x15 "	40 "	22 00	18 " x 24 "	140 "	60 00
12 " x12 "	35 "	20 00	18 " x 36 "	240 "	88 00
12 " x18 "	75 "	29 00	24 " x 24 "	175 "	80 00
12 " x24 "	100 "	42 00	24 " x 36 "	320 "	114 00
12 " x36 "	150 "	60 00	24 " x 48 "	425 "	154 00

BEVELED



FIG. 399

12 in. long, 1 in. wide, 3/16 in. thick	$1 50
18 " " 1¼" " 3/16 " "	2 50
24 " " 1½" " 3/16 " "	3 50
36 " " 2 " " ¼ " "	6 00
48 " " 2½" " ¼ " "	10 00

One edge only is beveled, and this to 1/16 inch thick, from ½ to 5/8 inch back.

DRAFTSMEN'S STEEL STRAIGHT EDGES

These edges are made from a fine grade of spring steel. They are from 3/64ths to 5/64ths inch thick, from 1½ to 3 inches wide, in proportion to their lengths. They are nicely finished, nickel plated, and provided with a hole in one end for convenience in hanging up.

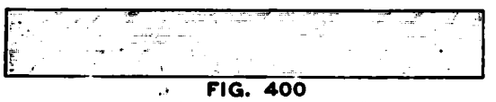


FIG. 400

15 inches long	$0 70	36 inches long	$3 00
18 " "	90	42 " "	4 00
24 " "	1 50	48 " "	6 00
30 " "	2 25	60 " "	8 00

One corner of these edges will be beveled at an extra charge of 5 cents per running foot.

KNIFE EDGE—STRAIGHT EDGE



FIG. 402

6 inch, each.. $1 50 9 inch, each.. $1 75 12 inch, each.. $2 25

COMBINATION STRAIGHT EDGE



FIG. 403

The needle carriers at each end swing on taper studs, and carry needle-pointed brads frictionally held in their split ends. These may be swung to bring the points close to the working edge, and by a slight turn of a knurled nut may be rigidly locked, holding the straight edge bradded to the paper. Using one brad secured at the working edge, and swinging the jointed arm (the protractor being removed) over against the straight edge to form a corner to place pencil, circular lines may be struck any desired size, and radial lines drawn to perfection. The straight edges, either graduated or plain, will be furnished with the brad carriers without the other attachments, or with any or all of them, making a complete set—the different lengths governing the price. Those having use for the set will highly appreciate it. They are also furnished plain without carriers.

	Each.		Each.
18 ins. long, 1¼ wide, not graduated	$2 25	graduated in 32ds	$3 00
24 " " 1¼ " " "	2 75	" " "	3 50
30 " " 1¼ " " "	3 50	" " "	4 75
36 " " 1¾ " " "	4 25	" " "	5 50
42 " " 1¾ " " "	5 00	" " "	6 75
48 " " 1¾ " " "	5 75	" " "	8 00

Extra needle points, 30 cents per dozen. Extra needle holders, 10 cents each. In ordering the latter, mention the width of straight edge blade.

STANDARD CAST IRON SURFACE PLATES

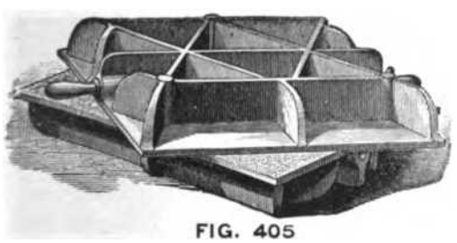


FIG. 405

These plates are usually sold singly, not in pairs, as shown in cut. Unless otherwise specified price is quoted for a single plate, with box and cover. We can furnish a variety of sizes, all of which are uniform in style.

Sizes.	Weights.	Prices, Each.	Sizes.	Weights.	Prices, Each.	Sizes.	Weights.	Prices, Each.
3½ in. x12 in.	11 lbs.	$6 00	9 in. x 9 in.	16 lbs.	$11 00	16 in. x48 in.	380 lbs.	$112 00
4 " x15 "	16 "	9 00	9 " x14 "	27 "	17 00	18 " x18 "	65 "	43 00
4½ " x 6 "	5 "	4 00	10 " x15 "	35 "	22 00	18 " x24 "	128 "	58 00
5 " x16 "	21 "	11 00	10 " x30 "	99 "	40 00	18 " x36 "	228 "	88 00
6 " x 6 "	7 "	5 00	12 " x12 "	29 "	20 00	20 " x30 "	178 "	85 00
6 " x12 "	19 "	10 00	12 " x18 "	53 "	29 00	22 " x80 "	752 "	235 00
6 " x26 "	52 "	23 00	12 " x24 "	93 "	43 00	24 " x24 "	164 "	79 00
6 " x50 "	120 "	40 00	14 " x14 "	47 "	27 00	24 " x36 "	298 "	112 00
6½ " x18 "	30 "	16 00	14 " x18 "	62 "	33 00	24 " x48 "	442 "	153 00
7 " x 7½ "	11 "	7 00	14 " x21 "	55 "	39 00	24 " x60 "	666 "	190 00
7 " x10 "	15 "	10 00	15 " x30 "	139 "	58 00	30 " x36 "	427 "	140 00
8 " x12 "	21 "	13 00	16 " x16 "	62 "	36 00	36 " x68 "	1024 "	335 00

Other sizes made to order.

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STANDARD STEEL RULES

ENGLISH MEASURE



FIG. 406

WITH PATENT END GRADUATIONS

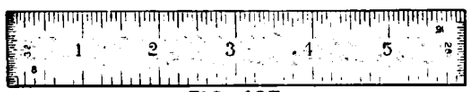


FIG. 407

These rules can be conveniently introduced into grooves, countersinks, and recesses of various kinds, and are adapted for measuring their depth and width.

They are made of specific widths, and the ends are graduated as follows: 2 inch and 4 inch rules to 32ds, 48ths, 56ths, and 100ths of an inch; the 6 inch to 24 inch rules to 28ths, 32ds, 48ths, and 100ths of an inch; the 3 inch rules are graduated to 32ds, 40ths, 48ths, and 56ths of an inch.

These rules are furnished with No. 4 graduations only.

PRICES, FIGS. 406 AND 407

Nos.	Lengths.	Number of Graduations.	Each.
100	1	4 or 7	$0 15
102	2	4, 7 or 9	25
104	3	1, 2, 4, 6 or 7	35
106	4	1, 2, 4, 6 or 7	45
108	6	1, 2, 4, 6 or 7	65
110	9	1, 2, 4, 6 or 7	1 00
112	12	1, 2, 4, 6 or 7	1 25
114	12	5	2 50
116	18	1, 2, 4, 6 or 7	2 00
118	24	1, 2, 4, 6 or 7	2 75
120	24	5	5 00
122	36	1, 2, 4, 6 or 7	7 00
124	48	1, 2, 4, 6 or 7	10 00

TEMPERED STEEL RULES

ENGLISH MEASURE

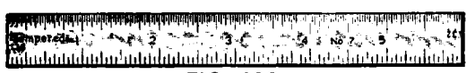


FIG. 408

WITH PATENT END GRADUATIONS



FIG. 409

These rules are furnished to 12 inches in length, and with No. 4 graduations only. They are graduated to 32ds of an inch on two ends of one side.

STEEL RULES

GRADUATIONS, FIGS. 406 TO 409

These rules, both standard and tempered, are divided in parts of an inch as follows:

	No. 1 Graduation.	No. 2 Graduation.	No. 4 Graduation.
1st cor.	10, 20, 50, 100	8	8
2d cor.	12, 24, 48	10, 20, 50, 100	16
3d cor.	14, 28	12, 24, 48	32
4th cor.	16, 32, 64	16, 32, 64	64

No. 5 Graduation.

1st cor.	11, 14, 15, 17, 18, 19, 20, 21, 22, 23, 24, 25
2d cor.	16, 32, 64
3d cor.	26, 27, 28, 29, 30, 31, 33, 34, 35, 36, 37, 38
4th cor.	39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 50 100.

	No. 6 Graduation.	No. 7 Graduation.	No. 9 Graduation.
1st cor.	32	16	10, 20
2d cor.	48	32	16
3d cor.	50	64	32, 64
4th cor.	64	100	50, 100

	No. 10 Graduation.	No. 11 Graduation.	No. 12 Graduation.
1st cor.	32	64	50
2d cor.	64	100	100

	No. 13 Graduation	No. 14 Graduation.
1st cor.	8	8
2d cor.	16	32

Standard steel rules, from 2 inches to 24 inches, and tempered steel rules, 10 inches to 12 inches in length, with No. 4 graduations only, are furnished with patent end graduations without additional cost.

PRICES, FIGS. 408 AND 409

These rules are about 1/20th inch thick. Every rule is marked "Tempered."

Nos.	Lengths.	Approximate Widths.	Number of Graduations.	Each.
136	1	29/64	4 or 7	$0 15
137	2	1/2	4, 7 or 9	25
138	3	35/64	1, 2, 4, 6 or 7	35
139	4	19/32	1, 2, 4, 6 or 7	45
140	6	11/16	1, 2, 4, 6 or 7	65
141	9	53/64	1, 2, 4, 6 or 7	1 00
142	12	31/32	1, 2, 4, 6 or 7	1 25
143	18	1	1, 2, 4, 6 or 7	2 00
144	24	1	1, 2, 4, 6 or 7	2 75
145	36	1	1, 2, 4, 6 or 7	7 00

STANDARD STEEL RULES

METRIC MEASURE

Same widths and thicknesses as Fig. 406.

First corner graduated to 1/5 mm., the remaining corners to 1 mm.

No. 180, 5 centimeters. 25c. No. 182, 10 centimeters. 45c.

Five centimeters of first corner graduated to 1/5 mm., the remainder of that corner, together with remaining corners, graduated to 1 mm.

No. 184, 20 centimeters. 85c. No. 186, 30 centimeters. $1 25

Five centimeters of each end of first corner graduated to 1/5 mm., the remainder of that corner, together with the remaining corners, graduated to 1 mm.

No. 188, 50 centimeters. $2 00 No. 190, 1 meter. $8 00

STANDARD STEEL RULES

METRIC AND ENGLISH MEASURE

Same widths and thicknesses as Fig. 406.

First corner graduated to 1/5 mm., second corner to 1 mm., third corner to 1/64th of an inch, fourth corner to 1/100th of an inch.

No. 181, 5 centimeters. 25c. No. 183, 10 centimeters. 45c.

First corner, 5 cm. graduated to 1/5 mm., the remainder of that corner, together with second corner, to 1 mm.; third corner, 2 inches to 1/64th, the remainder to 1/16 of an inch; fourth corner, 2 inches to 1/100th, the remainder to 1/50th of an inch.

No. 185, 20 centimeters. 85c. No. 187, 30 centimeters. $1 25

No. 189, 50 centimeters. $2 00 No. 191, 1 meter. $7 50

TEMPERED STEEL RULES

METRIC MEASURE

Same widths and thicknesses as Fig. 408. Every rule is marked "Tempered."

First corner graduated to 1/5th mm., remaining three corners to 1 mm. 20 cm. and 30 cm. Rules have 1/5th mm., for 5 cm. only.

No. 196, 10 centimeters. 45c. No. 197, 20 centimeters. 85c.

No. 198, 30 centimeters. $1 25 No. 199, 50 centimeters. $2 00

SPRING TEMPERED RULES

ENGLISH MEASURE



FIG. 410

Thickness: 3/64 in. or No. 18 gauge.

Approximate widths:	1/2 in.	1/2 in.	5/8 in.	5/8 in.	3/4 in.	7/8 in.	1 in.	1 1/8 in.	1 1/4 in.	1 1/4 in.	1 1/4 in.
Lengths:	1 in.	2 in.	3 in.	4 in.	6 in.	9 in.	12 in.	18 in.	24 in.	36 in.	48 in.
Prices:	$0.15	.25	.35	.45	.65	1.00	1.25	2.00	2.50	5.00	7.00
Nos.						300	301	302	303	307	308	309
Graduations No.						4	1	2	4	7	15	16

No. 308 has graduated ends, and is made in lengths 2 to 24 inches only.

SPRING TEMPERED RULES, ONE BEVELED EDGE



FIG. 411

Same widths and thicknesses as spring tempered rules above.

Lengths:	1 in.	2 in.	3 in.	4 in.	6 in.	9 in.	12 in.	18 in.	24 in.
Prices:	$0.20	.30	.40	.50	.70	1.10	1.35	2.25	2.75

No. 400 Beveled, No. 4 graduation, with 64ths on beveled edge.
No. 407 " No. 7 " " 100ths " " "

GRADUATIONS, FIGS. 410 AND 411

These rules are divided into parts of inches as follows:

	No. 1 Graduation.	No. 2 Graduation.
1st cor.	10,20,50,100	10,20,50,100
2d "	12,24,48	12,24,48
3d "	16,32,64	16,32,64
4th "	14,28	8

	No. 4 Graduation.	No. 7 Graduation.
1st corner	64	64
2d "	32	32
3d "	16	16
4th "	8	100

	No. 10 Graduation.	No. 11 Graduation.
1st corner	32	64
2d "	64	100

No. 12 Graduation.

1st corner	50
2d "	100

	No. 15 Graduation.	No. 16 Graduation.
1st corner	10	32
2d "	20	64
3d "	50	50
4th "	100	100

No. 308 rules, in 2, 3, 4, 6, 9, 12, 18, and 24 inch lengths, of No. 4 graduation, are graduated across the end.

SPRING TEMPERED RULES

METRIC MEASURE

Of the same widths and thicknesses as spring tempered rules of English measure, Fig. 410.

No. 340. Graduated three corners in millimeters, one corner in 1/2 mm.

No. 341. From 5 to 15 cm., inclusive, graduated three corners in millimeters, one corner in 1/2 millimeters. Above 15 cm., graduated in 1/2 millimeters on 5 cm. of one corner, the rest of that corner and the other corners in millimeters.

Dimensions and prices given below.

METRIC AND ENGLISH MEASURE

Of same widths and thicknesses as spring tempered rules of English measure, Fig. 410.

No. 350. Graduated one corner each in millimeters, 1/2 mm., 32ds and 64ths, all sizes.

No. 351. First corner graduated to 1/2 mm., second corner to 1 mm., third corner to 1/64 inch, fourth corner to 1/100 in., up to and including 15 cm. Above 15 cm., 2 inches of third corner graduated in 64ths, the rest of that corner in 16ths. Two inches of fourth corner graduated in 100ths, the rest of that corner in 50ths.

Dimensions and prices given below.

PRICES

Spring tempered rules, both Metric and English measure.

5	CM.	1.9685 inch	Each $0 25
10	"	3.9370 "	" 45
15	"	5.9055 "	" 65
20	"	7.8740 "	" 85
25	"	9.8425 "	" 1 05
30	"	11.8110 "	" 1 25
40	"	15.7480 "	" 1 65
50	"	19.6850 "	" 2 00
60	"	23.6220 "	" 4 00
80	"	31.4960 "	" 5 60
1	M.	39.3700 "	" 7 00

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FLEXIBLE STEEL RULES

ENGLISH MEASURE



FIG. 412

Every rule is marked "Tempered." Graduated on one side only.

For graduations see Graduations, Figs. 406 to 409.

Nos.	Lengths.	Approximate Widths.	Number of Graduations.	Each.
149	4 inches	½ inch	10, 11, 12, 13 or 14	$0 45
150	6 "	½ "	10, 11, 12, 13 or 14	65
151	9 "	½ "	10, 11, 12, 13 or 14	1 00
152	12 "	½ "	10, 11, 12, 13 or 14	1 25
153	18 "	¾ "	10, 11, 12, 13 or 14	2 00
154	24 "	¾ "	10, 11, 12, 13 or 14	2 75
155	36 "	¾ "	10, 11, 12, 13 or 14	7 00

FLEXIBLE STEEL RULES

EVERY RULE IS MARKED "TEMPERED"

METRIC MEASURE

Graduated on one side only. First corner to ⅛ mm.; second corner to 1 mm.

No. 192, 10 centimeters. 45c.

No. 193, 20 centimeters. 85c.

No. 194, 30 centimeters. $1 25

No. 195, 50 centimeters. $2 00

STEEL SHRINK RULES



FIG. 414

This rule is 24¼ inches long and is graduated as a shrink rule on one side and a standard rule on the other. Both sides are graduated as follows: The first corner is graduated into 10, 20, 50, 100, 12, 24, 48, and the second corner into 16, 32, 64 parts of an inch. No. 200. Price, $3.50.

This rule is 24¼ inches long and is graduated as a shrink rule on both sides. It has No. 1 graduation. No. 202, Price, $3.50.

TRIANGULAR STEEL RULES



FIG. 418

Nos.	Lengths.	No. of Graduations.	Each.
240	3 inches	20, 21 or 22	$0 50
242	4 "	20, 21 or 22	70
244	6 "	20, 21 or 22	1 00
246	12 "	20, 21 or 22	2 00

These rules are divided in parts of inches as follows:

No. 20 Graduation.	No. 21 Graduation.	No. 22 Graduation.
1st cor. 16	16	12, 24, 48
2d cor. 64	32	20, 50, 100
3d cor. 100	64	16, 32, 64

SQUARE STEEL RULES



FIG. 421

Nos.	Lengths.	No. of Graduations.	Each.
230	3 inches	15, 16 or 17	$0 45
232	4 "	15, 16 or 17	60
234	6 "	15, 16 or 17	90

These rules are divided in parts of inches as follows:

No. 15 Graduation.	No. 16 Graduation.	No. 17 Graduation.
1st cor. 8	16	16
2d cor. 16	32	50
3d cor. 32	64	64
4th cor. 64	100	100

FLEXIBLE SPRING TEMPERED RULES

ENGLISH MEASURE

PRICES, FIG. 413

Lengths	1 in.	2 in.	3 in.	4 in.	6 in.	9 in.
Prices,	$0.15	.25	.35	.45	.65	1.00

Lengths	12in.	18in.	24 in.	36 in.	48 in.
Prices,	$1.25	2.00	2.50	5.00	7.00

No. 320 Flexible, No. 10 graduation. (32ds and 64ths.)

No. 321 Flexible, No 11 graduation. (64ths and 100ths.)

No. 322 Flexible, No. 12 graduation. (50ths and 100ths.)

See graduations, Figs. 410 and 411.

PRICES FLEXIBLE SPRING TEMPERED RULES, BOTH METRIC AND METRIC ENG. MEASURES

5 CM.	1.9685 inch	Each	$0 25
10 "	3.9370 "	"	45
15 "	5.9055 "	"	65
20 "	7.8740 "	"	85
25 "	9.8425 "	"	1 05
30 "	11.8110 "	"	1 25
40 "	15.7480 "	"	1 65
50 "	19.6850 "	"	2 00
60 "	23.6220 "	"	4 00
80 "	31.4960 "	"	5 60
1 M.	39.3700 "		7 00

STEEL SHRINK RULES

Prices, 12 inch.....$1 75

" 24 " 3 50

These rules are spring tempered except No. 372, and are of the same width and thickness as Spring Tempered Standard Rules. Fig. 410, page 82.

No. 370 Shrink, ⅛ to foot, No. 4 graduation.

No. 371 Shrink, ⅛ to foot, No. 2 graduation.

No. 372 Shrink, ⅛ to foot flexible, graduated in 32ds and 64ths.

No. 373 Shrink and Standard, ⅛ to foot, No. 4 graduation.

No. 375 Brass Shrink, 3/16 to foot, No. 4 graduation.

No. 376 Brass Shrink, 3/16 to foot, No. 2 graduation.

No. 377 Double Shrink, ¼ to foot, No. 4 graduation.

No. 378 Double Shrink, ¼ to foot, No. 2 graduation.

See graduations, Figs. 410 and 411.

NARROW RULES



FIG. 416

3/16 inch wide, No. 18 gauge, spring tempered, graduated one corner each side whole length, either in 32ds and 64ths, 50ths and 100ths, or 64ths and 100ths.

Lengths	4 in.	6 in.	9 in.	12 in.
Prices, each	$0 45	.65	1 00	1 25

No. 330 Narrow, No. 10 graduation. (32ds and 64ths.)

No. 331 Narrow, No. 11 graduation. (64ths and 100ths.)

No. 332 Narrow, No. 12 graduation. (50ths and 100ths.)

See graduations, Figs. 410 and 411.

TRIANGULAR BOX WOOD SCALES



FIG. 420

Nos. 63, 64, and 65, for architects and mechanical draughtsmen.

No. 63, $5.00. 24 inch Triangular Boxwood Scale, divided to scales of ⅛, ¼, ⅜, ¾, ½, 1; 1½, 2, 3 and 4 inches to the foot and 16ths of an inch.

No. 64 B, $2.00. 12 inch Triangular Boxwood Scale ditto, with 3/16 and 3/32 instead of 2 inches and 4 inches to the foot.

No. 65, $1.50. 6 inch Triangular Boxwood Scale, ditto.

No. 72, $5.00. 24 inch Triangular Boxwood Scale, on one edge to 10ths, 20ths, 30ths, 40ths, 50ths, 60ths of an inch.

No. 73 B, $2.00. 12 inch Triangular Boxwood Scale, ditto.

No. 75, $1.50. 6 inch Triangular Boxwood Scale, ditto.

Nos. 72, 73 and 75, for railroad engineers and land surveyors.

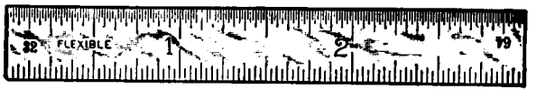


FIG. 413

These are very thin watch spring tempered rules, nicely graduated on one side only, in either 32ds and 64ths, 64ths and 100ths, or 50ths and 100ths, whole length. Those from 1 to 12 inches are ½ inch wide, and will easily conform to a 2 inch circle. Those from 18 inches to 48 inches are ¾ inch wide, and are made from a trifle heavier stock.

FLEXIBLE SPRING TEMPERED RULES

METRIC MEASURE

Of same widths and thicknesses as flexible rules of English measure. Graduated on one side only.

Lengths and prices to the left.

No. 345. Graduated one edge in millimeters, the other in ½ mm.

No. 346. From 5 to 15 cm., inclusive, graduated one corner in millimeters, the other corner in ½ millimeters. Above 15 cm., graduated in ½ millimeters on 5 cm. of one corner, the rest of that corner and the other corner graduated in millimeters.

FLEXIBLE SPRING TEMPERED RULES

METRIC AND ENGLISH MEASURE

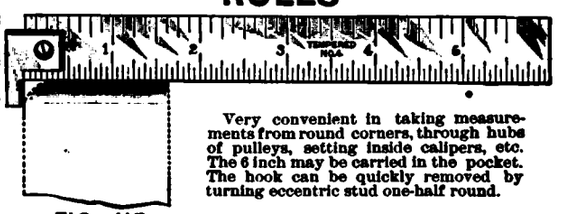
Of same widths and thicknesses as flexible rules of English measure. Graduated on one side only.

Lengths and prices to the left.

No. 355. Graduated one edge in millimeters, the other in 64ths.

No. 356. Graduated one edge in ½ millimeters, the other in 100ths, sizes up to 15 cm. Sizes above 15 cm. graduated one edge in ½ millimeters, the other edge 2 in. in 100ths, balance in 50ths.

IMPROVED HOOK STEEL RULES



Very convenient in taking measurements from round corners, through hubs of pulleys, setting inside calipers, etc. The 6 inch may be carried in the pocket. The hook can be quickly removed by turning eccentric stud one-half round.

FIG. 415

Lengths	6 in.	9 in.	12 in.	18 in.	24 in.	36 in.
Prices, each,	$1 00	1 40	1 75	2 50	3 00	5 75

STEEL GEAR RULES

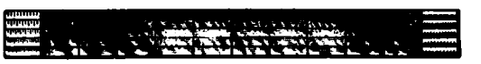


FIG. 417.

No. 61. Price, $3.00. This rule is 12 inches long, and has four lines of graduations upon each side; one each as follows: 18, 20, 22, 24, 26, 28, 30, 32 parts of an inch whole length.

No. 78. Price, $3.00. This rule is 12 inches long, and is graduated 1 inch only on each end, as follows: 6, 7, 8, 9, 10, 11, 12, 14, 16, 18, 20, 22, 24, 26, 28, 30, 32, 34, 36, 38 parts of an inch. The intermediate 10 inches are blank, except that the inch lines are made clear across the rule.

TRIANGULAR METALLIC SCALES



FIG. 419.

These Patent Triangular Metallic Scales are of the size and shape of the common 12 inch Triangular Boxwood Scales. They are made from brass tubing with the ends closed, nickeled, with a dull finish, and weigh less than 3½ ounces.

The ends of these scales are covered with hardened steel plates which slightly raise the scales from the paper.

NO. 63 M. PRICE, $2.50

12 inches, divided to scales of ⅛, ¼, ⅜, ¾, ½, 1, 1½, 2, 3 and 4 inches to the foot, and 16ths of an inch.

No. 64 M. Price, $2.50. 12 inches, divided to scales of 5/16, 3/32, ⅛, ¼, ⅜, ¾, ½, 1, 1½, and 3 inches to the foot and 16ths of inches.

No. 73 M. Price, $2.50. 12 inches divided on one edge each to 10ths, 20ths, 30ths, 40ths, 50ths and 60ths of inches; or to 20ths, 30ths, 40ths, 50ths, 60ths and 80ths of inches.

In ordering No. 73 M, state whether the divisions 10 to 60 or 20 to 80 are wanted.

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CAR WHEEL CIRCUMFERENCE GAUGES

MASTER CAR BUILDERS' STANDARD



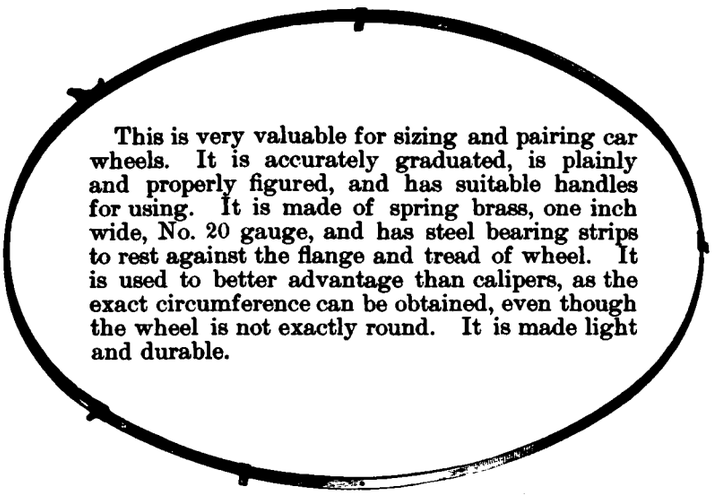
FIG. 422

These gauges are made of flexible tempered steel ribbon, with convenient adjustable handles, and are graduated to obtain accurately, by circumference measurement, the standard diameters of car-wheels from 24 to 42 inches, measured at the proper distance from the inside of the flange, as adopted by the Master Car Builders' Association.

The gauges are graduated to indicate variations of size by sixteenths of an inch in terms of the diameter, above and below for each regular size included, and will be found well adapted for the purpose for which they are designed.

For the present these gauges are made only to order, at prices depending on the range of diameters desired, and which will be quoted on application.

CAR WHEEL CIRCUMFERENCE MEASURES



This is very valuable for sizing and pairing car wheels. It is accurately graduated, is plainly and properly figured, and has suitable handles for using. It is made of spring brass, one inch wide, No. 20 gauge, and has steel bearing strips to rest against the flange and tread of wheel. It is used to better advantage than calipers, as the exact circumference can be obtained, even though the wheel is not exactly round. It is made light and durable.

FIG. 423

Net weight, 4 lbs.; weight boxed for shipment, 9 lbs..... Each, $10 00

ADJUSTABLE SHRINKAGE GAUGE FOR LOCOMOTIVE TIRES

PRICES, FIG. 424

For 30 to 50 in. tires, each $40 00

For 50 to 70 in. tires, each 50 00

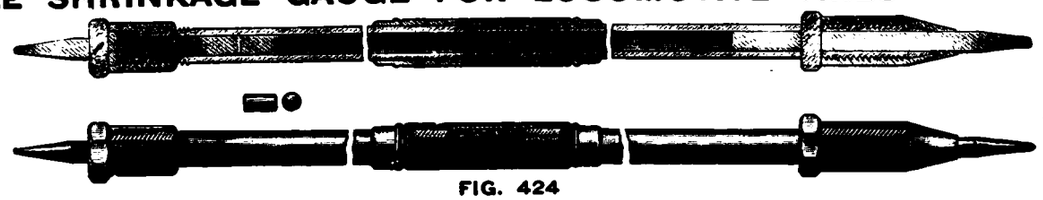


FIG. 424

FOLDING STEEL POCKET RULES



FIG. 425

RULE IN METAL BOUND LEATHER CASE

These rules are very neat and convenient for light work. They are made of spring steel, and will bend to a 3 inch circle.

They occupy very little space, and are conveniently carried in the vest pocket. Packed in neat paper boxes.

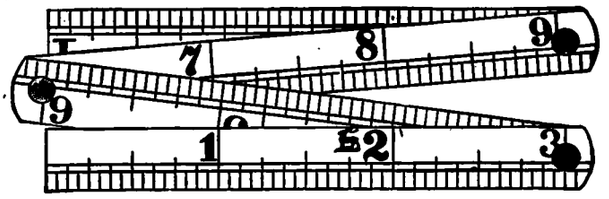


FIG. 426

No. 31. 1 ft. Full size.

PRICES, FIGS. 425 AND 426

Nos.		Rules only, per doz.	Rules with Cases, per doz.	Nickel-plated extra, per doz.
31.	1 ft., ⅜ in. x 28 gauge, 3 in. joints, 4 fold,	$4 00	$5 50	$1 50
31.	2 " " " 3 " 8 "	8 00	10 00	2 50
41.	1 " " " 4 " 3 "	4 00	5 50	1 50
41.	2 " " " 4 " 6 "	7 50	9 50	2 50
41.	3 " " " 4 " 9 "	11 00	13 50	3 50
41.	4 " " " 4 " 12 "	14 50	17 00	4 50

Nos.		Rules only, per doz.	Rules with Cases, per doz.	Nickel-plated extra, per doz.
46.	2 ft. ⅜ in. x 26 gauge, 6 in. joints, 4 fold..	$7 50	$10 00	$2 50
46.	3 " " " 6 " 6 " ..	11 00	14 00	3 50
46.	4 " " " 6 " 8 " ..	14 50	17 50	4 50
70.	2 " ¾ in. x 21 " 6 " 4 " ..	14 00		3 00

All the above graduated sixteenths of inches both sides.

70.	2 ft., folding pocket (in leather case)....	18 00.....	3 00

Graduated eighths of inches on one side, sixteenths on the other.

FOLDING STEEL RULES

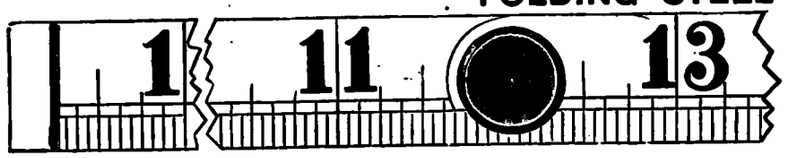


FIG. 427

No. 85. Full width.

Nos.		Rules only, per doz.	Nickel-plated, extra, per doz.
80.	2 ft. Folding, ¾ in. x 21 gauge, 12 in. joints, 2 fold ..... 16ths of inches on one side, 8ths on other.	$10 00	$3 00
80.	3 ft. Folding, ¾ in. x 21 gauge, 12 in. joints, 3 fold ..... 16ths of inches on one side, 8ths on other.	18 00	4 00
81.	2 ft. Folding, ¾ in. x 21 gauge, 12 in. joints, 2 fold ..... 16ths on one side, circumference inches on other.	15 00	3 00

Nos.		Rules only, per doz.	Nickel-plated, extra, per doz.
85.	2 ft. Folding, ¾ in. x 21 gauge, one stop joint ..... German silver ends, 8ths in. one side, 16ths on other.	$12 00	$3 00
85.	3 ft. Folding, ¾ in. x 21 gauge, 12 in. joints, 3 fold, two stop joints..... German silver ends, 8ths on one side, 16ths on other.	20 00	4 00
86.	2 ft. Folding, ¾ in. x 21 gauge, one stop joint..... German silver ends, 16ths on one side, circumference inches on other.	17 00	3 00

N. B.—All these steel rules being made of hardened steel, the corners and edges will not wear off, and the figures and divisions are always plain.

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BOXWOOD AND IVORY RULES

BOXWOOD TWO FOOT, FOUR FOLD, RULES

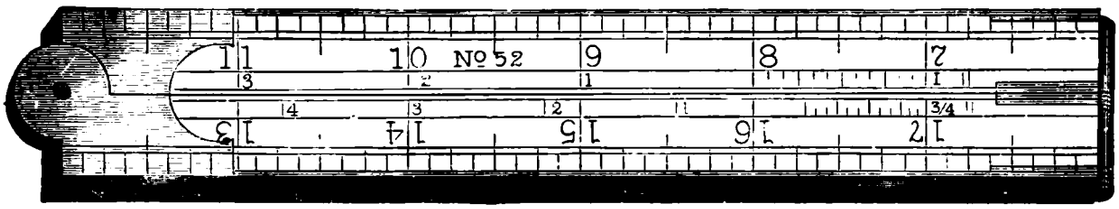


FIG. 428. NO. 52 ARCH JOINT, HALF BOUND

PRICES, FIG. 428, NARROW

No.			Per. doz.
68.	Round joint, middle plates, 8ths and 16ths of inches	1 in. wide,	$4 00
61.	Square joint, middle plates, 8ths and 16ths of inches	1 "	5 00
63.	Square joint, edge plates, 8ths, 10ths, 12ths and 16ths of inches, drafting scales	1 "	7 00
84.	Square joint, half bound, 8ths, 10ths, 12ths and 16ths of inches, drafting scales	1 "	12 00
62.	Square joint, bound, 8ths, 10ths, 12ths and 16ths of inches, drafting scales	1 "	15 00
51.	Arch joint, middle plates, 8ths, 10ths, 12ths and 16ths of inches, drafting scales	1 "	6 00
53.	Arch joint, edge plates, 8ths, 10ths, 12ths and 16ths of inches, drafting scales	1 "	8 00
53½.	Arch joint, edge plates, 8ths, 10ths, 12ths and 16ths of inches, with inside beveled edges and architect's drafting scales	1 "	15 00
52.	Arch joint, half bound, 8ths, 10ths, 12ths and 16ths of inches, drafting scales	1 "	13 00
54.	Arch joint, bound, 8ths, 10ths, 12ths and 16ths of inches, drafting scales	1 "	16 00
59.	Double arch joint, bitted, 8ths, 10ths, 12ths and 16ths of inches, drafting scales	1 "	9 00
60.	Double arch joint, bound, 8ths, 10ths, 12ths and 16ths of inches, drafting scales	1 "	21 00

BOXWOOD ONE FOOT, FOUR FOLD, NARROW

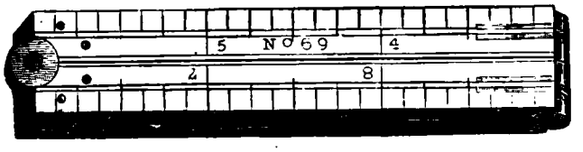


FIG. 430

No.		Price, Per doz.
69.	Round joint, middle plates, 8ths and 16ths of inches	⅝ in. wide. $3 00

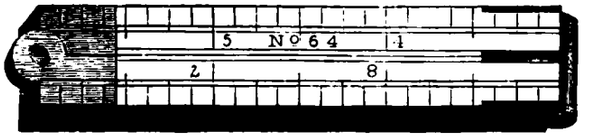


FIG. 432

No.		Price, Per doz.
65.	Square joint, middle plates, 8ths and 16ths of inches	⅝ in. wide. $3 50
64.	Square joint, edge plates, 8ths and 16ths of inches	⅝ " 5 00
65½.	Square joint, bound, 8ths and 16ths of inches	⅝ " 11 00

PRICES, FIG. 428, BROAD

No.			Per doz.
67.	Round joint, middle plates, 8ths and 16ths of inches	1⅜ in. wide,	$5 00
70.	Square joint, middle plates, 8ths and 16ths of inches, drafting scales	1⅜ "	7 00
72.	Square joint, edge plates, 8ths, 10ths and 16ths of inches, drafting scales	1⅜ "	9 00
72½.	Square joint, bound, 8ths, 10ths and 16ths of inches, drafting scales	1⅜ "	18 00
73.	Arch joint, middle plates, 8ths, 10ths and 16ths of inches, drafting scales	1⅜ "	9 00
75.	Arch joint, edge plates, 8ths, 10ths and 16ths of inches, drafting scales	1⅜ "	11 00
76.	Arch joint, bound, 8ths, 10ths and 16ths of inches, drafting scales	1⅜ "	20 00
77.	Double arch joint, bitted, 8ths, 10ths and 16ths of inches, drafting scales	1⅜ "	12 00
78.	Double arch joint, half bound, 8ths, 10ths and 16ths of inches, drafting scales	1⅜ "	20 00
78½.	Double arch joint, bound, 8ths, 10ths and 16ths of inches, drafting scales	1⅜ "	24 00
83.	Arch joint, edge plates, slide, 8ths, 12ths and 16ths of inches, 100ths of a foot, and octagonal scales	1⅜ "	14 00

BOXWOOD ONE FOOT, FOUR FOLD, NARROW

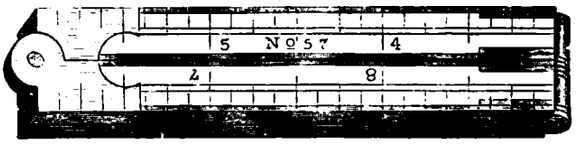


FIG. 429

No.		Price, Per doz.
55.	Arch joint, middle plates, 8ths and 16ths of inches	⅝ in. wide, $4 00
56.	Arch joints, edge plates, 8ths and 16ths of inches	⅝ " 6 00
57.	Arch joint, bound, 8ths and 16ths of inches	⅝ " 12 00

BOXWOOD CALIPER, ONE FOOT FOUR FOLD

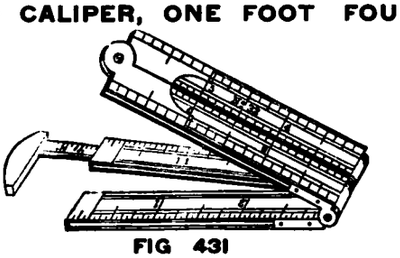


FIG 431

No.		Price, Per doz.
32.	Arch joint, edge plates, 8ths, 10ths, 12ths and 16ths of inches	1 in. wide, $12 00
32½.	Arch joint, bound, 8ths, 10ths, 12ths and 16ths of inches	1 " 20 00

IVORY CALIPER, ONE FOOT, FOUR FOLD



FIG. 433

No.		Price, Per doz.
39.	Square joint, German silver, edge plates, 8ths, 10ths, 12ths and 16ths of inches	⅞ in. wide, $38 00
40.	Square joint, German silver, bound, 8ths and 16ths of inches	⅝ " 44 00

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STEEL SQUARES

STEEL SQUARES FOR MILLWRIGHTS



FIG. 434

This square is designed to meet the wants of those desiring a more accurate tool than the ordinary carpenter's square.

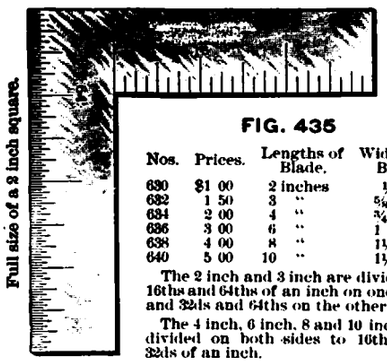
Long blade, 24 inches long, 2 inches wide.

Short blade, 18 inches long, 1½ inches wide.

Both blades are 5/32 inch thick at the corner where they unite, and taper down to 1/16 inch at their ends. One outside and inside corner divided to 8ths. One outside and inside corner divided to 16ths, excepting 1 inch on end divided to 64ths, and the second inch from end divided to 32ds. Both sides have similar graduations.

No. 620.....Price, $10 00

THIN STEEL SQUARES



Full size of a 2 inch square.

FIG. 435

Nos.	Prices.	Lengths of Blade.	Widths of Blade.
630	$1 00	2 inches	½ inch
632	1 50	3 "	5/8 "
634	2 00	4 "	¾ "
636	3 00	6 "	1 "
638	4 00	8 "	1¼ "
640	5 00	10 "	1¼ "

The 2 inch and 3 inch are divided to 16ths and 64ths of an inch on one side, and 32ds and 64ths on the other.

The 4 inch, 6 inch, 8 and 10 inch are divided on both sides to 16ths and 32ds of an inch.

THIN STEEL TRY SQUARES

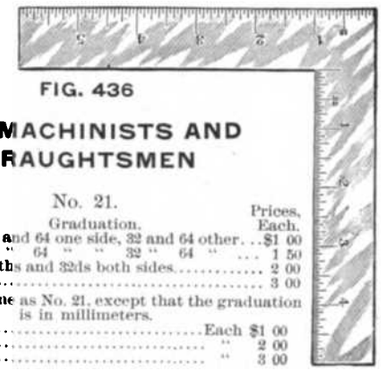


FIG. 436

FOR MACHINISTS AND DRAUGHTSMEN

Thick.	No. 21. Graduation.	Prices, Each.
2 in.	1/40 in. 16 and 64 one side, 32 and 64 other.	$1 00
3 "	1/20 " 16 " 64 " " 32 " 64 "	1 50
4 "	1/16 " 16ths and 32ds both sides	2 00
6 "	1/16 "	3 00

No. 21M. The same as No. 21, except that the graduation is in millimeters.

5	CM. Each	$1 00
10	" "	2 00
15	" "	3 00

ADJUSTABLE STEEL SQUARE AND MITER

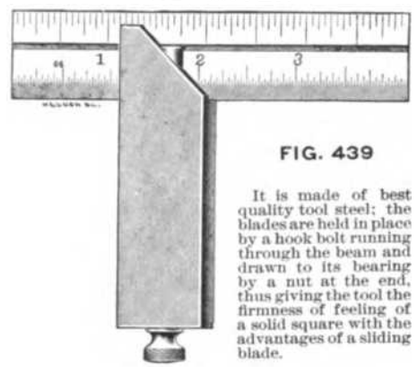


FIG. 439

It is made of best quality tool steel; the blades are held in place by a hook bolt running through the beam and drawn to its bearing by a nut at the end, thus giving the tool the firmness of feeling of a solid square with the advantages of a sliding blade.

Size	2	3	4	6
Each	$2 00	$2 25	$2 50	$3 00

HARDENED EDGE SOLID STEEL SQUARES

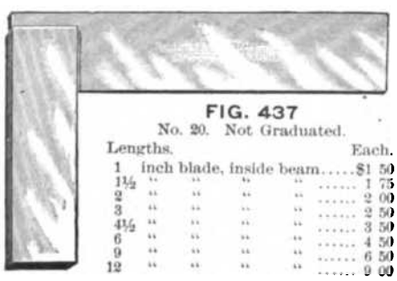


FIG. 437

No. 20. Not Graduated.

Lengths.	Each.
1 inch blade, inside beam	$1 50
1½ " " " "	1 75
2 " " " "	2 00
3 " " " "	2 50
4½ " " " "	3 50
6 " " " "	4 50
9 " " " "	6 50
12 " " " "	9 00

HARDENED CAST STEEL TRY SQUARES

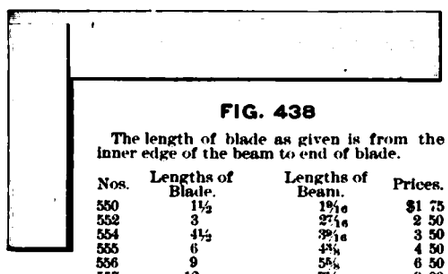


FIG. 438

The length of blade as given is from the inner edge of the beam to end of blade.

Nos.	Lengths of Blade.	Lengths of Beam.	Prices.
550	1½	1 9/16	$1 75
552	3	2 7/16	2 50
554	4½	3 9/16	3 50
555	6	4 3/8	4 50
556	9	5 3/4	6 50
557	12	7 1/8	9 00
558	15	8 9/16	15 00
560	18	10¼	18 00

RELIABLE TRY SQUARES

Figs. 440 and 441 represent a new line of Try Squares, handsome in design, light and convenient. The blade is not riveted or soldered to the stock, but is firmly held by patent bolt and nut, by means of which the tool can be readily taken apart, and when worn the blade and stock can be reground or lapped, and put together again as good as new.

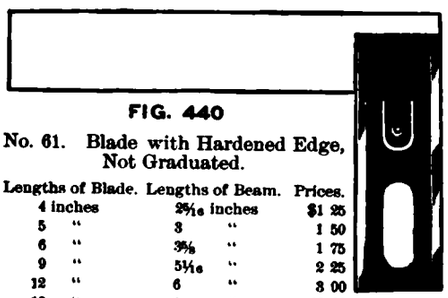


FIG. 440

No. 61. Blade with Hardened Edge, Not Graduated.

Lengths of Blade.	Lengths of Beam.	Prices.
4 inches	2 9/16 inches	$1 25
5 "	3 "	1 50
6 "	3 5/8 "	1 75
9 "	5 1/16 "	2 25
12 "	6 "	3 00
18 "	9 "	12 00
24 "	12 "	18 00

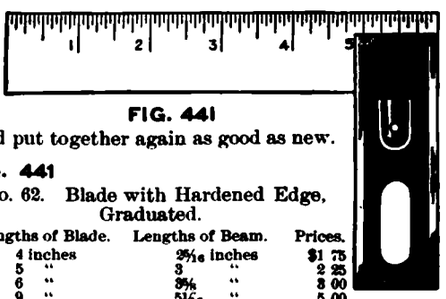


FIG. 441

PRICES, FIG. 441

No. 60. Graduated Blade. Not Hardened.

Lengths of Blade.	Lengths of Beam.	Prices.
4 inches	2 9/16 inches	$1 00
5 "	3 "	1 15
6 "	3 5/8 "	1 25
9 "	5 1/16 "	2 00
12 "	6 "	2 75

No. 60M. The same as No. 60, except that the blades are graduated in millimeters.

C. M.	10	15	20	30
Each	$1 00	$1 25	$2 00	$2 75

No. 62. Blade with Hardened Edge, Graduated.

Lengths of Blade.	Lengths of Beam.	Prices.
4 inches	2 9/16 inches	$1 75
5 "	3 "	2 25
6 "	3 5/8 "	3 00
9 "	5 1/16 "	5 00
12 "	6 "	7 00

No. 62M. The same as No. 62, except that the blades are graduated in millimeters.

C. M.	10	15	20	30
Each	$1 75	$3 00	$5 00	$7 00

GRADUATED STEEL SQUARES

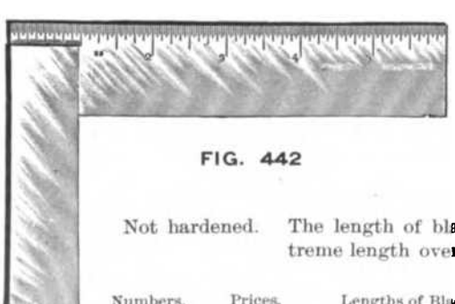


FIG. 442

Not hardened. The length of blade, as given, is the extreme length over all.

Numbers.	Prices.	Lengths of Blade.	Lengths of Beam.
590	$2 00	3 inches	2 inches
592	2 50	4 "	2 9/16 "
594	3 50	6 "	3 3/4 "
596	6 00	9 "	5 "
598	7 00	12 "	6 1/16 "

DOUBLE STEEL SQUARES

Fig. 443 represents a double solid steel square, with patent 2½ inch sliding scale, and is especially designed for fine tool makers. The rule being narrow and instantly adjusted to any length, however short, allows it to be used where it would be impossible to use any square with a fixed blade. The scale is graduated on one side only, in 32ds and 64ths.

Fitted to go with this stock we furnish not only a bevel blade, shown with 4 inch double square (Figs. 444 and 445), but a very narrow straight one, about 1/8 inch wide, highly prized by die makers for squaring small holes, both of which blades will be sent with the square unless otherwise ordered.

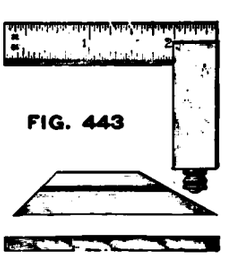


FIG. 443

PRICES, FIG. 443

No. 14. Square.....$2 00
" with either bevel or narrow blade 2 30
" complete..... 2 60

No. 14M. With 5 cm. blade, graduated in millimeters. Price the same as for No. 14 above.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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STEEL SQUARES, T AND CENTER SQUARES

PRICES, FIGS. 444 AND 445

No. 13

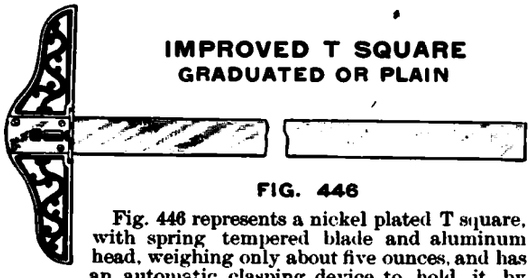
4 inch	$1 25,	with both blades,	$1 65
6 "	2 00,	" " "	2 50
9 "	3 00		
12 "	4 00		

Both blades with 4 and 6 inch always sent unless otherwise ordered.

There is a level in the stocks of the 6 inch, 9 inch and 12 inch squares.

No. 13M. The same as No. 13, except that the blades are graduated in millimeters.

10 C. M.	$1 25,	with both blades,	$1 65
15 "	2 00,	" " "	2 50
20 "	3 00		
30 "	4 00		



IMPROVED T SQUARE
GRADUATED OR PLAIN

FIG. 446

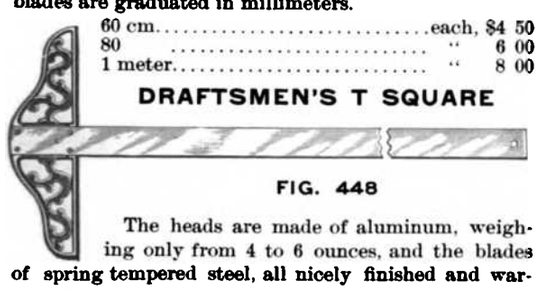
Fig. 446 represents a nickel plated T square, with spring tempered blade and aluminum head, weighing only about five ounces, and has an automatic clasping device to hold it by spring pressure against a metal straight-edge attached to the end, or end and side, of a drafting board or table, or by a slight turn of knurled nut, locked firm. The top side of the blade graduated forms a scale to set dividers, etc., and a feed rack, for section liner to work against, to move jointed blade used with combination straight-edge. The square will be furnished plain or graduated.

No. 164

Blades.	Heads.	Not Graduated.	Graduated.
22 x 1¼ inch	10 inch	$3 50	$4 25
26 1¼ "	10 "	4 25	5 00
32 1¼ "	10 "	5 00	6 00
36 1¾ "	13 "	5 75	7 00
42 1¾ "	13 "	6 50	8 00
48 1¾ "	13 "	7 50	9 50

No. 164M. The same as No. 164, except that the blades are graduated in millimeters.

60 cm	each, $4 50
80	" 6 00
1 meter	" 8 00



DRAFTSMEN'S T SQUARE

FIG. 448

The heads are made of aluminum, weighing only from 4 to 6 ounces, and the blades of spring tempered steel, all nicely finished and warranted accurate.

Nos.	Heads.	Blades.		
16	10 in. long,	20 x 1	in., 3/64 in. thick	each, $3 00
18	10 "	24 1	" 3/64 "	" 3 50
19	10 "	36 1¼	" 3/64 "	" 5 00
48	10 "	48 1¼	" 3/64 "	" 6 50

CENTER SQUARE

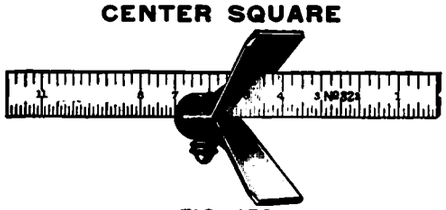


FIG. 450

The center head on this tool is made with broad sides, which feature is of value in many kinds of work. The sides are 1 9/16 inches wide at the ends. This center head can be furnished to fit the 12, 18 and 24 inch sizes of Nos. 11, 22, 17 squares, No. 9 set, and No. 10 inclinometer, as well as the same tools graduated in millimeters, at an advance of 50 cents each over the price with ordinary center head.

Center head, alone	each,	$1 00
" " with 12 inch blade	"	2 00
" " " 18 " "	"	2 75
" " " 24 " "	"	3 25

PATENT DOUBLE SQUARE

The blades are graduated in No. 4, No. 1, No. 2, and No. 7 graduations (for graduations, see graduations Figs. 410 and 411, page 82). Those of No. 4 graduation will be sent unless otherwise ordered.

Fig. 444 represents the 4 inch and 6 inch double square, with hexagon end of blade applied. Reverse it and the octagon is in position for use. Bevel blades are made to fit only 4 inch and 6 inch sizes.

This square is a most practical one for machinists' and fine tool makers' use. The sliding scale, shortened or extended full length, makes it most convenient, while with the extra bevel blade, shown in Fig. 444, we have both the hexagon and octagon angles.

The seat against which the blade is clamped being convex, should corners of the blade get injured, the accuracy of the square is not affected.

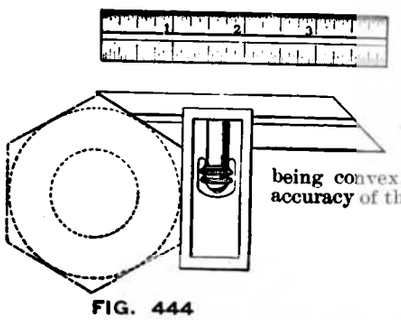


FIG. 444

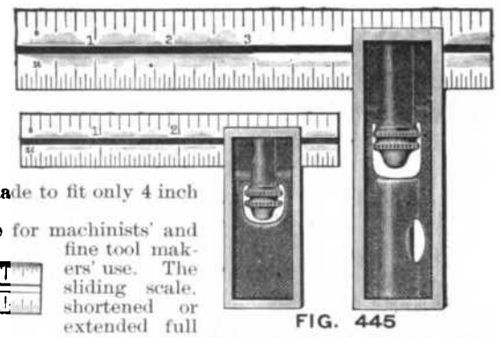


FIG. 445

DRAFTSMEN'S T SQUARE
WITH BRONZE HEAD

This draftsmen's T square has a steel blade 36 inches long, 1¼ inches wide, and 3/64 inch thick.

The head is of bronze and is 9 inches long. The arc is 4½ inches in diameter, and is graduated to ½ degrees.

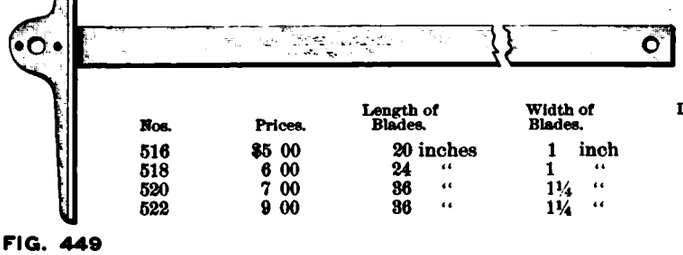
No. 514. Price.....$10 00



FIG. 447

DRAFTSMEN'S T SQUARE

These T squares have steel blades and cast iron heads.



Nos.	Prices.	Length of Blades.	Width of Blades.	Length of Heads.
516	$5 00	20 inches	1 inch	8 inches
518	6 00	24 "	1 "	8 "
520	7 00	36 "	1¼ "	8 "
522	9 00	36 "	1¼ "	10 "

FIG. 449

UNIVERSAL OR CENTER SQUARE

The Universal or Center Squares have blades graduated on one side only. The 4 inch blade is graduated to 32ds of an inch on the first corner, and to 20ths of an inch on the second corner.

The 6 inch, 8 inch, 10 inch, and 12 inch blades are graduated on the first corner to 16ths of an inch. The last inch of first corner is graduated to 32ds of an inch. The second corner is graduated to 12ths of an inch. The last inch of second corner is graduated to 48ths of an inch.

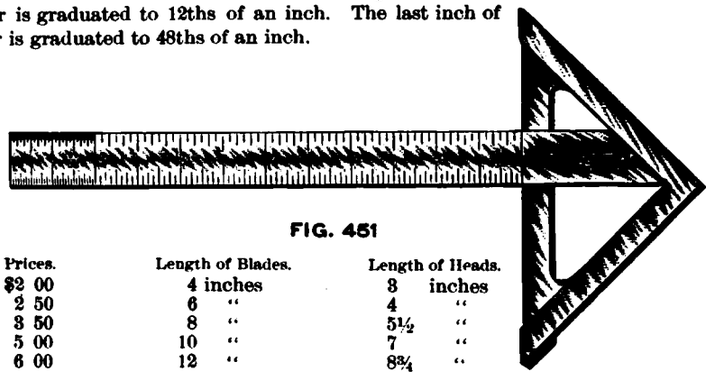


FIG. 451

Nos.	Prices.	Length of Blades.	Length of Heads.
650	$2 00	4 inches	3 inches
652	2 50	6 "	4 "
654	3 50	8 "	5½ "
656	5 00	10 "	7 "
658	6 00	12 "	8¾ "

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CARR'S IMPROVED CENTER SQUARE

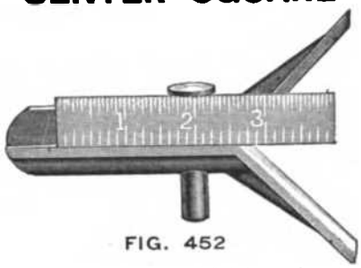


FIG. 452

For many years machinists and pattern makers have needed a center square of simple construction, which could be used with any straight edge or scale. This square which we now offer is simple, complete and accurate, and a straight edge or scale of any thickness from ½ to 1⅛ inches in width can be adjusted to it.

Price, 75 cents each.

UNIVERSAL BEVEL

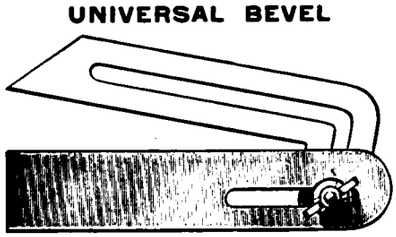


FIG. 455

Improved features. The set-off in the blade increases its capacity and usefulness for bevel gear work, etc., so that any angle, however slight, may be obtained.

Another valuable feature is, one edge of the case being solid, a rest is formed directly under the blade, where thin templets may be placed and accurately fitted.

No. 15, 3 inch .....Price $1 50

IMPROVED UNIVERSAL BEVEL PROTRACTOR

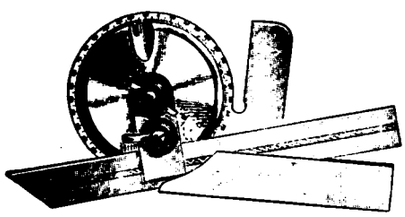


FIG. 458

This protractor is well adapted for all classes of work where angles are to be laid out or established.

The dial is accurately graduated in degrees the entire circle, and when set can be clamped in position. The blades are about ⅛ inch thick, can be drawn out to their full length, and clamped independently of the dial.

Special circular mailed on application.

		Each.
No. 495.	Protractor with 6 inch blade..	$8 00
No. 496.	" " 12 " " ..	9 00

BEVEL PROTRACTORS

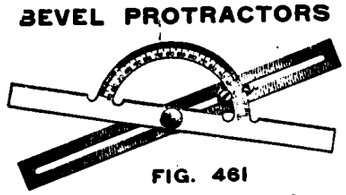


FIG. 461

The half circle is divided into degrees.

No. 490, length of sliding arm, 6 in., price $4.50.

No. 492, length of sliding arm, 10 in., price $5.75.

UNIVERSAL BEVEL

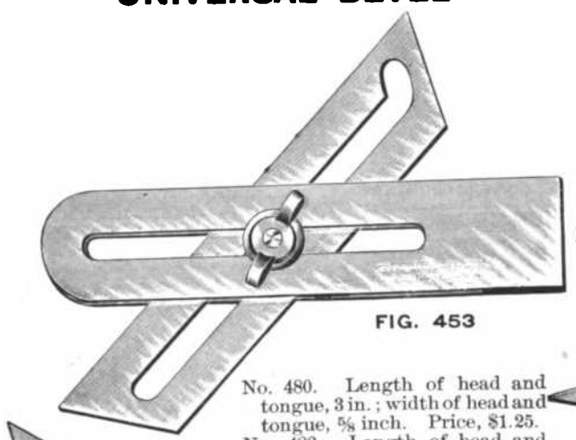


FIG. 453

No. 480. Length of head and tongue, 3 in.; width of head and tongue, ⅝ inch. Price, $1.25.

No. 482. Length of head and tongue, 1¼ in.; width of head and tongue, ¼ inch. Price $1.25.

IMPROVED BEVEL

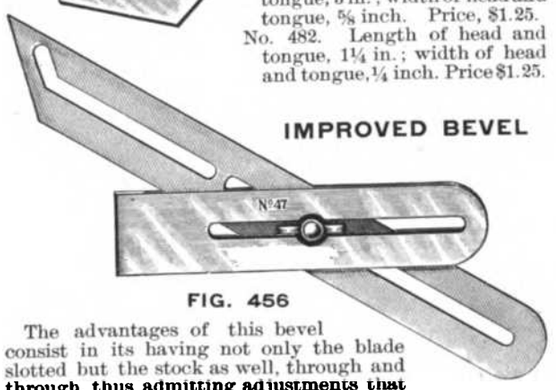


FIG. 456

The advantages of this bevel consist in its having not only the blade slotted but the stock as well, through and through, thus admitting adjustments that cannot be obtained with a common bevel. The clamping screw head, which the cut does not show, is let into a rabbet, flush with the surface of the stock, which will lie flat on the work.

No. 47.	6 in.	length of stock	3½ in.	.....each	$1 25
" "	9 "	" "	4¾ "	..... "	1 50
" "	12 "	" "	6 "	..... "	1 75

UNIVERSAL BEVEL

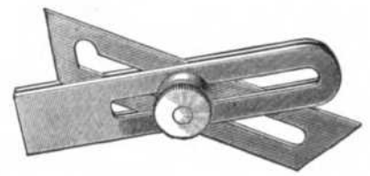


FIG. 454

Length, 3 in.; width, ⅝ in.; price, $1 25
" 5 " " ¾ " " 2 00

COMBINATION BEVEL

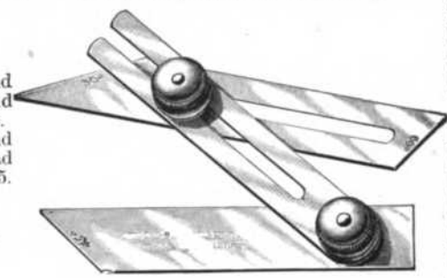


FIG. 457

This bevel, as will be seen, has a stud riveted in the straight-edge stock or head, on which its split blade is hinged, so as to swing over the stock, and by the knurled nut clamped at any angle, adapting it for laying out work in a very simple manner. The slotted auxiliary blade with clamp bolt may be slipped on to the split blade and be clamped at any desired angle and used, in combination with the stock of the other, for laying out work, measuring, or showing any angle desired, and, when so combined, will lie flat upon its work. The stock is about 4 inches long.

No. 49.....Price $2.00

UNIVERSAL BEVEL PROTRACTOR

DESCRIPTION, FIGS. 459 AND 460

This tool weighs 6 ounces. The blade is either 7 or 12 inches by ½ inch, the stock 4 inches long, and both are made from sheet steel, nicely finished. The disk is graduated in degrees from 0 to 90 each way, and rotates the entire circle on a central stud inside the case. The blade (clamped by an eccentric stud against the edge of the disk) may be slipped back and forth its full length, or turned at any angle around the circle and firmly clamped at any point, adapting it for work in awkward positions. One side of the stock being flat, makes it a convenient tool for laying on paper in drafting, etc.

The attachment shown in the smaller engraving (Fig. 460) will be found very convenient for grinding worm thread tools, tapers on lathe centers, and all long tapers.

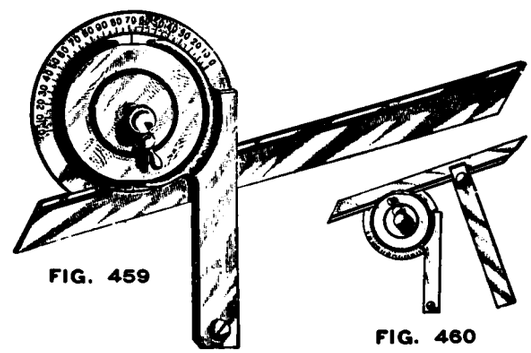


FIG. 459

FIG. 460

7 inch.....	$5 00	With both 7 and 12 inch blades.....	$6 50
7 " in leatherette case.....	5 75	Same in leatherette case.....	7 50
12 "	6 00	Attachment, extra	1 00
12 " in leatherette case.....	7 00	All sent in case unless otherwise ordered.	

IMPROVED BEVEL PROTRACTOR

An adjustable rule, held firmly at any point by a thumb nut, passes through a revolving turret, which is nicely graduated in degrees from 0 to 90, both right and left, and can be accurately adjusted to show any angle. A valuable auxiliary is made in the shape of a small level to be attached in place of the rule removed, forming an adjustable level to show any degree, thus greatly increasing the usefulness of the instrument.

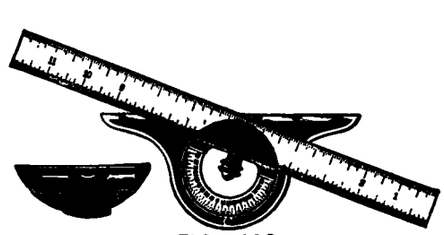


FIG. 462

PRICES, FIG. 462

		Each.
No. 12.	9 inches, head and blade, no level...	$2 75
"	12 " " " " " " " ...	3 00
"	18 " " " " " " " ...	3 50
"	24 " " " " " " " ...	4 00
Protractor head only, without level attachment		2 00
Level, extra.....		25

No. 4 graduation (see graduation on Figs. 410 and 411, Page 82) will be sent unless otherwise ordered. The head is 7 inches long. The protractor will be sent without the level unless otherwise ordered.

No. 12M, with blades graduated in millimeters: 20 cm., $2.75; 30 cm., $3.00; 50 cm., $3.50; 60cm., $4.00. Level, extra, 25 cents.

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PATENT COMBINATION SQUARE

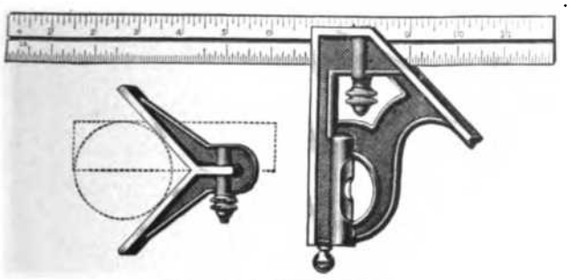


FIG. 463 NEW DESIGN.

With the adjustable scale this forms a most convenient and useful tool. It is also convenient for a depth gauge, or to square in a mortise. For a miter it is excellent, while with the auxiliary center head it forms a centering square, both inside and outside.

NO. 11

		Prices.
4 inch,	without center head or level	$0 75
6 "	with center head	$1 50; without, 1 00
9 "	" "	1 75; " 1 25
12 "	" "	2 00; " 1 50
18 "	" "	2 75; " 2 25
24 "	" "	3 25; " 2 75

The 6, 9, 12, 18, and 24 inch have levels (in their stocks) and center heads, and will be sent complete unless otherwise ordered. The 18 and 24 inch have same stock as 12 inch.

The blades are graduated in No. 4, No. 1, No. 2 and No. 7 graduations (see Page 82, Figs. 410 and 411). Those of No. 4 graduation, being most used, will be sent unless otherwise ordered.

NO. 11M

The same as No. 11, except that the blades are graduated in millimeters.

		Prices.
10 cm.,	without center head or level	$0 75
15 cm.,	with center head	$1 50; without, 1 00
20 "	" "	1 75; " 1 25
30 "	" "	2 00; " 1 50
50 "	" "	2 75; " 2 25
60 "	" "	3 25; " 2 75

NO. 17

These squares are the same as No. 11 above, except that the blades and stocks are a little larger, thereby increasing their usefulness as well as adding to their beauty.

	With Center Head.	Without.
18 in. blade, 1¼ in. wide, 5/32 in. thick; 6 in. stock with 4 inch miter	$3 25	$2 75
24 " " " " " " " "	3 75	3 25

NO. 17M

The same as No. 17, except that the blades are graduated in millimeters.

		Prices.
50 cm.	with center head,	$3 25, without, $2 75
60 cm.	" "	3 75, " 3 25

PATENT COMBINATION SQUARE
WITH HARDENED BLADE

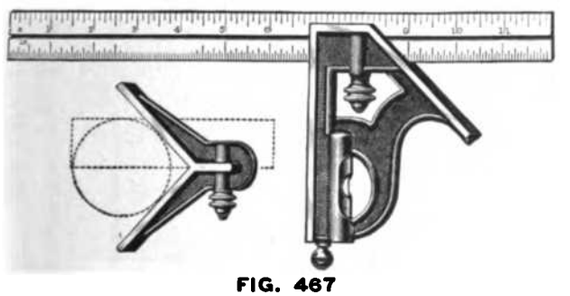


FIG. 467

NO. 22

		Prices.
4 inch,	without center head or level	$1 25
6 "	with center head	$2 00; without, 1 50
9 "	" "	2 25; " 1 75
12 "	" "	2 50; " 2 00

NO. 22M

The same as No. 22, except that the blades are graduated in millimeters.

		Prices.
10 cm.,	without center head or level	$1 25
15 "	with center head	$2 00; without, 1 50
20 "	" "	2 25; " 1 75
30 "	" "	2 50; " 2 00

COMBINATION SQUARE AND PROTRACTOR

This cut shows a Combination Square, with center head and bevel protractor head, all on the No. 11 square scale (Fig. 463). Each head may be instantly removed, or replaced and used interchangeably with the scale.

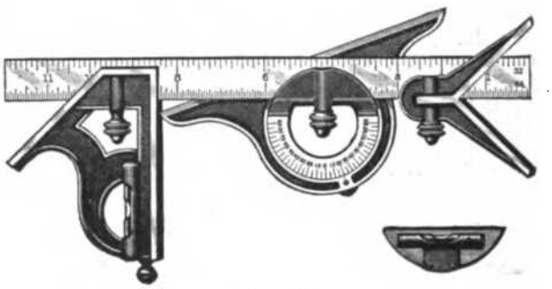


FIG. 464

NO. 9

	Prices.
9 inch, set complete	$3 75
12 " " "	4 00
18 inch, set complete	4 75
24 " " "	5 25
Level, extra	25

The 9 inch and 12 inch will be furnished with hardened blades at an advance of 50 cents each over above prices.

NO. 9M

The same as No. 9, except that the blades are graduated in millimeters.

	Prices.
20 cm.	$3 75
30 "	4 00
50 "	4 75
60 cm.	5 25
Level, extra	25

The 20 cm. and 30 cm. will be furnished with hardened blades at an advance of 50 cents each over above prices.

BELLOWS COMBINATION SQUARE AND PROTRACTOR

DESCRIPTION, FIG. 465

In one end of the frame a slot is milled at an angle of ninety degrees; the blade is grooved its entire length, and is used in this slot when it is desired to use the tool as a square, being drawn to its seat by a hook bolt.

In the center of the tool a disk graduated in degrees is inserted, having one-half of its surface cut away to allow the blade to be set in so that its surface will be level with the surface of the disk, the blade being held firmly in position by a bolt passing through the disk, and a cam catching in the groove of the blade and forcing it against the side of the disk, where it has been cut away, and in this position it is used as a protractor, or swung to zero and used as a center square.

A level goes with the tool that can be inserted in the disk in place of the blade when desirable.

No. 515, 12 inch.....Price, $5 00

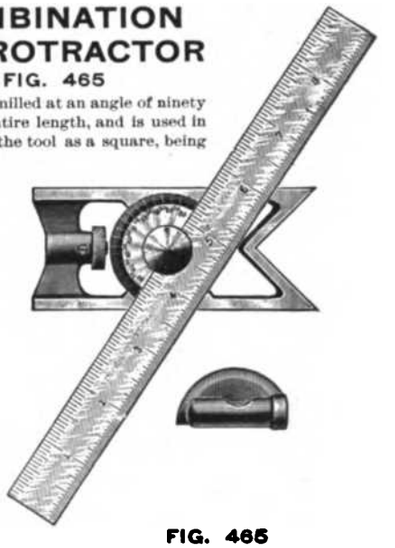


FIG. 465

PATENT INCLINOMETER

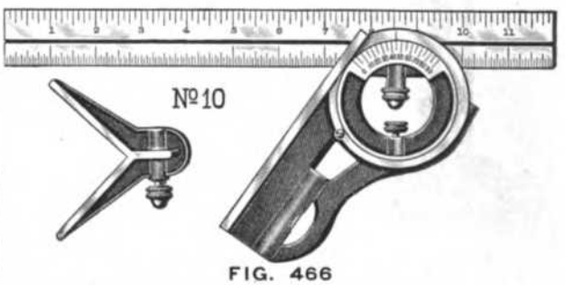


FIG. 466

The cut, Fig. 466, represents an Inclinometer, try square, and bevel protractor combined.

It consists of a stock and disk, both slotted to receive the blade, which folds in the stock. The blade attached to the graduated rotary disk may be secured at any angle from 0 to 90 degrees, and by loosening the clamp screw it may be shortened or extended full length, or removed for a straight edge.

The working face of the stock, extending both sides of the blade, admits of its being reversed, so that the same angle may be laid off in opposite directions without changing the angle in the tool, thus requiring but ¼ of a graduated circle to obtain all angles both ways.

At 90 degrees, the blade brings up against a case-hardened screw, accurately adjusted, thus forming a try square; by holding the blade perpendicular (the level in the stock being at right angles), a plumb; by folding the tool, a level, length of blade.

The blades are graduated one edge each in 8ths, 16ths, 32ds, and 64ths.

NO. 10

	Prices.
With 12 inch blade	$5 00
" 18 inch "	6 00
" 24 inch "	7 00
Center head, to fit all sizes	75

NO. 10M

The same as No. 10, except that the graduation is in millimeters.

	Prices.
With 30 cm. blade	$5 00
" 50 " "	6 00
" 60 " "	7 00

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ADJUSTABLE SCRATCH GAUGE



FIG. 468

The head is made of steel, thoroughly hardened, and eccentric in shape, so that it can be worked close to shoulders and in places where, with others, the head would be in the way. A fine adjustment is gained by a screw that goes through the tube its entire length. The cutter scribes a very fine line.

No. 130. Price ..... each $1.75

IMPROVED SCRIBER



FIG. 470

This scriber is made for mechanics who want a better thing than has been heretofore obtainable. These points are made of a fine grade of steel, nicely tempered. The knurled stock is of sufficient size to be easily held without cramping or turning in the fingers. The long bent point will be found a valuable auxiliary for reaching through holes, etc. Length, with short bent point, 9 inches; with long point, 12 inches. All parts are interchangeable. The knurled sleeve is nickeled.

No. 67.	Prices.
Complete	$0 45
Without long point	35
Straight point, long or short bent point, each	10

The tool will be sent complete unless otherwise ordered.

STARRETT'S MICROMETER SURFACE GAUGE

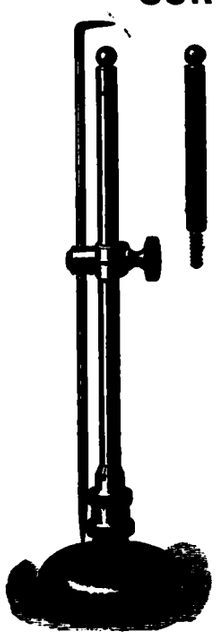


FIG. 475

DESCRIPTION AND PRICES FIG. 475

This gauge has a turned and polished base, a micrometer adjusting nut reading 1,000ths, and a six-inch extension for the spindle. By means of springs and taper fitting parts of the sleeve (not shown in cut) the scriber is held by slight friction in any position while adjustments are made, and firmly held by a turn of the nut. A knurled cam on the base releases and locks the spindle for adjusting.

No. 53.	Prices, Each.
8 inch, without extension	$2 50
12 " " "	3 50
12 " with 6 inch "	4 00

In ordering give the size wanted.

SURFACE GAUGE ATTACHMENT



FIG. 476

To be used between the centers of the lathe to adjust, locate and lay out work secured to the face plate. An auxiliary arbor is supplied size of surface gauge, Fig. 475, 12 inch spindle, the sleeve fitting both spindle and arbor.

Those having the surface gauge will need the arbor only.

	Prices.
No. 54. Complete	$1 50
Auxiliary arbor	50

SCRATCH GAUGE

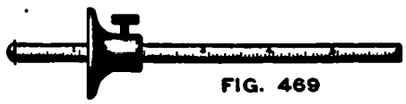


FIG. 469

This gauge is made of steel with hardened cast steel head. Through it is a split bushing, against which the set screw acts to hold it firm. The beam is graduated in either 50ths or 64ths of an inch. The marker is a thin square piece of steel, nicely tempered, which is firmly held against the end of beam, presenting four marking points.

No. 29		Prices. Graduated.	Not Graduated.
5 inch beam	15/64 inch	$1 00	$0 65
6 " "	5/16 "	1 25	75

Unless otherwise ordered, we shall send those graduated in 64ths.

Two extra cutters will be sent with each gauge, fastened to the case. They should last for year .

METRIC MEASURE

No. 29 M. Graduated in millimeters.

Price, 10 cm ..... $1.00; 15 cm $1.25

IMPROVED ADJUSTABLE SLEEVE SCRIBER

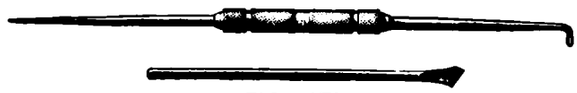


FIG. 471

The knurled sleeve has hole clear through and a clamping device at each end, adapting it for slipping on or off different tools, securely holding them near to or away from the working point. The knurled sleeve is nickeled.

This scriber is made in two lengths, 8 inches and 12 inches. Toolmakers will find the small size more desirable for general use, and the larger one for heavier work. For pattern makers a knife scriber, made of a fine grade of steel, is supplied as an auxiliary.

No. 68		Prices.
Either size, without knife point		$0 50
Knife point, extra		15
Extra scriber points, each		20

The 8 inch, being the more popular size, will be sent (without knife point) unless otherwise ordered.

SCRIBER



FIG. 472

7 in. long.

Each, 30 cents

MACHINISTS' MARKING AWLS

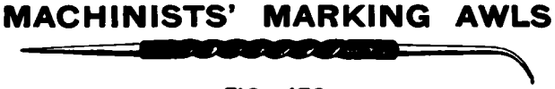


FIG. 473

No. 1.	Twisted steel, one end bent, polished points	Per dozen	$2 50
No. 2.	" " both ends straight, polished points	"	2 50



FIG. 474

The chuck firmly holds an ordinary sewing needle which has the flexibility so much desired in a marking awl. The knob on end of handle may be unscrewed and extra needles kept in handle, which is hollow. The most minute circle may be marked with this awl.

PRICE

No. 5. Polished and nickel plated .. Per doz., $5.00

SURFACE GAUGE

DESCRIPTION AND PRICES, FIG. 477

This gauge, with improvements as made for a few years past, gives great satisfaction to all who use it.

The sleeve and needle clasp, when loosened for adjustment, are both held by a slight spring friction, and by a single knurled nut both are rigidly clamped. For fine adjustment, the spindle in the base is raised or lowered by a knurled nut, and all backlash is taken up by a spiral spring in the base.

For above 12 inch lengths, an extension is provided to couple on to the spindle.

No. 53		Each.
8 inch		$2 00
12 "		2 75
12 "	with 6 inch extension	3 25
Sleeve alone		75



FIG. 477

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SURFACE GAUGE

DESCRIPTION, FIG. 478

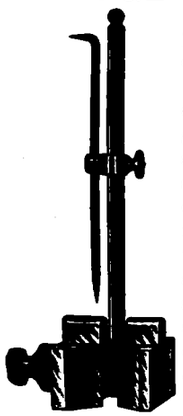


FIG. 478

An exceptionally easy and fine adjustment is provided, being positive and operative in whatever position the spindle happens to be.

The spindle has a sweep of three-fourths of a circle, which allows the use of every face of the gauge excepting that occupied by the adjusting and locking device. This gauge is simple in construction, durable in use, and not liable to get out of order. It consists of the draw bolt inclosed in a flanged shell. This shell is inclosed in an eccentric cylinder, and is prevented from rotating by a pin in the flange working in a groove in the stock. By rotating the latter a fine and positive adjustment is secured. The large V slot at the end adapts the tool to be used on the tail spindle of a lathe, a boring bar, the curved edge of a plate, etc.

	Prices, Each.
With 6 inch and 10 inch spindle	$2 50
With 12 inch and 18 inch spindle	3 50

TOOL MAKERS' UNIVERSAL SURFACE GAUGE

This gauge is admirably adapted for light work. The base is steel, nicely finished and case-hardened, with depressions milled in the sides for the thumb and finger to grasp. The top side of it is slotted, and the rocking bracket is pivoted in the same. There is a stiff spring under one end of the bracket, and a knurled adjusting screw in the other; the spindle jointed to this may be set and rigidly held in any position from vertical to horizontal, and the scriber placed in position to be used below its base for depth gauge, or, with bent end down, a scribing gauge. A V-shaped groove in the end and bottom adapts it for use on cylindrical work. There is a small hole in the clamp next to the base in which the scriber may be used for light work, the spindle being removed. An auxiliary guide piece. Fig. 482, is furnished to clamp to the base.

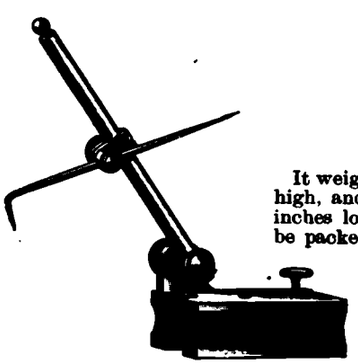


FIG. 481



FIG. 482

It weighs but ten ounces, and is five inches high, and, folding the spindle (which is four inches long) horizontally over the base, it may be packed in 1⅝ x 1½ x 4 inches space in the tool chest.

Price, with 4 inch spindle and auxiliary guide $3 00
" without auxiliary guide 2 50

Sent with guide unless otherwise ordered. A 7 inch spindle is furnished when ordered at an extra cost of 25 cents.

LOCOMOTIVE GUIDE LINER

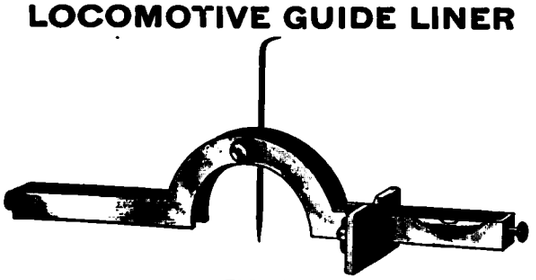


FIG. 484

This instrument was devised after many urgent requests from intelligent mechanics, there having been nothing of the kind on the market. The lightness of this tool, combined with strength and accuracy, together with an adjustable level in each end, adapting it to be used either side up, and the convenient way of adjusting the pointer, all go to make it just the thing needed. Length over all, 14 inches; span of arch, 3¼ inches. Price. $3.00

SURFACE GAUGE

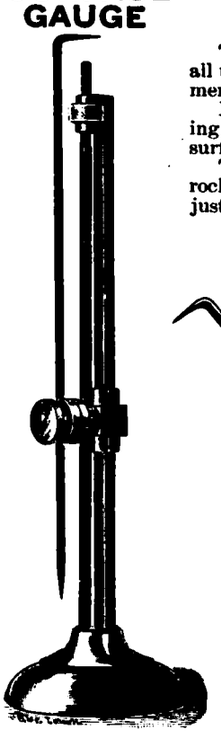


FIG. 479

This gauge is made strong and durable, especially for planer work. The binder grips the pointer firmly, and by driving the spindle into the base and adjusting the pointer from an independent rod we secure a much more rigid tool than those that are adjusted with a nut at the bottom of the spindle.

8 in.....$2 00 12 in.....$2 75

NEW UNIVERSAL SURFACE GAUGE

This gauge has the latest improvements, which make it all that can be desired, possessing the following points of merit:

Heavy base, grooved through the bottom and end, adapting it for use on or against circular work as well as flat surfaces.

The spindle passes through a rotating head, jointed to a rocking bracket pivoted in base. Said bracket being adjusted by a knurled screw in one end against a stiff spring in the other, the spindle may be set upright or at any angle, or turned so as to work under the base and be sensitively adjusted to any position. The snug and head carrying the scriber are so made that, when the clamp nut is loosened, all may be freely moved to any position and, by friction springs, retained in place until a slight turn of the clamp nut holds them firm.

In the rear end of the base are two gauge pins frictionally held, and may be pushed to bear against the edge of a surface plate or in the slot of a planer bed for lineal work.

For small work the spindle may be removed and the scriber inserted in hole provided, where it can be sensitively adjusted and used to advantage on bench work. An extra long spindle, which may be quickly substituted for the regular, will be sent with the gauge when ordered.

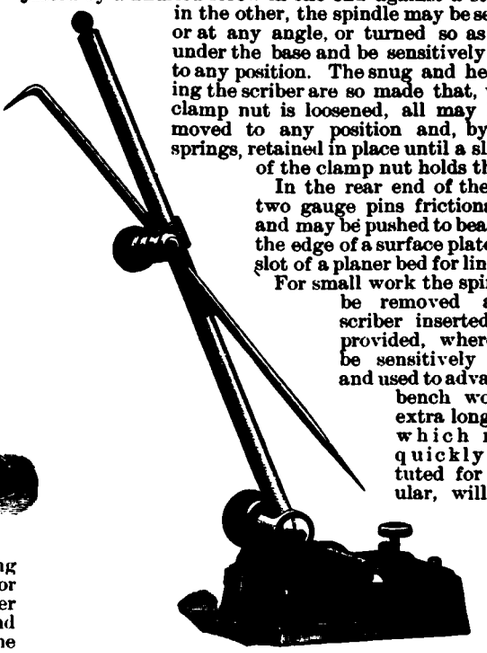


FIG. 480

		Prices, Each.
3 inch base with	9 in. spindle	$2 50
3 " " "	9 and 12 inch spindles	2 85
3¾ " " "	12 inch spindle	3 00
3¾ " " "	12 and 18 inch spindles	3 50

Spindles only, at 3 cents per inch, list.

TOOL MAKERS' SURFACE GAUGE

This gauge is made entirely of steel. The base is hardened, as well as the bosses on the upper face. The spindle has a sweep of three-fourths of a circle; a very easy and fine adjustment operates it in whatever position the spindle happens to be.

It is provided with the new grooved friction washer. The dimensions of the base are practically 2 inches long, 1½ inches wide, 1¼ inches high. The spindle is 5½ in. long.

Price.....$2 75

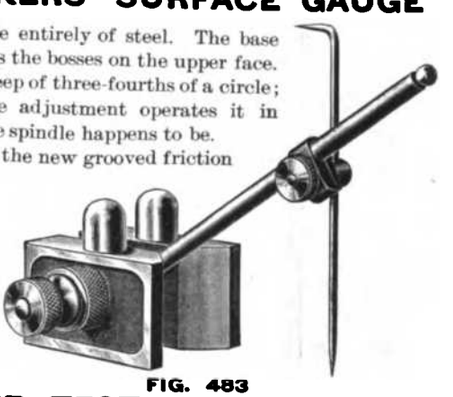


FIG. 483

CENTER TESTER

This instrument was designed to use in adjusting and locating centrally any point or hole in a piece of work operated upon in a lathe chuck, or on a face plate; also to test the truth of lathe centers or a shaft between the centers, the instrument being held in the tool post.

The tester is of improved design and nicely made. The indicating needle passes through the ball, having a split stem, forming a chuck for holding the needle adjusted to any desired length. The ball is pivoted to form a universal joint, but may be instantly converted into a single joint for a tilting motion by only tightening the knurled nut, adapting it for both inside and outside surface contact. A steel bead, not shown in the cut and carried on the needle, slips over the point of same when used for inside work. The instrument is joined to a tool-post shank by a flexible steel ribbon with sufficient spring to properly hold the needle in contact with the work. It is a tool needed in every up-to-date tool room. Price. $2 50

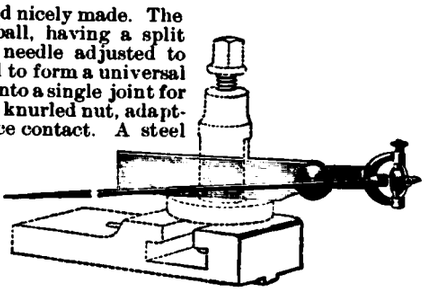


FIG. 485

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NEW TRAMMELS

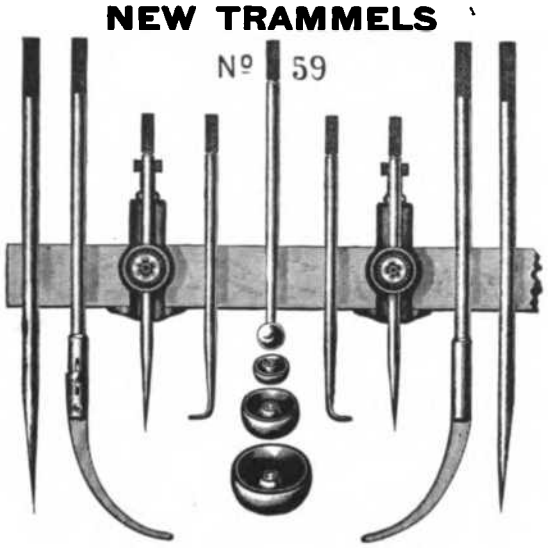


FIG. 486

This cut shows the Trammels fastened to a wooden beam, which may be any size from ¾ inch to 1⅝ inches wide, and of any thickness desired (requiring no fitting) giving stiffness according to the length and adapting it for small or large work.

The auxiliaries designed to go with the Trammel Heads are as shown above, viz., inside and outside caliper legs, an extra pair of long points, a set of four ball points with holder, which enable one to scribe a circle from the center of any hole up to 1½ inches. A lead pencil may be used in place of either of the steel points. The clamping device is adapted to take in either a small or common sized pencil. The Trammels are furnished with or without auxiliaries. Trammel Heads with one pair of points will be sent unless otherwise ordered.

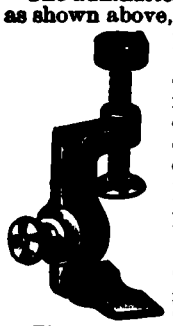


FIG. 488

The small engraving (Fig. 488) gives a more detailed representation of one of the heads.

Set complete	$4 75
Trammel Heads (with one pair points)	2 00
Balls and holder, per set (see Page 93)	1 25
Small caliper legs, per pair	50
Large " "	75
Large Divider Points "	50

EXTENSION BEAM TRAMMELS

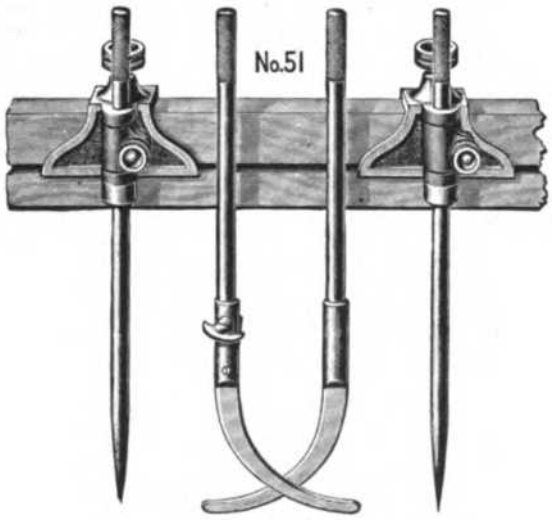


FIG. 490

NICKEL PLATED

The above cut represents a pair of Trammel Heads, with an opening through the under side to accommodate the extension, giving width and stiffness in proportion to the length required for large work, while it is equally well adapted to receive a narrow beam for light work.

The points are eccentric, and may be loosened and rotated in their sockets to make fine adjustments. Either point may be removed and a common pencil inserted.

One of the caliper legs is provided with a joint, worked by an eccentric thumb piece for fine adjustments.

Complete	$3 25
Without caliper legs	2 50

Sent complete, unless otherwise ordered.

For Ball Points which may be used with this tool, see Page 93, Fig. 499.

EXTENSION STEEL BEAM TRAMMELS

DESCRIPTION, FIG. 487

The beam of this tool is 5/16 inch round with one side flattened. It is made in one, two, or three sections, of 14 inch lengths each, and coupled together by means of improved socket coupling and grip nut, rigidly holding them for long reaches. With one 14 inch section only, it weighs but 8 ounces. The slides carrying the points grip both beam and points by a partial turn of the knurled nut. Fine adjustments are made by a slight rotation of one or the other eccentric point which by friction springs retain it when the nut is loosened.

The Trams are nicely finished and will be supplied with any number of the sections desired.

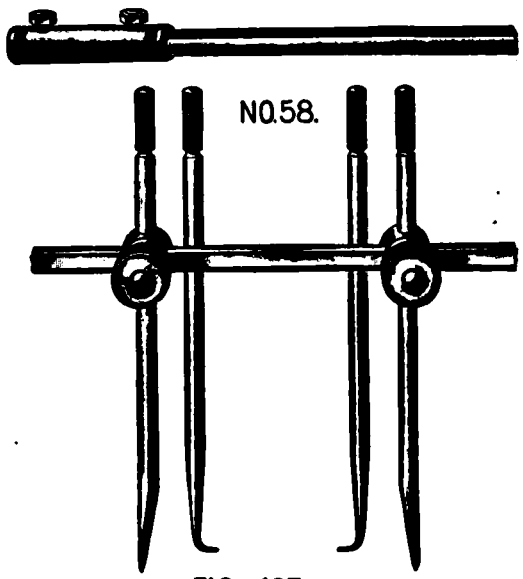


FIG. 487

	Not Plated.	Plated.
With one section, 14 inches	$2 20	$2 50
" two sections, 28 "	2 60	3 00
" three " 42 "	3 00	3 50
Extra sections	40	50
Caliper points to fit this tool, extra, per pair	50	60

Those not nickeled will be sent unless otherwise ordered.

For Ball Points, which may be used with this tool, see Page 93, Fig. 499.

IMPROVED TRAMMEL POINTS

DESCRIPTION, FIG. 489

NICKEL PLATED

Made of bronze metal, with forged steel points, hardened.

Either point can be removed, and the pencil socket accompanying each pair put in its place.

Adjustable like spring dividers. Light and durable.

With 3 inch points, adjustable	$2 50
" " not adjustable	1 50
Extra long points, 5 inch, per set	35

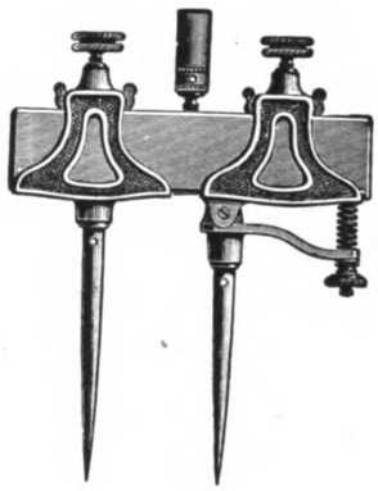


FIG. 489

STEEL BAR TRAMMEL POINTS

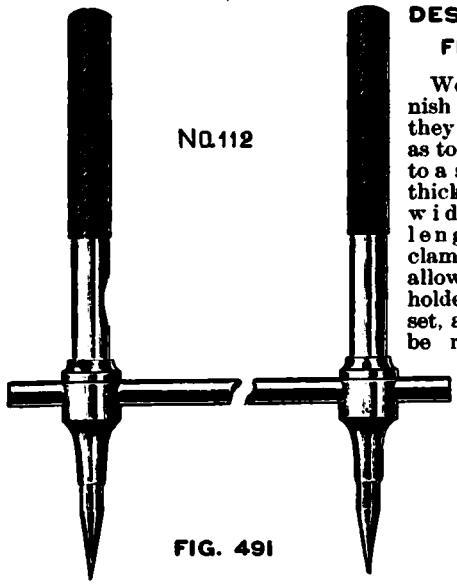


FIG. 491

Round bar 18 inches in length.....Price, $1 50

BELLOWS TRAMMEL POINTS

DESCRIPTION, FIG. 492

We do not furnish any bar, as they are so made as to be clamped to a stick of any thickness, and as wide as the length of the clamp screw will allow. A pencil holder goes with each set, and either leg can be removed by a few turns and the pencil holder inserted in its place. One point is provided with a screw adjustment, and can be adjusted as accurately as a divider.

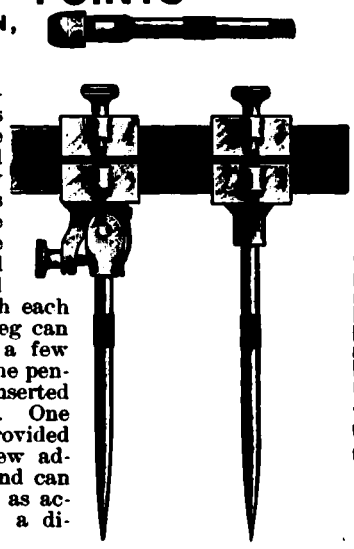


FIG. 492

Gun metal, nickel plated, each, $3 00
Steel, japanned " 2 25

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WITH MICROMETER ADJUSTMENT

PARALLEL DIVIDERS

PLAIN

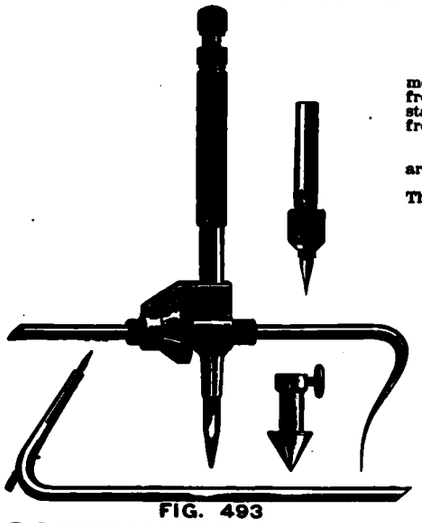


FIG. 493

DESCRIPTION AND PRICES, FIG. 493

We do not claim this tool is a substitute for the ordinary divider so long in use by mechanics; it has a field of its own. In laying out work on a surface, as it ordinarily comes from the planer, it will be found invaluable, the point of pressure being directly over the stationary point of tool. With ordinary care there will be no trouble with the tool jumping from center punch mark.

A micrometer adjustment is added so that it reads to 1/1000 of an inch.

A pump center can be furnished with tool, by means of which a circle can be scribed around a drilled hole, the bushing of a drill jig, or other similar work.

The marking parts are made of the best of tool steel, with points carefully hardened. The regular size will draw a 7 inch circle.

Tool alone without extras	$2 00
Pump center	25
Pencil holder	50
Needle point	50
Long bar, to scribe 24 inch circle	50
Complete with pump center, pencil holder, long bar, and needle point	3 75

DESCRIPTION AND PRICES, FIG. 494

This tool is the same as Fig. 493, except that there is no micrometer adjustment.

Tool complete	$2 00
Pump center	25
Pencil holder	50
Needle point	50
Long bar, to scribe 24 inch circle	50

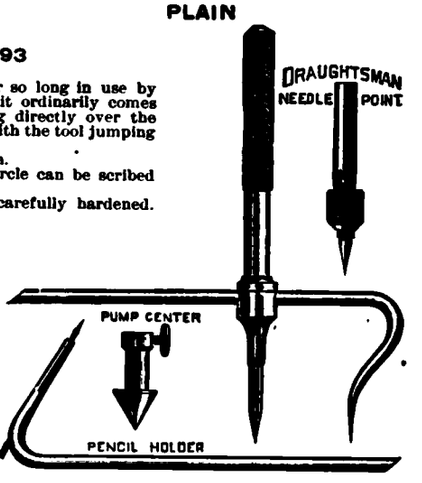


FIG. 494

COMBINATION DIVIDERS

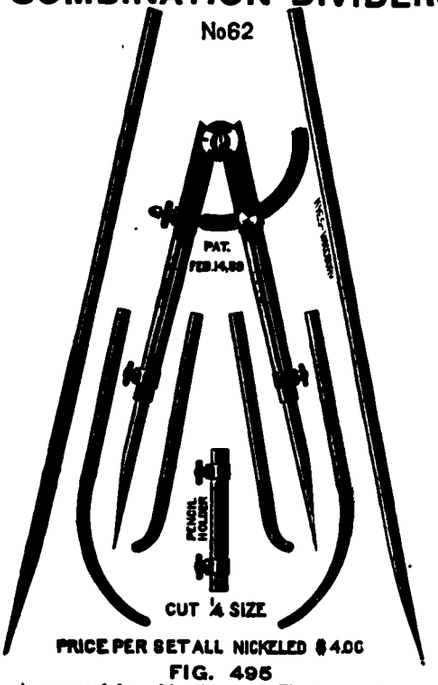


FIG. 495

A very useful combination set. The body or legs are made of brass, nicely finished and nickel plated. The set consists of two pairs of points, 5½ inches and 14 inches long; outside and inside calipers, and pencil attachment. The long points will scribe a 4 foot circle. The calipers will caliper 16 inches. By interchanging the legs, one can get a number of useful tools. The points are made of good steel, hardened in oil and nickel plated.

	Prices.
Complete	$4 00
Tool, with short divider points only	2 25
Long or short points, per pair	50
Outside or inside caliper legs, per pair	50
Pencil attachment	50

Sent complete unless ordered otherwise.

For centering disk and auxiliary leg to be used with tool see Fig. 496.

CENTERING DISK

FOR USE WITH DIVIDERS FIG. 495



FIG. 496

With the above Centering Disk circles can be scribed around a hole. It is made of steel and hardened, and will fit from ¼ inch to 1 inch holes.

Complete with leg	$0 50
Either leg or disk	25

IMPROVED EXTENSION DIVIDER

DESCRIPTION, FIG. 497

This is a well-made, nicely finished divider, with auxiliary caliper legs, which, together with a common pencil, form convenient combinations. The patent locking nut between the arms, against which a spiral spring acts, is a valuable feature. After the fine adjustment is made, the nut may be turned back, locking spring and arms firmly, thus remedying the weak point which renders the common wing divider only as stiff as the adjusting spring. A full threaded nut on the stud, through which the quadrant passes, is a more durable fastener than two or three threads tapped in the arm to hold the wing of the old style. The head and arms of this tool are made from the best malleable iron, the rest of steel. The points are hardened and warranted first class. The smallest size is 7 inches long; by adjustment of points it becomes 9 inches, and will scribe a 22 inch circle; will caliper 11 inches outside and 13 inches inside. The second size is 9 inches; by adjustment of points it becomes 12 inches, and will scribe a 30 inch circle, and caliper 14 inches outside and 16 inches inside. The dividers will be sold without caliper legs when so ordered.



FIG. 497

PRICES, FIG. 497

Inches.		
7	With divider legs only	$1 25
9	" " " "	1 50
7	Complete	2 25
9	"	2 50

For ball points which may be used with this tool see Fig. 499.

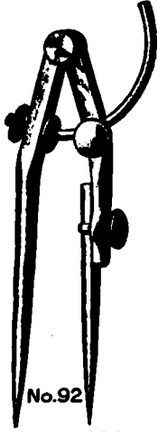


FIG. 498

IMPROVED DIVIDERS

DESCRIPTION, FIG. 498

This cut shows an improved divider with patented features. Both points are crucible forged steel, nicely tempered. The quadrant passes through the leg, which is split. The clamp screw springs the slit parts and frictionally locks the quadrant firm. The screw threads have stock enough to last a lifetime. After fine adjustments are made, the patent lock nut between the arms locks the spring in the leg firm, curing the defect in the old style dividers of the points dodging out and in with the grain of the wood. The adjustable point may be instantly removed and a common pencil inserted in its place. The dividers are light yet rigid.

	6 inches.	7 inches.	8 inches.	9 inches.
Plain	$0 85	$0 90	$1 00	$1 15
Nickeled	1 10	1 15	1 25	1 40



FIG. 499

BALL POINTS

(For use with Dividers, Fig. 497, and Trammels, Figs. 487 and 490.)

DESCRIPTION, FIG. 499

This attachment consists of four balls, of 1 1/16 inches, 1 inch, ¾ inch, and ½ inch diameter respectively, and a holder which fits either divider leg or trammel head. It is used to form a seat for the divider leg in describing circles around a hole.

	Prices
Complete, four balls and holder	$1 25
Either ball or holder	25

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IMPROVED COMBINATION DIVIDER & CALIPER



FIG. 500

DESCRIPTION FIG. 500

This tool can be readily and quickly changed from a divider to a caliper, and possesses all the essential qualities of both. It can be used as a divider, a hermaphrodite, key-hole, inside and outside calipers.

PRICES FIG. 500

Inches.	Each.
4	$2 00
6	2 25
8	2 50
10	2 75

FAY PATENT SPRING DIVIDERS

WITH SPRING NUT

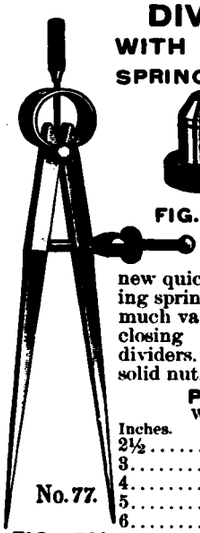


FIG. 501

SPRING NUT



FIG. 502

These dividers are sent with spring nut unless otherwise ordered.

DESCRIPTION FIG. 501

The cut Fig. 501 represents a spring divider with new quick adjusting, automatic closing spring nut. Their use will save much valuable time in opening and closing spring bow calipers and dividers. They are also made with a solid nut.

PRICES, FIG. 501

Inches.	With spring nut, Each.	With solid nut, Each.
2½	$1 15	$1 00
3	1 15	1 00
4	1 40	1 25
5	1 40	1 25
6	1 75	1 60

YANKEE SPRING DIVIDERS

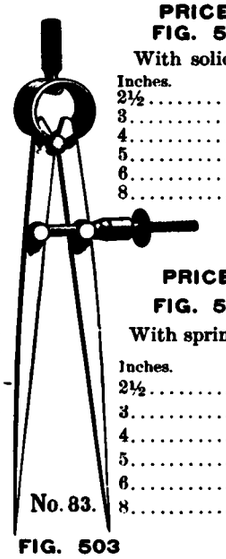


FIG. 503

PRICES FIG. 503

With solid nut

Inches.	Each.
2½	$0 65
3	70
4	75
5	80
6	85
8	1 10

PRICES FIG. 503

With spring nut

Inches.	Each.
2½	$0 90
3	95
4	1 00
5	1 05
6	1 10
8	1 35

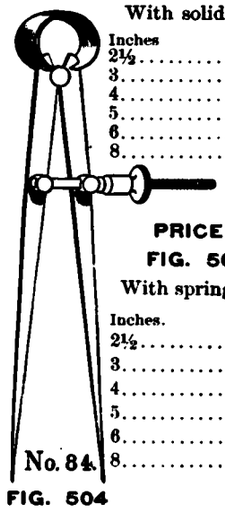


FIG. 504

PRICES FIG. 504

With solid nut

Inches	Each.
2½	$0 65
3	70
4	75
5	80
6	85
8	1 10

PRICES FIG. 504

With spring nut

Inches.	Each.
2½	$0 90
3	95
4	1 00
5	1 05
6	1 10
8	1 35

LOCK JOINT DIVIDERS



FIG. 505

DESCRIPTION FIG. 505

With improved lock joint attachment and sensitive adjustment. It is light and stiff, with large capacity, instantly opened, closed and locked. The points are nicely tempered.

PRICES, FIG. 505

Inches.	Each.
6	$1 00
8	1 25
10	1 50



FIG. 506

PRICES, FIG. 506

Sizes, inches.	6	8	10
Each	$1 00	1 25	1 50

WING DIVIDERS



FIG. 507

SOLID CAST STEEL FORGED WITH BRASS WASHERS

PRICES, FIG. 507

Sizes, inches.	Per dozen.
5	$5 50
6	5 50
7	6 50
8	7 50
9	9 00
10	10 00
12	12 00
15	18 00
18	25 00
20	30 00
24	36 00

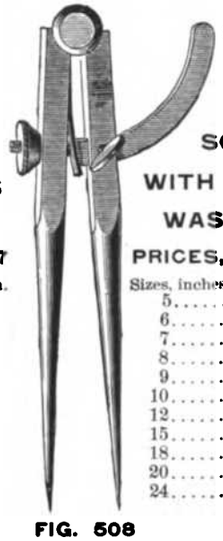


FIG. 508

SPRING AND SET SCREW WITH STEEL WASHERS

PRICES, FIG. 508

Sizes, inches.	Per dozen.
5	$5 50
6	5 50
7	6 50
8	7 50
9	9 00
10	10 00
12	12 00
15	18 00
18	25 00
20	30 00
24	36 00

COMPASSES



FIG. 509

CAST STEEL POLISHED

PRICES FIG. 509

Sizes, Inches.	Per Dozen.
3½	$3 25
4	3 25
5	3 50
6	4 00
7	4 75
8	5 50
9	6 50
10	7 50
12	8 00

FIRM JOINT SCREW ADJUSTING CALIPERS

OUTSIDE

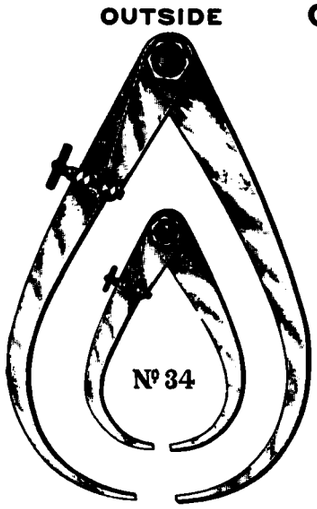


FIG. 510

INSIDE

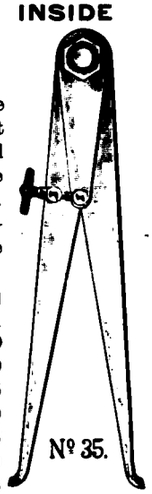


FIG. 511

DESCRIPTION FIGS. 510 AND 511

The screw adjustment for fine measurements, the improved joint which may be set to any desired degree of uniform tension, the shape and stiffness of the legs, quickness and wide scope of adjustment—all go to make these calipers a leader in their line.

PRICES, FIGS. 510 AND 511

Inches.	Each.
4	$0 90
6	1 00
8	1 25
10	1 50
12	1 75
14	2 00
16	2 25
18	2 50
20	2 75
24	3 50

FIRM JOINT OUTSIDE AND INSIDE CALIPERS



FIG. 512



FIG. 513

New vise clamp used on sizes 10 inches and above.



FIG. 514

PRICES, FIGS. 512 TO 514

Inches.	Each.	Inches.	Each.	Inches.	Each.	Inches.	Each.
3	$0 40	6	$0 65	12	$1 00	18	$2 10
4	50	8	80	14	1 50	20	2 50
5	55	10	90	16	1 75	24	3 00

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LOCK JOINT TRANSFER CALIPERS

OUTSIDE



FIG. 515

Inches.	Each.	Inches.	Each.
4	$1 25	12	$2 25
5	1 40	14	2 50
6	1 50	16	2 75
8	1 75	18	3 00
10	2 00	20	3 50
24			4 25

INSIDE



FIG. 516

LOCK JOINT CALIPERS

OUTSIDE



FIG. 517

Inches.	Each.	Inches.	Each.
4	$0 90	12	$1 75
5	95	14	2 00
6	1 00	16	2 25
8	1 25	18	2 50
10	1 50	20	2 75
24			3 50

INSIDE

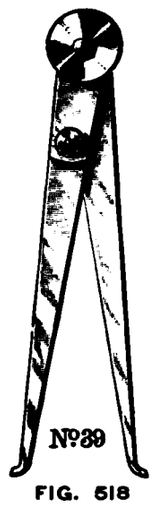


FIG. 518

OUTSIDE



FIG. 519

Inches.	Each.
3	$0 90
4	90
5	1 00
6	1 00
8	1 25
10	1 50

INSIDE



FIG. 520

Inches.	Each.
12	$1 75
14	2 00
16	2 25
18	2 50
20	2 75
24	3 50

FIRM JOINT TRANSFER CALIPERS



FIG. 521

Inches.	Prices.
4	1 00
6	1 15
8	1 30
10	1 50

DOUBLE CALIPERS

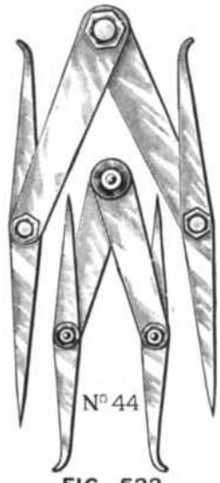


FIG. 522

Inches.	Prices.
6	$1 35
8	1 50

HERMAPHRODITE CALIPERS

SPRING

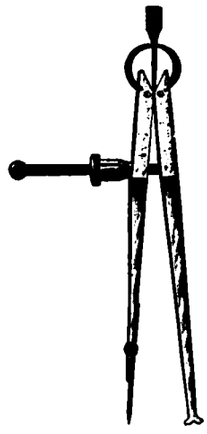


FIG. 523

Inches.	Prices.
5	$1 50
With solid nut	1 35

SPRING

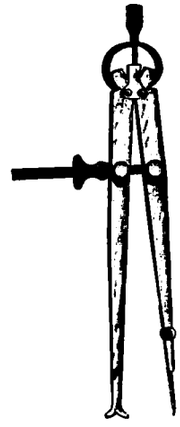


FIG. 524

	Prices.
⅝ inch solid nut	$1 10
With split nut	1 35

Sent with solid nut unless otherwise ordered.

LOCK JOINT



PRICES, FIG. 525

Inches.	Prices.
3	$0 90
4	90
5	1 00
6	1 00
8	1 25
10	1 50
12	1 75

FIG. 525

FIRM JOINT HERMAPHRODITE CALIPERS



FIG. 527

PRICES, FIG. 527

With adjustable point (see cut)

Size in.	4	6	8	10
Each	$0 65	80	1 00	1 20

With solid point

Size in.	3	4	5	6
Each	$0 40	50	55	65

Size in	8	10	12
Each	$0 80	90	1 00



FIG. 528

PRICES, FIG. 528

Size inches.	Each.
3	$0 40
4	50
5	55
6	65
8	80
10	90
12	1 00

HERMAPHRODITE CALIPERS WITH LOCK JOINT AND SENSITIVE ADJUSTMENT

PRICES, FIG. 526

With adjustable point (see cut)

Size in.	4	6	8	10
Each	$1 00	1 15	1 35	1 60

With solid point

Size in.	4	6	8	10
Each	$0 90	1 00	1 25	1 50



FIG. 526

HERMAPHRODITE CALIPER AND DIVIDER

DESCRIPTION

FIG. 529

Made of best tool steel, with hardened points, one leg having an adjustable point that when set is as rigid as though solid, the other point having a spur projecting from the bottom; so that the tool can be used as either a caliper or divider, the spur being in such a position that it never interferes with its use as a caliper.

PRICES, FIG. 529

Inches.	Firm Joint.	Screw Adjustment.
4	$0 75	$1 00
6	1 00	1 25
8	1 25	1 75
10	1 50	2 00

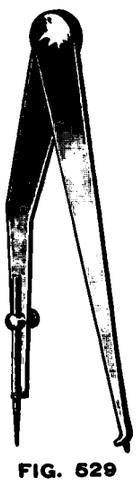


FIG. 529

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SPRING CALIPERS

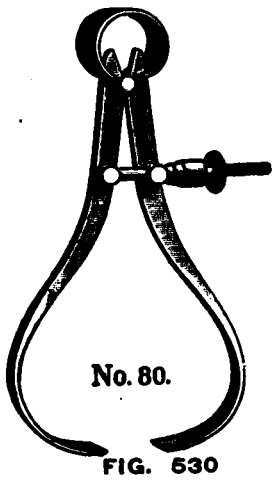


FIG. 530

	Solid Nut	Spring Nut.
3 inch.....	$0 70	$0 95
4 "	75	1 00
5 "	80	1 05

THREAD CALIPERS

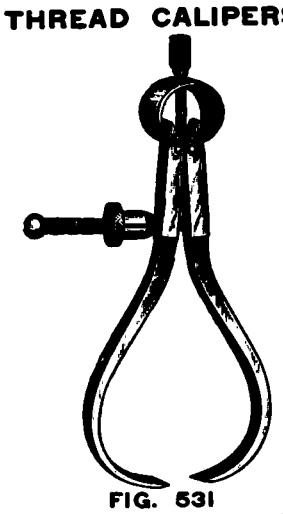


FIG. 531

	Split Nut.
3 inch.....	$1 15
4 "	1 25
5 "	1 25

Above sizes with solid nuts, 15 cents less.

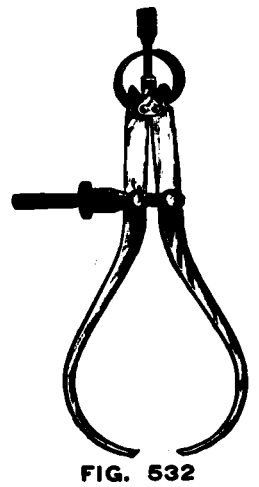


FIG. 532

	Solid Nut.	Split Nut.
3 inch....	$0 75	$1 00
4 "	90	1 15
5 "	1 00	1 25

Sent with solid nut unless otherwise ordered.

OUTSIDE CALIPERS

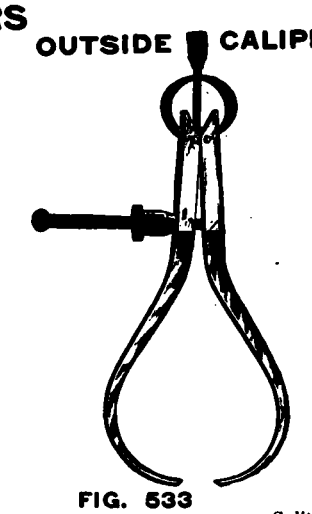


FIG. 533

	Split Nut.
2½ inch.....	$1 15
3 "	1 15
4 "	1 25
5 "	1 25
6 "	1 50

Above sizes with solid nuts, 15 cents less.

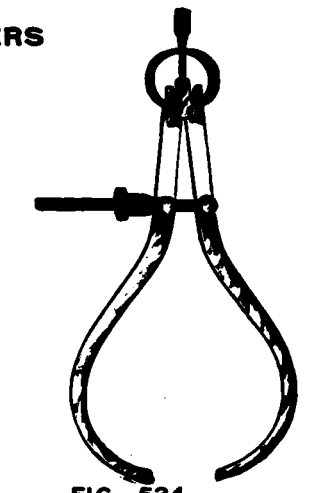


FIG. 534

	Solid Nut.	Split Nut.
2½ inch....	$0 65	$0 90
3 "	70	95
4 "	75	1 00
5 "	80	1 05
6 "	85	1 10
8 "	1 00	1 25

Sent with solid nut unless otherwise ordered.

THREAD AND INSIDE CALIPERS

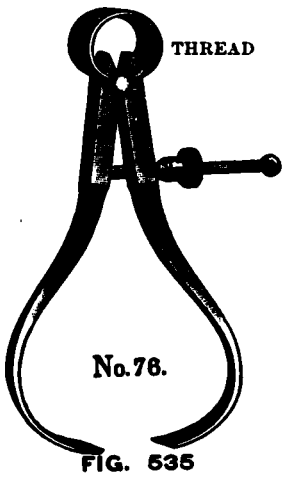


FIG. 535

THREAD

	Solid Nut.	Spring Nut.
3 inch....	$1 00	$1 15
4 "	1 10	1 25
5 "	1 10	1 25

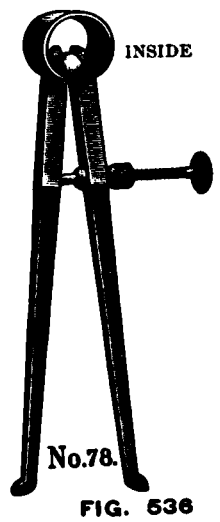


FIG. 536

INSIDE

	Solid Nut.
4 inch.....	$1 10
5 "	1 10

Inside calipers, Fig. 536, are not made to receive the spring nut.

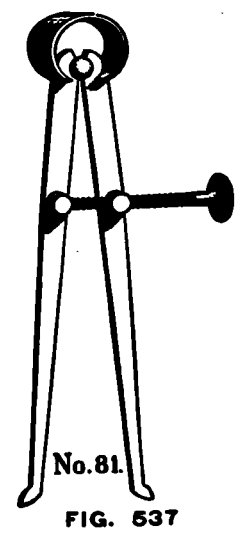


FIG. 537

	Each.
4 inch, with solid nut,	$0 75
5 " " "	80
6 " " "	85

INSIDE CALIPERS

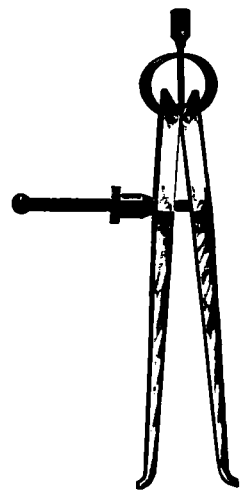


FIG. 538

	Split Nut.
3 inch, with split nut.	$1 15
4 " " " "	1 25
5 " " " "	1 25
6 " " " "	1 50

Above sizes with solid nuts, 15 cents less.

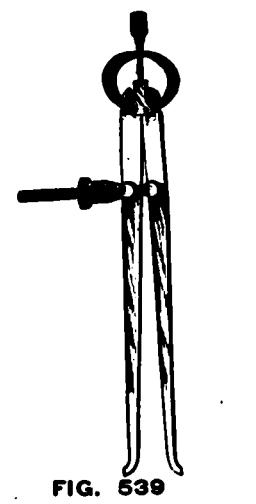


FIG. 539

	Solid Nut.	Split Nut.
3 inch.....	$0 70	$0 95
4 "	75	1 00
5 "	80	1 05
6 "	85	1 10
8 "	1 00	1 25

Sent with solid nut unless otherwise ordered.

OUTSIDE AND INSIDE CALIPERS

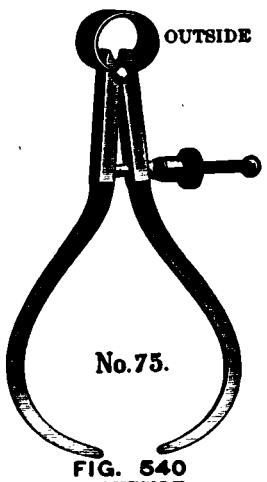


FIG. 540

FIG. 540, OUTSIDE

	Solid Nut.	Spring Nut.
2½ inch.....	$1 00	$1 15
3 "	1 00	1 15
4 "	1 10	1 25
5 "	1 10	1 25
6 "	1 35	1 50

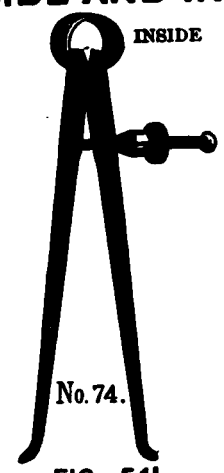


FIG. 541

FIG. 541, INSIDE

	Solid Nut.	Spring Nut.
3 inch.....	$1 00	$1 15
4 "	1 10	1 25
5 "	1 10	1 25
6 "	1 35	1 50

These calipers will be sent with spring nut unless otherwise ordered.

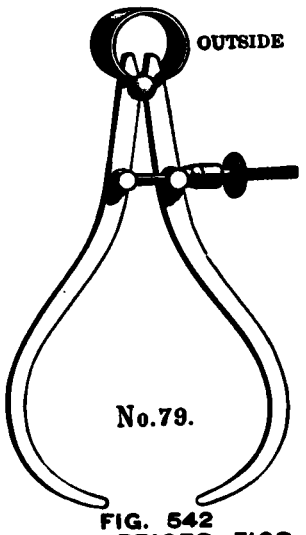


FIG. 542

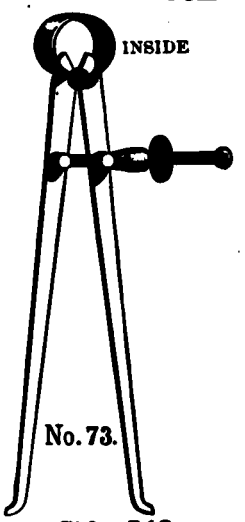


FIG. 543

PRICES, FIGS. 542 AND 543

Size, Inches.....	2½	3	4	5	6	8
With Solid Nut..	$0 65	$0 70	$0 75	$0 80	$0 85	$1 00
With Spring Nut..	90	95	1 00	1 05	1 10	1 25

Sent with solid nut unless otherwise ordered.

KEYHOLE CALIPERS

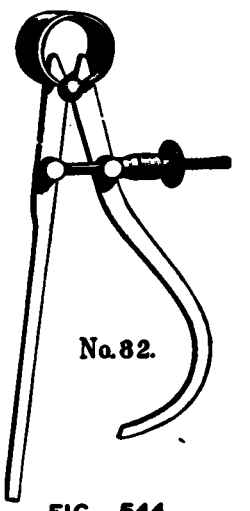


FIG. 544

For centering a hole in either flat or round piece and for calipering work close to an edge.

3 inch, with solid nut, each.	$0 70
4 " " " "	75

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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CALIPERS

OUTSIDE



FIG. 545

INSIDE

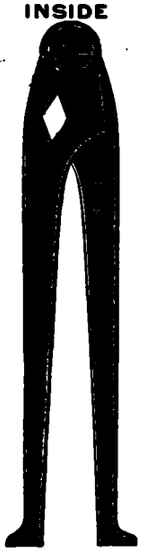


FIG. 546

Firm Joint

PRICES, FIGS. 545 AND 546

2½	Ins....	Per doz.,	$2 40	9	Ins.	Per doz.,	$5 90
3	"	"	2 65	10	"	"	6 50
4	"	"	2 85	12	"	"	8 00
5	"	"	3 30	15	"	"	10 50
6	"	"	3 75	18	"	"	14 00
7	"	"	4 40	20	"	"	17 00
8	"	"	5 35	24	"	"	22 00

DOUBLE



FIG. 547

3	inch	Per doz.,	$3 50
4	"	"	4 25
5	"	"	5 00
6	"	"	6 00

WING



FIG. 548

Cast Steel Spring and Set Screw.

6	Ins.	Per. doz.,	$7 00
8	"	"	9 00
10	"	"	11 00
12	"	"	13 00
15	"	"	17 50
18	"	"	20 00
20	"	"	25 00
24	"	"	30 00

DOUBLE

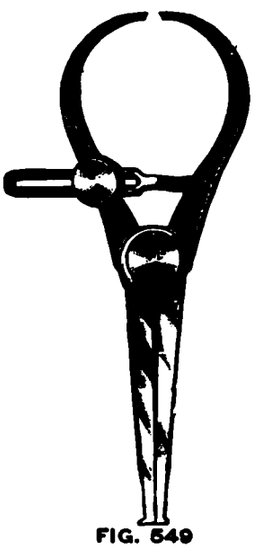


FIG. 549

With Set Screw

5	inch	Per doz.,	$6 50
6	"	"	7 00

SET SCREW CALIPERS

OUTSIDE

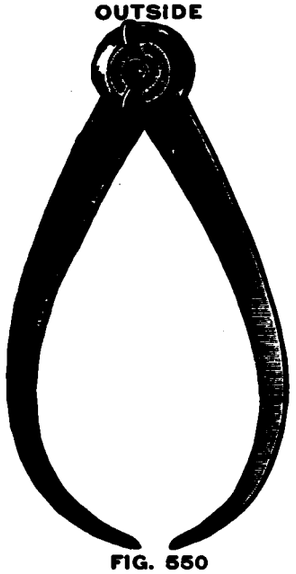


FIG. 550

INSIDE



FIG. 551

Figs. 550 and 551. 5 inch ..... Per doz., $6 00
7 " ..... " 7 00

OUTSIDE AND INSIDE CALIPERS



FIG. 552

3	inch	Per doz.,	$8 00
5	"	"	9 00

DOUBLE CALIPERS



FIG. 553

3½ inch... Per doz., $7 00

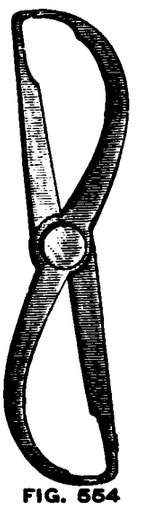


FIG. 554

3½ in.. Per doz., $7 00

DOUBLE



FIG. 555

Size, in., 3, 4, 5, 6
Per doz., $3.20 4.20 5.00 6.00

FANCY IN AND OUT



FIG. 556

Size, in., 2, 3, 4
Per doz., $3.25 3.50 4.20



FIG. 557

Cast steel.
2½ in., per doz., $3.50

NAVY OR SNAKE



FIG. 558

3 in., per doz., $3.50

REGISTER

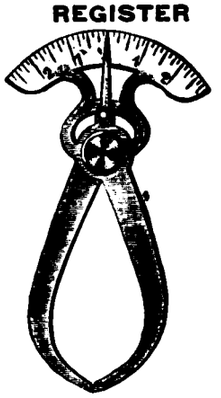


FIG. 559

With set screw, nickel plated.
Size, in., 3, 4, 5, 6
Per doz., $7.50 9.00 10.50 12.00

CENTER

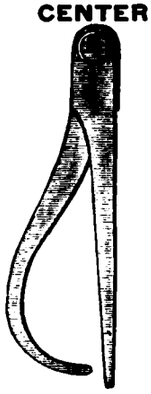


FIG. 560

Size, in., 5, 7, 9, 12
Per doz., $5.20 6.00 6.80 9.00

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HACK SAW FRAMES AND BLADES

STUBBS PATTERN HACK SAW

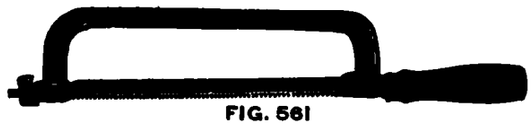


FIG. 561

	8 Inches.	10 Inches.	12 Inches.	
Price for Frame, only,	$8 00	8 50	9 00	per dozen

STAR HACK SAW FRAME

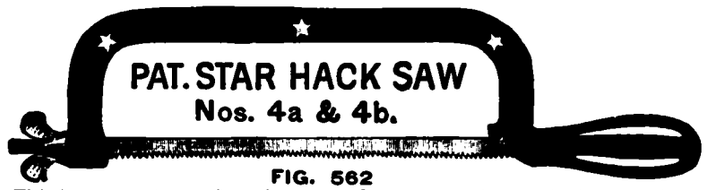


FIG. 562

This is a patent cast iron frame, and so constructed as to face blades in four different directions. The pins which hold the blade are fast in the frame, and can not drop out.

For 8 inch blades, frame, Japan finish.....per dozen, $8 00
For 9 inch blades, " " " ..... " 8 00

UNION HACK SAW FRAME

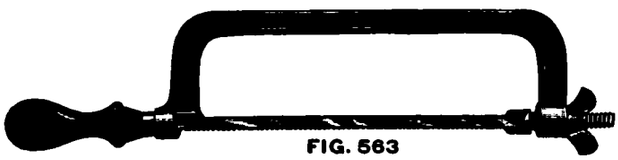


FIG. 563

These frames are iron, black japanned, and have black wood handles. They are light in weight, but strong and rigid. The blade is held by stationary pins which can not be lost, and the blade can be faced four different ways. Only 8 inch blades can be used in these frames.

Price, without blades.....per dozen, $3 00

GRIFFIN'S HACK SAW FRAME

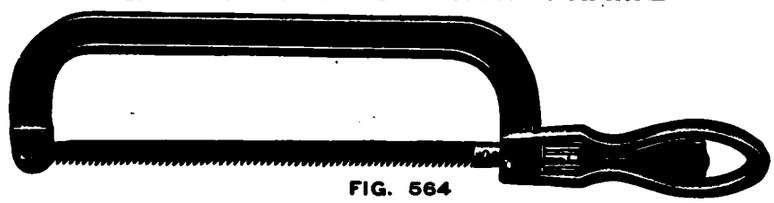


FIG. 564

IRON FRAME, LEVER FASTENING

Frames complete, with one dozen blades.

Inches.....	6	7	8	9	10	12	13	14
Per dozen,	$14 00	15 00	16 00	17 00	18 00	20 00	22 00	24 00

REVERSIBLE FRAME HACK SAW
NO. 8

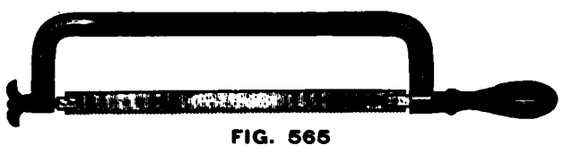


FIG. 565

FRAME ONLY

Inches.....	8	9	10	11	12	14	16	18
Per dozen,	$6 00	6 25	6 50	6 25	7 00	7 50	8 00	8 50

STAR HACK SAW FRAME No. 2

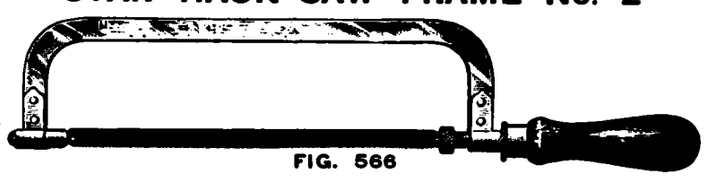


FIG. 566

No. 2, solid frame, to hold 8 inch blades only, and face them in four directions. Polished and nickel plated. Cocobola handle.

Price.....per dozen, $8 40

FLAT BACK HACK SAW FRAME

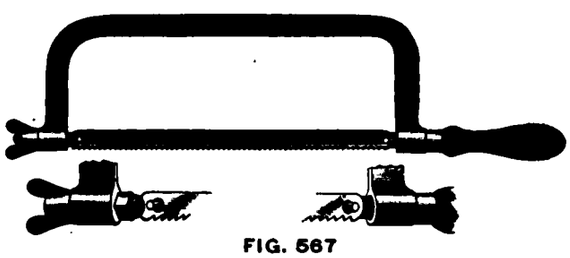


FIG. 567

Price, Polished Frame, only No. 1

Inches.....	8	9	10	12	14	16
Per dozen,	$9 00	9 50	10 00	11 00	12 00	13 00

STAR HACK SAW FRAME No. 15

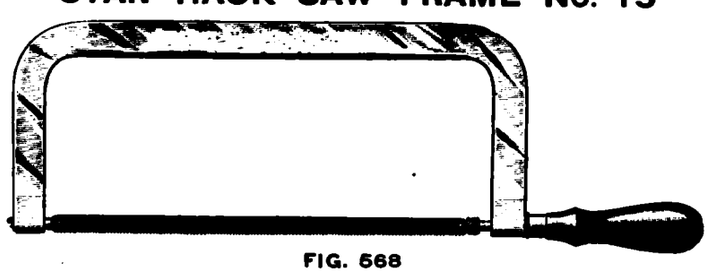


FIG. 568

For 12 inch blades only. The back of this frame is made from heavy stiff stock and will stand any necessary strain. Measurement between the back and points of the blade 5¼ inches. Polished and nickel plated.

Price.....per dozen, $15 00

THE UNIVERSAL HACK SAW FRAME

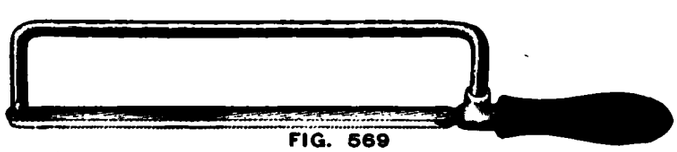


FIG. 569

In the Universal the saw can instantly be placed at any one of four angles, by unscrewing the handle and turning the stud to positiondesired.

These frames are all made of the best spring steel with cast steel fittings, nickel finish, hardwood handle, and on account of their design are two inches shorter than any other frame of like capacity.

Size, Inches.....	8	10	12
Per dozen	$6 00	7 20	8 40

UNIVERSAL ADJUSTABLE HACK SAW FRAME

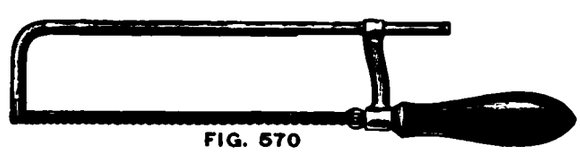


FIG. 570

In this frame no set screws, ratchets, pawls or pins are used, the purely mechanical principle of friction producing the desired effect. When the saw is taut, the frame becomes rigid and can not move from position.

Price.....per dozen, $10 20

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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HACK SAW FRAMES AND BLADES

CRESCENT HACK SAW FRAME

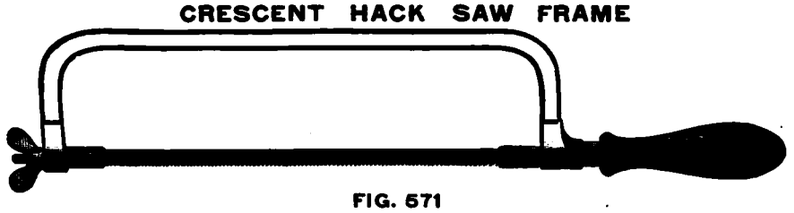


FIG. 571

Made in one length only, viz., to hold 8 inch blade. Steel back, all nickeled; black wooden handle; fine finish. Price, with one blade, 75c. each; per dozen, $9.00.

EUREKA HACK SAW FRAME

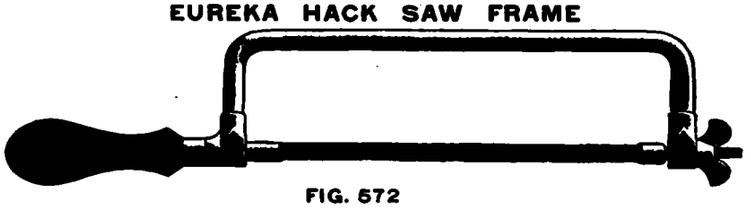


FIG. 572

Made in one length only, viz., to hold 14 inch blade. Steel back, all nickeled; black wooden handle; fine finish. Price, with one blade, $1.50 each; per dozen, $18.00. This frame has a blade ⅝ inch wide, 20 gauge, and is intended for cutting heavy brass work. Specially adapted for railroad and brass foundries.

I X L HACK SAW FRAME



FIG. 573

Made in one length, to hold 8 inch blade. Steel back, all nickeled. In addition to pin, blade is held the whole width on both ends. Rosewood handle, fine finish. Price, with one blade, 80 cents each; per dozen, $9.60.

EXTENSION HACK SAW FRAMES

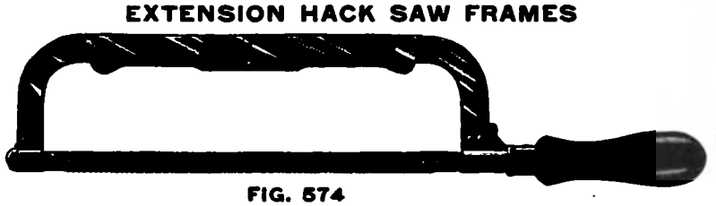


FIG. 574

No. 2. White nickeled only; adjustable from 8 to 12 inches; all steel except the handle; blades can be faced four ways. Per dozen, $10.00.

No. 02. Finished in natural steel; not polished or nickeled; adjustable from 8 to 12 inches. Per dozen, $8.50.

GRIFFIN'S NEW HACK SAW BLADES



FIG. 578

Sizes, Inches	6	7	8	9	10
Per gross	$9 25	10 00	10 50	11 25	12 00
Sizes, Inches	11	12	13	14	
Per gross	$12 75	13 25	14 00	15 00	

EUREKA OR YANKEE BRAND IMPROVED FLEXIBLE BACK HACK SAW BLADES



FIG. 579

The above cut shows the principle of the Eureka or Yankee Flexible Back blades, also the set of the teeth. Made regular for general machinists' use, cutting iron, steel, brass, etc., made from 23 gauge stock, 15 teeth to the inch. 6 inch, 7 inch and 8 inch blades are 7/16 inch wide. 9 inch, 10 inch, 11 inch and 12 inch blades are ½ inch wide. Fine teeth, for thick tubing and sheet metals, same as the "Regular" in every respect, excepting that they are made 24 teeth to the inch.

	6 in.	7 in.	8 in.	9 in.	10 in.	11 in.	12 in.
Prices, per dozen	$0 55	0 60	0 65	0 70	0 75	0 85	0 90

Special sizes and lengths made to order.

For other flexible back hack saw blades see Fig. 581, Page 100.

BENCH HACK SAW

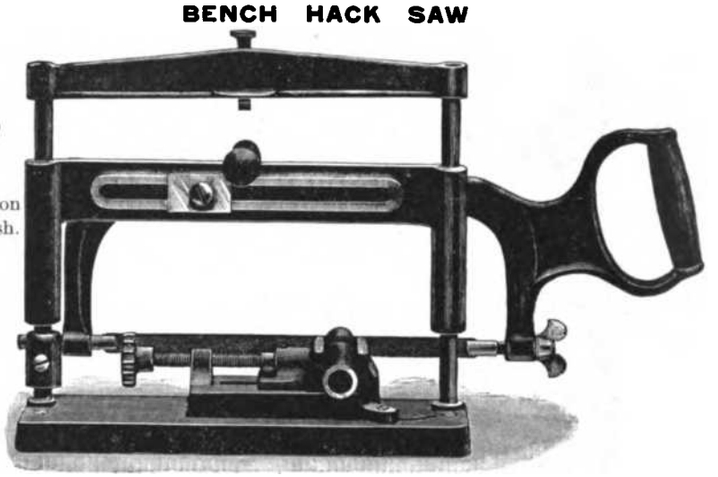


FIG. 580

Can be readily fastened to any bench.

One 9 inch blade is furnished with each machine, which should be strained well in the frame when in use. It is so constructed that 8 inch blades can be used when desired. Price each, $3.50. Shipping weight, each, 15 pounds.

STAR EXTENSION HACK SAW FRAME NO. 9

PRICES AND DESCRIPTION, FIG. 575

This frame holds blades from 8 to 12 inches in length. It is an extension frame covered by a steel sheath, as shown in the cut. The sheath makes it very stiff, and at the same time very light. It is polished and nickel plated. The blades may be faced in either direction. Price per dozen, $12.00.

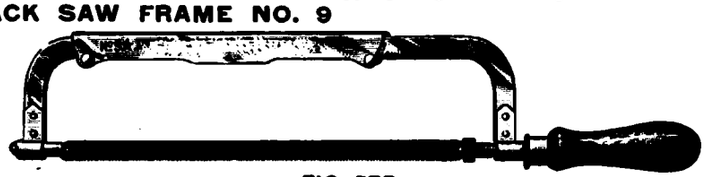


FIG. 575

STAR EXTENSION HACK SAW FRAME NO. 10



FIG. 576

PRICES AND DESCRIPTION, FIG. 576

It is light and quickly adjusted, having strength in the middle where strength is needed. It is made of tempered steel, polished and nickel-plated. The handles are Cocobola wood, highly finished. It carries blades 6, 7, 8, 9, 10, 11 and 12 inches long, and is marked for the different lengths. Price per dozen, $12.00.

STAR HACK SAW BLADES



FIG. 577

Length of blade	6	7	8	9	10	Length of blade	11	12	assorted 6 to 9
Prices per dozen	$0 55	0 60	0 65	0 70	0 85	Prices per dozen	$0 95	1 05	0 65

Made with 14 or 23 teeth to the inch. Orders filled with 14 teeth, unless otherwise stated. Length measured from hole to hole.

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PATENT FLEXIBLE BACK HACK SAW BLADES



FIG. 581

IMPROVED TUBING AND SHEET METAL SAW
STYLE AND QUALITY SAME AS FIG. 581

Made from steel 23 gauge. 30 teeth to the inch. Designed expressly for cutting thin iron, steel, brass and copper tubing, and sheet metals. Just what is needed by bicycle makers and repairers.
Prices per dozen, 8 in., .65; 9 in., .70; 10 in., .75; 11 in., .85; 12 in., .90

THE X L FOR USE IN POWER SAWING MACHINES
DESCRIPTION, FIG. 581

These saws have teeth 12, 16 and 24 to the inch, the former for cutting solid metal, the latter for ordinary tubing or hollow work. State the length desired and the make of power sawing machine you are using.

									Hole to hole.
Blades ⅝ in. wide, .031 gauge, size in.,	8,	9,	10,	11,	12,	13½,	16½		
Per dozen,	.75	.80	.85	.95	1.05	1.25	1.55		
Blades ¾ in. wide, .031 gauge, size in.,	12,	14,	16,	17,	or	16½	hole to hole.		
Per dozen,	$1 15	1 45	1 75	1 90					
Blades 1 in. wide, .036 gauge, size in.,	14,	16,	17,	or	16½	hole to hole.			
Per dozen,	$1 92	2 17	2 25						

Special lengths made to order.

SAW BLADES FOR THE Q AND C SHOP SAWS

					Per dozen.	Wt. per gross.
12 inches,	½	inch wide,	21	gauge	$0 80	14 lbs.
12 "	¾	"	21	"	85	15 "
14 "	¾	"	21	"	1 00	16 "
14 "	¾	"	18	"	1 25	19 "
17 "	1	"	16	"	2 00	45 "

CIRCULAR SAW BLADES FOR Q AND C SAWING MACHINES

10 inches,	⅛	thickness	for	No. 8 Shop Saw	$3 00
16 "	¼	"	"	5 and 5A Portable Saws	10 00
20 "	¼	"	"	No. 10, and 6 and 6A Portable Saws	15 00
25 "	¼	"	"	No. 15 Power Saw	20 00
25 "	¼	"	"	Fine Teeth for No. 11 Rail Saw	20 00
30 "	¼	"	"	For No. XX Power Saw	25 00
36 "	¼	"	"	" " XXXXX " "	30 00

BAND SAWS FOR CUTTING METALS
DESCRIPTION, FIG. 582

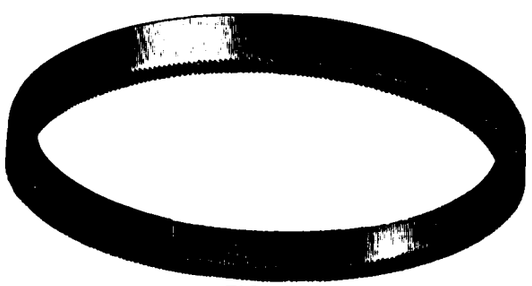


FIG. 582

These band saws are used in cutting iron, steel, brass, copper, bronze, sheet metals, tubing, sprews, pearl, onyx, etc., in fact any substance that a file will cut, by manufacturers of machinery, jewelry, scroll work, bicycle tubing (straight and angular), chandeliers, cornices, steel roofing, stamped ware, cutlery, silverware, tubing, electrical specialties, mica, slate, etc.

These saws have 14, 15, 16, 18, 24 and 30 teeth to the inch, and are specially tempered for the metal they are intended to cut.

								Saws in Coil.	Saws Cut to Length.	Brazing.
⅝	inch	wide,	.031	thick,	about	16	feet to the pound.	$1 12 per lb.	.07 per foot	$0 40
½	"		.025	"	"	25	" "	1 25 "	.05 "	40
⅜	"		.025	"	"	35	" "	1 75 "	.05 "	40
¼	"		.025	"	"	60	" "	3 50 "	.06 "	40
¾	"		.031	"	"	12	" "	1 20 "	.08 "	45
1	"		.036	"	"	9	" "	1 20 "	.10 "	1 00

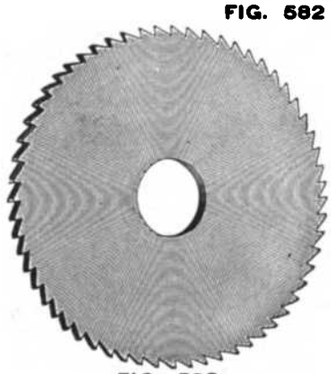


FIG. 583

CIRCULAR SAWS FOR CUTTING METAL

—

MILLING SAWS

Diameters, Inches.	Gauge.	Sizes of Hole.	Number of Teeth.	Prices, Each.	Extra for each additional Gauge Heavier.
2	22x20	½	48	$1 40	$0 02
3	22x20	½	64	1 70	03
4	21x19	¾	76	1 90	04
5	20x18	¾	88	2 30	05
6	19x17	1	96	2 90	06
7	18x16	1	104	3 35	08
8	18x16	1	110	4 00	10
9	17x15	1	116	5 00	12
10	16x14	1¼	120	6 25	15
12	16x13	1¼	134	7 75	21
14	14x11	1½	148	9 00	26
16	13x10	1½	160	11 00	31
18	12x 9	1¾	172	13 50	38
20	11x 8	1¾	184	16 75	45
22	10x 7	2	192	19 50	55
24	9x 6	2	200	23 50	70
26	9x 6	2½	208	28 00	80
28	8x 5	2½	214	31 50	1 00
30	8x 5	2½	222	35 00	1 12
32	7x 4	2½	228	40 00	1 25
34	6x 3	2½	232	48 50	1 75
36	6x 3	2½	236	54 00	2 25
38	5x 2	2½	240	78 00	4 00
40	5x 2	2½	256	90 00	5 50
42	¼x5/16	3	260	100 00	7 00
44	¼x5/16	3	266	110 00	9 00
46	¼x5/16	3	272	120 00	11 00
48	¼x5/16	3	280	135 00	13 00

METAL SLITTING SAWS

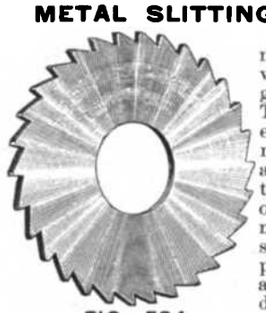


FIG. 584

These are thin milling cutters, with the sides ground true. They are hardened to cut metals. They are a little thicker at the outer edge than near the center, so as to give a proper clearance in cutting deep slots.

In ordering special saws please state for what purpose they are required.

Diameters.	Thickness.	Hole.	Prices.
2½ in.	1/32	⅞ in.	$1 00
2½	3/64	⅞	1 00
2½	1/16	⅞	90
2½	3/32	⅞	90
2½	⅛	⅞	90
2½	5/32	⅞	1 10
3	1/32	1	1 25
3	3/64	1	1 10
3	1/16	1	1 00
3	3/32	1	1 00
3	⅛	1	1 00
3	5/32	1	1 15
3	3/64	1	1 45
4	1/16	1	1 25
4	3/32	1	1 20
4	⅛	1	1 20
4	5/32	1	1 40
4	3/16	1	1 60
5	1/16	1	1 80
5	3/32	1	1 60
5	⅛	1	1 50
5	⅛	1¼	1 50
5	⅛	1½	1 50
5	5/32	1	1 90
5	3/16	1	2 30
6	⅛	1	2 70
6	3/16	1½	3 50
6	3/16	1	3 50
7	⅛	1	3 80

Cutters varying from the list are made to order.

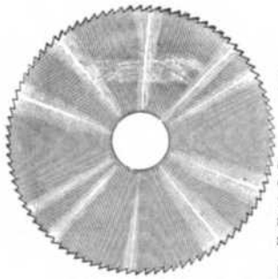


FIG. 585

SCREW SLOTTING CUTTERS

These cutters have a fine pitch of teeth especially adapted for the slotting of screw heads and similar work.

Diam. of Screw Head to be Slotted.	Thickness of Cutter by Am. Standard Wire Gauge.	Thickness of Cutter in Decimals.	Diam. of Cutter.	Sizes of Hole.	Prices, Each.
	No. 5	.182	2¾ in.	1	$0 70
	6	.162	2¾	1	60
	7	.144	2¾	1	50
⅞ in.	8	.128	2¾	¾ & 1	45
¾	9	.114	2¾	¾ & 1	40
⅝	10	.102	2¾	¾ & 1	35
	11	.091	2¾	¾ & 1	30
½	12	.081	2¾	¾ & 1	25
	13	.072	2¾	¾ & 1	20
⅜	14	.064	2¾	½, ⅝, ¾ & 1	20
11/32	15	.057	2¾	½, ⅝, ¾ & 1	15
5/16	16	.051	2¾	½, ⅝, ¾ & 1	15
9/32	17	.045	2¾	½, ⅝, ¾ & 1	15
¼	18	.040	2¾	½, ⅝, ¾ & 1	15
7/32	19	.035	2¾	½, ⅝, ¾ & 1	15
3/16	20	.032	2¾	½, ⅝, ¾ & 1	15
⅛	21	.028	2¾	½, ⅝, ¾ & 1	15
	22	.025	2¾	½, ⅝, ¾ & 1	15
	23	.023	2¾	½, ⅝, ¾ & 1	15
	24	.020	2¾	½, ⅝, ¾ & 1	15
	25	.018	2¾	½, ⅝, ¾ & 1	15
	26	.016	2¾	½, ⅝, ¾ & 1	15
	27	.014	2¾	½, ⅝, ¾ & 1	15
	28	.012	2¾	½, ⅝, ¾ & 1	15
	30	.010	2¾	½, ⅝, ¾ & 1	15
	32	.008	2¾	½, ⅝, ¾ & 1	15
	34	.006	2¾	½, ⅝, ¾ & 1	15
3/16	20	.032	2¼	½, ⅝, & ¾	15
⅛	21	.028	2¼	½, ⅝, & ¾	15
	22	.025	2¼	½, ⅝, & ¾	15

Can furnish Cutters
No. 23 to 34 gauge. 2¼ dia. holes ½, ⅝ and ¾, 15 cents each.
" 24 " 34 " 1¾ " " ⅜, ½ " ⅝, 12 " "

For arbors for above cutters see Fig. 502, page 101.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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MILLING CUTTERS



FIG. 586

Cutters of 1 inch face and over have teeth of a spiral form.

Cutters varying from the following list are made to order, of any required size.

No.	Diameter of Cutters, Inches.	Width of Face, Inches.	Size of Hole, Inches.	Prices, Each.
1	2½	½	⅜	$1 75
2	2½	1	½	2 50
3	2½	1⅛	⅝	3 30
4	2½	1 5/16	⅞	1 30
5	2½	9/16	1	1 30
6	2½	¼	1	1 40
7	2½	5/16	1	1 50
8	2½	⅜	1	1 60
9	2½	7/16	1	1 70
10	2½	½	1	1 80
11	2½	9/16	1	1 90
12	2½	⅝	1	2 00
13	2½	11/16	1	2 10
14	2½	¾	1	2 20
15	2½	13/16	1	2 30
16	2½	⅞	1	2 40
17	2½	1	1	2 60
18	2½	1¼	1	2 90
19	2½	1½	1	3 10
20	2½	1¾	1	3 40
21	2½	2	1	3 70
22	2½	2½	1	4 10
23	2½	3	1	4 50
24	2½	3½	1	5 00
25	2½	4	1	5 50
26	2¾	⅝	1	1 80
27	2¾	7/16	1	1 85
28	2¾	½	1	1 90
29	2¾	9/16	1	2 00
30	2¾	⅝	1	2 10
31	2¾	4	1¼	6 00
32	2¾	6	1¼	10 00
33	2¾	11/16	1	2 20
34	2¾	¾	1	2 50
35	2¾	⅞	1	2 85
36	3	⅝	1	1 35
37	3	¾	1	1 60
38	3	9/16	1	1 85
39	3	⅝	1¼	2 10
40	3	7/16	1¼	2 25
41	3	½	1¼	2 40

FORMED MILLING CUTTERS FOR MILLING SEWING MACHINE AND GUN PARTS

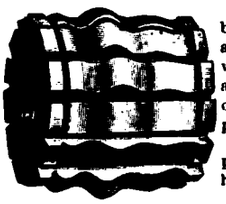


FIG. 587

These cutters, Figs. 587 and 588, can be made in a great variety of outlines and can be sharpened by grinding without changing their form. They are economical in the production of duplicate and interchangeable parts.

In ordering send sketch of, or sample piece to be milled, with size of hole required in cutter.

Prices Figs. 587 and 588 on application.

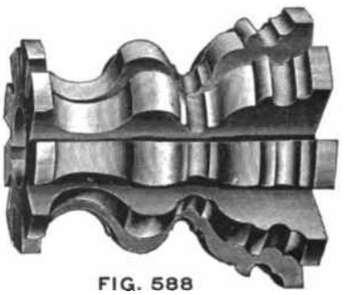


FIG. 588

PRICES, MILLING CUTTERS, FIG. 586

No.	Diameter of Cutters, Inches.	Width of Face, Inches.	Size of Hole, Inches.	Prices, Each.
42	3	9/16	1¼	$2 55
43	3	5/8	1¼	2 70
44	3	11/16	1¼	2 85
45	3	¾	1¼	3 00
46	3	⅞	1¼	3 30
47	3	1	1¼	3 60
48	3	1¼	1¼	4 00
49	3	1½	1¼	4 30
50	3	1¾	1¼	4 50
51	3	2	1¼	4 70
52	3	2½	1¼	5 20
61	3	3	1¼	5 40
62	3	3½	1¼	5 90
63	3	4	1¼	6 40
64	3	5	1¼	7 80
65	3	6	1¼	10 80
66	3½	9/16	1	1 45
67	3½	¼	1	1 70
68	3½	5/16	1	2 05
69	3½	⅜	1	2 40
70	3½	7/16	1	2 75
71	3½	½	1¼	3 15
72	3½	9/16	1¼	3 80
73	3½	⅝	1¼	3 45
74	3½	11/16	1¼	3 65
75	3½	¾	1¼	3 85
76	3½	⅞	1¼	4 85
77	3½	1	1¼	4 75
78	3½	1¼	1¼	5 15
79	3½	1½	1¼	5 60
80	3½	1¾	1¼	6 00
81	3½	2	1¼	6 40
82	3½	2½	1¼	6 90
83	3½	3	1¼	7 40
84	3½	3½	1¼	8 15
85	3½	4	1¼	9 15
86	3½	5	1¼	10 40
87	3½	6	1¼	11 90
88	4	¼	1¼	2 00
89	4	5/16	1¼	2 50
90	4	⅜	1¼	3 00
91	4	7/16	1¼	$3 50
92	4	½	1¼	3 90
92½	4	½	1½	3 90
93	4	9/16	1¼	4 10
94	4	⅝	1¼	4 30
95	4	11/16	1¼	4 50
96	4	¾	1¼	4 70
96½	4	¾	1½	4 70
97	4	⅞	1¼	5 15
98	4	1	1¼	5 65
98½	4	1	1½	5 65
99	4	1¼	1¼	6 25
99½	4	1¼	1½	6 25
100	4	1½	1¼	6 65
100½	4	1½	1½	6 65
101	4	1¾	1¼	7 05
101½	4	1¾	1½	7 05
102	4	2	1¼	7 45
102½	4	2	1½	7 45
103	4	2½	1¼	8 40
104	4	3	1¼	9 00
105	4	3½	1¼	10 00
106	4	4	1¼	11 00
107	4	5	1¼	13 50
108	4	6	1¼	15 50
109	4	3	1½	9 00
110	4	6	1½	15 50
112	4½	⅝	2	3 85
114	4½	7/16	2	3 75
116	4½	½	2	4 10
118	4½	9/16	2	4 40
120	4½	⅝	2	4 60
122	4½	11/16	2	4 85
124	4½	¾	2	5 10
126	4½	⅞	2	5 50
128	4½	1	2	6 00
130	4½	1¼	2	6 60
132	4½	1½	2	7 25
134	4½	1¾	2	8 00
136	4½	2	2	8 75

MILLING CUTTERS WITH NICKED TEETH



FIG. 589

Cutters of this form are especially adapted for the heavier class of milling. The teeth being nicked, the chip is broken up, thus enabling a heavier cut to be taken than would be possible with the ordinary milling cutter.

Diameter, Inches.	Width of Face, Inches.	Hole, Inches.	Prices, Each.
2½	2½	1	$4 90
2½	3	1	5 40
2½	3½	1	6 00
2½	4	1	6 60
3	2½	1¼	6 25
3	3	1¼	6 50
3	3½	1¼	7 10
3	4	1¼	7 70
3	5	1¼	9 40
3	6	1¼	13 00
3½	2½	1¼	8 25
3½	3	1¼	8 90
3½	3½	1¼	9 80
3½	4	1¼	11 00
3½	5	1¼	12 50
3½	6	1¼	14 25
4	2½	1¼	10 00
4	2½	1½	10 00
4	3	1¼	10 80
4	3	1½	10 80
4	3½	1¼	12 00
4	3½	1½	12 00
4	4	1¼	13 20
4	4	1½	13 20
4	5	1¼	16 20
4	5	1½	16 20
4	6	1¼	18 60
4	6	1½	18 60
4½	2½	2	11 50
4½	3	2	12 75
4½	3½	2	14 25
4½	4	2	15 75
4½	5	2	18 75
4½	6	2	22 25

GANG OF FORMED MILLING CUTTERS AND SIDE MILLING CUTTERS

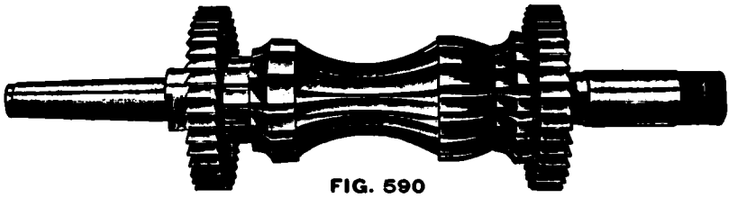


FIG. 590

Whole length of gang..... 15½ inches
Diameter of Formed Milling Cutters..... 5 "
Diameter of Side Milling Cutters..... 8 "

Prices furnished on application.

GANG OF MILLING CUTTERS, ONE WITH RADIAL GROOVES

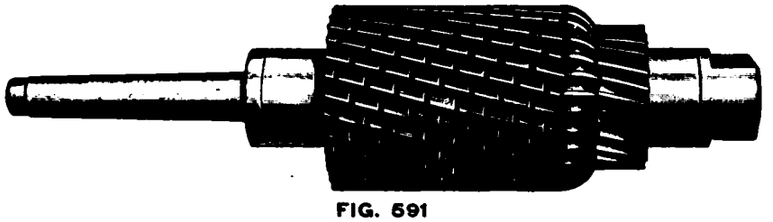


FIG. 591

Whole length of gang..... 9½ inches
Diameter of largest cutter..... 6 "

Prices furnished on application.

We can furnish, also, Gangs of Spiral Mills and Side Milling Cutters with either plain or inserted teeth.

SCREW SLOTTING CUTTER ARBORS

These arbors are for use with Screw Slotting Cutters.

The following sizes are carried in stock: ⅜ inch, ½ inch, ⅝ inch, ¾ inch, ⅞ inch, 1 inch.

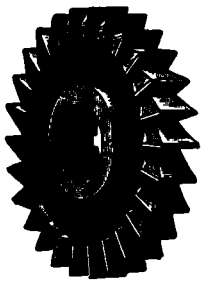
Price, each, $2.50.



FIG. 592

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SIDE MILLING CUTTERS



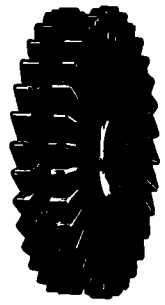
These cutters are often used in pairs for sizing nuts, bolt heads, etc., and are then called "Straddle Mills." They have teeth upon both sides and edges.

FIG. 593

Nos.	Diameters, Inches.	Width of Faces, Inches.	Holes, Inches.	Prices, Each.
10	2	5/16	½	$2 00
11	2	¼	½	2 05
12	2	3/16	½	2 10
13	2	5/16	5/8	2 00
14	2	¼	5/8	2 05
15	2	3/16	5/8	2 10
16	2½	¼	7/8	2 15
17	2½	3/16	7/8	2 20
18	2½	½	7/8	2 25
19	2¾	¼	7/8	2 30
20	2¾	3/16	7/8	2 30
21	2¾	½	7/8	2 35
22	3	¼	1	2 40
23	3	3/16	1	2 50
24	3	½	1	2 80
25	3½	9/16	1	3 50
26	3½	5/8	1	3 70
27	4	5/8	1	4 70
28	4	5/8	7/8	4 70
29	4	¾	1	5 00
30	5	¾	1	6 00
31	5	7/8	1	6 50
32	6	15/16	1¼	8 50
33	6	15/16	1½	8 50
34	7	1⅛	1¼	17 00
35	8	1¾	1¼	23 00
36	8	1¾	1½	23 00
37	8	1⅞	2	23 00

Cutters varying from the above list are made to order.

INTERLOCKING SIDE MILLING CUTTERS



These cutters can be easily adjusted for maintaining a standard width of slot.

Unless otherwise stated they are furnished in pairs.

FIG. 594

Diameters, Inches.	Total Width of Faces, Inches.	Holes, Inches.	Prices, per Pair.
2	⅜	½	$4 00
2	½	½	4 10
2	¾	½	4 20
2	⅜	⅝	4 00
2	½	⅝	4 10
2	¾	⅝	4 20
2½	½	⅞	4 30
2½	¾	⅞	4 40
2½	1	⅞	4 50
2¾	½	⅞	4 60
2¾	¾	⅞	4 60
2¾	1	⅞	4 70
3	½	1	4 80
3	¾	1	5 00
3	1	1	5 60
3½	1⅛	1	7 00
3½	1¼	1	7 40
4	1¼	1	9 40
4	1¼	⅞	9 40
4	1½	1	10 00
5	1½	1	12 00
5	1¾	1	13 00
6	1⅞	1¼	17 00
6	1⅞	1½	17 00
7	2¼	1¼	34 00
8	2⅜	1¼	46 00
8	2¾	1½	46 00

END MILLS



FIG. 595. LEFT HAND MILL

In ordering state whether right or left hand mills are wanted.

Nos.	Diameters, Inches.	Nos. of Tapers.	Length of Cuts, Inches.	Whole Lengths, Inches.	Prices, Each.
0	¼	4	13/16	2 1/16	$1 00
1	¼	5	13/16	3	1 15
2	5/16	4	⅞	2 7/16	1 00
3	5/16	5	⅞	3 1/16	1 15
4	⅜	4	⅞	2 7/16	1 10
5	⅜	5	⅞	3 1/16	1 20
6	7/16	4	15/16	2½	1 10
7	7/16	5	15/16	3⅛	1 25
8	½	5	1	3⅛	1 30
9	½	7	1⅛	5⅛	1 45
10	9/16	5	1 1/16	3⅛	1 35
11	9/16	7	1¼	5¼	1 50
12	5/8	5	1¼	3 5/16	1 45
13	5/8	7	1½	5½	1 70
14	11/16	7	1½	5½	1 75
15	11/16	9	1½	6 13/16	1 90
16	¾	7	1⅝	5⅝	1 80
17	¾	9	1⅝	6 15/16	1 95
18	13/16	7	1⅝	5¾	1 90
19	13/16	9	1⅝	6 13/16	2 00
20	⅞	7	1¾	5⅞	2 10
21	⅞	9	1¾	7 1/16	2 25
22	15/16	7	1¾	5⅞	2 10
23	15/16	9	1¾	7 1/16	2 25
24	1	7	1⅞	6	2 15
25	1	9	1⅞	7 5/16	2 30
26	1 1/16	7	1⅞	6	2 15
27	1 1/16	9	1⅞	7 5/16	2 35
28	1⅛	7	2	6¼	2 25
29	1⅛	9	2	7¼	2 40
30	1 3/16	7	2	6¼	2 25
31	1 3/16	9	2	7¼	2 50
32	1¼	7	2	6¼	2 25
33	1¼	9	2	7¼	2 55
34	1 5/16	9	2¼	7⅝	2 75
35	1⅜	9	2⅛	7⅝	2 75
36	1 7/16	9	2¼	7½	3 00
37	1½	9	2¼	7½	3 00

Morse Taper furnished if required.

SPIRAL END MILLS



FIG. 596. LEFT HAND MILL

In ordering, state whether right or left hand mills are wanted.

Nos.	Diameters, Inches.	Nos. of Tapers.	Length of Cuts, Inches.	Whole Lengths, Inches.	Prices, Each.
10	½	5	1	3⅛	$1 30
11	½	7	1⅛	5⅛	1 45
12	9/16	5	1 1/16	3⅛	1 35
13	9/16	7	1¼	5¼	1 50
14	⅝	5	1¼	3 5/16	1 45
15	⅝	7	1½	5½	1 70
16	11/16	7	1½	5½	1 75
17	11/16	9	1½	6 13/16	1 90
18	¾	7	1⅝	5⅝	1 80
19	¾	9	1⅝	6 15/16	1 95
20	13/16	7	1⅝	5¾	1 90
21	13/16	9	1⅝	6 13/16	2 00
22	⅞	7	1¾	5⅞	2 10
23	⅞	9	1¾	7 1/16	2 25
24	15/16	7	1¾	5⅞	2 10
25	15/16	9	1¾	7 1/16	2 25
26	1	7	1⅞	6	2 15
27	1	9	1⅞	7 5/16	2 30
28	1 1/16	7	1⅞	6	2 15
29	1 1/16	9	1⅞	7 5/16	2 35
30	1⅛	7	2	6¼	2 25
31	1⅛	9	2	7¼	2 40
32	1 3/16	7	2	6¼	2 25
33	1 3/16	9	2	7¼	2 50
34	1¼	9	2	7¼	2 55
35	1 5/16	9	2¼	7⅝	2 75
36	1⅜	9	2⅛	7⅝	2 75
37	1 7/16	9	2¼	7½	3 00
38	1½	9	2¼	7½	3 00

Morse Taper furnished if required.

SPIRAL SHELL END MILLS

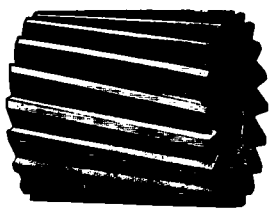


FIG. 599. LEFT HAND MILL

END MILLS WITH CENTER CUT



FIG. 597. LEFT HAND MILL

In ordering, state whether right or left hand mills are wanted.

These end mills are useful where it is desired to cut into the work with the end of the mill, and then move along as in cams, grooves, etc., as the teeth are sharp on the inside, and thus cut a path out from the first entering point. They are also useful in taking heavy cuts, especially in cast iron.

Nos.	Diameters, Inches.	Nos. of Tapers.	Length of Cuts, Inches.	Whole Length, Inches.	Prices, Each.
50	½	5	1	3⅛	$1 50
51	½	7	1⅛	5⅛	1 80
52	9/16	5	1	3⅛	1 70
53	9/16	7	1¼	5¼	1 85
54	⅝	5	1¼	3 5/16	1 80
55	⅝	7	1½	5½	2 10
56	11/16	7	1½	5½	2 15
57	11/16	9	1½	6 13/16	2 35
58	¾	7	1⅝	5⅝	2 25
59	¾	9	1⅝	6 15/16	2 45
60	13/16	7	1⅝	5¾	2 35
61	13/16	9	1⅝	6 15/16	2 50
62	⅞	7	1¾	5⅞	2 60
63	⅞	9	1¾	7 1/16	2 80
64	15/16	7	1¾	5⅞	2 60
65	15/16	9	1¾	7 1/16	2 80
67	1	7	1⅞	6	2 70
68	1	9	1⅞	7 5/16	2 85
69	1 1/16	7	1⅞	6	2 70
70	1 1/16	9	1⅞	7 5/16	2 95
71	1⅛	7	2	6¼	2 80
72	1⅛	9	2	7¼	3 00
73	1 3/16	7	2	6¼	2 80
74	1 3/16	9	2	7¼	3 10
75	1¼	7	2	6¼	2 80
76	1¼	9	2	7¼	3 20
77	1 5/16	9	2⅛	7⅝	3 45
78	1⅜	9	2⅛	7⅝	3 45
79	1 7/16	9	2¼	7½	3 75
80	1½	9	2¼	7½	3 75

Morse Taper furnished if required.

SHELL END MILLS

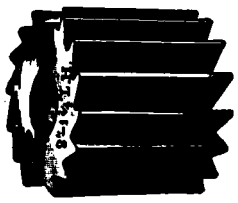


FIG. 598. LEFT HAND MILL

Diameters, Inches.	Lengths of Cuts, Inches.	Nos. of Arbor on which Cutter can be Used.	Holes, Inches.	Prices, Each.
1 9/16	1¾		¾	$2 65
1⅝	1¾		¾	2 80
1 11/16	1¾		¾	3 00
1¾	1¾		¾	3 20
1 13/16	1¾	90	¾	3 40
1⅞	1¾		¾	3 60
1 15/16	1¾	94	¾	3 80
2	1¾		¾	4 00
2 1/16	1¾		¾	4 25
2⅛	1¾		¾	4 50
2 3/16	1¾		¾	4 75
2¼	2¼		1	5 00
2 5/16	2¼		1	5 25
2⅜	2¼		1	5 50
2 7/16	2¼		1	5 75
2½	2¼		1	6 00
2 9/16	2¼	91	1	6 25
2⅝	2¼		1	6 50
2 11/16	2¼	95	1	6 75
2¾	2¼		1	7 00
2 13/16	2¼		1	7 25
2⅞	2¼		1	7 50
2 15/16	2¼		1	7 75
3	2¼		1	8 00

In ordering, state whether right or left hand mills are wanted.

PRICES, FIG. 599

Diameters, Inches.	Lengths of Cut. Inches.	Nos. of Arbor on which Cutter can be Used.	Holes, Inches.	Prices, Each.
1 9/16	1¾		¾	$2 65
1⅝	1¾		¾	2 80
1 11/16	1¾		¾	3 00
1¾	1¾		¾	3 20
1 13/16	1¾	90	¾	3 40
1⅞	1¾		¾	3 60
1 15/16	1¾	94	¾	3 80
2	1¾		¾	4 00
2 1/16	1¾		¾	4 25
2⅛	1¾		¾	4 50
2 3/16	1¾		¾	4 75

Diameters, Inches.	Lengths of Cuts, Inches.	Nos. of Arbor on which Cutter can be Used.	Holes, Inches.	Prices, Each.
2¼	2¼		1	$5 00
2 5/16	2¼		1	5 25
2⅜	2¼		1	5 50
2 7/16	2¼		1	5 75
2½	2¼		1	6 00
2 9/16	2¼	91	1	6 25
2⅝	2¼		1	6 50
2 11/16	2¼	95	1	6 75
2¾	2¼		1	7 00
2 13/16	2¼		1	7 25
2⅞	2¼		1	7 50
2 15/16	2¼		1	7 75
3	2¼		1	8 00

In ordering, state whether right or left hand mills are wanted.

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FACE MILLING CUTTERS WITH INSERTED TEETH

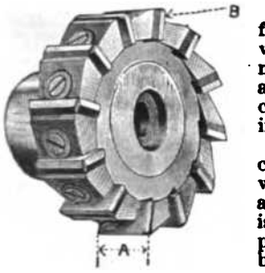


FIG. 600
LEFT HAND CUTTER

This cut shows a form of cutter which we can furnish, especially adapted for all classes of face milling.

The body is of cast iron, provided with a taper hole and key way, and is held firmly in place, on the arbor, by a screw.

The teeth are of tool steel, hardened. They are held in place by taper bushings and screws, and can thus be easily adjusted or removed. The bushings, screws and teeth are interchangeable.

Nos. of Mills.	Sizes, Ins.	Face A, Ins.	Face B, Ins.	No. of Taper Hole.	No. of Arbor on which Cutter can be Used.	Prices, Each.
1	5½	2	1	10	79 or 80	$12 00
2	5½	2	1	12	81, 82, 84, 85 or 86	12 00
3	6½	2	1	10	79 or 80	14 00
4	6½	2	1	12	81, 82, 84, 85 or 86	14 00
5	7½	2	1	10	79 or 80	16 00
6	7½	2	1	12	81, 82, 84, 85 or 86	16 00
7	8½	2⅝	1	12	81, 82, 84, 85 or 86	18 00
8	9½	2⅝	1	12	81, 82, 84, 85 or 86	20 00

In ordering state whether right or left hand cutters are wanted.

Other sizes made to order.

CUTTERS FOR GROOVING TAPS



FIG. 602

These cutters do not make as deep a groove in proportion to the width as the Tap Cutters, Fig. 606. They are not suitable for fluting reamers. These cutters can be sharpened by grinding without changing their form. In ordering, give number of cutter or diameter of tap, as by list.

Nos. of Cutter.	Diameter of Tap, Inches.	Diameter of Cutter, Inches.	Hole in Cutter, Inches.	Prices, Each.
1	0 to ⅛	1¾	⅞	$2 00
2	9/32 " ¼	1¾	⅞	2 10
3	9/32 " ⅜	1⅞	⅞	2 20
4	7/16 " ⅝	2	⅞	2 40
5	11/16 " ⅞	2¼	⅞	2 40
6	15/16 " 1¼	2¼	⅞	2 70
7	15/16 " 1⅝	2⅝	⅞	2 70
8	11 1/16 " 2	2⅝	⅞	3 00

CUTTERS FOR GROOVING TAPS



FIG. 606

No. 1 cutter is suitable for grooving taps ⅛ inch or less diameter; No. 2 for taps larger than ⅛ inch and up to ¼ inch diameter, etc.

These cutters can be sharpened by grinding without changing their form.

In ordering, give number of cutter, or diameter and number of teeth of tap as by lists.

Nos. of Cutter.	Diameter of Tap, Inches.	Number of Teeth in Tap.	Diameter of Cutter, Inches.	Hole in Cutter, Inches.	Prices, Each.
1	0 to ⅛	4	1¾	⅞	$2 00
2	9/32 " ¼	4	1¾	⅞	2 10
3	9/32 " ⅝	4	1⅞	⅞	2 20
4	7/16 " ⅝	4	2	⅞	2 40
5	11/16 " ⅞	4	2¼	⅞	2 40
6	11/16 " 1¼	4	2¼	⅞	2 70
7	15/16 " 1⅝	4	2⅝	⅞	2 70
8	11 1/16 " 2	4	2⅝	⅞	3 00

FACE MILLING CUTTERS WITH INSERTED TEETH AND THREADED HOLES

These cutters are the same in design as shown in Fig. 600, except that they are provided with threaded holes.

Nos. of Mills.	Sizes, Inches.	Width of Face A, Inches.	Width of Face B, Inches.	Hole, Inches.	Prices, Each.
10	5½	2	1	2½ 4, L	$14 00
12	5½	2	1	2¾ 4, L	14 00
13	6½	2	1	2½ 4, L	16 00
14	6½	2	1	2¾ 4, L	16 00
15	6½	2	1	3¼ 3½, L	16 00
16	7½	2	1	2½ 4, L	18 00
17	7½	2	1	2¾ 4, L	18 00
18	7½	2	1	3¼ 3½, L	18 00
19	7½	2	1	4, 3, L	18 00
20	8½	2⅝	1	2¾ 4, L	20 00
21	8½	2⅝	1	3¼ 3½, L	20 00
22	8½	2⅝	1	4, 3, L	20 00
23	9½	2⅝	1	2¾ 4, L	22 00
24	9½	2⅝	1	3¼ 3½, L	22 00
25	9½	2⅝	1	4, 3, L	22 00

ANGULAR CUTTERS



FIG. 603
RIGHT HAND CUTTER

We can furnish Angular Cutters of 45°, 50°, 60°, 70°, and 80° angle, both right and left hand, suitable for cutting the teeth of cutters and mills.

Diameters, Inches.	Thickness, Inches.	Hole, Inches.	Prices, Each.
2½	½	⅞	$2 70
2¾	½	1	3 00
3	½	1¼	3 25

ANGULAR CUTTERS WITH THREADED HOLES

These cutters have an angle of 60° and are made both right and left hand.

Diameters, Inches.	Thickness, Inches.	Hole, Inches.	Thread.	Prices, Each.
1¼	7/16	⅜	20, L	$2 25
1⅝	9/16	½	16, L	2 50

CUTTERS FOR FLUTING REAMERS

This cutter makes a tooth that allows the chips to be removed readily and has great strength.

In ordering give number of cutter or diameter of reamer as by the following list.

Nos. of Cutter.	Diameter of Reamer, Inches.	No. of Teeth.	Hole in Cutter, Inches.	Prices, Each.
1	¼ to 5/16	6	⅞	$2 00
2	¼ " 5/16	6	⅞	2 10
3	5/16 " 7/16	6	⅞	2 20
4	½ " 11/16	6 to 8	⅞	2 40
5	¾ " 1	8	⅞	2 40
6	15/16 " 1½	10	⅞	2 70

These cutters can be sharpened by grinding without changing their form.

STANDARD T SLOT CUTTERS

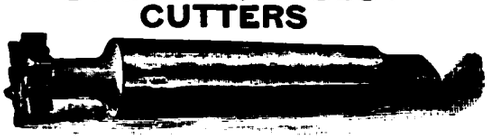
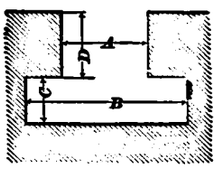


FIG. 601. LEFT HAND CUTTER



In ordering state whether right or left hand cutters are wanted.

Nos. of Cutter.	Width of Slot A. Inches.	Dia. of Neck of Cutter, Inches.	Width of Slot B, Inches.	Depth C, Inches.	Extreme Limit D, Inches.	Nos. of Taper.	Prices, Each.
4	¼	7/32	½	9/32	¼	4	$1 50
7	¼	7/32	½	9/32	¼	5	1 60
10	5/16	9/32	⅝	9/32	5/16	5	1 80
13	5/16	9/32	⅝	9/32	5/16	7	2 10
16	⅜	11/32	11/16	7/32	⅜	5	2 00
19	⅜	11/32	11/16	7/32	⅜	7	2 20
22	7/16	⅜	13/16	7/32	7/16	7	2 35
25	7/16	⅜	13/16	7/32	7/16	9	2 50
28	½	7/16	15/16	9/32	½	7	2 60
31	½	7/16	15/16	9/32	½	9	2 80
34	⅝	17/32	13/16	13/32	⅝	9	3 10
37	⅝	21/32	15/16	17/32	15/16	9	3 45
40	⅞	25/32	15/16	11/16	13/16	9	3 75
43	1	29/32	17/8	13/16	15/16	9	4 00

These cutters are made 1/32 larger in diameter than the figures given, to allow for sharpening.

Other sizes made to order.

ANGULAR CUTTERS WITH SIDE GROUND CONCAVE



FIG. 604
LEFT HAND CUTTER

These cutters have the side ground concave, and we can furnish cutters of 45°, 50°, 60°, 70°, and 80° angle, both right and left hand.

In ordering state whether right or left hand is wanted.

Diameters, Inches.	Thickness, Inches.	Hole, Inches.	Prices, Each.
2½	½	⅞	$2 25
2¾	½	1	2 50
3	½	1¼	2 75

DOUBLE ANGLE CUTTERS



FIG. 605

We can furnish a form of cutter, shown in cut, with the included angle either 45°, 60° or 90°.

Diameters, Inches.	Thickness, Inches.	Hole, Inches.	Prices, Each.
2½	½	⅞	$2 70
2¾	½	1	3 00
3	½	1¼	3 25

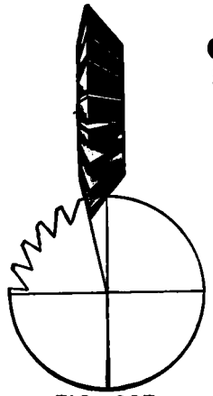


FIG. 607

CUTTERS FOR SPIRAL MILLS

We can furnish a form of cutter especially adapted to the cutting of spiral mills, either 40°, 48°, or 53° angle on one side and 12° on the other, and are right hand cutters. The cut illustrates a cutter at work, in the position required in cutting the teeth of a spiral cutter.

Diameters, Inches.	Thickness, Inches.	Size of Hole, Inches.	Prices, Each.
2½	½	⅞	$2 70
2¾	½	1	3 00
3	½	1¼	3 25

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CUTTERS FOR MAKING TWIST DRILLS

FIG. 608

No. of Cutter.	Diameter of Drill, Inches.	Diameter of Circle made by Cutter, Inches.	Diameter of Cutter.	Hole in Cutter, Inches.	Prices, Each.
1	1/16	.06	1 3/4	7/8	$1 50
2	1/8	.08	1 3/4	7/8	1 70
3	3/16	.11	1 3/4	7/8	1 90
4	1/4	.15	1 3/4	7/8	2 10
5	5/16	.19	2	7/8	2 30
6	3/8	.23	2	7/8	2 40
7	7/16	.27	2	7/8	2 60
8	1/2	.31	2	7/8	2 80
9	9/16	.35	2 1/8	7/8	3 00
10	5/8	.39	2 1/8	7/8	3 20
11	11/16	.44	2 1/8	7/8	3 40
12	3/4	.50	2 1/4	7/8	3 60
13	13/16	.56	2 1/4	7/8	3 80
14	7/8	.62	2 1/2	7/8	4 00
15	15/16	.70	2 1/2	7/8	4 20
16	1	.77	2 3/4	7/8	4 50
17	1 1/8	.85	2 3/4	7/8	5 00

These Cutters can be sharpened by grinding without changing their form.

In ordering, give number of Cutter or diameter of drill, as by above list.

SPROCKET WHEEL CUTTERS



FIG. 611

We can furnish a form of Sprocket Wheel Cutter for the ordinary 1 inch pitch chain.

The cutters for the smaller sized wheels are for cutting a curved form of tooth, to prevent the chain from mounting the sprocket, while the cutters for the larger sized wheels make a straight sided tooth.

Cutters of special forms, or made to cut two teeth at once, made to order.

No. of Teeth of Sprocket.	Diameter of Cutter, Inches.	Hole in Cutter, Inches.	Prices, Each.
6	2 3/4	1	$6 00
7	2 3/4	1	6 00
8	2 3/4	1	6 00
9	2 3/4	1	6 00
10 and 11	2 3/4	1	6 00
12 and 13	2 3/4	1	6 00
14 to 16	2 3/4	1	6 00
17 to 20	2 3/4	1	6 00
21 and over	2 3/4	1	6 00

Double Cutters, price, $13.00 per pair.

IMPROVED STOCKING CUTTERS FOR INVOLUTE GEARS

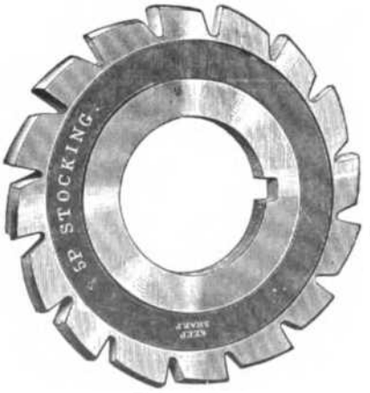


FIG. 617

Diametral Pitch, Inches.	Each.	Diameters of Cutter, Inches.	Hole in Cutter, Inches.	Diametral Pitch, Inches.	Each.	Diameters of Cutter, Inches.	Hole in Cutter, Inches.	Diametral Pitch, Inches.	Each.	Diameters of Cutter, Inches.	Hole in Cutter, Inches.
2	$7 50	5	1 1/4	*3 1/4	$3 90	3 3/4	1 1/4	5	$2 70	3 1/8	1 1/4
*2 1/4	6 75	4 1/2	1 1/4	*3 1/2	3 75	3 5/8	1 1/4	*5 1/2	2 50	2 7/8	1 1/4
2 1/2	6 00	4 1/4	1 1/4	*3 3/4	3 60	3 1/2	1 1/4	6	2 35	2 3/4	1 1/16
*2 3/4	5 40	4	1 1/4	4	3 30	3 3/8	1 1/4	7	2 20	2 5/8	1 1/16
3	4 20	3 7/8	1 1/4	*4 1/2	3 00	3 1/4	1 1/4	8	2 05	2 1/2	1 1/16

Cutters marked * are not kept in stock, but are made to order.

CUTTERS FOR MAKING STRAIGHT LIPPED TWIST DRILLS



FIG. 609

Nos. Cutter.	Diameter of Drill, Inches.	Diameter of Cutter, Inches.	Hole in Cutter, Inches.	Prices, Each.
1	1/16	1 3/4	7/8	$1 50
2	1/8	1 3/4	7/8	1 70
3	3/16	1 3/4	7/8	1 90
4	1/4	1 3/4	7/8	2 10
5	5/16	2	7/8	2 30
6	3/8	2	7/8	2 40
7	7/16	2	7/8	2 60
8	1/2	2	7/8	2 80
9	9/16	2 1/4	7/8	3 00
10	5/8	2 1/4	7/8	3 20
11	11/16	2 1/4	7/8	3 40
12	3/4	2 1/4	7/8	3 60
13	13/16	2 1/2	7/8	3 80
14	7/8	2 1/2	7/8	4 00
15	15/16	2 1/2	7/8	4 20
16	1	2 3/4	7/8	4 50
17	1 1/8	2 3/4	7/8	5 00
18	1 1/4	3	7/8	5 50
19	1 1/2	3 1/2	1	6 25
20	1 3/4	3 1/2	1	7 00
21	2	3 3/4	1	7 75

These Cutters can be sharpened by grinding without changing their form.

In ordering, give number of cutter or diameter of drill, as by above list.

CONVEX AND CONCAVE CUTTERS FOR MILLING HALF CIRCLES



FIG. 612 (Convex.)



FIG. 613 (Concave.)

These Cutters can be sharpened by grinding without changing their outline.

PRICES, FIGS. 612 AND 613

Diameters of Circle, Inches.	Diameters of Cutter, Inches.	Size of Hole, Inches.	Fig. 612. Convex Cutter, Each.	Fig. 613. Concave Cutter, Each.
1/8	2	7/8	$2 00	$2 40
3/16	2	7/8	2 25	2 70
1/4	2	7/8	2 50	3 00
5/16	2 1/4	7/8	2 80	3 35
3/8	2 1/4	7/8	3 10	3 70
7/16	2 1/4	7/8	3 35	4 00
1/2	2 1/4	7/8	3 60	4 30
5/8	2 3/4	7/8	4 00	4 80
3/4	2 3/4	7/8	4 40	5 25
7/8	3 1/4	7/8	4 80	5 75
1	3 1/4	1	5 25	6 30
1 1/8	3 1/2	1	5 75	6 90
1 1/4	3 1/2	1	6 25	7 50
1 3/8	3 3/4	1	7 00	8 40
1 1/2	3 3/4	1	7 75	9 30

CUTTERS FOR MAKING FOUR LIPPED TWIST DRILLS

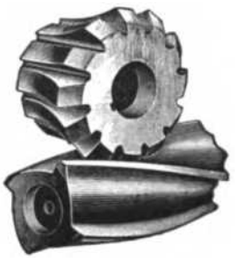


FIG. 610

The cut shows a form of cutter, which we can furnish, especially adapted to cutting Four Lipped Twist Drills that are used in screw and chucking machines for roughing out holes previous to reaming. These drills are made, when possible, as shell drills to be used on an arbor and should have a spiral or "twist" of fifteen degrees.

In ordering give number of cutter or size of drill, as by the following list.

These cutters can be sharpened by grinding without changing their form.

No. Cutter.	Diameter of Drill, Inches.	Diameter of Cutter, Inches.	Hole in Cutter, Inches.	Cutter, Each.
1	to 1 1/2	2 3/4	1	$6 00
2	1 1/2 to 3	3	1	7 00

CORNER ROUNDING CUTTERS

Left Hand. Right and Left Hand. Right Hand.



FIG. 614



FIG. 615



FIG. 616

These Cutters have side as well as radial clearance, and can be ground without changing their outline.

In ordering single Cutters, state whether right or left hand is wanted.

PRICES, FIGS. 614, 615 AND 616

Radius of Circle, Inches.	Diameter, Inches.	Hole, Inches.	Single Cutter, Figs. 614 and 616. Each.	Double Cutter, Fig. 615, Each.
1/16	2	7/8	$2 00	$2 [illegible]
3/32	2	7/8	2 25	2 [illegible]
1/8	2	7/8	2 50	3 [illegible]
5/32	2 1/4	7/8	2 70	3 [illegible]
3/16	2 1/4	7/8	2 90	3 7[illegible]
7/32	2 1/4	7/8	3 10	4 0[illegible]
1/4	2 1/4	7/8	3 30	4 30
5/16	2 3/4	7/8	3 50	4 80
3/8	2 3/4	7/8	3 70	5 25
7/16	3 1/4	1	3 90	5 75
1/2	3 1/4	1	4 20	6 30
9/16	3 1/2	1	4 50	6 90
5/8	3 1/2	1	5 00	7 50
11/16	3 3/4	1	5 75	8 40
3/4	3 3/4	1	6 50	9 30

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PENNING, MAXWELL & MOORE, 84, 86 AND 88 LIBERTY STREET, NEW YORK

PATENT METRIC INVOLUTE CUTTERS
FOR TEETH OF GEAR WHEELS

We are prepared to furnish, at short notice, cutters for cutting the teeth of gear wheels according to the metric system.

Module is the pitch diameter in mm. divided by the number of teeth in the gear.

Pitch diameter in mm. is the module multiplied by the number of teeth in the gear.

M—Module. D—Pitch Diameter in mm.
N—No. of Teeth in Gear. D—M X N.

For example: M—3.50 mm.; N—100; D—3.50 X 100—350 mm.

PRICES

MODULE IN FIRST COLUMN.

Module.	Diameter, Inches.	Hole.	Each.
½ mm.	1¾	⅞ in. or 22 mm.	$1 80
⅝	1¾	"	1 80
1	1¾	"	2 10
1¼	1⅞	"	2 30
1½	1 15/16	"	2 45
1¾	2	"	2 55
2	2	"	2 65
2¼	2 1/16	"	2 75
2½	2⅛	"	3 00
3	2 1/32	1 1/16 in. or 27 mm.	3 40
3¼	2 3/16	"	3 50
3½	2 5/16	"	3 60
3¾	2⅜	"	3 75
4	2¾	"	3 90
4¼	3	1¼ in. or 32 mm.	4 05
4½	3	"	4 20
4¾	3 1/16	"	4 35
5	3 1/16	"	4 50
5¼	3¼	"	4 75
5½	3¼	"	5 00
5¾	3⅜	"	5 25
6	3⅜	"	5 50
7	3 5/16	"	6 25
8	3 15/16	"	7 00
9	4	"	9 00
10	4¼	"	10 00
11	4½	"	11 25
12	5	"	12 50

PATENT INVOLUTE CUTTERS
FOR TEETH OF GEAR WHEELS

PRICES, FIG. 618

All gears of same pitch cut with these cutters are interchangeable.

Diametral Pitch.	Each.	Diameter of Cutter, Inches.	Hole in Cutter, Inches.
*2	$12 50	5	1¼
*2¼	11 25	4½	"
*2½	10 00	4¼	"
*2¾	9 00	4	"
3	7 00	3 13/16	"
*3¼	6 50	"	"
*3½	6 25	3 1/16	"
*3¾	6 00	"	"
4	5 50	3⅛	"
*4½	5 00	3¼	"
5	4 50	3 1/16	"
*5½	4 20	"	"
6	3 90	2¾	1 1/16
7	3 60	2 9/16	"
8	3 40	2½	"
9	3 20	2⅜	"
10	3 00	2¼	⅞
11	2 75	2 1/16	"
12	2 65	2	"
*13	2 60	"	"
14	2 55	"	"
*15	2 50	"	"
16	2 45	1 15/16	"
18	2 35	"	"
20	2 30	1⅞	"
22	2 20	1 13/16	"
24	2 10	1¾	"
26	1 95	"	"
28	1 80	"	"
30	1 80	"	"
32	1 80	"	"
36	1 80	"	"
*38	1 80	"	"
40	1 80	"	"
*44	1 80	"	"
48	1 80	"	"
*50	1 80	"	"
*56	1 80	"	"
*60	1 80	"	"
*64	1 80	"	"
*70	1 80	"	"
*80	1 80	"	"
*120	1 80	"	"

Cutters marked * are not kept in stock, but are made to order.

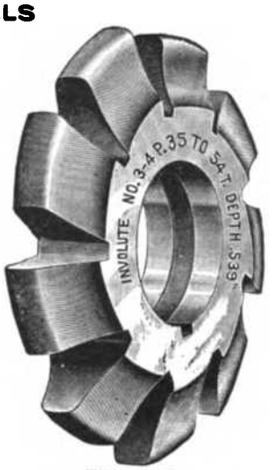


FIG. 618

The patent cutters for the teeth of gear wheels, from their peculiar construction, can be sharpened when dull by grinding the faces of the teeth. This operation can be repeated without altering the form of the tooth which the cutter makes.

Cutters marked * are not kept in stock, but are made to order at short notice.

Orders should be given by tables to the left, stating the No. of cutter and the diametral pitch required. By diametral pitch is meant the number of teeth to the inch in diameter on pitch circle of any wheel. In ordering cutters for worm wheels, give the number of teeth in wheel, the diameter of worm, and number of threads to the inch.

Center Line on Gear Cutters. We would call attention to the center line on these gear cutters, which may be convenient in setting cutters central with the work spindle.

Can be sharpened by grinding without changing their form.

DIRECTIONS FOR ORDERING FIG. 618

Eight cutters are made for each pitch, as follows:

No. 1	will cut wheels from	135	teeth to a rack.		
" 2	" "	55	"	134	teeth.
" 3	" "	35	"	54	"
" 4	" "	26	"	34	"
" 5	" "	21	"	25	"
" 6	" "	17	"	20	"
" 7	" "	14	"	16	"
" 8	" "	12	"	13	"

In ordering, give the No. of cutter and diametral pitch required. Cutters in stock can be ordered by telegraph. Form of telegram: "Send one cutter, No. five, eight pitch."

PATENT EPICYCLOIDAL CUTTERS
FOR TEETH OF GEAR WHEELS

PRICES, FIG. 619

All gears of same pitch cut with these cutters are interchangeable.

Diametral Pitch.	Diameter of Cutter, Inches.	Size of Hole in Cutter, Inches.	Each.
*2	5	1¼	$15 50
*2¼	4½	1¼	14 00
*2½	4¼	1¼	13 00
*2¾	4	1¼	11 75
3	3 13/16	1¼	10 75
*3½	3 9/16	1¼	9 75
4	3⅜	1¼	6 60
5	3 1/16	1¼	5 65
6	2¾	1 1/16	4 65
*7	2 9/16	1 1/16	4 40
8	2½	1 1/16	3 90
*9	2⅜	1 1/16	3 65
10	2¼	⅞	3 40
*12	2	⅞	3 20
*14	2	⅞	3 00
*16	1 15/16	⅞	2 80

Cutters marked * are not kept in stock, but are made to order.

DIRECTIONS FOR ORDERING FIG. 619

Cutters are marked with letters. 24 Cutters in each set.

Cutter A	cuts	12	teeth.	Cutter M	cuts	27 to 29	teeth.
" B	"	13	"	" N	"	30 " 33	"
" C	"	14	"	" O	"	34 " 37	"
" D	"	15	"	" P	"	38 " 42	"
" E	"	16	"	" Q	"	43 " 49	"
" F	"	17	"	" R	"	50 " 59	"
" G	"	18	"	" S	"	60 " 74	"
" H	"	19	"	" T	"	75 " 99	"
" I	"	20	"	" U	"	100 " 149	"
" J	"	21 to 22	"	" V	"	150 " 249	"
" K	"	23 " 24	"	" W	"	250 or more.	
" L	"	25 " 26	"	" X	"	Rack.	

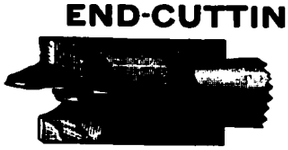
In ordering give the letter on cutter and the pitch required.

Can be sharpened by grinding without changing their form.



FIG. 619

END-CUTTING HOLLOW MILLS


FIG. 620

DESCRIPTION, FIG. 620

These mills are made of best quality tool steel, fine finish and temper. The teeth have proper clearance and admit of grinding back ¼ to ½ inch. They are provided with a tapered recess at the back end, adapting them for use on screw machine or turret lathe, by simply fitting one end of steel plug to inside of mill and the other end to turret, collet or chuck.

One plug of any of the following sizes will fit any mill of that size. Plugs can be bored to allow milled work to pass through. Mills are made in three regular outside sizes, as per list. Other sizes to order.

PRICES

No. 0. ⅝ inches diameter, 1½ inches long.
" 1. ⅞ " 1¾ "
" 2. 1⅛ " 2 "

	Per dozen.
No. 0 cuts sizes from ⅛ to ¼ by 64ths. and No. 4 to 14 Machine Screw sizes	$12 00
" 1 " " ¼ " ½ " 32ds	15 00
" 2 " " ⅝ " ¾ " "	21 00

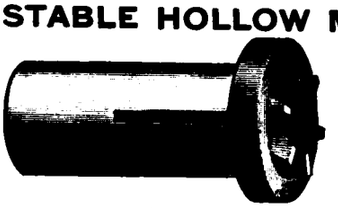
HOLDER FOR END CUTTING HOLLOW MILLS

With ½-inch shanks.


FIG. 620 A

No. 0	each,	$0 35
" 1	"	50
" 2	"	75

ADJUSTABLE HOLLOW MILLS


FIG. 621

PRICES

Size of Hole, Inches.	Each.	Outside Diameter, Inches.	Length, Inches.	Size of Hole, Inches.	Each.	Outside Diameter, Inches.	Length, Inches.
5/32	$1 60	⅝	1½	7/16	$2 00	¾	2
⅛	1 60	⅝	1½	½	2 20	1	2¼
5/32	1 60	⅝	1½	9/16	2 40	1	2¼
5/16	1 60	⅝	1½	⅝	2 60	1	2¼
7/32	1 60	⅝	1½	11/16	2 80	1¼	2½
¼	1 60	⅝	1½	¾	3 00	1¼	2½
9/32	1 80	¾	2	13/16	3 20	1¼	2½
5/16	1 80	¾	2	⅞	3 40	1½	2¾
11/32	1 80	¾	2	15/16	3 60	1½	2¾
⅜	2 00	¾	2	1	3 80	1½	2¾

The holes in these mills are carefully ground to size and have a proper relief. Forcing the ring on the mill will correct any slight wear.

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ADJUSTABLE HOLLOW MILLING TOOL

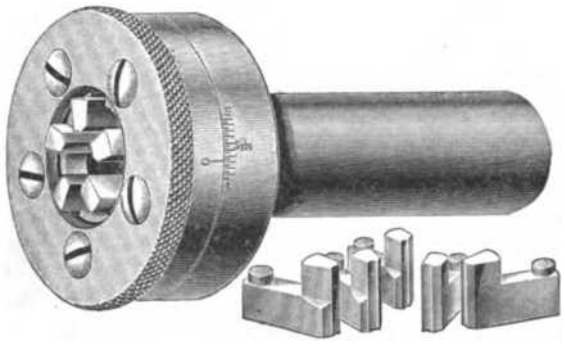


FIG. 622

FOR USE ON AUTOMATIC SCREW MACHINES, HAND TURRET LATHES, OR FOR ROTATING

PRICES, FIG. 622

	⅜ inch size.	½ inch size.	1¼ inch size.
Largest diameter of head	2	2⅞	3⅝
Diameter of shank	⅞	1¼	2
Length of shank	3	4⅛	5⅞
Length of tool over all	4⅛	5⅝	7⅞
Capacity, with 2 sets of cutters	⅛ to ⅜	⅜ to ¾	¾ to 1¼
Price, with two sets of cutters	$12 00	$16 00	$20 00
Extra cutters, per set	1 00	1 25	1 50

McCANNA'S PATENT ADJUSTABLE THREAD CUTTING AND MILLING TOOL

FOR THREAD CUTTING, MILLING, COUNTERBORING, FACING, POINTING, CUTTING TAPERS, AND GENERAL BRASS FINISHING AND MACHINE WORK



FIG. 623

DIRECTIONS

Do not use a hammer or drift to remove the blades. Slack off the cap and the blades will draw out easily.

Do not grind the inner edge of the blades—that is, the edge which is parallel with the finish work. Grind the face only. This is most imperative.

To use a counterbore or facing tool, tighten the necessary leader in the blades.

In changing from one size to another, slack the cap slightly, and press the blades back against the adjusting nut, then screw up the nut until the mill cuts the proper size, and then tighten the cap.

We are now furnishing this tool in four sizes, given in the list below, but are prepared to quote prices for any size that may be desired.

PRICES

Size.	Thread Cut and Mill.	Bore of Stock.	Outside Diameter of Stock.	Length over all.	Size of Blades.	Price Complete.	Price of Blades per set —Soft.	Price of Blades per set finished for Threading, etc.
No. 0	1/64 to 5/16	3/8	1½	2⅜	3/32x7/32	$10 00	75c.	$1 65
" 1	1/64 to ½	5/8	1 13/16	3½	3/16x7/16	12 00	80c.	1 70
" 2	½ to 1	1⅛	2 9/16	4	¼x9/16	14 25	85c.	1 75
" 3	1 to 1½	1⅝	3⅛	4¼	¼x9/16	16 00	90c.	1 80

When ordering these mills please state the stock on which they are to be used, steel, iron, brass, fibroid, etc.



SECTIONAL CUT, FIG. 623

KNURLING TOOL AND KNURLS

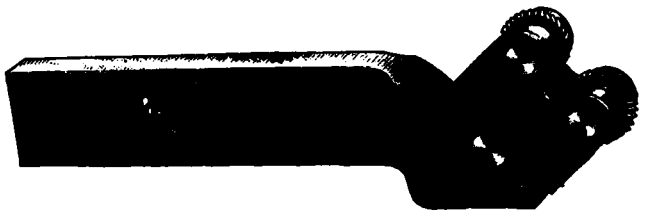


FIG. 624

This tool is designed for checking cylindrical pieces that they may be held firmly by hand. Any desired length and diameter can be checked after the manner of turning in an engine lathe with continuous feed. The holder is jointed, that the knurls may center themselves, and be used in a weighted lathe without an extra weight being applied to the carriage to hold it in position.

Knurls of three pitches are carried in stock; finer and coarser to a limited degree can be furnished to order at special prices.

All knurls used in same holder.

The pitch of the knurled cut, measured parallel to axis of the work, is about 20 to the inch for fine knurls, 12 for medium, and 8 for coarse.

KNURLS

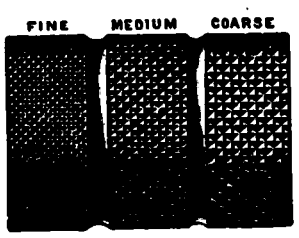


FIG. 625

PRICES, FIGS. 624 AND 625

Price of holder only, 1 x ½ x 6 inches; weight, 16 ounces	$4 00
Price of holder with one pair of knurls; weight, 17 ounces	4 50
Extra knurls, per pair; weight, 1 ounce	75

IMPROVED KNURLING TOOL

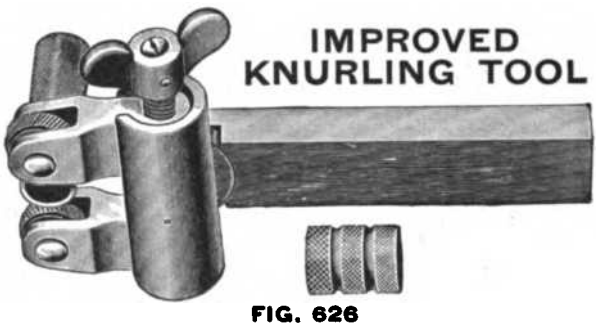


FIG. 626

FOR USE IN ENGINE LATHE FOR KNURLING METAL

The movable arms holding the knurls, in connection with the rocking joint, have a positive opening and closing movement in parallel lines, actuated by a right and left hand screw, moving the knurls towards and from each other.

The knurls will center themselves to the work.

Knurls of three pitches carried in stock: Coarse, medium and fine.

PRICES, FIG. 626

Price of holder only, 1 x ½ x 6 inches	$4 25
" " " with one pair of knurls	5 00
Extra knurls, per pair	75

ADJUSTABLE KNURL HOLDER

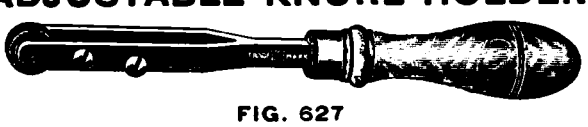


FIG. 627

No. 20. Will hold knurls any width, are nicely polished and have hardwood handles, per dozen $6 00

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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LATHE, PLANER, AND SHAPER TOOLS

PRICES, FIG. 628, LATHE TOOLS

Set of 20.	⅝ x 1¼	$15 00	¼ x ½ and 5/16 x ⅝		$3 40
" 16.	"	12 00	"	"	2 72
" 12.	"	9 00	"	"	2 04
" 10.	"	7 50	"	"	1 70
" 8.	"	6 00	"	"	1 36
Set of 20.	⅝ x 1½	$20 00	⅜ x ⅝ and ⅜ x ¾		$5 00
" 16.	"	16 00	"	"	4 00
" 12.	"	12 00	"	"	3 00
" 10.	"	10 00	"	"	2 50
" 8.	"	8 00	"	"	2 00
Set of 20.	¾ x 1½	$22 00	½ x 1		$10 00
" 16.	"	17 60	"		8 00
" 12.	"	13 20	"		6 00
" 10.	"	11 00	"		5 00
" 8.	"	8 80	"		4 00

PRICES OF PLANER AND SHAPER TOOLS

Set of 16.	⅜ x ¾	$4 00	Set of 12.	⅝ x 1¼	$9 00
" 12.	"	3 00	" 16.	⅝ x 1½	18 00
" 16.	½ x 1	8 00	" 12.	"	13 50
" 12.	"	6 00	" 16.	¾ x 1½	20 00
" 16.	⅝ x 1¼	12 00	" 12.	"	15 00

CONTENTS OF SET OF 16 PLANER AND SHAPER TOOLS

No. 1. Left-hand Side Tool. No. 2. Right-hand Side Tool. No. 3. Left-hand Diamond Point Tool. No. 4. Right-hand Diamond Point Tool. No. 5. Bull Nose, for heavy cuts. No. 6. Gouge Nose Tool. No. 7. Broad Nose or Stocking Tool. No. 8. Scaling Tool. No. 9. Right-hand Siding Tool. No. 10. Left-hand Siding Tool. No. 11. For Finishing in Corners. No. 12. Cutting-off Tool. No. 13. Right-hand Bevel Tool. No. 14. Left-hand Bevel Tool. No. 15. Smoothing Tool for Cast Iron. No. 16. For Smoothing Wrought Iron or Steel.

If full sets are not wanted selections can be made and ordered by Numbers.

This cut represents a full set of 12 Lathe Tools for use in Engine Lathes.

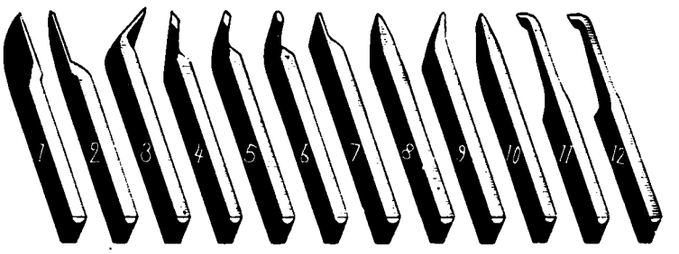


FIG. 628

1. Left-hand Side Tool. 2. Right-hand Side Tool. 3. Right-hand Bent Tool. 4. Right-hand Diamond Point. 5. Left-hand Diamond Point. 6. Round Nose Tool. 7. Cutting-off Tool. 8. Threading Tool. 9. Bent Threading Tool. 10. Roughing Tool. 11. Boring Tool. 12. Inside Threading Tool.

The above Lathe Tools are packed in Sets in separate boxes and their contents are:

Set of 20. No. 1. Left-hand Side Tool. No. 2. Right-hand Side Tool. No. 3. Left-hand Bent Side Tool. No. 4. Right-hand Bent Side Tool. No. 5. Left-hand Diamond Point. No. 6. Right-hand Diamond Point. No. 7. Bent Right-hand Diamond Point. No. 8. Half Diamond Point. R. H. No. 9. Round Nose. No. 10. Water Polishing Tool. No. 11. Straight Cutting-off Tool. No. 12. Bent Cutting-off Tool. No. 13. Straight Threading Tool. No. 14. Bent Threading Tool. No. 15. Inside Boring Tool. No. 16. Inside Threading Tool. No. 17. Bull Nose Tool. No. 18. Finishing or Necking Tool. No. 19. Roughing or Scaling Tool. No. 20. For Truing up Centers, etc.

Set of 16. Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 13, 14, 15, 16, 19 Tools as above enumerated in Set of 20.

Set of 12. Nos. 1, 2, 4, 5, 6, 9, 11, 13, 14, 15, 16, 19 Tools as above enumerated in Set of 20.

Set of 10. Nos. 1, 2, 5, 6, 9, 11, 13, 15, 16, 19 Tools as above enumerated in Set of 20.

Set of 8. Nos. 1, 2, 6, 9, 11, 13, 16, 19 Tools as above enumerated in Set of 20.

If full Sets are not wanted selections can be made and ordered by Numbers.

ARMSTRONG OFF-SET CUTTING-OFF TOOL

Complete with drop forged wrench and one self-hardening steel blade.



FIG. 629

PRICES

Nos.	Size of Shank. Inches.	Size of Blades. Inches.	Complete.	Extra Blades. Each.
30	⅜ x 1	3/32 x ⅝ x 5½	$1 65	$0 25
31	½ " 1⅛	⅛ " ¾ " 6½	1 80	35
32	⅝ " 1⅜	⅛ " ⅞ " 7½	2 30	45
33	¾ " 1½	3/16 " 1 " 8½	3 00	60
34	⅞ " 1⅝	3/16 " 1¼ " 9½	3 80	75
35	1 " 1⅞	¼ " 1¼ " 10½	4 75	95
36	1⅛ " 2	¼ " 1⅜ " 11½	6 50	1 25

ARMSTRONG STRAIGHT SHANK CUTTING-OFF TOOL

Complete with drop forged wrench and one self-hardening steel blade.



PRICES. FIG. 630

Nos.	Size of Holder. Inches.	Size of Blades. Inches.	Complete.	Net Weight. Lbs.	Net Weight. Oz.	Extra Blades. Each.
20	⅜ x 1 x 5	3/32 x ⅝ x 5½	$1 65	0	12	$0 25
21	½ " 1⅛ " 6	⅛ " ¾ " 6½	1 80	1	5	35
22	⅝ " 1⅜ " 7	⅛ " ⅞ " 7½	2 30	2	2	45
23	¾ " 1½ " 8	3/16 " 1 " 8½	3 00	3	4	60
24	⅞ " 1⅝ " 9	3/16 " 1⅛ " 9½	3 80	4	8	75
25	1 " 1⅞ " 10	¼ " 1¼ " 10½	4 75	6	8	95
26	1⅛ " 2 " 11	¼ " 1⅜ " 11½	6 50	8	5	1 25

THE "HILL" CUTTING-OFF TOOL

PRICES, FIGS. 631 AND 632

Including Wrench and one Self-hardening Blade.

No. Straight Shank. Fig. 631.	No. Rt Hand Tools. Fig. 632.	No. L. Hand Tools. Fig. 632.	Size of Shank. Inches.	Size of Cutter. Inches.	Each.	Extra Cutting off Blades. Size. Thickness.	Width.	Length.	Each.
	108	208	⅜ x ¾ x 5	⅛ or less x ⅝ x 4	$2 00	1/16, 3/32, ⅛	x ⅝ x 5		$0 30
9	109	209	½ " 1 " 5	⅛ " " ⅝ " 5	2 25	1/16, 3/32, ⅛, 5/32	x ¾ x 6		40
10	110	210	⅝ " 1¼ " 7	3/16 " " ⅞ " 6	2 60	5/32, ⅛, 5/32, 3/16	x ¾ x 7		55
11	111	211	¾ " 1½ " 8	3/16 " " 1 " 6	3 00	⅛, 3/16, ¼	x 1 x 8		75
12	112	212	⅞ " 1¾ " 9	¼ " " 1¼ " 7	4 50	⅛, 3/16, ¼	x 1¼ x 9	1	00
	112½	212½	1 " 2 " 12	¼ " " 1½ " 9	6 50	⅛, 3/16, ¼ x 5/16	x 1½ x 10	1	25

Larger sizes made to order. Made in sizes large enough to take blade ⅜ thick by 2 inches wide.

We can furnish these tools bent either right or left-hand as indicated by above numbers.

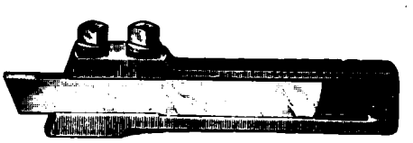


FIG. 631. STRAIGHT SHANK

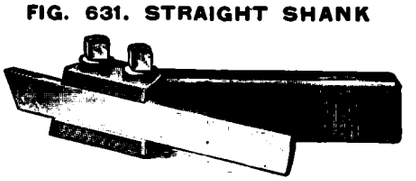


FIG. 632. LEFT HAND TOOL

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SLATE'S PATENT CUTTING OFF TOOL

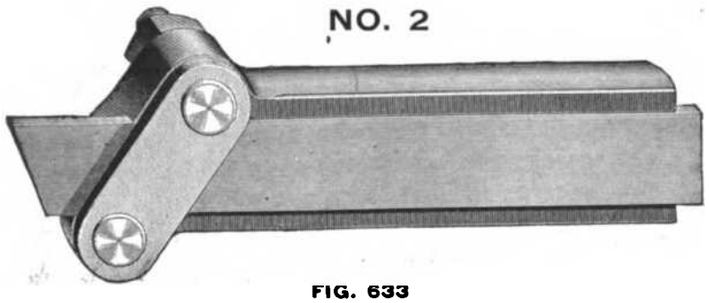


FIG. 633

This tool consists of holder and movable blade and cutter.

The holder is drop forged from steel and case hardened. The under edge of holder is extended, giving blade firm support directly under cut.

The blades are 6 inches long, ⅞ inch wide, milled and ground on both sides to give proper clearance.

This tool is handy in planer or shaper. Splining shafts, and for many uses, the 5/32 to 7/32 blades make a cheap planing tool. The shank of holder entering tool post is 1⅛ x ½ inch. Price of No. 2 holder and ⅛ blade, $2.50.

PRICES OF BLADES FOR SLATE CUTTING OFF TOOL NO. 2, FIG. 633

	Each.
1/16, 3/32 and ⅛ inch	$0 30
5/32 inch	35
3/16 "	40
7/32 "	45
¼ "	50

CRESCENT CUT OFF TOOL

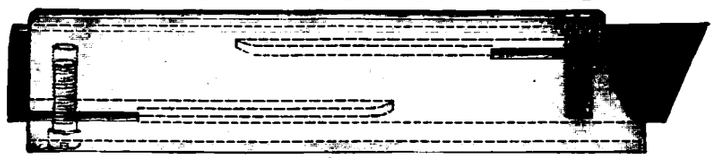


FIG. 634

The design of this tool shows a steel case hardened holder, with milled recess for receiving a blade or cutter.

This tool will meet the wants of users who desire to withdraw the holder from tool post without changing position of same.

The upper edge of recess stands at right angle to back, the lower edge at angle of 80°. Transverse slots are cut from top and bottom of either end entirely through stock of holder for a short distance, the cuts being continued, overlapping each other at the center, where the slots do not extend through the metal. The small set screws in either end are used to draw the parts together temporarily for grinding, etc., and are not intended to aid in holding it when cutter is in use.

The blade is held while in use by the pressure of the binding screw in tool post, and a sufficient stock of metal is provided to prevent holder becoming permanently bent, or set, at point of contact. The blade requires grinding on end only. The upper edge is square and always ready for use. The blade used is the same as in the slate cut off holders, with the exception of the under edge, which is beveled on 10° angle to fit slot in holder.

Size of No. 2 Holder, 1¼x½ inch; blades, 6½ inches long, ⅞ in. wide. Price of No. 2 Holder and ⅛ blade, $2.50.

Size of No. 3 Holder, 1 7/16x⅝ inch; blade, 7 inches long 1 inch wide. Price of No. 3 Holder and ⅛ blade, $3.00.

PRICES, BLADES FOR CRESCENT TOOL, FIG. 634

No. 2.	Each.	No. 3.	Each.
1/16, 3/32, and ⅛ inch	$0 30	⅛ inch	$0 40
5/32 inch	35	5/32 "	45
3/16 "	40	3/16 "	50
7/32 "	45	7/32 "	55
¼ "	50	¼ "	60

CHAMPION CUTTING OFF TOOL

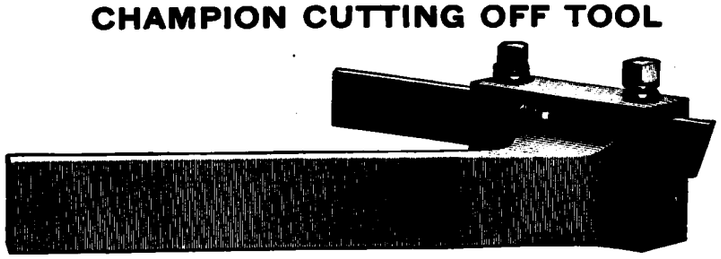


FIG. 635

Blade is held firmly, but by loosening two set screws blade can be easily moved or taken entirely out of holder.

Tool holder is forged from steel.

Blades are self-hardening steel, or tool steel if specially ordered.

Nos.	Sizes of Shank.	Sizes of Blade.	Prices, Each.	Extra Blades.
20	½x1x5	⅛ or less x⅝x6	$3 25	35 cts.
21	⅝x1¼x6	3/16 " " x⅞x6	3 50	45 "
22	¾x1½x7	¼ " " x 1 x8	4 50	65 "

ROBBINS LATHE AND PLANER TOOL

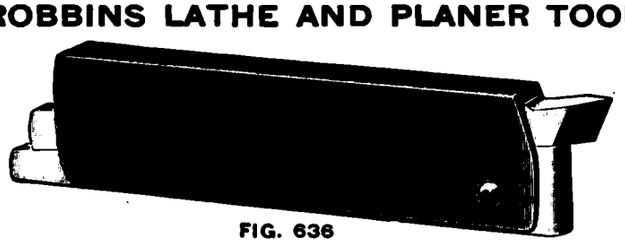


FIG. 636

As shown by the engraving, the construction of the tool is such that there are no projections to interfere with the tool post of lathe, as it has no lugs or set screws, consequently no wrench to lose.

The tool is very rigid and compact. The stock or body of tool and the gib are milled from solid bars of machine steel.

One Cutter of self-hardening steel furnished with each tool.

Nos.	Sizes of Stock, Inches.	Sizes of Cutter, In. Sq.	Complete	Ex. Cutters, Each.
00	¼ x ½	5/32	$1 50	$0 10
0	5/16 ⅝	3/16	1 75	12
1	⅜ ¾	¼	2 00	15
2	½ 1	5/16	2 50	25
3	⅝ 1¼	⅜	3 00	35
4	¾ x 1⅜	7/16	$3 75	$0 45
5	⅞ 1½	½	4 50	60
6	1 1⅝	⅝	5 50	75
7	1¼ 1⅞	¾	7 00	1 00
8	1½ 2½	1	14 00	1 50

JOHNSON'S PATENT CUTTING OFF TOOL, FOR LATHE, PLANER AND SCREW MACHINE USE

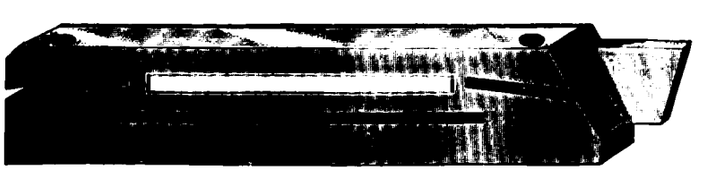


FIG. 637

PRICES, FIG. 637. HOLDERS WITH ONE BLADE

Nos.	Height, Inches.	Thickness, Inches.	Length, Inches.	Each.
00	¾	5/16	4½	$2 50
0	1	5/16	5	2 50
1	1 3/16	½	6	2 50
2	1¼	15/32	6	2 50
3	1⅜	9/16	6½	3 00
4	1 11/16	⅝	6½	3 25

DESCRIPTION, FIG. 637

The holder in this tool is a plain rectangular piece of machine steel, case hardened, with recess in side, having the edge beveled to hold blades, which have their edges beveled to correspond to holder. The small screws at each end are to insure a tight fit to blade when in use, and to hold blade when grinding. This tool is equally as good for planer as for lathe work, being as easily handled as a forged tool. Having no projection, they are especially adapted for screw machines. Blades must be ground square on top for a distance equal to depth of cut. In making blades concave on sides, the greatest amount of clearance is obtained with the least reduction in strength.

PRICES OF BLADES, JOHNSON CUT OFF TOOL, FIG. 637

Nos.	Thickness, Inches.	Width, Inches.	Each.
00	1/32, 3/64, 1/16, 5/64	½ in.	$0 40
0	1/16, 3/32, ⅛	11/16	40
1 and 2	1/16, 3/32, ⅛	13/16	30
	5/32		35
	3/16		40
	7/32		45
	¼		50
3 and 4	3/32	1	$0 40
	⅛		45
	3/16		50
	¼		55
	5/16		65

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BILLINGS' PATENT CUTTING OFF TOOL

DESCRIPTION, FIG. 638

This improved Cutting-off Tool Holder is made with two separable segments, provided with two screws for clamping the segments together for the purpose of holding the cutter fast while grinding. The force of the screw of the tool post not only retains the holder in proper position, but also holds the cutter with all the necessary additional firmness. The holder is drop forged of open-hearth 40-carbon steel, finished in a thorough manner and case hardened. The cutters are made of the best tool steel.

Price of holder, with one blade,.....$2.50



FIG. 638

PRICES OF BLADES

1/16 inch thick	each	$0 30	
3/32 " "	"	30	
1/8 " "	"	30	
5/32 " "	"	35	
3/16 inch thick	each	$0 40	
7/32 " "	"	45	
1/4 " "	"	50	

BEACH'S IMPROVED PATENT THREAD CUTTING AND DIAMOND POINT LATHE TOOL

BENT HOLDER



FIG. 639

DESCRIPTION, FIGS. 639 AND 640

STRAIGHT HOLDER



FIG. 640

PRICES, FIGS. 639 AND 640

These tools have now been in constant use for the past ten years. The cutters are made from the best steel, carefully tempered, and are exact to United States Standard gauge, viz.: 60 degrees. One of these cutters, when used up, can be replaced for 25 cents.

	Size of Holder, Inches.	Thickness of Cutter, Inch.	Straight or Bent Holder	Extra or Duplicate Cutters.
No. 2 tool with two cutters, fine or V adjustment.	15/16 x 1/2 x 5 7/8	3/16	$2 50	$0 25
No. 3 tool with two cutters, fine or V adjustment.	1 1/16 x 17/32 x 5 7/8	1/4	3 00	35

Clamps and nuts, 30 cents each. Cutters for U. S. Standard threads will be furnished at an advance of 5 cents each on above prices.

In ordering U. S. Standard cutters, state number of threads wanted to the inch.

RHODES' SQUARE THREADING TOOL

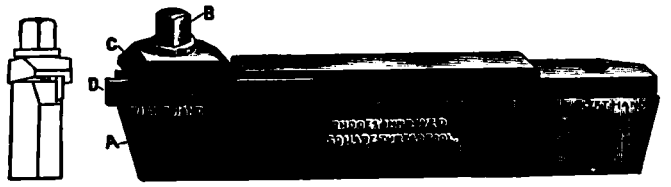


FIG. 641

Above cuts represent a convenient and economical holder and tool for cutting square threads. Right hand threads are cut with one end of holder forward. By simply reversing holder and cutter, left hand threads may be cut. The strap which clamps the cutter has an elongated hole, and adjusts itself to different widths of cutter, pressing the cutter against straight side of holder, and holding it rigidly in place. The cutters have clearance on side. When nice work is desired, a cutter one size smaller than that required for finishing can be used for roughing out. Should a cutter require sharpening before the thread is finished, it can be taken out and ground without disturbing the holder; then, when replaced, it will be exactly right to resume its cut, which is a great advantage. Dimensions of holder, 1/2 x 1 1/8 x 5 1/2. Holder, with one cutter, for any number of threads per inch in list; weight, 14 ounces; price, $3.50. Single cutters, for any of the following threads, 3, 4, 5, 6, 7, 8, 9, 10, 12, 14, 16; price, 40 cents.

Weight of holder and set of eleven cutters, in box, 15 1/4 ounces. Price, $7.50.

Weight of cutters: No. 3, 1/2 ounce; No. 6, 1/4 ounce; No. 9, 1/8 ounce.

Weight of strap, 1/2 ounce. Price, 50 cents.

Weight of screw (of steel), 3/8 ounce. Price, 10 cents.

Cutters of special pitches are furnished at special prices. That proper clearance may be had, cutters are regularly made 1/2000ths inch wider than they should be to cut the groove the exact width of the land for any given pitch.

An order for cutters should state whether they are for cutting taps or screws.

CHAMPION SQUARE THREAD TOOLS



FIG. 642

The above illustrates Offset Square Thread Tool.

With it any size thread can be cut, either right or left hand, and to and from a shoulder.

Price of holder, with one cutter..... $4 00
Extra cutter, 4 to 20 pitch, each..... 40



FIG. 643

Price of holder.....$1.00 Price of cutter..... $1.20

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THREADING TOOLS

OFFSET SPRING THREADING TOOL

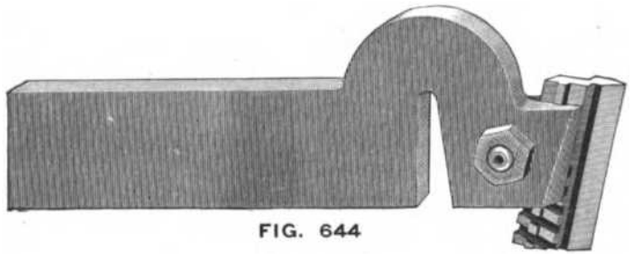


FIG. 644



TOP VIEW OF FIG. 644

DESCRIPTION, FIGS. 644 AND 645

These holders, Figs. 644 and 645, are made of good quality of steel, drop forged and finished true, giving the same clearance for each cutter.

The shape of the holder gives just enough spring to prevent chattering while cutting the thread.

The cutters are made of special tool steel to insure best results.

The same cutter is used in cutting right or left hand threads.

Offset tool will cut close to shoulder.

DIRECTIONS FOR USE

Grind top of cutter only to sharpen and keep it parallel with holder. In setting the tool see that the point of cutter is level with center of lathe.

PRICES, FIG. 644

With one cutter and one wrench. Holders are furnished with one sharp V or U. S. Standard cutter. All holders will be shipped with sharp V cutter unless otherwise ordered.

Nos.		Each.
2	Straight Spring Holder, size ½ x 1, with cutter for 7 pitch or finer	$2 50
3	Offset Spring Holder, size ½ x 1, with cutter for 7 pitch or finer,	2 75
4	" " " ⅝ x 1⅜, with cutter for 4 pitch or finer,	4 00

SOLID HOLDER THREADING TOOL

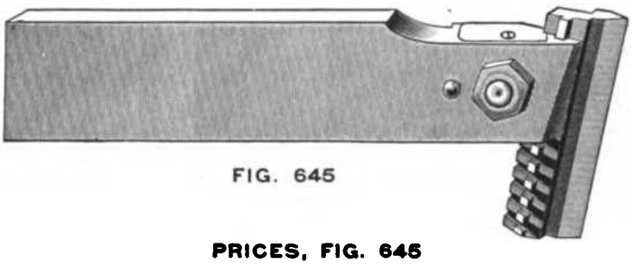


FIG. 645

PRICES, FIG. 645

With one cutter and one wrench. Holders are furnished with one sharp V or U. S. Standard cutter. All holders will be shipped with sharp V cutter unless otherwise ordered.

Nos.		Each.
1	Offset Holder, size ⅜ x ¾, with cutter for 12 pitch or finer,	$2 50
5	Offset Solid Holder, ½ x 1, " " " 7 " " "	2 75
6	" " " ⅝ x 1¼, " " " 4 " " "	4 00

PRICES EXTRA CUTTERS FOR BOTH FIGS. 644 AND 645

	Each.
V Cutter, straight, 7 pitch	$0 50
" " offset, 7 "	75
" " " 4 "	1 25

U. S. STANDARD CUTTER

	Each.
Straight Cutter, 7 pitch and finer	$0 60
Offset " 7 " " "	80
" " 4 " to 7 pitch	1 25

WHITWORTH STANDARD THREAD CUTTER

	Each.
7 pitch and finer	$1 00
4 to 7 pitch	1 25

NOTICE

In ordering extra cutters be particular to state whether sharp V, U. S. Standard or Whitworth is desired, otherwise sharp V will be sent.

THE ARMSTRONG THREADING TOOL

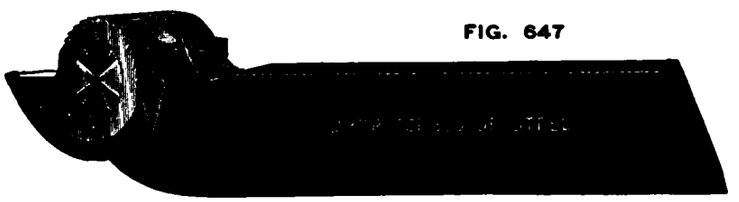


FIG. 647

DESCRIPTION, FIG. 647

The holder is drop forged from steel and is case hardened. The retaining boss, the teeth of which engage adjustment teeth on cutter, is forged solid on the holder.

The cutters are drop forged of special grade tool steel carefully machined and tempered; they are backed off to give the amount of clearance which practice has demonstrated will give best results on various metals.

The adjusting and locking device is simple and positive. A glance at accompanying illustration rendering description unnecessary.

PRICES, FIG. 647

Complete with drop forged wrench, and one single point cutter, sharp V or U. S. Standard.

Nos.	Sizes.			Each.
50	⅜ x ¾ x 5 inches			$2 25
51	½	1	6 "	2 75
52	⅝	1¼	7 "	3 50
53	¾	1½	8 "	4 50

Tools equipped with single point sharp V cutter will always be shipped unless otherwise ordered.

ARMSTRONG THREADING TOOLS

Equipped with one single point Whitworth cutter.

Size	50	51	52	53
Price	$2 50	$3 10	$4 00	$5 00

UNIVERSAL THREADING TOOL



FIG. 646

The circular shape of the cutter insures a good backing for the point, thus avoiding the constant snapping off of the cutting-edge. The tool, being round and always ground on the top of tooth, never alters its shape.

The cutters are made with a taper shank, which, by means of binding screw, are drawn into the holder, thus keeping the cutter from turning when under pressure. They are relieved back same as a form cutter.

It must always be set on the center, and will cut either right or left hand threads, or in fact any form desired. Always grind on the face of the tool.

The holders are all ground true and square before hardening.

All screws are hardened and all parts are interchangeable.

The V thread tools are all ground to an angle of 60 degrees after hardening. Price, $3.50.

EXTRA CUTTERS FOR FIG. 647

Can furnish single point and chasing cutters to cut the pitches listed beneath in sharp V, Whitworth or U. S. Standards.

PITCHES, SINGLE POINT CUTTERS

Size Tool.	Pitches.
50	6 to 20 threads per inch
51	5 " 20 " "
52	4 " 20 " "
53	3 " 20 " "

CHASER CUTTERS

Size Tool.	Pitches. Threads per inch.								
50			14	16	18	20	24		
51		12	13	14	16	18	20	24	
52	8	10	11	12	13	14	16	18	20
53	8	10	11	12	13	14	16	18	20

PRICES CUTTERS FOR FIG. 647

SINGLE POINT CUTTERS

Size.	50	51	52	53
Sharp V	$0 45	$0 55	$0 70	$0 90
U. S. Standard	50	60	75	95
Whitworth	75	90	1 15	1 40

CHASING CUTTERS

Size.	50	51	52	53
Sharp V	$0 90	$1 05	$1 20	$1 30
U. S. Standard	0 90	1 05	1 20	1 30
Whitworth	1 25	1 40	1 65	1 80

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THREADING, BORING AND TURNING TOOLS

BORING AND INSIDE THREADING TOOL

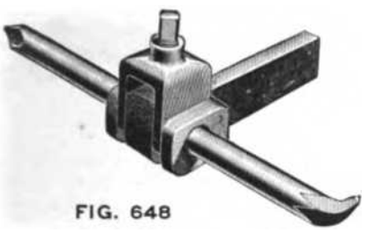


FIG. 648

DESCRIPTION
FIG. 648

Cutter-bars for inside threading are furnished for either U. S. standard or sharp V threads, and may be ground many times without changing their shape. Size of shank, ½ x 1⅛. Parts interchangeable. The holder is made of steel. The screws are thoroughly hardened. The largest cutter is made with a drill point, to be used as a starter; a twist drill may then be inserted in the holder, a hole drilled and finished to size with one of the cutter-bars, and, if required, threaded, without removing the holder from the tool-post.

	Prices, Each.
Holder, with three cutters for boring; weight, 59 ounces,	$2 50
Cutter No. 1, 5/16 diameter. 8 inches long, for boring; weight, 3½ ounces	20
For inside threading; weight, 3½ ounces	50
Cutter No. 2, bars ½ diameter, 9 inches long, for boring; weight, 9½ ounces	30
For inside threading; weight, 9½ ounces	60
Cutter No. 3, bars 5/8 diameter, 10 inches long, for boring; weight, 15½ ounces	50
For inside threading; weight, 15½ ounces	80

No extra charge for cutters of special length or size, except for extra weight of steel.

Parties ordering inside threading tool should state pitch of thread and diameter of holes in which they are to be used.

CHAMPION BORING TOOL ATTACHMENT

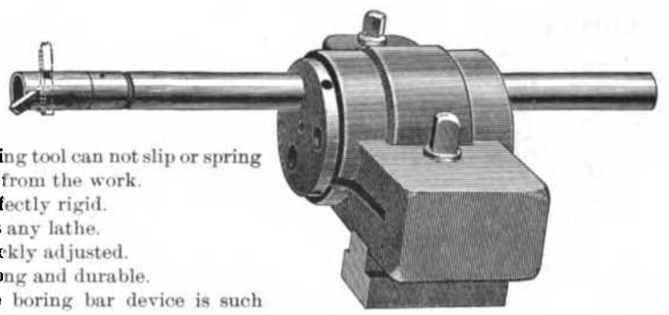


FIG. 649

Boring tool can not slip or spring away from the work.
Perfectly rigid.
Fits any lathe.
Quickly adjusted.
Strong and durable.
The boring bar device is such that the cutters can be set to different angles in a moment's time—without changing the bar.

When the cutter needs grinding it can be quickly removed from the bar and replaced without disturbing set of bar.

PRICES, FIG. 649

(Only one boring bar is included in price of attachment.)

Nos.	Size of Boring Bar, Inches.	Size of Cutters, Inches.	Each.
26	5/8 x 18	3/16	$10 00
	7/8 18	1/4	
	1⅛ 18	3/8	
27	1⅛ 24	3/8	12 00
	1¼ 24	7/16	
	1½ 24	½	

PRICES EXTRA BORING BARS

5/8 x 18 inches	Each,	$2 50
7/8 18 "	"	2 75
1⅛ 18 and 24 inches	"	3 00
1¼ 24 inches	"	3 25
1½ 24 "	"	3 50

Extra T blocks, each, 75 cents. Larger size boring attachments made to order.

Unless otherwise ordered the larger bar for attachment will be sent.

In ordering, it is necessary to furnish us with exact measurements of the tool post slot in lathe, also distance from top of cross slide to center of lathe for which you wish attachment.

In order to make it fit different size lathes extra T blocks are furnished at a small additional cost.

ARMSTRONG BORING TOOL

DESCRIPTION, FIG. 650



FIG. 650

This tool is made entirely of steel, the wearing parts are hardened, and it is finished in a first-class manner. The bar can be extended from its holder to any desired length to suit depth of hole.

Each set is put up in a substantial box. It consists of holder and bar with straight and 45 degree end caps, two cutters (ground for boring), wrench and a piece of self-hardening steel, about enough for 10 extra cutters.

PRICES, FIG. 650

Nos.	Sizes of Shank.	Sizes of Bar.	Sizes of Cutter.	Complete, Each.	Net Weight.	Ext. Cutters. Ground for Boring
8	⅜ x ¾ in.	9/16 in. round	3/16 in. square	$3 00	2 lb. 0 oz.	12c. each
9	½ 1 "	¾ " "	¼ " "	3 60	4 " 0 "	15c. "
10	5/8 1¼ "	15/16 " "	5/16 " "	4 75	7 " 5 "	20c. "
11	¾ 1½ "	1⅛ " "	⅜ " "	6 75	12 " 5 "	30c. "

THE HILL BORING TOOL

DESCRIPTION, FIG. 651

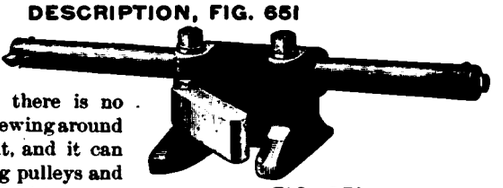


FIG. 651

With this tool there is no danger of point screwing around and increasing cut, and it can be used for turning pulleys and full swing of lathe without unscrewing point. The support of bar need be no farther from point than depth of hole to be bored.

To attach to lathe, remove tool post ring, insert loose tongue in tool post and clamp down on cross slide.

PRICES, FIG. 651

Including wrench and enough self-hardening steel to make six points.

Nos.	Sizes of Tool Shank.	Sizes of Bar.	Size Cutter.	Each.
13	½ x 1 inch	¾ inch	¼ in. square	$3 50
14	5/8 1¼ "	1 "	5/16 "	4 50
15	¾ 1½ "	1¼ "	⅜ "	6 00
16	⅞ 1¾ "	1½ "	7/16 "	9 00
17	1 2 "	1¾ or 2 "	½ "	12 00

Larger sizes made to order.

In ordering boring tools, give measurement from center to top of cross slide, also diameter of tool post.

THE EBERHARDT TURNING TOOL, FOR LATHE, PLANER AND SHAPER WORK

PRICES, FIG. 652

(Price includes wrench and three cutters of self-hardening steel.)

Straight Shank.	Left Hand.	Right Hand.	Size of Holder.	Size of Cutter.	Each.
21					
22	122	222	½ x 1 x 7 inch	¼ in. square	$1 80
23	123	223	5/8 1¼ 7 "	5/16 " "	2 30
24	124	224	¾ 1⅜ 9 "	⅜ " "	3 00
25	125	225	⅞ 1½ 10 "	7/16 " "	3 80
26	126	226	1 1⅝ 11 "	½ " "	4 75
27	127	227	1¼ 1⅞ 12 "	5/8 " "	7 00
28	128	228	1½ 2¼ 16 "	¾ " "	12 00

STRAIGHT SHANK

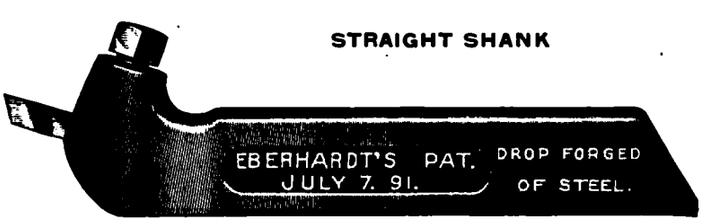


FIG. 652

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LATHE TOOL HOLDERS

ARMSTRONG STRAIGHT SHANK TOOL HOLDERS

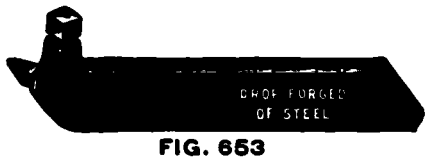


FIG. 653

PRICES

Complete with drop forged wrench and three self hardening steel cutters.

Nos.	Size of Holders. Inches.	Size of Cutter, Ins. Square.	Complete.	Net Weight, Lbs.	Net Weight, Oz.	Extra Cutters, Each.
0	⅜ x ¾ x 5	3/16	$1 65	0	8	$0 12
1	½ x 1 x 6	¼	1 80	1	0	15
2	⅝ x 1¼ x 7	5/16	2 30	1	12	22
3	¾ x 1⅜ x 8	⅜	3 00	2	10	30
4	⅞ x 1½ x 9	7/16	3 80	3	12	40
5	1 x 1⅝ x 10	½	4 75	5	5	50
6	1¼ x 1⅞ x 12	⅝	7 00	9	6	75
7	1½ x 2¼ x 16	¾	12 00	18	6	1 50

ARMSTRONG OFFSET TOOL HOLDERS

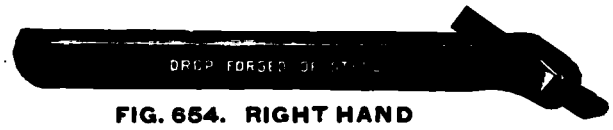


FIG. 654. RIGHT HAND

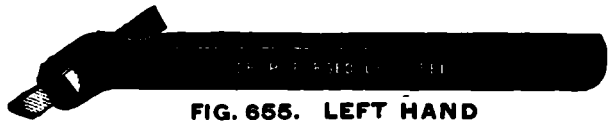


FIG. 655. LEFT HAND

PRICES, FIGS. 654 AND 655

Complete with drop forged wrench and two self hardening steel cutters, ground to shape.

Nos. Right or Left,	Size of Holders. Inches.	Size of Cutters, Ins. Square.	Complete.	Net Weight, Lbs.	Net Weight, Oz.	Extra Cutters, Each.
0	⅜ x ¾ x 6	3/16	$1 65	0	12	$0 12
1	½ x 1 x 8	¼	1 80	1	6	15
2	⅝ x 1¼ x 9	5/16	2 30	2	5	22
3	¾ x 1⅜ x 10	⅜	3 00	3	6	30
4	⅞ x 1½ x 11	7/16	3 80	5	0	40
5	1 x 1⅝ x 12½	½	4 75	6	14	50
6	1¼ x 1⅞ x 15	⅝	7 00	11	3	75
7	1½ x 2¼ x 20	¾	12 00	22	8	1 50

Note.—In ordering always specify whether right or left hand is wanted.

THE HILL DIAMOND POINT FOR LATHE, PLANER AND SHAPER WORK



FIG. 656. STRAIGHT SHANK



FIG. 657. RIGHT HAND

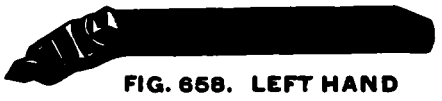


FIG. 658. LEFT HAND

PRICES, FIGS. 656, 657 AND 658

Straight Shank. Fig. 656.	Left Hand. Fig. 658.	Right Hand. Fig. 657.	Size of Holders. Inches.	Size of Cutters. Ins. Square.	Each.
1	101	201	⅜ x ¾ x 6	3/16	$1 60
2	102	202	½ x 1 x 6	¼	1 75
3	103	203	⅝ x 1¼ x 7	5/16	2 25
4	104	204	¾ x 1½ x 8	⅜	2 75
5	105	205	⅞ x 1⅝ x 10	7/16	$3 50
6	106	206	1 x 1¾ x 12	½	4 25
7	107	207	1½ x 2 x 14	⅝	6 25

SLATE'S DIAMOND POINT HOLDER, NO. 1

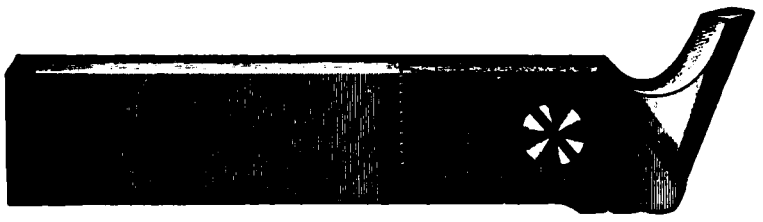


FIG. 659

The shank of holder is 1¼ x ½ inch. These tools are drop forged from best tool steel.

Price of holder and diamond point, $1.00. Diamond points, each, 20 cents.

SLATE'S OFFSET HOLDER

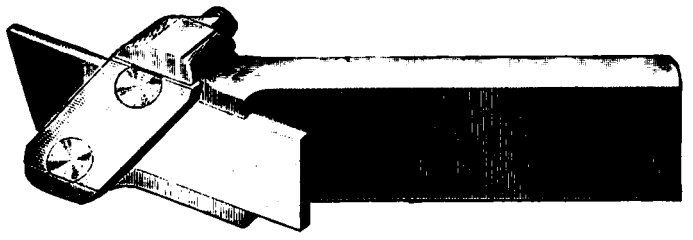


FIG. 661

Short blades from the straight holder can be placed in this. With the holder a full length blade is sent. Shank of holder, 1⅛ x ½ inch.

Price of No. 2 offset holder and ⅛ blade, $2.50.

CARR'S COMBINATION TOOL HOLDERS

It will readily be seen that the holder combines two in one, and its usefulness will be apparent to all users of such tools. We furnish two tools with each holder, one diamond point and one ground for cutting off on one end and threading on the other.

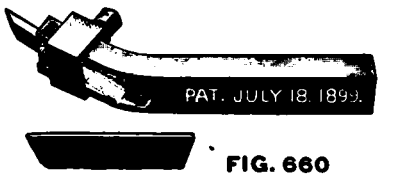


FIG. 660

We also furnish side tools, in two sizes, either right or left.

Prices of side tool holders always furnished right unless otherwise ordered.

PRICES, FIG. 660

Combination tool holder. Nos.	Size of Shanks, Inches.	Size of Cutters, Ins. Square.	Each.	Side tool holder. Nos.	Size of Shanks, Inches.	Size of Cutters, Inches.	Each.
1	⅜ x ¾ x 6	¼	$1 90	2	½ x 1 x 6	¼ x ¾ x 3¼	$2 00
2	½ x 1 x 6	¼	2 00	3	⅝ x 1¼ x 7	¼ x ⅞ x 3¾	2 75
3	⅝ x 1¼ x 7	⅜	2 75				
4	¾ x 1⅜ x 9	⅜	3 50				

THE WESTERN DIAMOND POINT TOOL

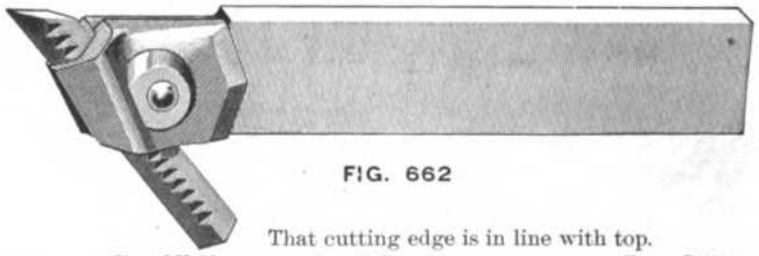


FIG. 662

That cutting edge is in line with top.

Nos.	Size of Holder. Inches.	Size of Cutters. Inches Square.	Each.	Extra Cutters, Each.
1	½ x 1 x 6	5/16	$1 75	$0 15
2	⅝ x 1¼ x 7	⅜	2 25	20
3	¾ x 1½ x 8	7/16	2 75	25
4	⅞ x 1⅝ x 10	½	3 50	30
5	1 x 1¾ x 12	9/16	4 25	40

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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ARMSTRONG PLANER TOOL



FIG. 663

Each tool is packed in a neat, substantial box, and the following prices include two self-hardening steel cutters, ground to shape, and a drop forged wrench carefully fitted :

No.	Size Shank, Inches.	Length, Inches.	Size Cutter, Inches.	Complete.	Extra Cutters, Each.
40	½ x 1	7	¼ x ⅜	$2 75	$0 20
41	¾ " 1¼	9	⅜ " ½	4 50	40
42	1⅛ " 1½	12	½ " ¾	7 00	70
43	1⅜ " 1¾	15	⅝ " ⅞	11 00	1 00
44	1⅞ " 2	18	¾ " 1	16 00	2 00

SELF-HARDENING STEEL

Extra warranted Self-hardening Steel for use in Armstrong Boring Tools and Tool Holders.

Sold in 3-foot bars only.

Every bar is carefully tested and carries our guarantee.

PRICES

Length, Feet.	Sizes. Inch. Square.	Prices.	Sizes, Inches.	Prices, Each.
3	5/16	$0 50	¼ x ⅜	$0 85
3	¼	60	⅜ " ½	1 60
3	5/16	85	½ " ¾	3 00
3	⅜	1 20	⅝ " ⅞	4 20
3	7/16	1 65	¾ " 1	5 75
3	½	2 10		
3	⅝	3 00		
3	¾	4 50		

CHAMPION PLANER TOOL

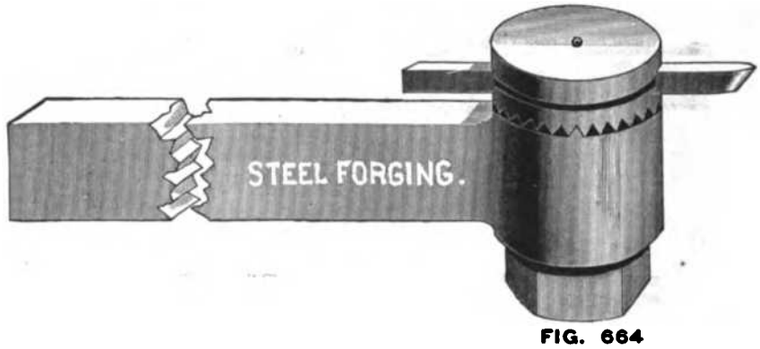


FIG. 664

A handy tool, forged from steel, needed by every one using a planer. Cutters are self-hardening steel and can be shifted to any angle, right or left hand, by simply loosening nut. When nut is again tightened, cutter cannot shift from its position. A new improvement is, the cutter rests on a notched plate that engages with notches in the head of tools, so that cutter cannot shift position while in use.

PRICES

No.	Size of Shank.	Size of Cutter.	Prices.	Extra Cutters.
19	½ x 1 x 8	5/16 inch square	$3 00	$0 22
20	⅝ " 1¼ " 9	⅜ "	4 50	30
21	¾ " 1⅜ " 10	7/16 "	5 25	40
22	⅞ " 1½ " 11	½ "	6 00	50
23	1 " 1½ " 12½	⅝ "	7 00	75
24	1½ " 2 " 15	¾ "	11 00	1 25
25	2 " 2¼ " 20	⅞ "	16 00	1 50

BEVEL ROLLED STEEL

FOR USE IN ARMSTRONG CUTTING-OFF TOOLS

NOTE—This steel is rolled to approximate width to fit Armstrong Cutting-off Tools, but requires grinding on edges to bring to exact size.

PRICES

Size of Steel, Inches.	Fits Tools Nos.	Length, Feet.	Prices.
3/32 x 5/8	20 and 30	3	$0 75
1/8 " ¾	21 " 31	3	1 00
1/8 " ⅞	22 " 32	3	1 25
3/16 " 1	23 " 33	3	1 60
3/16 " 1⅛	24 " 34	3	2 00
¼ " 1¼	25 " 35	3	2 75
¼ " 1⅜	26 " 36	3	3 10

NICHOLSON'S PATENT EXPANDING LATHE MANDRELS

PRICES, FIG. 665

No. of Mandrel.	Expansion, Inches.	Length of Arbor, Inches.	Length of Jaw Bearing, Inches.	Prices.	
00	¾ to ⅞	7	1¾	$ 7 00	Special
0	⅞ " 1	7½	2	7 00	Special
1	1 " 1¼	8¼	2½	9 00	Standard Set.
2	1¼ " 1 9/16	10	3	10 50	Standard Set.
3	1 9/16 " 2	13¼	4	14 50	$125 00 Standard Set.
4	2 " 2½	15¼	5	20 00	$125 00 Standard Set.
5	2½ " 3 7/32	17¼	5¾	32 00	Standard Set.
6	3 7/32 " 4	18	6	39 00	Standard Set.
7	4 " 4 29/32	20	6	40 00	Standard Set.
8	4 29/32 " 5 15/16	21½	6	41 25	$125 00 Standard Set.
9	5 15/16 " 7 1/32	22½	6	43 75	Standard Set.

The Nos. 00 and the No. 0 mandrels each have but one set of jaws; Nos. 1, 2, 3 and 4 each have two sets, and Nos. 5, 6, 7, 8 and 9 each have three sets, marked A, B and C respectively.

The list below gives the sizes taken by each set of jaws.

No. Mandrel.	A Jaws. Expansion in Inches.	B Jaws. Expansion in Inches.	C Jaws. Expansion in Inches.
00	¾ to ⅞		
0	⅞ " 1		
1	1 " 1¼	1⅛ to 1¼	
2	1¼ " 1 13/32	1 13/32 " 1 9/16	
3	1 9/16 " 1 25/32	1 25/32 " 2	
4	2 " 2¼	2¼ " 2½	
5	2½ " 2¾	2¾ " 2 31/32	2 31/32 to 3 7/32
6	3 7/32 " 3 15/32	3 15/32 " 3¾	3¾ " 4
7	4 " 4 5/16	4 5/16 " 4⅝	4⅝ " 4 29/32
8	4 29/32 " 5 7/32	5 7/32 " 5 19/32	5 19/32 " 5 15/16
9	5 15/16 " 6 5/16	6 5/16 " 6 11/16	6 11/16 " 7 1/32

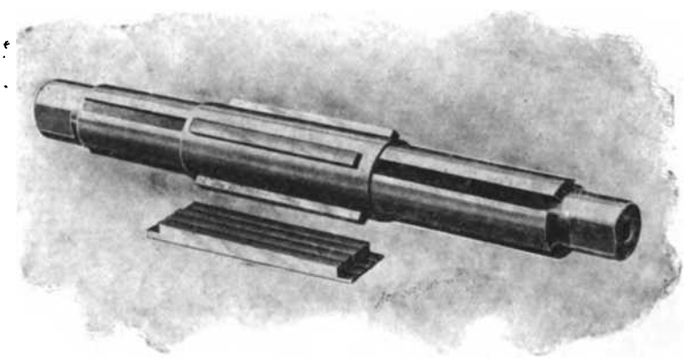


FIG. 665

These mandrels will take every possible size hole, from 1 inch to 7 inches, inclusive.

They are a well-made and substantial tool. Parts subjected to wear are all hardened and with ordinary care they will last for years. All parts are made interchangeable and can easily be replaced. They are finished by grinding; the surface fits are such that their grip is surprising, and they need not be driven as hard as a solid arbor would to hold. Work requiring facing, as well as turning, can be placed so as to project over the ends of the jaws, where it can be faced clean into the bore without cutting into the mandrel.

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THE CHAMPION EXPANDING MANDREL



FIG. 666

SLEEVE FOR FIG. 666





TAPER ARBOR FOR FIG. 666

DESCRIPTION, FIG. 666

This mandrel consists of only two parts, a taper arbor and a flexible round sleeve, so there is nothing to get out of order or be lost.

Having no jaws it cannot distort or injure work.

It is suitable for all classes of work, large and small. All kinds of metal (even the softest), and is therefore indispensable to every up-to-date workshop.

It automatically adjusts itself to the work being done, and therefore cannot get out of true or slip.

It always allows of overhanging when surfacing, thus obviating the liability of cutting into mandrel.

The greatest accuracy is insured by all parts being ground after hardening.

PRICES

No.	Range, Inches.	Each.	No.	Range, Inches.	Each.	No.	Range, Inches.	Each.	No.	Range, Inches.	Each.
1	½ to 9/16	$4 00	4	¾ to ⅞	$ 5 50	7	1¼ to 1⅝	$12 75	10	2¾ to 3¾	$31 50
2	9/16 " 21/32	4 50	5	⅞ " 1	6 25	8	1½ " 2	14 60	11	3¾ " 5	44 00
3	21/32 " ¾	5 00	6	1 " 1⅜	11 00	9	2 " 2¾	22 00	12	5 " 6½	58 50

NOTE.—All sizes from No. 1 to No. 5 inclusive have one flexible sleeve only. All sizes from No. 6 upward have two flexible sleeves to obtain maximum expansion.

NEW EXPANDING MANDREL

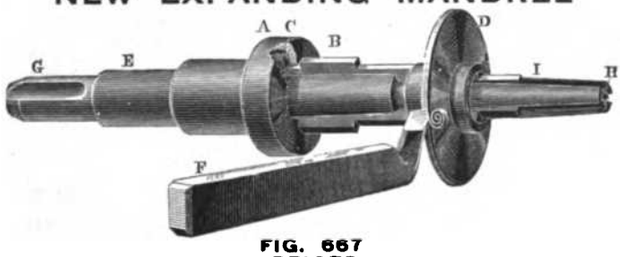


FIG. 667

PRICES

MACHINIST'S SIZE			AMATEUR'S SIZE
No	Inches.	Each.	Taking anything from ⅜ to 1 inch inclusive.
1	1½ to 1	$10 00	
2	1 " 1½	14 00	
3	1½ " 2	18 00	Price.....$5 00
4 screws	2 " 3	32 00	
5 "	3 " 4	44 00	

MALLEABLE IRON LATHE DOG

With steel screws. U. S. Standard. Points hardened.



FIG. 669

No.	Inch.	Each.	No.	Inches.	Each.	No.	Inches.	Each.
1	⅜	$0 30	5	1¼	$0 50	9	2½	$1 20
2	½	30	6	1½	60	10	3	1 30
3	¾	40	7	1¾	90	11	3½	1 40
4	1	40	8	2	1 00	12	4	1 60

Small set of 8, $4.50. Full set of 12, $10.00.

INDISPENSABLE LATHE DOG

DESCRIPTION, FIG. 668

It can be attached to work after the work is centered in the lathe. It can be used equally as well between collars as upon plain or straight work.

A large dog can be used on a light mandrel where the work is large in circumference. It can also be used for locking work on the mandrel in case of its slipping.

They are made of drop-forged steel and fitted with steel set screws.

CLOSED OPEN



FIG. 668

PRICES, FIG. 668

No.	Each.
0. For amateurs, jewelers and tool makers, takes from ¼ to ¾ inch	$1 00
1. " general lathe work, takes from ¼ to 1¼ inches	1 50
2. " " " " " " ½ " 2¼ "	2 50
3. " " " " " " 1 " 3¼ "	3 50
Per set of three to take from ¼ to 3¼ inches, comprising one each, Nos. 1, 2 and 3	7 50

DROP FORGED LATHE DOG

WITH BENT TAIL

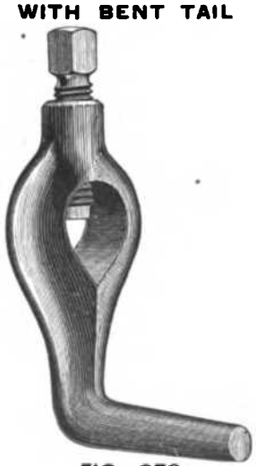


FIG. 670

PRICES, FIG. 670

Number	1	2	3	4	5	6	7	8	9	10	11	12
Size dog	⅜	½	¾	1	1¼	1½	1¾	2	2½	3	3½	4
Prices, each	$0 50	$0 60	$0 70	$0 80	$0 95	$1 10	$1 25	$1 40	$1 60	$1 80	$2 00	$2 30
Diameter screw	5/16	⅜	7/16	½	½	9/16	⅝	11/16	11/16	¾	⅞	⅞
Length screw	1⅛	1¼	1⅝	2	2¼	2⅜	2½	2¾	3	3¼	3½	3¾
Extra screws, each	$0 05	$0 06	$0 07	$0 08	$0 09	$0 10	$0 12	$0 18	$0 20	$0 22	$0 33	$0 35

PRICES, FIG. 671

Number	21	22	23	24	25	26	27	28	29	30	31	32
Size dog	⅜	½	⅝	1	1¼	1⅜	1¾	2	2½	3	3½	4
Prices, each	$0 30	$0 35	$0 40	$0 45	$0 55	$0 65	$0 80	$1 05	$1 30	$1 65	$2 00	$2 30
Diameter screw	5/16	⅜	7/16	½	½	9/16	⅝	11/16	11/16	¾	⅞	⅞
Length screw	1⅛	1¼	1⅝	2	2¼	2⅜	2½	2¾	3	3¼	3½	3¾
Size hole in head of screw	5/32	3/16	7/32	¼	¼	¼	5/16	5/16	5/16	⅜	7/16	7/16
Extra screws, each	$0 05	$0 06	$0 07	$0 08	$0 09	$0 10	$0 12	$0 18	$0 20	$0 22	$0 33	$0 35

WITH STRAIGHT TAIL



FIG. 671

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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LIGHT STEEL DOG

With steel screws. U. S. standard. Points hardened.



FIG. 672

PRICES, FIG. 672

Nos.	Inches.	Each.
1	⅜	$0 35
2	½	35
3	¾	50
4	1	60
5	1¼	75
6	1½	85
7	1¾	1 00
8	2	1 10
Small set of 8		5 50
9	2½	1 40
10	3	1 50
11	3½	1 70
12	4	1 90
Full set of 12		12 00

HEAVY STEEL DOG

With steel screws. U. S. standard. Points hardened.

This dog has a very heavy boss, so that if the thread wears, a heavier screw can be substituted.

PRICES, FIG. 673

Nos.	Inches.	Each.	Nos.	Inches.	Each.
1	⅜	$0 40	14	2½	$1 45
2	½	50	15	3	1 60
3	⅝	60	16	3½	1 80
4	¾	60	17	4	2 10
5	⅞	70	18	4½	2 75
6	1	70	19	5	3 25
7	1⅛	80	14½ extra	2¾	1 60
8	1¼	80	15½ "	3¼	1 80
9	1⅜	95	16½ "	3¾	2 10
10	1½	95	20 "	5½	4 00
11	1¾	1 10	21 "	6	5 00
12	2	1 20	22 "	7	6 00
13	2¼	1 35	23 "	8	7 00



FIG. 673

STRAIGHT TAIL DOG

With steel screws. U. S. standard, and the points hardened. To be driven from a stud in the face plate.



FIG. 674

PRICES, FIG. 674

Nos.	Inches.	Each.	Nos.	Inches.	Each.
1	¾	$0 60	15	4½	$2 75
2	⅞	70	16	5	3 25
3	1	70	17	5½	4 00
4	1⅛	80	18	6	5 00
5	1¼	80	19	7	6 00
6	1⅜	95	20	8	7 00
7	1½	95			
8	1¾	1 10		Extra Sizes	
9	2	1 20	⅝	inches	$0 40
10	2¼	1 35	½	"	50
11	2½	1 45	⅝	"	60
12	3	1 60	2¾	"	1 60
13	3½	1 80	3¼	"	1 80
14	4	2 10	3¾	"	2 10

DOUBLE TAIL LATHE DOGS



FIG. 675

PRICES, FIG. 675

Inches.	Each.
2	$4 50
2½	5 75
3	6 25
3½	6 75
4	8 25
4½	8 75
5	9 25
5½	10 00

PRICES, FIG. 676

Inches.	Each.
6	$12 00
7	13 50
8	14 50
9	17 00
10	19 50
11	26 00
12	28 00



FIG. 676

PATENT BOLT DOG



FIG. 679

Single dogs....25c each.

Fig. 679. Sets of 12 sizes, 5/16 to 2 inches, inclusive. $1 00

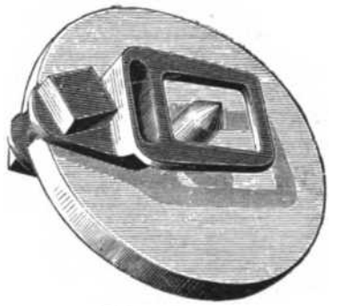


FIG. 679

Showing dog attached to driving face plate of lathe.

AMATEUR'S DOG

For small lathes, amateurs, jewelers, etc. It is steel with hardened screws. U. S. standard.



FIG. 677

PRICES, FIG. 677

No. 1, ⅜ of an inch bore	$0 30
" 2, ½ " " "	35
" 3, ¾ " " "	45
" 4, 1 inch bore	50
Full set	1 60

STEEL DOG WRENCH

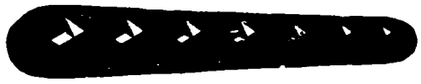


FIG. 678

Fitting screw heads from ⅜ to ¾ inch square. Will answer for both dogs and tool post.

Price....75c.

CLAMP DOG

Made of Malleable Iron.

PRICES, FIG. 681

Nos.	Each.
1 opens 1 inch	$1 00
2 " 1½ "	1 10
3 " 2 "	1 30
4 " 3 "	1 60
Sets of four	5 00

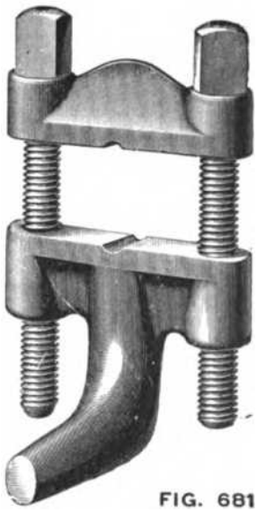


FIG. 681

STEEL CLAMP DOG

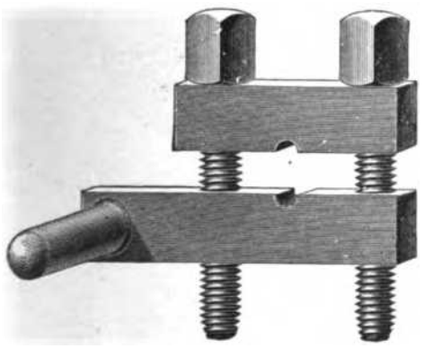


FIG. 680

PRICES, FIG. 680

Nos.	Each.
1 opens 1 inch	$1 25
2 " 1½ "	1 50
3 " 2 "	1 75
4 " 3 "	2 00
Full set	6 50

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CLAMP DOG



FIG. 682

PRICES, FIG. 682

Nos.		Each.
1.	1¾ in. between screws	$1 50
2.	2¼ " " "	2 00
3.	2¾ " " "	2 50
	Per set of three	5 50

Nos.		Each.
1.	Screw	$0 10
2.	"	15
3.	"	20

PRICES PARTS, FIG. 683

Nos.		Each.
1.	Screw, for Swivel Jaw	$0 12
2.	" " "	18
3.	" " "	25

CLAMP DOG WITH SWIVEL JAW

The accompanying cut shows a new patent clamp dog for holding taper pieces. The top jaw rolls in the eye of the screw, conforming to the taper of the piece, holding it securely. It can also be used on straight pieces with the same good results.

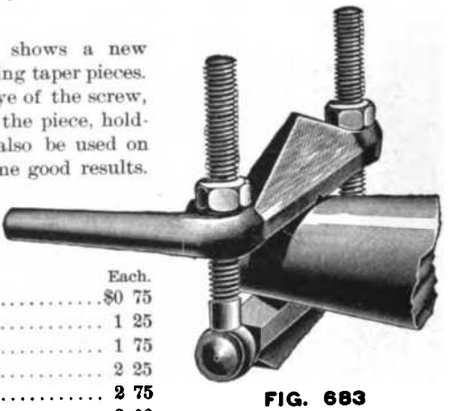


FIG. 683

PRICES, FIG. 683

Nos.	Between Screws.	Each.
00.	Amateur, ¾ inch	$0 75
0.	" 1¼ "	1 25
1.	1¾ inches	1 75
2.	2¼ "	2 25
3.	2¾ "	2 75
	Per set of five	8 00

IDEAL BALL BEARING CLAMP

FOR MACHINISTS AND ALL MECHANICS

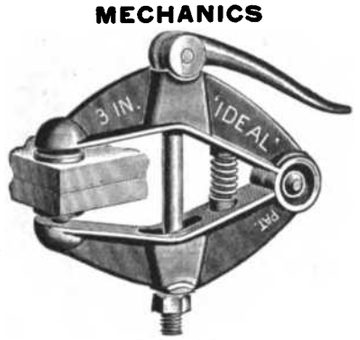


FIG. 684

It is self adjusting to uneven surfaces.
It will lay flat on surface plate and close true without side motion.
It is easy to operate by hand only, a nut turned by the fingers quickly adjusts to thickness, and a powerful eccentric on lever makes the grip.
No wrench needed.
The balls allow the work to revolve or the clamp to swing on the work while keeping a firm grip.
It is very convenient; can be used as a vise.
It is very strong. Made entirely of steel.

Price, $2 50.

NEW VISE CLAMP

Made from steel castings.

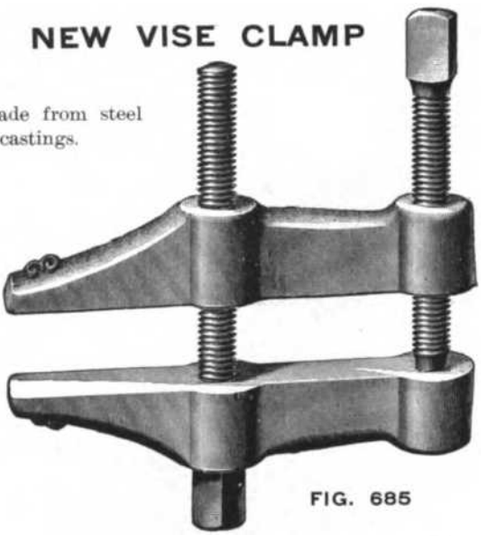
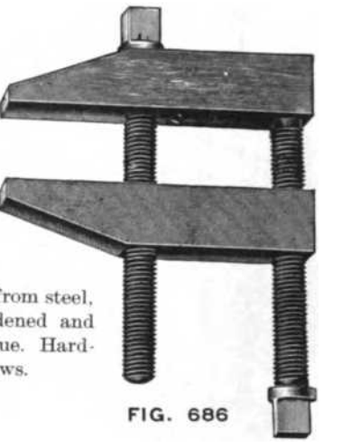


FIG. 685

Nos.		Prices, Each.
1.	Opens to 1¼ inches	$1 25
2.	" 2¼ "	1 50
3.	" 3¼ "	2 00
4.	" 4¼ "	2 50
5.	" 5¼ "	3 25
6.	" 6¼ "	4 00
	Full set	14 50

MACHINISTS' CLAMPS



Made from steel, case hardened and ground true. Hardened screws.

FIG. 686

Sizes.		Prices, Each.
2	inches, opens to 1½ inches	$0 75
3	" " 2½ "	1 00
4	" " 3 "	1 25
5	" " 3½ "	1 50
6	" " 5¼ "	1 75

HEAVY STEEL CLAMP

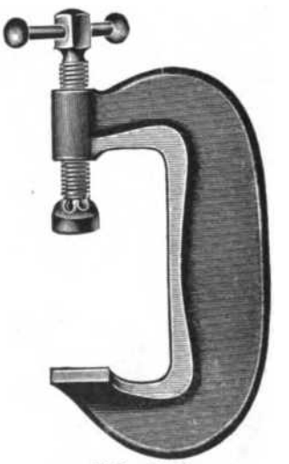


FIG. 689

The back is 2½ inches from center of screw.

Nos.		Each.	Nos.		Prices, Each.
1.	Opens 2 in.	$1 75	7.	Opens 10 in	$3 75
2.	" 3 "	2 00	8.	" 12 "	4 25
3.	" 4 "	2 25	9.	" 14 "	5 00
4.	" 5 "	2 50	10.	" 16 "	6 00
5.	" 6 "	2 75	11.	" 18 "	7 00
6.	" 8 "	3 25			
				Full set of 11 sizes	40 50

PARALLEL CLAMP

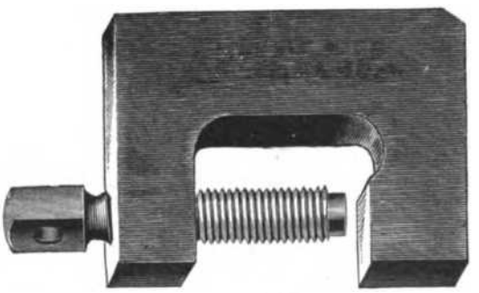


FIG. 687

Full size cut of one inch.

Sizes.	Weights.	Prices, Each.
1 inches	4½ ounces	$0 75
1¼ "	8 "	1 00
1⅝ "	9 "	1 25
2 "	1⅞ pounds	1 75
3 "	2 "	2 00
3 "	4½ " extra heavy	2 75
4 "	5 "	3 00
4 "	11 " extra heavy	4 00
5 "	11½ "	5 00
6 "	11¾ "	6 00

MECHANIC'S STEEL CLAMP

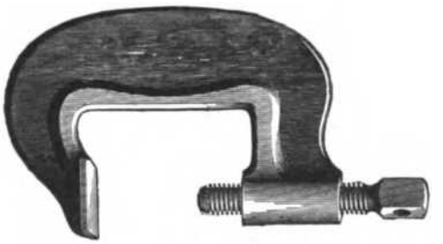


FIG. 688

The back is 1½ inches from center of screw. It is suitable for boiler makers, blacksmiths or machinists.

Nos.		Prices, Each.
1.	Opens 2 inches	$1 25
2	" 3 "	1 50
3	" 4 "	1 75
4	" 5 "	2 00
5	" 6 "	2 25
6	" 7 "	2 50
7	" 8 "	2 75
8	" 9 "	3 00
Full set		17 00

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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EXTRA HEAVY STEEL BOILER CLAMP

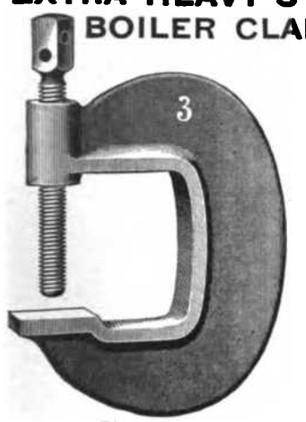


FIG. 690

PRICES, FIG. 690

No. 1.	2 inch	$3 00
" 2.	3 "	4 00
" 3.	4 "	5 00
" 4.	5 "	6 00
" 5.	6 "	7 50
" 6.	8 "	8 50
" 7.	10 "	10 00

LIGHT STEEL BOILER CLAMP

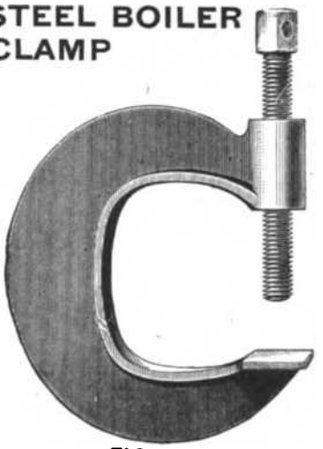


FIG. 691

No. 0 opens	2½ inches, runs back 2½ inches	$2 00
" 1 "	4 " " " 4½ "	4 00

6½ INCH CLAMP

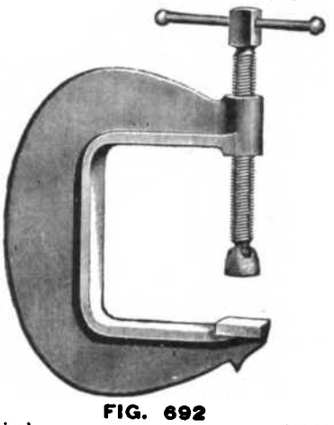


FIG. 692

6 inch	$12 00
10 "	16 00

FITTER'S STEEL CLAMP

VERY STRONG



FIG. 693

DESCRIPTION, FIG. 693

Has a square thread steel screw with hardened point running down to the foot. The foot is planed square by the screw.

		Prices.
No. 1.	opens ⅛ inches, runs back 1⅛ inches	$1 25
" 2.	" 1¾ " " " 1¾ "	1 50
" 3.	" 2½ " " " 2½ "	1 75

STEEL SHIP OR BRIDGE CLAMP

EXTRA HEAVY

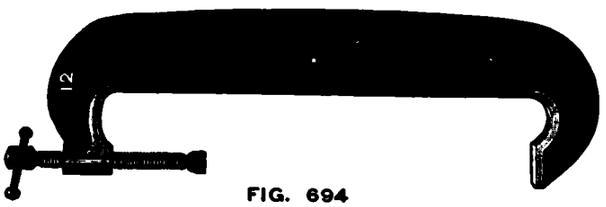


FIG. 694

The screw is heavy and has button on the end.

PRICES, FIG. 694

No. 12	opens 24 inches	$12 00
" 13 "	30 "	16 00

DROP FORGED STEEL C CLAMP

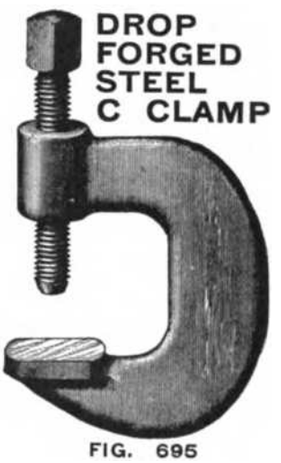


FIG. 695

DESCRIPTION AND PRICES, FIG. 695

This is another useful tool for the machinist and tool maker. The clamp here represented is drop forged from bar steel and is made extra heavy.

	Opens.	Weight.	Each.	Screws.
No. 1.	1¼ inches.	5 ounces.	$1 00	$0 10
" 2.	2¼ "	2 pounds.	2 00	15
" 3.	3¼ "	5¼ "	2 50	20
" 4.	4½ "	7½ "	3 25	30
" 5.	6½ "	11½ "	4 00	40

"HANDY" VISES OR CLAMPS



FIG. 697, 3¾ Size.

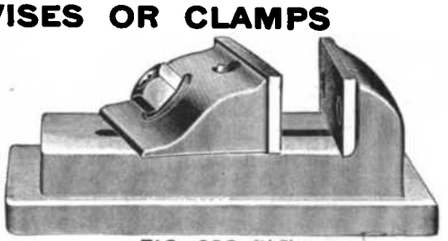


FIG. 698, 6¼ Size.

Pushing the jaw forward by the nut allows the stud to keep its natural or best drawing position of about 45 degrees.

The jaws in holding work remain positively parallel, and the grip is a compound leverage.

PRICES, FIGS. 697 AND 698

2½ x 2½, open, $2 00; 3¾ x 3, open, $4 00; 6¼ x 4½, open, $12 00.

TOOL MAKERS' STEEL CLAMP

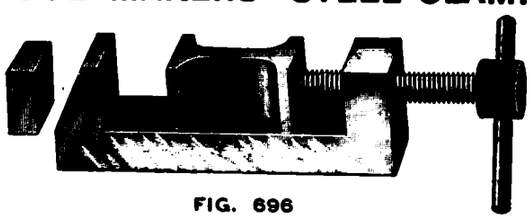


FIG. 696

These clamps are made from drop forgings, nicely finished, case-hardened, and have take-up blocks to slip on and off end of screw, and are held to same in a novel manner. They will hold work square and parallel for laying out on surface plates, fitting or drilling. A round piece may be rigidly held in two of the clamps and drilled on an upright, central and parallel. Put up and sold in pairs. With the small block in use, the capacity of the smaller clamp is a little over 1 inch, and that of the larger clamp 2 inches.

	Per Pair.
Size, 1 inch	$1 00
" 2 "	1 25

MILLING MACHINE AND PLANER CLAMP

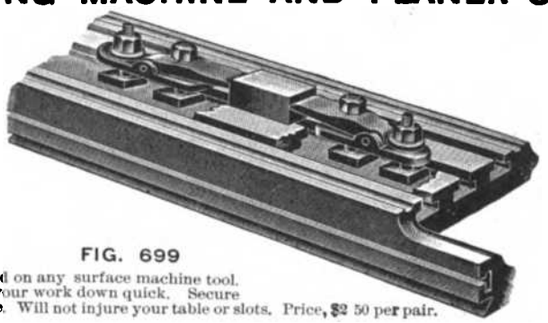


FIG. 699

Can be used on any surface machine tool. Will clamp your work down quick. Secure and accurate. Will not injure your table or slots. Price, $2 50 per pair.

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UNION IMPROVED INDEPENDENT FOUR-JAW CHUCK

REVERSIBLE JAWS

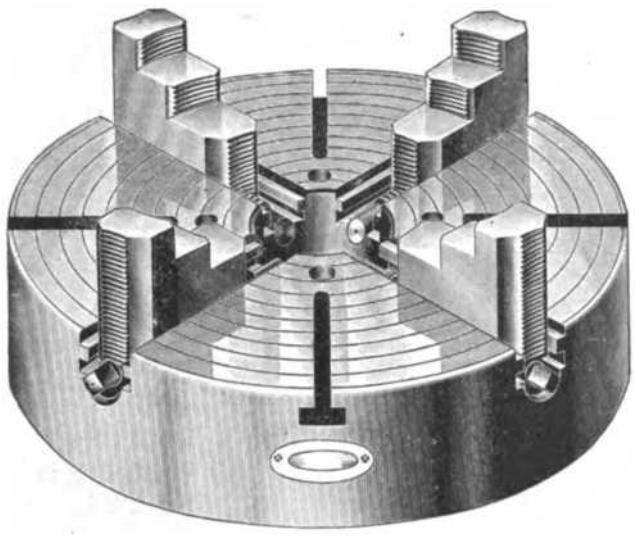


FIG. 700

PRICES AND DIMENSIONS, FIG. 700

Sizes.	Diameter including projecting Pinion Head. Inches.	Weight. Pounds.	Diameter of Hole through center, Inches.	Diameter of Recess for Face Plate, Inches.	Capacity of Chuck, Inches.	Each.
4	4¾	6	1	3 11/16	4½	$14 00
6	6½	14	2	5 1/32	6¾	18 00
8	8 9/16	30	2	5 1/32	8¾	22 00
9	9⅛	34	2	5 1/32	9¾	24 00
10	10½	36	2	5 1/32	10¾	26 00
12	12¾	70	3	7 1/16	12¾	30 00
14	14⅝	80	3	7 1/16	14¾	34 00
15	15⅝	85	3	7 1/16	15¾	35 00
16	16 11/16	95	3	7 1/16	16¾	38 00
18	18½	115	4	8	19	44 00
20	20⅝	162	4	10	21	50 00
21	21	180	4	10	21	55 00
22	22⅞	200	4¾	10	23	57 00
24	24¾	217	4¾	10	25	65 00
26	27¼	292	5	12	27	80 00
28	29½	349	5¼	12	29	109 00
30	30⅞	424	5½	16⅛	31	120 00
32	32	460	5½	16⅛	33	150 00
34	34	490	5½	17¾	35	180 00
36	36	552	5½	17¾	36¾	210 00
38	38	650	6	20	40	240 00
40	40	750	6	20	42	270 00
42	42	1082	6	20	43	300 00
44	44	1200	6	20	46	350 00
46	46	1400	6	20	48	420 00
48	48	1500	6	20	50	500 00

CUSHMAN INDEPENDENT FOUR JAW CHUCKS

REVERSIBLE JAWS

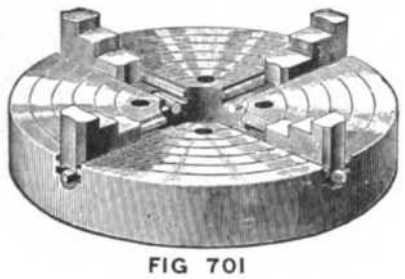


FIG 701

Above cut shows the 4½ and 6 in. sizes.

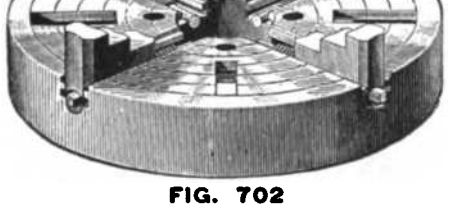


FIG. 702

Above cut shows the 8, 9 and 10 in. sizes.

A key-wrench, made of bar steel, and four bolts for attaching to face-plate, are furnished with each Chuck.

PRICES AND DIMENSIONS,

FIGS. 701 AND 703

Size. Inches.	Size of Hole. Inches.	Size of Face-plate Recess. Inches.	Each.	Approximate Weight. Lbs.
4½	1	4 3/16	$14 00	7
6	1¾	5 11/16	18 00	13
8	1⅞	4¾	22 00	28
9	1⅞	4¾	24 00	32
10	2	4¾	26 00	36
12	2⅞	6 11/16	30 00	62
14	3	6 11/16	34 00	85
15	3	7 13/16	35 00	100
16	3	7 13/16	38 00	115
18	4	9½	44 00	143
20	4	9½	50 00	190
21	4	9½	55 00	210
22	4¾	11	57 00	227
24	4¾	11	65 00	261
26	4¾	12	75 00	345

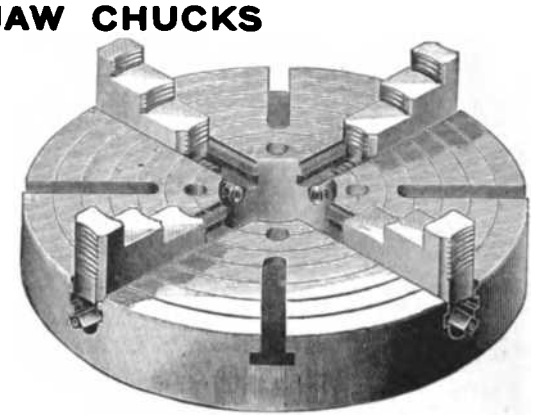
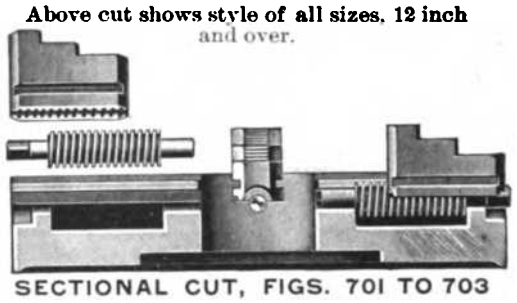


FIG. 703

Above cut shows style of all sizes, 12 inch and over.



SECTIONAL CUT, FIGS. 701 TO 703

SKINNER INDEPENDENT FOUR JAW LATHE CHUCK

1898 PATENT, HEAVY PATTERN, WITH REVERSIBLE JAWS

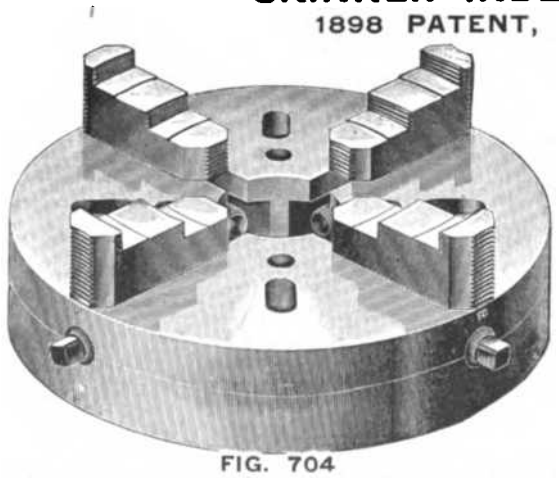


FIG. 704

The above cut is a front view of the 12 inch Chuck and larger sizes. The 10 inch and smaller sizes do not have the slot in the face. The 8 inch and smaller sizes have one more step on the jaws

PRICES AND DIMENSIONS, FIG. 704

Order by these Numbers.	Rated Size of Chuck. Inches.	Diameter of Chuck Body. Inches.	Diameter of Hole through Center. Inches.	Diameter of Recess for Face-plate. Inches.	Each.
1003	3	4	⅞	2	$12 00
1004	4	5	1	2¾	14 00
1006	6	7	1¾	3½	18 00
1008	8	9	1⅞	4	22 00
1010	10	11	2	4¾	26 00
1012	12	13	2 15/16	6⅜	30 00
1014	14	14¾	3	7	34 00
1016	16	16½	3	7¾	38 00
1018	18	18	3	8	44 00
1020	20	20	3	10	50 00
1022	22	22	3	12	57 00
1024	24	24	3	12	65 00
1026	26	26	3⅛	13	80 00
1028	28	28	3⅛	14	100 00

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NEW INDEPENDENT REVERSIBLE THREE AND FOUR-JAW CHUCKS

PRICES AND DIMENSIONS, FIG. 705

Sizes. Inches.	Will Hold.	Approx. Weight, Pounds. (Four Jaw).	Diam. of Hole Through Center. Inches.	Diam. of Face Plate Recess. Inches.	Three Jaws Numbers.	Three Jaws Each.	Four Jaws Numbers.	Four Jaws Each.
6	7½	14	1⅝	3 25/32	V 1	$16 50	V 2	$18 00
7½	9¾	18	2⅛	4⅝	V 3	18 00	V 4	20 00
9	11¾	38	2 5/16	4 29/32	V 5	21 00	V 6	24 00
10	12¾	46	2 5/16	4 29/32	....	....	V 8	26 00
12	14½	60	2 15/16	6 5/16	V 9	27 50	V 10	30 00
14	16½	80	2 15/16	6 5/16	....	....	V 12	34 00
15	18	98	3⅛	7	V 13	31 00	V 14	35 00
16	19	114	3⅛	7	....	....	V 16	38 00
18	21	130	3⅞	8 5/16	V 17	38 00	V 18	44 00
20	23	148	3⅞	8 5/16	....	....	V 20	50 00
21	24	160	3⅞	8 5/16	V 21	48 00	V 22	55 00
22	25	175	3⅞	8 5/16	....	....	V 24	57 00
24	27	194	3⅞	8 5/16	V 25	56 00	V 26	65 00
26	29	230	4⅜	9 13/16	....	....	V 28	75 00
28	31	280	4⅜	9 13/16	....	....	V 30	100 00
30	34	335	6	13½	....	....	V 32	120 00
32	36	400	6	13½	....	....	V 34	150 00

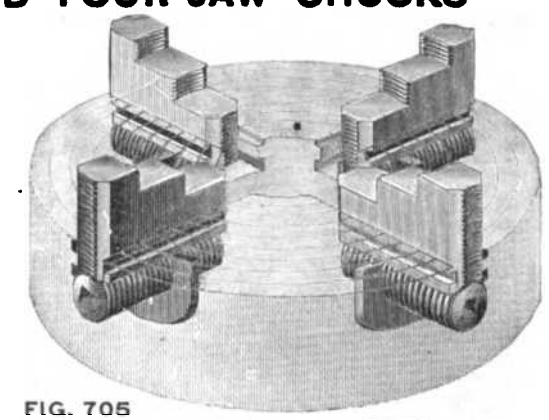
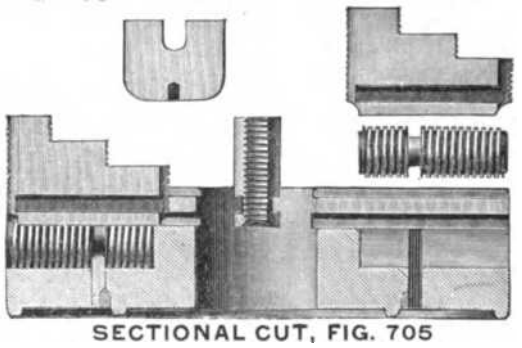


FIG. 705



SECTIONAL CUT, FIG. 705

HORTON IMPROVED INDEPENDENT FOUR-JAW CHUCKS

JAWS REVERSIBLE

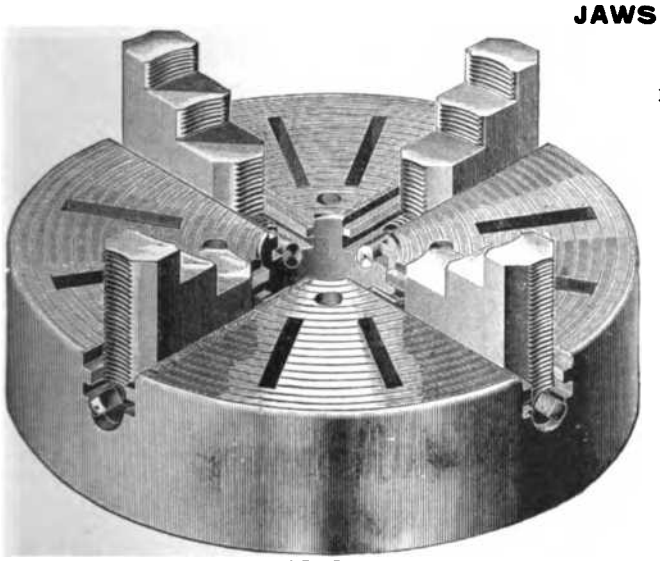


FIG. 706

PRICES AND DIMENSIONS, FIG. 706

Sizes. Inches.	Approx. Weight of Chuck. Pounds.	Diam. of Hole Through Center. Inches.	Diam. of Recess for Face Plate. Inches.	Each.
4	6	1	3	$14 00
6	13	1¾	5 11/16	18 00
8	26	1⅞	4¾	22 00
9	30	2	4¾	24 00
10	37	2	4¾	26 00
12	65	3	6 11/16	30 00
14	84	3	6 11/16	34 00
15	100	3	6 11/16	35 00
16	114	3	6 11/16	38 00
18	143	4	7 13/16	44 00
20	190½	4	7 13/16	50 00
22	216	4¾	9½	57 00
24	254	4¾	9½	65 00
26	340	5½	13	80 00
28	373	5½	13	100 00
30	454	6	15	120 00
32	463	6½	15	150 00
34	503	6¾	15	180 00
36	520	7¼	18	210 00
38	595	7¼	18	240 00
40	609	7¼	18	270 00
42	625	7¼	18	300 00

THE SWEETLAND STANDARD INDEPENDENT FOUR-JAW CHUCKS

JAWS REVERSIBLE

DIMENSIONS, FIG. 707

PRICES, FIG. 707

Sizes. Inches.	Net Weight, Approx. Pounds.	Gross Weight, Approx. Pounds.	Diameters of Swing, Including Head of Pinions. Inches.	Diameters of Body. Inches.	Will Hold.	Sizes of Hole. Inches	Diameters Recess of Face Plate. Inches.	Diameters. Inches.	Each.
6	14	18	8½	7⅝	6	1¾	3 11/16	6	$18 00
8	19	23	10	8⅝	8	2¼	4¾	8	22 00
10	29	35	11¾	10½	10	2¼	4¾	10	26 00
12	55	64	14¼	13	12	3	6 11/16	12	30 00
14	67	80	16	14¾	14	3	6 11/16	14	34 00
16	79	92	18	16¾	16	3	6 11/16	16	38 00
18	108	125	20¼	18¾	18	4	7 13/16	18	44 00
20	123	144	22¼	20¾	20	4	7 13/16	20	50 00
22	136	162	24½	22¾	22	4¾	9½	22	57 00
24	159	187	26½	24¾	24	4¾	9½	24	65 00
30	362	413	32½	30	30½	4	12⅛	30	120 00
36	462	517	38½	36	36½	4	12⅛	36	210 00
42	575	650	44½	42	42½	4	24	42	300 00

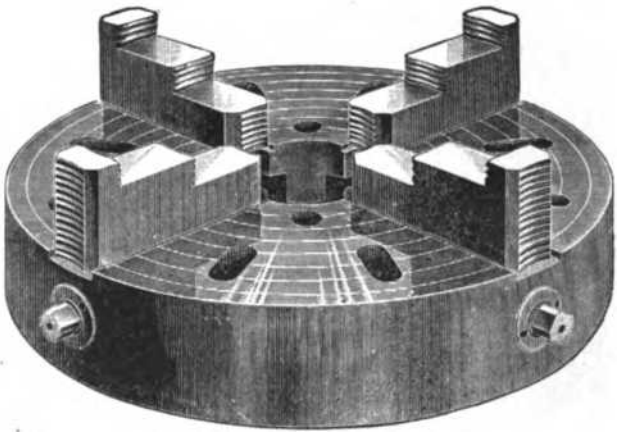


FIG. 707

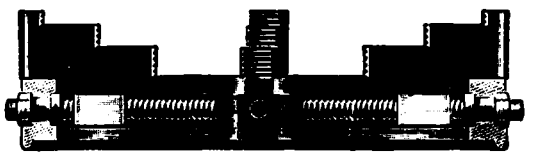


FIG. 708 SECTIONAL CUT FIG. 707

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NATIONAL IMPROVED INDEPENDENT CHUCK

Four Jaws, Reversible.

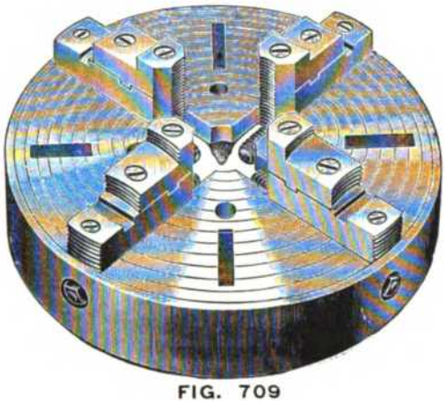


FIG. 709

PRICES, FIG. 709

Size, in.	6	9	12	15	18	21
Each..	$18 00	$23 00	$30 00	$35 00	$44 00	$55 00

Size, in.	24	26	30	36	42
Each..	$65 00	$80 00	$120 00	$190 00	$280 00

PRICES AND DIMENSIONS, FIG. 710

Diameter. Inches.	Capacity. Inches.	Diameter of Recess for Face Plate. Inches.	Price with Four Jaws.	Unfinished Face-plate Castings.
7½	7½	4 7/16	$18 00	$0 30
10⅛	10⅛	5½	23 00	75
13	13⅛	6½	30 00	1 00
15¼	17	7½	35 00	1 50
18	19¾	8	44 00	2 00
21	25	8	55 00	2 00
24	28	10	65 00	3 00
30	32½	15	120 00	5 00
36	40	15	210 00	5 00

The jaws in 30 inch and 36 inch are not made to reverse unless so ordered.

WESTCOTT PATENT INDEPENDENT CHUCK

Four Jaws, Reversible.



FIG. 710

NATIONAL INDEPENDENT TWO-JAW CHUCK

Special False Jaws.
Price includes One Set False Jaws.

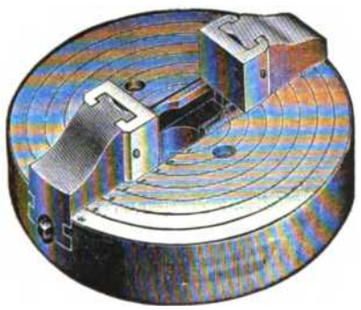


FIG. 711

PRICES AND DESCRIPTION, FIG. 711

The false jaws can be removed so as to hold round stock with permanent jaw, which are complete for use, without the False Jaw, for many classes of work.

Size, inch,	4	7	9	12	14	17
Prices,	$18 00	$20 00	$27 00	$34 00	$40 00	$48 00
False Jaws. Per Pair,	$1 75	$2 00	$3 00	$3 50	$4 00	$4 50

PRICES AND DESCRIPTION, FIG. 712

They are attached to lathe by means of a face plate, the same as any ordinary lathe chuck.

	With One Pair Slip Jaws.		Regular Size. Per Pair.
6 in.,	Two-jaw	$20 00	Slip Jaws..... $2 00
8	"	24 00	" 2 25
10	"	28 00	" 3 00
12	"	34 00	" 4 00
14	"	40 00	" 4 50
15	"	42 00	" 5 00

INDEPENDENT TWO-JAW CHUCK

With Slip Jaws.



FIG. 712

UNION UNIVERSAL LATHE CHUCKS

OUTSIDE JAW

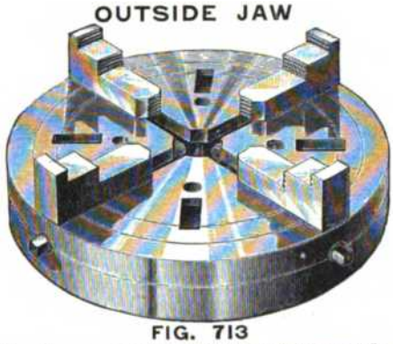


FIG. 713

The above cut represents the Universal Lathe Chuck, which we can furnish in all sizes from 3 to 42 inches inclusive. Furnished with two, three or four jaws, as desired.

FOR CUTTING-OFF LATHE

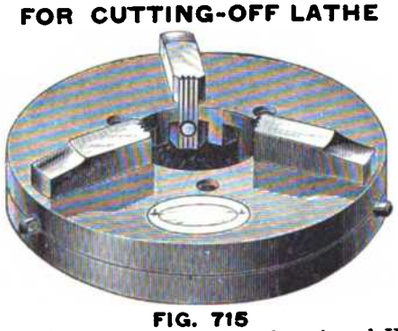


FIG. 715

The above cut represents a three-jawed Universal Chuck. It is made expressly for use on cutting-off lathes. The holes through the center of these Chucks are extra large, so that pipes and rods will pass entirely through the Chuck.

PRICES, FIGS. 713 TO 716

THREE-JAWED CHUCKS

Either style of Jaw.

Diameters. Inches.	Each.
3	$18 00
4	22 00
5	25 00
6	26 00
9	34 00
12	44 00
15	52 00
18	62 00
21	80 00
24	100 00
26	130 00
30	170 00
36	230 00
42	270 00

FOUR-JAWED CHUCKS

Either style of Jaw.

Diameters. Inches.	Each.
4	$26 00
5	30 00
6	32 00
9	42 00
12	56 00
15	64 00
18	75 00
21	95 00
24	120 00
26	160 00
30	200 00
36	285 00
42	325 00

In ordering state style of jaw wanted.

INSIDE JAW

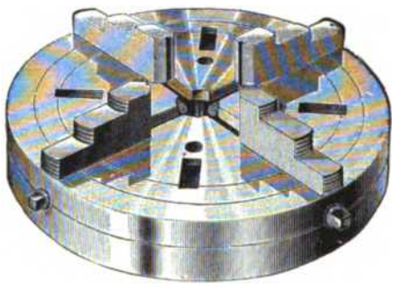


FIG. 714

The above cut represents the Universal Lathe Chuck with reverse jaw.

This Chuck is used for holding rings, rods, pipe, drills, etc. It is an excellent Chuck for brass finishing.

We can furnish with two, three, or four jaws, as desired.

FOR MILLING MACHINE

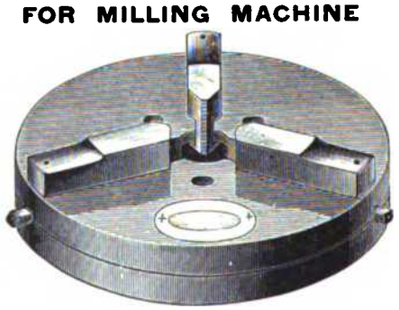


FIG. 716

The above Universal Chuck is especially designed for use on Milling Machines and Grinding Machines. The hole in the center is made large enough in diameter to allow pipes or rods to pass entirely through the Chuck, and the bite of the jaws is on both sides of the pinion.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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UNION UNIVERSAL LATHE CHUCKS

TWO JAW

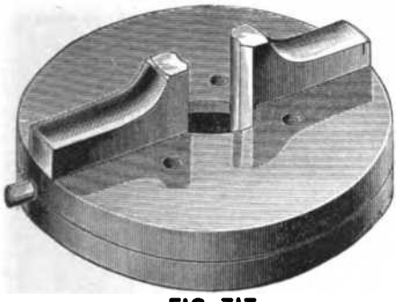


FIG. 717

Diameters, Inches.	Prices.
4	$20 00
6	22 00
9	30 00
12	40 00
15	48 00
18	56 00
21	74 00
24	92 00

TWO JAW CHUCK WITH FALSE JAWS

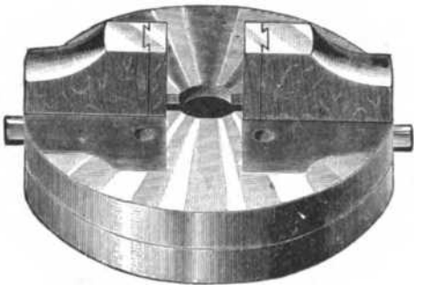


FIG. 718

With false jaw dovetailed into bite. With one pair false jaws.

Diameters, Inches.	Prices.
4	$22 00
6	24 00
9	32 00
12	42 00
15	50 00

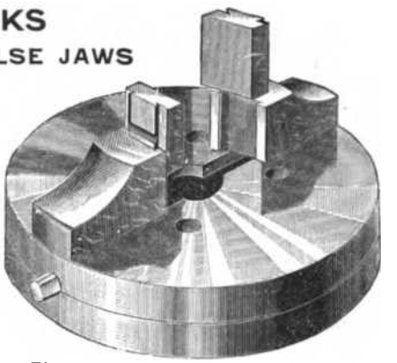


FIG. 718 Showing false jaw detached.

PRICES, FALSE JAWS FOR CHUCK

Diameters, Inches.	Per Set.
4 regular size	$1 75
6 " "	2 00
9 " "	3 00
12 " "	3 50
15 " "	4 00

THE HORTON UNIVERSAL LATHE CHUCKS

COMMON JAW CHUCK
THREE JAW

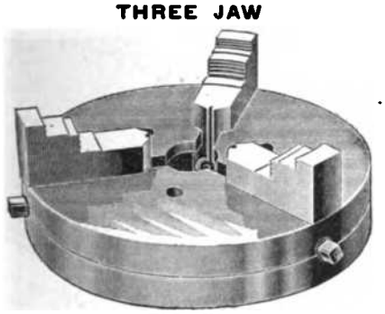


FIG. 719

This cut represents a common 6, 9 and 12 inch chuck with the patent jaw.

CHUCK WITH OUTSIDE BITES

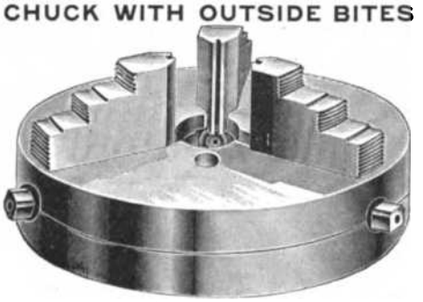


FIG. 720

This cut gives a view of the 6 and 9 inch chucks with outside bites (not reversible). The patent raised seat is used on this style of jaw on all sizes, the same as on the common jaw.

REVERSE JAW CHUCK

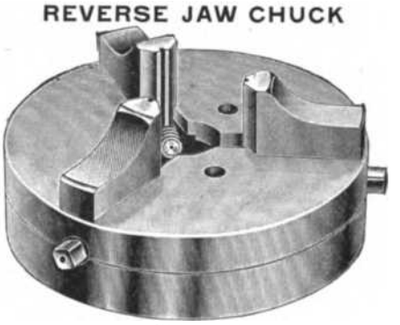


FIG. 721

The jaw is not reversible. The bite of jaw is long, and carries work away from face of chuck, and is used for holding screws, rods, twist drills, etc., so that it can be readily worked at.

COMMON JAW CHUCK
THREE JAW

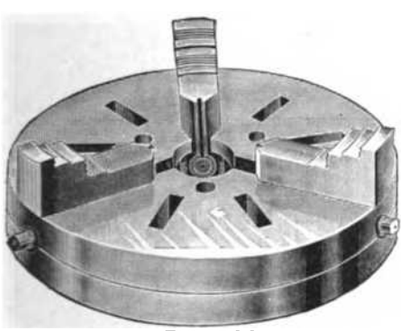


FIG. 722

This cut gives a view of Three Jaw Universal Chucks over 12 inches in diameter.

COMMON CHUCK
FOUR JAW

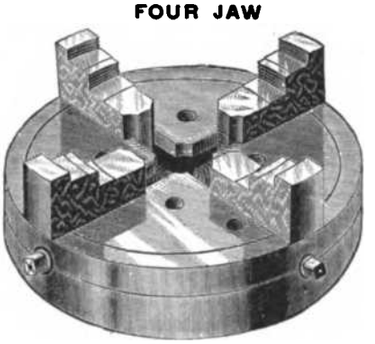


FIG. 723

This cut represents the 6, 9 and 12 inch four jaw chucks. It illustrates all sizes between 4 inch and 15 inch.

MILLING MACHINE CHUCK

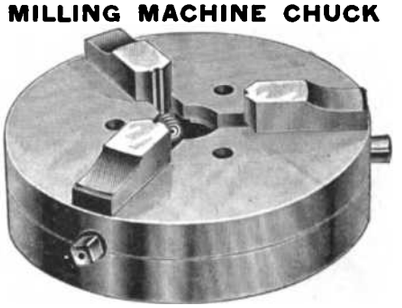


FIG. 724

This chuck is used on milling machines and screw machines, and for holding pipe, rods, drills, dies, etc. The hole in center of the 6 inch chuck is 1¼ inches in diameter, and will allow a pipe or rod of that size to pass entirely through the chuck.

WITH OPEN CENTER

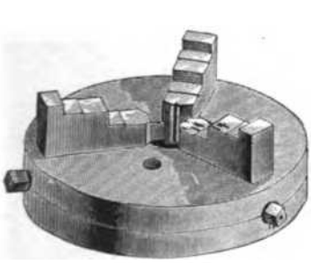


FIG. 725

The above cut shows a 6 inch chuck, with patent jaw made longer and heavier, to hold work 7 inches in diameter, with a hole 1¼ inches in diameter in the center of the body, to admit of work being passed through the chuck.

COMMON JAWS



FIG. 726. 3 INCH

NO. 1 JAWS

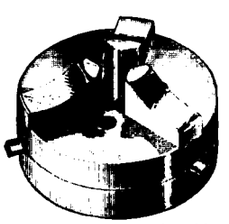


FIG. 727. 3 INCH

NO. 2 JAWS

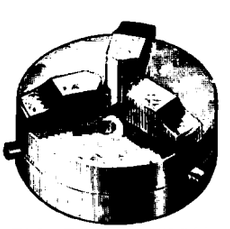


FIG. 728. 3 INCH

WITH OUTSIDE BITES

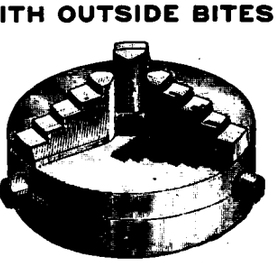


FIG. 729. 4 INCH

This cut shows a 4 inch reverse chuck with outside bites. This is a good tool for holding drills on the inside, and for doing light work on the outside, such as turning rings, etc. It will hold rings from 5 inches inside diameter down to about an inch.

PRICES, FIGS. 719 TO 729. EITHER STYLE OF JAW

THREE JAW (In ordering, state style of jaw wanted.)

Sizes, inches.	3	4	5	6	9	12	15	18	21	22	24	26	30	36	42
Prices....	$18 00	22 00	25 00	26 00	34 00	44 00	52 00	62 00	80 00	90 00	100	130	170	230	270

FOUR JAW (In ordering, state style of jaw wanted.)

Sizes, inches.	5	6	9	12	15	18	21	22	24	26	30	36	42
Prices.....	$30 00	32 00	42 00	56 00	64 00	75 00	95 00	110	120	160	200	285	325

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FIG. 1

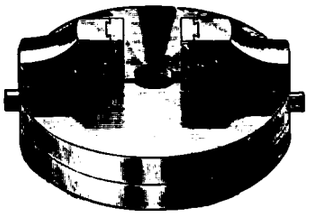


FIG. 730

HORTON UNIVERSAL TWO JAW CHUCKS

PRICES, FIG. 730

Sizes.	Each.
5 inch, two-jaw, with one pair false jaws	$23 00
6 " " " "	24 00
9 " " " "	32 00
12 " " " "	42 00
15 " " " "	50 00
	Per pair.
False jaws for 5 inch chuck, regular size	$1 75
" " 6 " "	2 00
" " 9 " "	3 00
" " 12 " "	3 50
" " 15 " "	5 00

FIG. 2

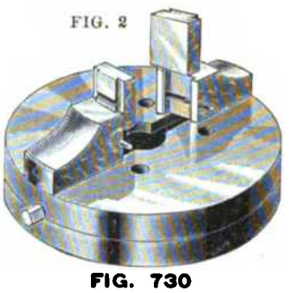


FIG. 730

DESCRIPTION, FIG. 730

The cut (Fig. 730, Fig. 1) shows a two jaw chuck with slip jaws dovetailed into bite, in position for use. The permanent jaws are of steel, well case-hardened, and the false jaws or points are of steel, which, after being fitted to work required of them, can be hardened.

The cut (Fig. 730, Fig. 2) shows the slip jaws detached, and groove in jaw that holds it in place; also pin passing through between slip jaw and permanent jaw to hold the former in place. It is operated by means of rack and pinion.

SKINNER UNIVERSAL LATHE CHUCKS

COMMON JAW CHUCK, STYLE A

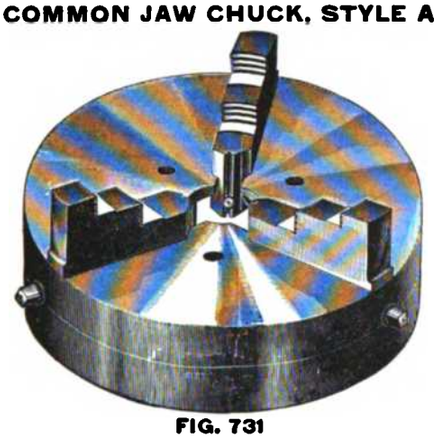


FIG. 731

Fig. 731 represents the 5 inch Three Jaw Universal Chuck, with common jaws. This chuck has a large center hole which permits of work or tools passing through the chuck. In the 5 inch chucks and smaller sizes the inside bite extends below as well as above the jaw screw.

REMOVABLE HUB CHUCK, STYLE A

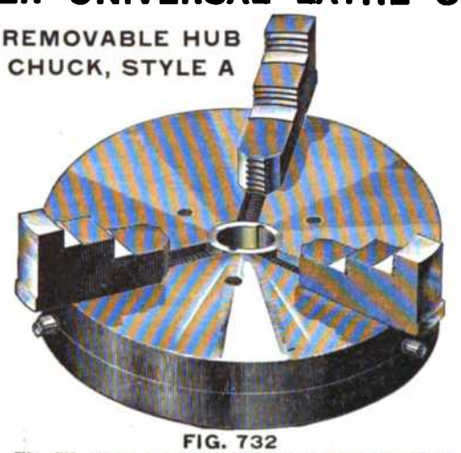


FIG. 732

Fig. 732 represents 9 inch Three Jaw Universal Chuck, with common jaws and patent removable hub which is threaded into the shell, and is easily removed with a key-wrench. This cut also shows the jaws open, giving a 9 inch chuck a capacity of over 10 inches.

CHUCK, STYLE B, JAWS WITH OUTSIDE BITE

(NOT REVERSIBLE)

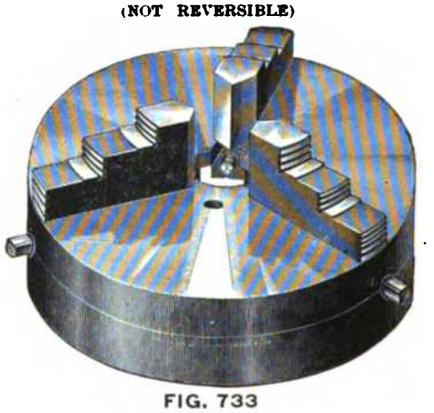


FIG. 733

Fig. 733 represents the Universal Chuck, with jaws with outside bite. The jaws have a long bite on the inside for holding rods, pipes, drills, etc., which may pass through the chuck. The outside bites are for holding rings, or work that is to be held from the inside.

CHUCK, STYLE C, JAWS WITH INSIDE BITE ONLY



FIG. 734

We can furnish both three and four-jaw chucks of this style. The three jaws are used as drill chucks for holding rods and screws, brass finishing, etc.: the four jaw for holding the square end of taps, other square pieces, as well as round work.

REVERSIBLE JAW CHUCK, STYLE J

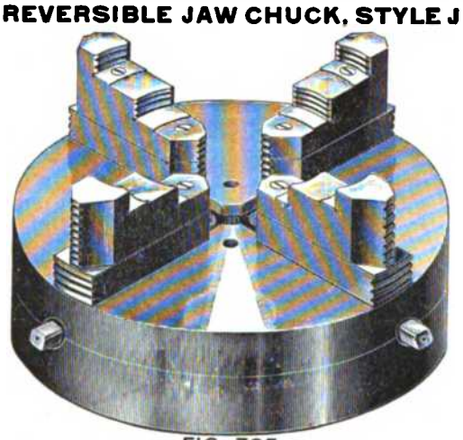


FIG. 735

COMMON JAW CHUCK, STYLE A

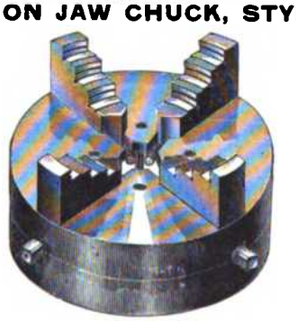


FIG. 737

Fig. 737 represents a 4 inch Four-jawed Universal Chuck, with common jaws. The 3 and 4 inch chucks are furnished with this style jaw unless others are ordered. These jaws have one more step than the jaws for the larger sizes of chucks. A wrench and a set of bolts are furnished with each Skinner Universal Chuck except the cutting-off machine chucks, which are furnished with wrench but no bolts.

MILLING MACHINE CHUCK, STYLE D

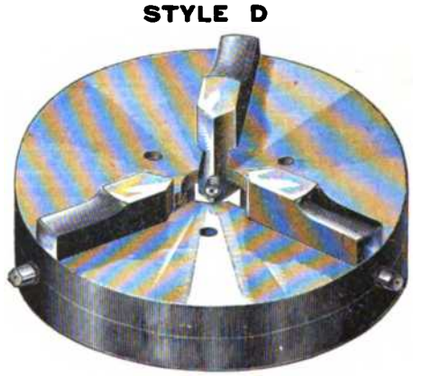


FIG. 736

This chuck is especially adapted for use on Universal milling machines, screw machines, and other hollow spindle machines. The jaw bite is above and below the jaw screw.

PRICES, FIGS. 731 TO 737

THREE JAWS

Rated size of Chuck, Inches.	Diameters of Chuck Body, Inches.	Each.	Use these numbers in ordering. Style A.	Style B.	Style C.	Style D.	Style J.
3	3⅜	$18 00	303A	303B	303C	303D	303J
4	4 15/16	22 00	304A	304B	304C	304D	304J
5	6¼	25 00	305A	305B	305C	305D	305J
6	7	26 00	306A	306B	306C	306D	306J
8	8½	30 00	308A	308B	308C	308D	308J
9	9¾	34 00	309A	309B	309C	309D	309J
12	12½	44 00	312A	312B	312C	312D	312J
15	15¼	52 00	315A	315B			315J
18	17	62 00	318A				318J
21	20	80 00	321A				321J
24	21¾	100 00	324A				324J
26	26	130 00	326A				326J
30	30¼	170 00	330A				330J
36	35⅝	230 00	336A				336J
42		270 00	342A				342J

PRICES, FIGS. 731 TO 737

FOUR JAWS

Rated size of Chuck, Inches.	Diameters of Chuck Body, Inches.	Each.	Use these numbers in ordering. Style A.	Style B.	Style C.	Style D.	Style J.
4	4 15/16	$26 00	404A	404B	404C	404D	404J
5	6¼	30 00	405A	405B	405C	405D	405J
6	7	32 00	406A	406B	406C	406D	406J
8	8½	38 00	408A	408B	408C	408D	408J
9	9¾	42 00	409A	409B	409C	409D	409J
12	12½	56 00	412A	412B	412C	412D	412J
15	15¼	64 00	415A	415B			415J
18	17	75 00	418A				418J
21	20	95 00	421A				421J
24	21¾	120 00	424A				424J
26	26	160 00	426A				426J
30	30¼	200 00	430A				430J
36	35⅝	285 00	436A				436J
42		325 00	442A				442J

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SKINNER UNIVERSAL AND INDEPENDENT TWO JAW CHUCKS

TWO JAW CHUCK, STYLE F

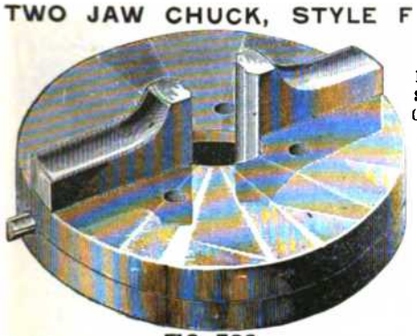


FIG. 738

Fig. 738 represents a Universal Chuck with two jaws. The jaws are finished as shown in cut, usually, but can be turned on any desired circle, or have a V slot on the bite. There is a hole through the center of the chuck, and the jaws have a long bearing on the work.

PRICES, FIGS. 738 AND 739

Rated Size of Chuck, Inches.	FIG. 738, STYLE F Each.	Use these Numbers in ordering. Universal.	Independent.	FIG. 739, STYLE G Each.	Use these Numbers in ordering. Universal.	Independent
4	$20 00	204 F	704 F	$22 00	204 G	704 G
5	21 00	205 F	705 F	23 00	205 G	705 G
6	22 00	206 F	706 F	24 00	206 G	706 G
8	28 00	208 F	708 F	30 00	208 G	708 G
9	30 00	209 F	709 F	32 00	209 G	709 G
12	40 00	212 F	712 F	42 00	212 G	712 G
15	48 00	215 F	715 F	50 00	215 G	715 G

A wrench and set of bolts furnished with each chuck.

PRICES, EXTRA SLIP JAWS FOR CHUCK, FIG. 739

Size Chuck, inches,	4	5	6	8	9	12	15
Per Set.....	$1 75	$1 75	$2 00	$3 00	$3 00	$3 50	$4 00

TWO JAW CHUCK, STYLE G



FIG. 739

Fig. 739 represents a two-jaw universal chuck, with slip jaws dove-tailed on to the bite of jaws. This style of jaw can also be furnished in an independent or combination chuck.

This chuck is used largely by brass workers.

WESTCOTT'S PATENT UNIVERSAL LATHE CHUCKS

THREE JAW REVERSIBLE JAWS



FIG. 740. 10⅛ Inches.

PRICES AND DIMENSIONS, FIGS. 740 AND 741

Diameters Covering Screw Heads. Inches.	Capacity. Inches.	Diameter of Recess for Face Plate. Inches.	Three Jaws. Fig. 740.	Four Jaws. Fig. 741.	Unfinished Face Plate Castings.
5	5	3	$24 00	.....	$0 25
7½	7½	4 7/16	26 00	$32 00	30
10⅛	10⅜	5½	34 00	42 00	75
13	13¼	6½	44 00	56 00	1 00
15¼	17	7½	52 00	64 00	1 50
18	19¾	8	62 00	75 00	2 00
21	25	8	80 00	95 00	2 00
24	28	10	100 00	120 00	3 00
30	32½	15	170 00	200 00	5 00
36	40	15	230 00	285 00	5 00

Jaws in 30 inches and 36 inches are not made to reverse unless so ordered.

FOUR JAW REVERSIBLE JAWS



FIG. 741. 10⅛ Inches.

FOR MILLING MACHINES NO. 2 OR INSIDE JAW

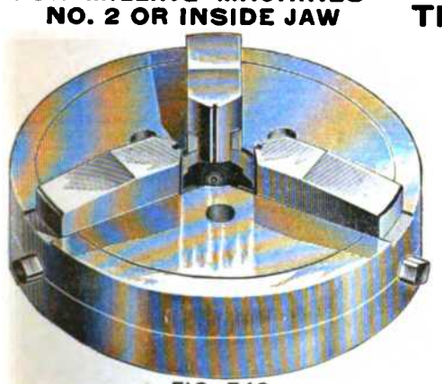


FIG. 742

This chuck is for use on hollow spindle and milling machines, for holding pipe, drills, rods, etc. We can furnish this chuck with jaws for cutting off machines.

THE SWEETLAND UNIVERSAL CHUCKS

NO. 1 WITH OUTSIDE BITES

Not Reversible

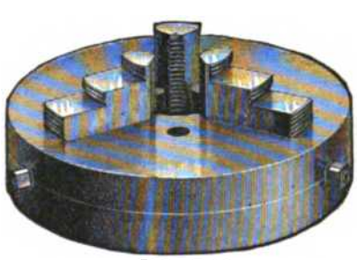


FIG. 743

The jaws on this chuck are suitable for holding drills, screws, rods, etc., also hand tool work and brass finishing. The jaws are not reversible.

NO. 4 OR REVERSIBLE JAWS

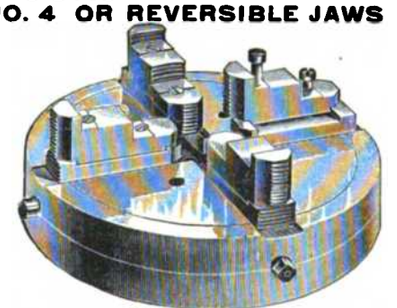


FIG. 744

This chuck, because of the style of jaws, is adapted to every variety of work.

NO. 0 OR COMMON JAWS

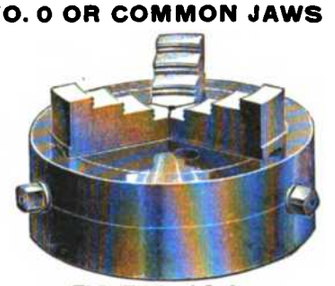


FIG. 745. 4 Inches.

PRICES, FIGS. 742, 743, 744 AND 745

THREE JAWS

Sizes, inches.....	4	6	9	12	15	18	21	24	30	36	42
Fig. 745, No. 0 Jaws..	$22 00	$26 00	$34 00	$44 00	$52 00	$62 00	$80 00	$100 00	$170 00	$230 00	$270 00
" 743, " 1 " ..	22 00	26 00	34 00	44 00	52 00	62 00	80 00	100 00	170 00	230 00	.....
" 742, " 2 "		26 00	34 00	44 00	....	....	....	.....	.....	.....	.....
" 744, " 4 "		26 00	34 00	44 00	52 00	62 00	80 00	100 00	170 00	230 00	.....

FOUR JAWS

Sizes, inches.....	6	9	12	15	18	21	24	30	36
Figs. 742 to 745, Nos. 0, 1, 2 or 4 Jaws.	$32 00	$42 00	$56 00	$64 00	$75 00	$95 00	$120 00	$200 00	$285 00

In ordering state what style jaw is desired.

SLIP JAW

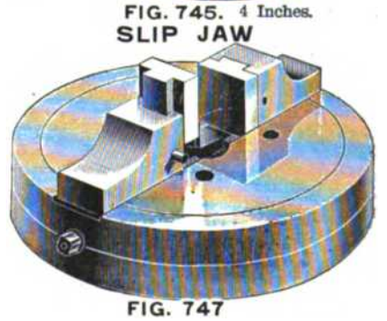


FIG. 747

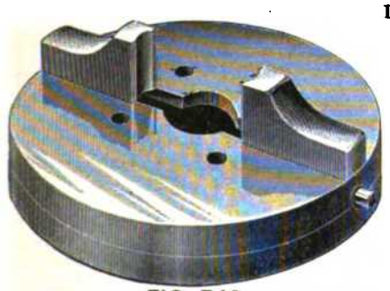


FIG. 746

This chuck is especially adapted for holding valves and brass work.

SWEETLAND UNIVERSAL AND INDEPENDENT TWO JAW CHUCKS

PRICES, FIGS. 746 AND 747

Sizes, Inches.	Universal.	Independent.
6	$20 00	$18 00
9	30 00	27 50
12	36 00	33 00

EXTRA SLIPS, PER PAIR

6 inches....$2 00 9 inches....$3 00 12 inches....$4 00

In ordering state what style jaw is desired.

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SKINNER COMBINATION LATHE CHUCKS

COMMON JAW CHUCK, STYLE A

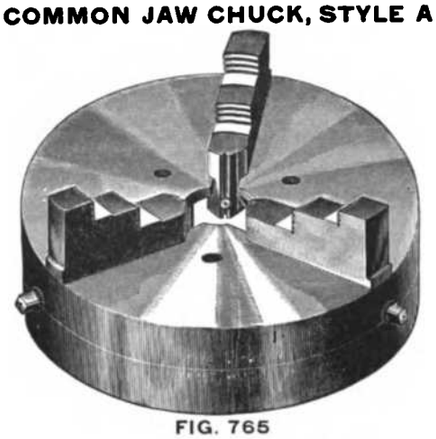


FIG. 765

Fig. 765 represents 5 inch three jaw combination chuck, with common jaws. This chuck has a large center hole, which permits of work or tools passing through it, and is a valuable feature, especially when the chuck is attached to a hollow spindle machine. The inside bite extends below as well as above the jaw screw.

REMOVABLE HUB CHUCK, STYLE A

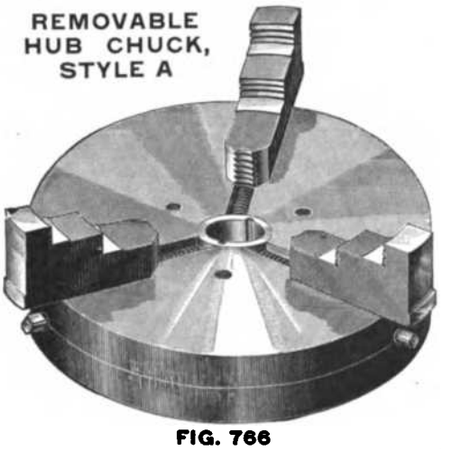


FIG. 766

Fig. 766 represents 9 inch three jaw combination chuck, with common jaws, and fitted with patent removable hub which is threaded into the shell, and is easily removed with a key wrench. This cut also shows the jaws extending so as to give a 9 inch chuck a capacity of over 10 inches.

Any size chuck will be made with hub to order, for which there will be an extra charge.

CHUCK STYLE B, JAWS WITH OUTSIDE BITE (NOT REVERSIBLE)

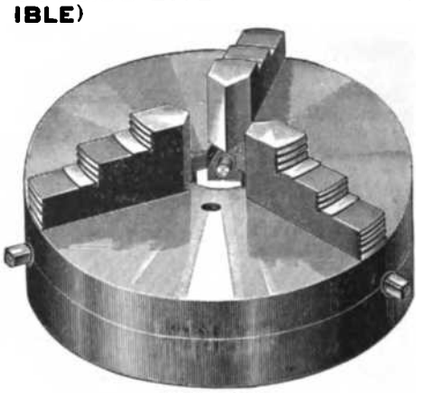


FIG. 767

Fig. 767 represents a combination chuck, with jaws with outside bite, the opposite to the common jaw. This chuck has a large center hole. The jaws have a long bite on the inside for holding rods, pipes, drills, etc., which may pass through the chuck. The outside bites are for holding rings, or work that is to be held from the inside.

CHUCK, STYLE C, JAWS WITH INSIDE BITE ONLY

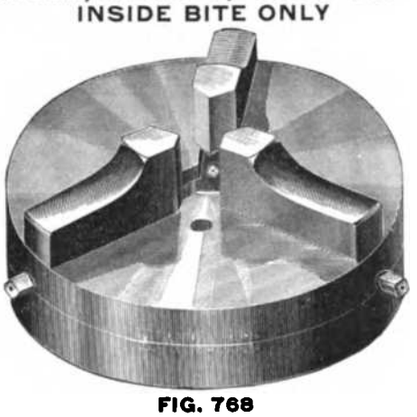


FIG. 768

Fig. 768 represents a three jaw combination chuck. We can furnish both three and four jaw chucks of this style. The three jaw chucks are used as drill chucks, also for holding rods and screws, and for brass finishing and hand tool work. The four jaw chucks are well adapted for holding the square end of taps or other square pieces, as well as round work.

MILLING MACHINE CHUCK, STYLE D

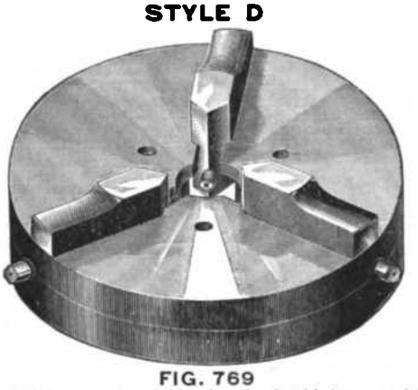
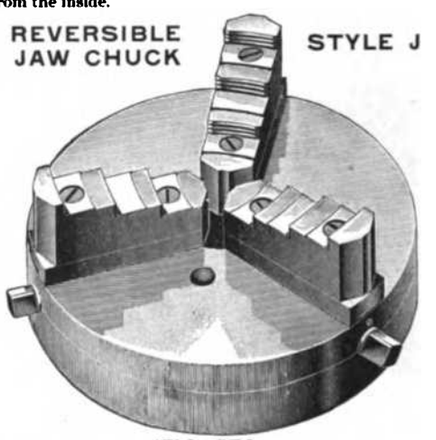


FIG. 769

Fig. 769 represents combination chuck with jaws specially adapted for use on universal milling machines. These chucks are also used on screw machines and other hollow spindle machines. The jaw bite is above and below the jaw screw.

REVERSIBLE JAW CHUCK STYLE J



IFIG. 770

Fig. 770 represents a 6 inch three jaw combination chuck with patent reversible jaws. The jaws in the smaller size chucks have more steps. The long bite of the jaw, in chucks 12 inch and smaller, is usually finished as shown, but can be slotted or creased on this bite if desired.

PRICES, FIGS. 765 TO 771. THREE JAWS

Rated Size of Chuck.	Diameter of Chuck Body.	Prices.	USE THESE NUMBERS IN ORDERING Style A.	Style B.	Style C.	Style D.	Style J.
3 inch	3¾ inch.	$18 00	603 A	603 B	603 C	603 D	603 J
4 "	4 15/16 "	22 00	604 A	604 B	604 C	604 D	604 J
5 "	6¼ "	25 00	605 A	605 B	605 C	605 D	605 J
6 "	7 "	26 00	606 A	606 B	606 C	606 D	606 J
8 "	8½ "	30 00	608 A	608 B	608 C	608 D	608 J
9 "	9¾ "	34 00	609 A	609 B	609 C	609 D	609 J
12 "	12½ "	44 00	612 A	612 B	612 C	612 D	612 J
15 "	15¼ "	52 00	615 A	615 B			615 J
18 "	17 "	62 00	618 A				618 J
21 "	20 "	80 00	621 A				621 J
24 "	21¾ "	100 00	624 A				624 J
26 "	26 "	130 00	626 A				626 J
30 "	30¼ "	170 00	630 A				630 J
36 "	35⅝ "	230 00	636 A				636 J
42 "		270 00	642 A				642 J

COMMON JAW CHUCK, STYLE A

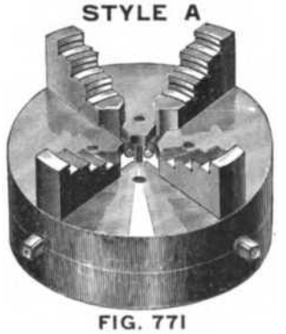


FIG. 771

Fig. 771 represents a 4 inch, four jaw combination chuck, with common jaws. The 3 inch and 4 inch chucks are furnished with this style jaw unless others are ordered. These jaws have one more step than the jaws for the larger sizes of chucks.

PRICES, FIGS. 765 TO 771. FOUR JAWS

Rated Size of Chuck.	Diameter of Chuck Body.	Prices.	USE THESE NUMBERS IN ORDERING Style A.	Style B.	Style C.	Style D.	Style J
4 inch	4 15/16 inch	$26 00	804 A	804 B	804 C	804 D	804 J
5 "	6¼ "	30 00	805 A	805 B	805 C	805 D	805 J
6 "	7 "	32 00	806 A	806 B	806 C	806 D	806 J
8 "	8½ "	38 00	808 A	808 B	808 C	808 D	808 J
9 "	9¾ "	42 00	809 A	809 B	809 C	809 D	809 J
12 "	12½ "	56 00	812 A	812 B	812 C	812 D	812 J
15 "	15¼ "	64 00	815 A	815 B			815 J
18 "	17 "	75 00	818 A				818 J
21 "	20 "	95 00	821 A				821 J
24 "	21¾ "	120 00	824 A				824 J
26 "	26 "	160 00	826 A				826 J
30 "	30¼ "	200 00	830 A				830 J
36 "	35⅝ "	285 00	836 A				836 J
42 "		325 00	842 A				842 J

TWO JAW CHUCK, STYLE F

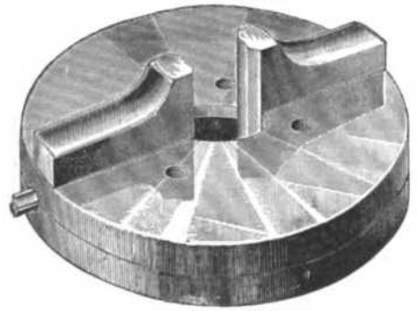


FIG. 772

Fig. 772 represents combination chuck with two jaws. The jaws are usually finished as shown in cut, but can be turned on any desired circle, or have a V slot on the bite. There is a hole through the center of the chuck, and the jaws have a long bearing on the work.

PRICES, FIGS. 772 AND 773 TWO JAWS

Rated Size of Chuck.	FIG. 772, STYLE F. Prices.	Use these Numbers in ordering.	FIG. 773, STYLE G. Prices.	Extra Slip Jaws, Per Set.	Use these Numbers in ordering.
4 inch	$20 00	504 F	$22 00	$1 75	504 G
5 "	21 00	505 F	23 00	1 75	505 G
6 "	22 00	506 F	24 00	2 00	506 G
8 "	28 00	508 F	30 00	3 00	508 G
9 "	30 00	509 F	32 00	3 00	509 G
12 "	40 00	512 F	42 00	3 50	512 G
15 "	48 00	515 F	50 00	4 00	515 G

A wrench and a set of bolts are furnished with each combination chuck.

TWO JAW CHUCK, STYLE G

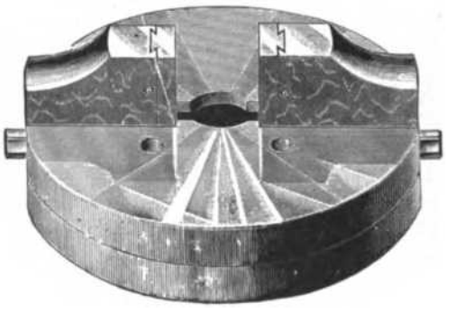


FIG. 773

Fig. 773 represents two jaw combination chuck with slip jaws dovetailed on to the bite of jaws. This chuck is used largely by brass workers.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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HORTON IMPROVED COMBINATION LATHE CHUCKS

UNIVERSAL, INDEPENDENT, AND ECCENTRIC REVERSIBLE JAWS

TWO, THREE OR FOUR JAW

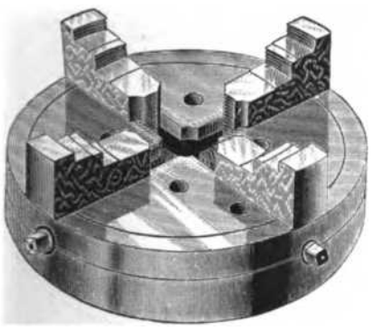


FIG. 774

Fig. 774 gives a view of the face of all four jaw combination chucks under 15 inches, showing the patent jaw.

PRICES, FIGS. 774 AND 775

Either Style of Jaw.

Three Jaw — Size, Inches.	Three Jaw — Each.	Four Jaw — Size, Inches.	Four Jaw — Each.
5	$25 00	5	$30 00
6	26 00	6	32 00
9	34 00	9	42 00
12	44 00	12	56 00
15	52 00	15	64 00
18	62 00	18	75 00
21	80 00	21	95 00
22	90 00	22	110 00
24	100 00	24	120 00
26	130 00	26	160 00
30	170 00	30	200 00
36	230 00	36	285 00
42	270 00	42	325 00

In ordering, state style of jaw wanted.

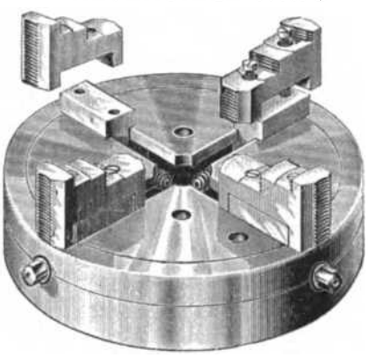


FIG. 775

This cut gives a view of the combination made with reversible jaws. It is practically as strong as a solid jaw, and allows of a continuous bite at either end of jaw the same as a solid jaw, thereby giving more strength and accuracy.

THE SWEETLAND COMBINATION CHUCKS

UNIVERSAL INDEPENDENT ECCENTRIC CONCENTRIC

NO. 2, OR INSIDE JAW

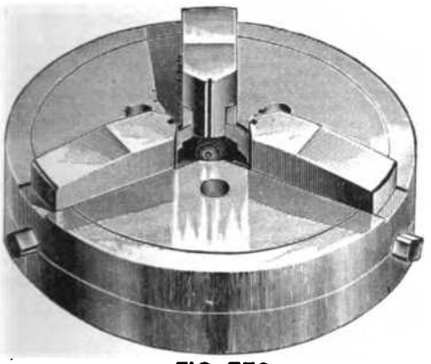


FIG. 776

The inside jaw chuck, Fig. 776, with No. 2 jaw, is designed for use on hollow spindle and milling machines, for holding pipe, drills, rod, etc. We furnish this chuck with the grooves in bite of jaws, cut lengthwise, especially for cutting-off machines, and it gives universal satisfaction.

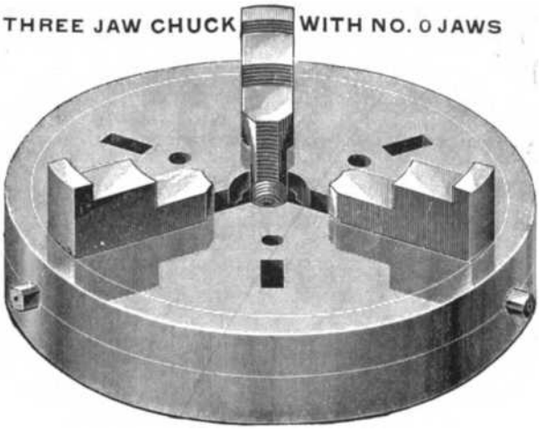


FIG. 777

The common or No. 0 jaw chuck is well adapted for general machine shop work.

NO. 1 JAW WITH OUTSIDE BITES NOT REVERSIBLE

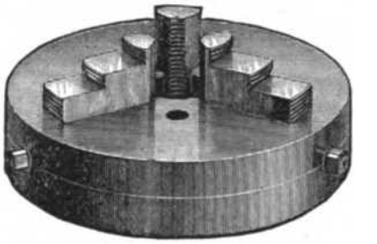


FIG. 778

This chuck is suitable for holding drills, screws, rods, etc., also for hand-tool work and brass finishing.

NO. 4 OR REVERSIBLE JAWS

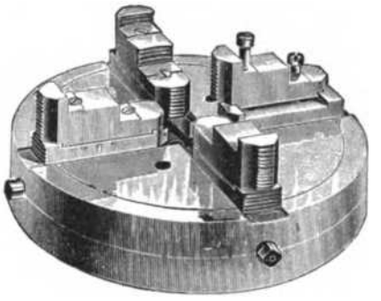


FIG. 779

PRICES, FIGS. 776 TO 779

THREE JAWS

Size, inches	4	6	9	12	15	18	21	24	30	36	42
Fig. 776, No. 2 jaws	....	$26 00	$34 00	$44 00	....	....	....	....	....	....	....
" 777, " 0 "	$22 00	26 00	34 00	44 00	$52 00	$62 00	$80 00	$100 00	$170 00	$230 00	$270 00
" 778, " 1 "	22 00	26 00	34 00	44 00	52 00	62 00	80 00	100 00	170 00	230 00	
" 779, " 4 "	....	26 00	34 00	44 00	52 00	62 00	80 00	100 00	170 00	230 00	

FOUR JAWS

Size, inches	6	9	12	15	18	21	24	30	36
Figs. 776 to 779, Nos. 0, 1, 2, or 4 jaw	$32 00	$42 00	$56 00	$64 00	$75 00	$95 00	$120 00	$200 00	$285 00

SWEETLAND GEARED SCROLL CHUCKS

PRICES, FIG. 780

Three Jaw Chucks — One Set Jaws. Inches.	One Set Jaws.	Two Sets Jaws.	Patent Solid Reversible Jaw.	Jaws (per set Three Jaws) — Common and Reverse.	Patent Solid Reversible Jaw.
2½	$7 50	$9 00	$8 25	2½	$2 25	$3 00
3	10 00	12 00	11 00	3	3 00	4 00
4	12 00	14 40	13 20	4	3 75	4 95
5	15 00	18 00	16 50	5	4 50	6 00
6	18 00	21 60	19 80	6	5 50	7 50
7½	20 00	24 00	22 00	7½	6 75	8 75
9	24 00	28 80	26 40	9	9 00	11 00
10½	27 00	32 40	29 70	10½	10 50	13 20
12	30 00	36 00	33 00	12	12 00	15 00

Four Jaw Chucks — One Set Jaws. Inches.	One Set Jaws.	Two Sets Jaws.	Patent Solid Reversible Jaw.	Jaws (per set Four Jaws) — Common and Reverse.	Patent Solid Reversible Jaw.
3	$11 00	$13 60	$12 30	3	$4 00	$5 20
4	13 20	16 40	14 80	4	5 00	6 60
5	16 50	20 50	18 50	5	6 00	8 00
6	19 80	24 60	22 20	6	7 30	9 70
7½	22 00	27 30	24 65	7½	9 00	11 65
9	26 40	32 80	29 60	9	12 00	15 20
10½	29 70	37 00	33 35	10½	14 00	17 65
12	33 00	41 00	37 00	12	16 00	20 00

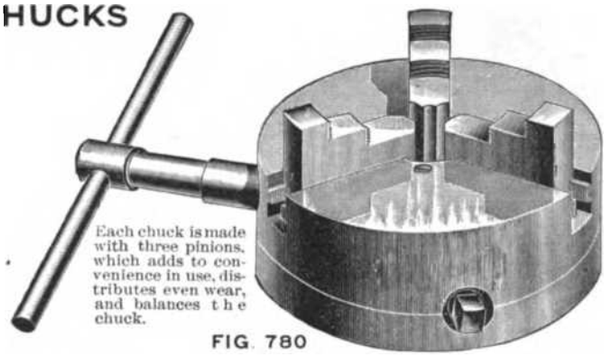


FIG. 780

Fig. 780 shows the complete chuck fitted with No. 0 or common jaws. Unless ordered differently, all scroll chucks will be fitted with common jaws.

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UNION GEARED SCROLL CHUCK

COMMON OR OUTSIDE JAW

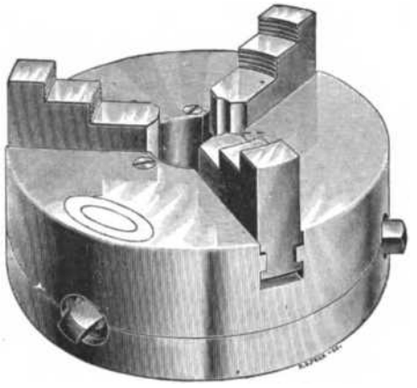


FIG. 781

REVERSIBLE JAWS

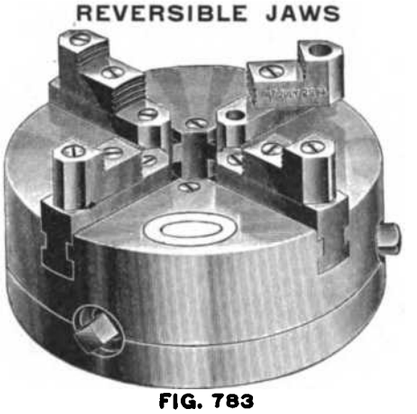


FIG. 783

PRICES, FIGS. 781 TO 784

THREE JAW CHUCKS

Diameter Hole. Inches.	Diameter Face Plate. Inches.	One Set Jaws. Inches.	One Set Jaws.	Two Sets Jaws.	Patent Solid Reversible Jaws.
5/8	....	2½	$7 50	$9 00	$7 50
5/8	2⅞	3	10 00	12 00	10 00
¾	3 1/16	4	12 00	14 40	12 00
⅞	3¾	5	15 00	18 00	15 00
1 1/16	4¾	6	18 00	21 60	18 00
2	4¾	7½	20 00	24 00	20 00
2½	5¾	9	24 00	28 80	24 00
3	5¾	10½	27 00	32 40	27 00
3	7	12	30 00	36 00	30 00
3¼	8	15	40 00	48 00	40 00
3½	10	18	55 00	66 00	55 00
4½	11	21	80 00	96 00	80 00

FOUR JAW CHUCKS

Diameter Hole. Inches.	Diameter Face Plate. Inches.	One Set Jaws. Inches.	One Set Jaws.	Two Sets Jaws.	Patent Solid Reversible Jaws.
5/8	2⅞	3	$11 00	$13 60	$11 00
¾	3 1/16	4	13 20	16 40	13 20
⅞	3¾	5	16 50	20 50	16 50
1 1/16	4¾	6	19 80	24 60	19 80
2	4¾	7½	22 00	27 30	22 00
2½	5¾	9	26 40	32 80	26 40
3	5¾	10½	29 70	37 00	29 70
3	7	12	33 00	41 00	33 00
3¼	8	15	44 00	54 60	44 00
3½	10	18	62 00	77 00	55 00
4½	11	21	90 00	110 00	90 00

When ordering be particular to state whether Three or Four Jaw Chuck is wanted and the style of jaw.

EXTRA SETS OF JAWS

Inches.		2½	3	4	5	6	7½
Per Set,	Three Jaws,	$2 25	$3 00	$3 75	$4 50	$5 50	$6 75
"	Four "		4 00	5 00	6 00	7 30	9 00

Inches.		9	10½	12	15	18	21
Per Set,	Three Jaws,	$9 00	$10 50	$12 00	$15 00	$18 00	$24 00
"	Four "	12 00	14 00	16 00	20 00	24 00	32 00

COMMON OR INSIDE JAW

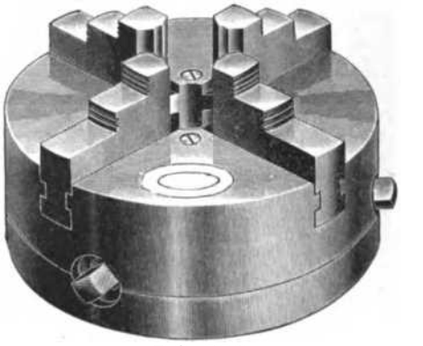


FIG. 782

WITH TWO SETS OF JAWS

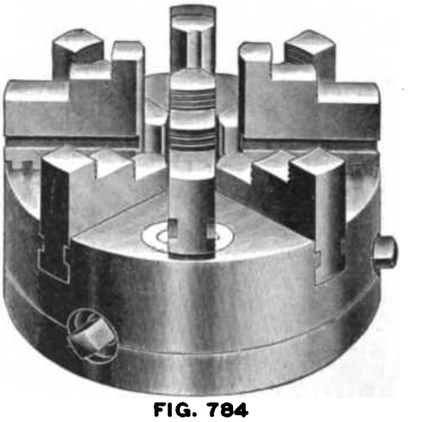


FIG. 784

UNIVERSAL GEARED SCROLL CHUCKS

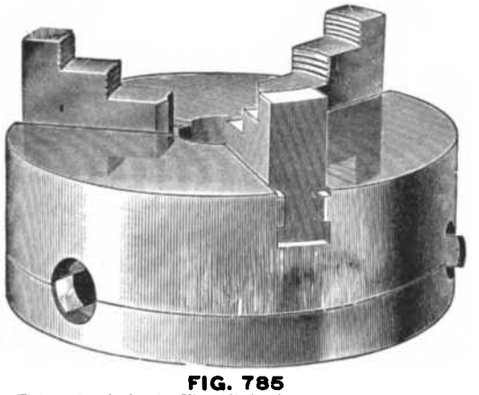


FIG. 785

This style of chuck, Fig. 785, is the one most commonly used for holding round pieces. It is strictly a universal chuck, the jaws being moved simultaneously by the scroll threaded plate.

PRICES, FIG. 785

STYLE "H"—THREE PINIONS

Size. Inches.	Diameter of Hole. Inches.	Diameter of Face-plate Recess. Inches.	Three Jaw.	Three Jaw, Two Sets.	Four Jaw.	Four Jaw, Two Sets.	Extra Sets of Three Jaws ordered without Chuck	Extra Sets of Four Jaws ordered without Chuck.
2½	5/8	....	$7 50	$9 00	....	....	$2 25	....
3	5/8	2⅞	10 00	12 00	$11 00	$13 60	3 00	$4 00
4	1	3 1/16	12 00	14 40	13 20	16 40	3 75	5 00
5	1¼	3¾	15 00	18 00	16 50	20 50	4 50	6 00
6	1 1/16	4¾	18 00	21 60	19 80	24 60	5 50	7 30
7½	2	4¾	20 00	24 00	22 00	27 30	6 75	9 00
9	2½	5¾	24 00	28 80	26 40	32 80	9 00	12 00
10½	3	5¾	27 00	32 40	29 70	37 00	10 50	14 00
12	3	7	30 00	36 00	33 00	41 00	12 00	16 00
15	3¼	7	40 00	48 00	44 00	54 60	15 00	20 00

STYLE "K"—ONE PINION ONLY, FORMERLY CALLED "AMATEURS' GEARED"

Size, 2 inches; diameter of hole, ½ inch; three jaws, $6.00; four jaws, two sets, $7.50; extra sets of three jaws, ordered without chuck, $2.25.

The pinions in the 2 inch, 2½ inch, and 3 inch are now made with square holes instead of square heads.

CHAMPION GEARED SCROLL CHUCKS

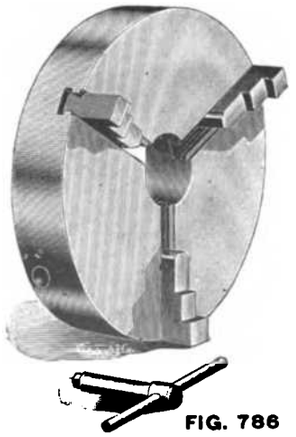


FIG. 786

DESCRIPTION, FIG. 786

Figure 786 shows a 7½ inch chuck of this new line, and fairly represents the proportions of all the sizes. These chucks are made with a solid body (having no joint), and are adapted especially for use on light lathes.

All the sizes are mounted by means of face plates, and are universal or self-centering only. They are operated by keys.

PRICES, FIG. 786

Sizes. Inches.		One Set Jaws, outside or inside. Each.	Two Sets Jaws. Each.	Extra Sets Jaws, ordered without Chuck.
3	3 Jaws	$9 00	$11 00	$2 25
	4 "	10 00	12 50	2 75
4	3 "	11 00	13 50	3 00
	4 "	12 50	15 56	3 50
5	3 "	14 00	16 50	3 00
	4 "	16 00	19 00	3 50
6	3 "	16 00	19 00	3 50
	4 "	18 00	22 00	4 50
7½	3 "	18 00	21 00	3 50
	4 "	20 00	24 00	4 50
9	3 "	20 00	23 00	3 50
	4 "	22 00	26 00	4 50

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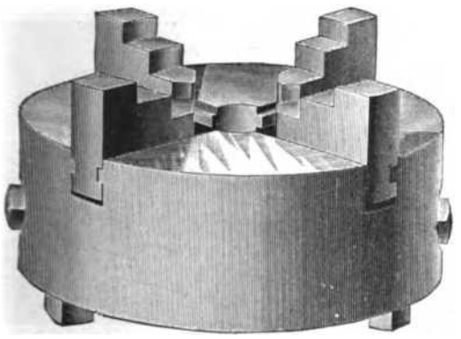


FIG. 787

Figure 787 shows a chuck of this line fitted with four No. 1 style jaws. Four jaw 1884 chucks are provided with only two pinions.

1884 PATENT GEARED SCROLL CHUCKS

DESCRIPTION, FIGS 787 AND 788

The front plate or body, in which the scroll and jaws are fitted, consists of one piece only, and this is directly attached to the face plate of the lathe. The body of the chuck is thus made without any joint and is very deep under the jaw, so that there is no danger of breakage from the corner of the slot to the joint. A back plate, which closes the opening in the chuck body and supports the inner ends of the pinions, is held in place by the face plate screws, which also serve to attach the chuck to the face plate.

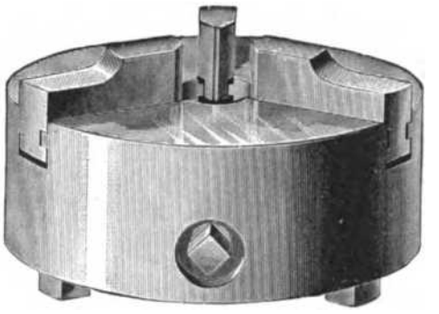


FIG. 788

Figure 788 shows an 1884 patent chuck fitted with three No. 3 jaws. This is very useful as a milling machine chuck, and the larger sizes are perfectly adapted for use as cutting-off chucks, since they have large holes and are very strongly made.

PRICES, FIG. 787 AND 788

Sizes, Inches.		Will Hold.	Approx. Weight, Pounds. (3 Jaws.)	One Set Jaws.	Two Sets Jaws.	Extra Sets Jaws, ordered Without Chuck.
2½	3 Jaws	3	1¾	$7 50	$9 00	$2 00
	4 Jaws			8 50	10 50	2 50
3	3 Jaws	3⅜	3	10 00	12 00	2 50
	4 Jaws			11 00	13 60	3 00
4	3 Jaws	4¼	5¾	12 00	14 40	3 00
	4 Jaws			13 20	16 40	3 75
5	3 Jaws	5⅜	8¾	15 00	18 00	3 50
	4 Jaws			16 50	20 50	4 50
6	3 Jaws	6¾	12½	18 00	21 60	4 00
	4 Jaws			19 80	24 60	5 25
7½	3 Jaws	8¼	21	$20 00	$24 00	$4 50
	4 Jaws			22 00	27 30	6 00
9	3 Jaws	10½	33	24 00	28 80	5 50
	4 Jaws			26 40	32 80	7 50
10½	3 Jaws	11½	42	27 00	32 40	6 50
	4 Jaws			29 70	37 00	8 50
12	3 Jaws	13½	58	30 00	36 00	7 50
	4 Jaws			33 00	41 00	9 50
15	3 Jaws	16¼	94	40 00	48 00	10 00
	4 Jaws			44 00	54 60	12 00

SOLID REVERSIBLE JAWS

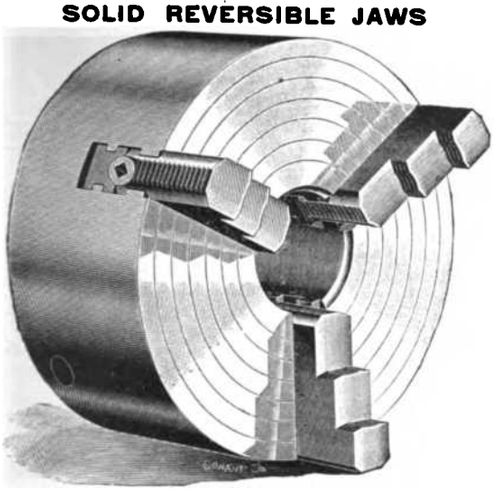


FIG. 789

GEARED SCROLL COMBINATION CHUCKS

DESCRIPTION AND PRICES, FIG. 789

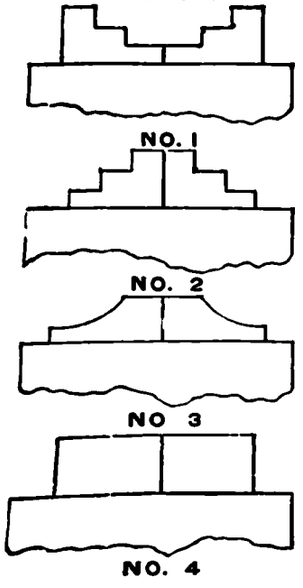
By providing such a chuck with independently adjustable and reversible jaws, the utmost convenience is attained. The independently adjustable jaws may be set as required for chucking round, elliptical, or irregular work, either true or in an eccentric position, and the Geared Scroll Jaw operating mechanism may be used to grip the work. Chucks 18 inches in diameter and larger have deep T slots in their faces between the jaws so that bolts may be conveniently used when required.

Sizes, Inches.	Will Hold.	Approx. Weight, Pounds. (3 Jaw)	Three Jaws.	Four Jaws.
4	5⅜	9	$20 00	$26 00
5	6½	13	22 00	28 00
6	7⅝	20	24 00	30 00
7½	9¼	29	26 00	32 00
9	11¼	45	34 00	42 00
10½	12½	60	40 00	50 00
12	14¾	85	44 00	56 00
15	17½	115	52 00	64 00
18	21	190	62 00	75 00
21	24	275	80 00	95 00
24	27	375	100 00	120 00
28	30	550	150 00	180 00
32	35	700	200 00	250 00

EXTRA HEAVY GEARED SCROLL CHUCKS

The chucks of this line are supplied fitted with No. 1, No. 2, No. 3, No. 4, and two sets of No. 1 and No. 2 jaws, as shown on the left. We call attention to the importance of the No. 4 jaws, which can be readily shaped for any special piece or easily kept true for holding partially finished work for later chucking.

STYLE JAWS FOR CHUCK FIG. 790



PRICES, FIG. 790

Sizes, Inches.		One Set Jaws, Each.	Two Sets Jaws, Each.	Extra Sets Jaws, Without Chuck. Styles Nos. 1, 2, 3,	Style No. 4.
4	3 Jaws	$16 00	$20 00	$4 00	$3 00
	4 Jaws	18 00	23 50	5 50	4 00
5	3 Jaws	20 00	24 00	4 00	3 00
	4 Jaws	22 00	27 50	5 50	4 00
6	3 Jaws	24 00	30 00	6 00	4 00
	4 Jaws	27 00	35 00	8 00	5 00
7½	3 Jaws	28 00	36 00	8 00	6 00
	4 Jaws	32 00	42 50	10 50	8 00
9	3 Jaws	35 00	45 00	10 00	8 00
	4 Jaws	40 00	53 50	13 50	10 00
12	3 Jaws	45 00	60 00	15 00	12 00
	4 Jaws	52 50	72 50	20 00	16 00
15	3 Jaws	65 00	83 00	18 00	15 00
	4 Jaws	74 00	98 00	24 00	20 00
18	3 Jaws	90 00	110 00	20 00	17 00
	4 Jaws	100 00	127 00	27 00	22 00
21	3 Jaws	120 00	142 00	22 00	19 00
	4 Jaws	131 00	160 00	29 00	25 00
24	3 Jaws	150 00	175 00	25 00	20 00
	4 Jaws	162 50	196 00	33 50	27 00
28	3 Jaws	200 00	230 00	30 00	24 00
	4 Jaws	215 00	255 00	40 00	32 00
32	3 Jaws	275 00	315 00	40 00	30 00
	4 Jaws	295 00	350 00	55 00	40 00

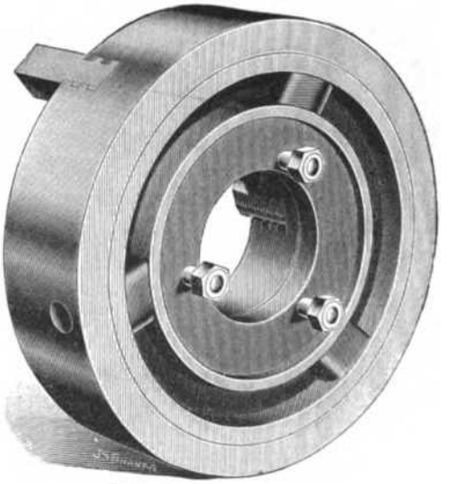


FIG. 790 (REAR VIEW)

These chucks are made of one piece only and very deep underneath the jaw.

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NO. 1 JAWS



FIG. 791

2 inch size, with taper hole in hub.

NO. 2 JAWS

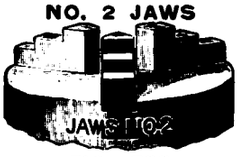


FIG. 793

AMATEURS' LEVER SCROLL CHUCKS

DESCRIPTION, FIGS. 791 TO 793

This line of small lever scroll chucks was originally designed for use on foot lathes and light machinery, but they are quite as well adapted for general machinists' use, and for any work within their capacity.

These chucks are operated by hand, but we furnish a lever with each for use when it is required to hold work extra tight.

When chucks are ordered and no style of jaws is mentioned, No. 1 jaws will always be sent. When chucks are ordered with two sets of jaws, we will send a set each of No. 1 and No. 2.

NO. 1 JAWS

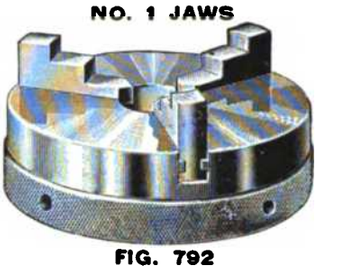


FIG. 792

3 inch, 4 inch and 5 inch sizes made with recess in back for face plate.

PRICES, FIGS. 791 TO 793

Diameters, Inches.	With One Set of Jaws, Each.	With Two Sets of Jaws, Each.	Extra Sets of Jaws Ordered without Chuck.
2	$4 50	$5 75	$1 85
3	5 50	6 75	1 85
4	6 50	8 00	2 25
5	7 50	9 00	2 25

CHUCKS FOR CUTTING OFF LATHE

THREE JAW

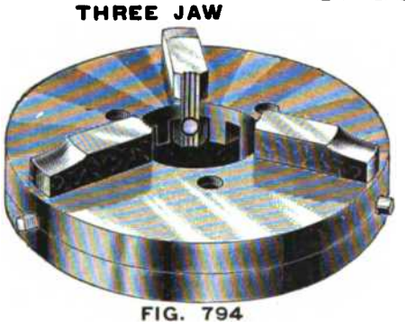


FIG. 794

FOUR JAW

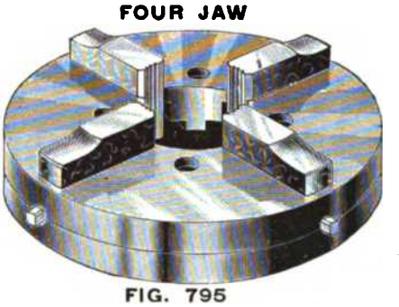


FIG. 795

THREE JAW. NO. 1 JAWS

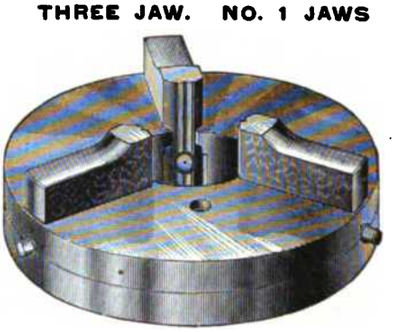


FIG. 796

This cut represents 8, 12, 14 and 17 inch chuck, made with No. 1 jaws.

DESCRIPTION, FIGS. 794 TO 796

These chucks are universal and are made expressly for use on a cutting off machine. They are very strong, the bite of jaw being on both sides of carrying screw, and the body being made extra heavy, with seat for face plate in back as large as the diameter of the chuck will admit.

PRICES, FIGS. 794 TO 796

Sizes, inches.	7	8	9	12	No. 14 P. & W.	No. 14 H. & R.	17	20	24
Size holes, through center, inches	1¼	2⅛	2 9/16	3⅛	4⅛	4⅝	5⅛	6½	8½
Three jaw.....each,	$26 00	30 00	34 00	44 00	52 00	56 00	62 00	80 00	100 00
Four jaw..... "	32 00	38 00	42 00	56 00	64 00	68 00	.....	.....	.....

No. H. & R., used on Hurlburt & Rogers Machine; No. P. & W., used on Pratt & Whitney Machine. We furnish wrench, but no bolts, with the chucks.

PATENT CUTTING OFF CHUCK

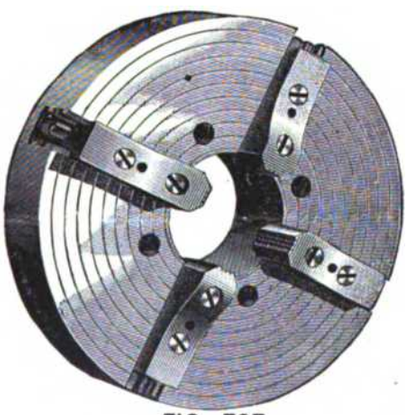


FIG. 797

JAWS ARE INDEPENDENT AND UNIVERSAL

DESCRIPTION, FIG. 797

This cut shows a 16 inch cutting off chuck, having 5½ inch hole. It will take iron or steel from ¾ inch up to 5½ inches. The jaws have a long bite on the work, holding it firmly. The jaws being independent as well as universal, they can be set true independently, and afterward used universally. This is a very strong, durable chuck, very convenient and efficient.

In the 16 inch and larger, patent jaws are furnished.

PRICES, FIG. 797

Diameter, Inches.	Center Holes.	Diameters of Recess for Face plate.	Three Jaws.	Four Jaws.	Unfinished Face plate Castings.
7½	1½ inch.	3½ inch.	$26 00	$32 00	$0 25
10⅛	2⅝ "	4 7/16 "	34 00	42 00	50
13¼	3½ "	5 9/16 "	44 00	56 00	75
16	Spec. Pat. 5½	8¼ "	52 00	64 00	2 00
18½	" " 7		62 00	75 00	
21¼	" " 9		80 00	95 00	
24	" " 12		100 00	120 00	

NATIONAL CUTTING OFF CHUCK

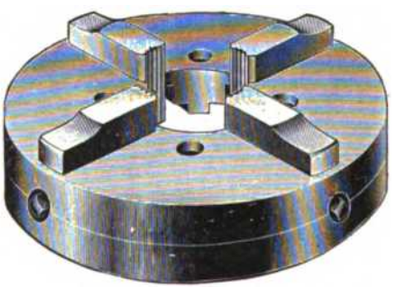


FIG. 798

This chuck is designed for cutting off machines with long bit so as to hold the work very firm. Furnished in either Combination or Universal.

Sizes.	Three Jaw, Each.	Center Hole, Sizes.	Four Jaw, Each.
6 inch.	$26 00	2 inch.	$32 00
9 "	34 00	2¾ "	42 00
12 "	44 00	3 "	56 00
15 "	52 00	4 "	64 00
18 "	62 00	5¼ "	75 00
21 "	80 00	6 "	95 00
24 "	100 00	8½ "	120 00

Cutting-Off Chucks above 16 inches in diameter are made to order only. For other Cutting-Off Chucks, see Pages 125, 127, 129, 131.

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HEAVY PATTERN UNIVERSAL CUTTING OFF CHUCK

Fig. 799 represents Heavy Pattern Universal Lathe Chuck, designed for use on cutting off machines. It is made extra heavy in every part.

DIMENSIONS, FIG. 799

Sizes of Chuck Body, Inches.	Diameter of Center Holes, Inches.	Diameter of Face-plate Seats, Inches.
8	1⅞	4½
9	2⅛	5
9	*2 9/16	5
12	3⅛	7¼
14	4⅛	8 17/32
17	5⅛	11
20	6¼	12
24	8½	15
30	9¾	18

PRICES, FIG. 799

Rated Sizes of Chucks, Inches.	Three Jaw.	Four Jaw.
8	$30 00	$38 00
9	34 00	42 00
12	44 00	56 00
14	56 00	64 00
17	62 00	75 00
20	80 00	95 00
24	100 00	120 00
30	170 00	200 00

*This chuck is made to order only; all other sizes are carried in stock.



FIG. 799

EXTRA HEAVY CUTTING OFF CHUCK

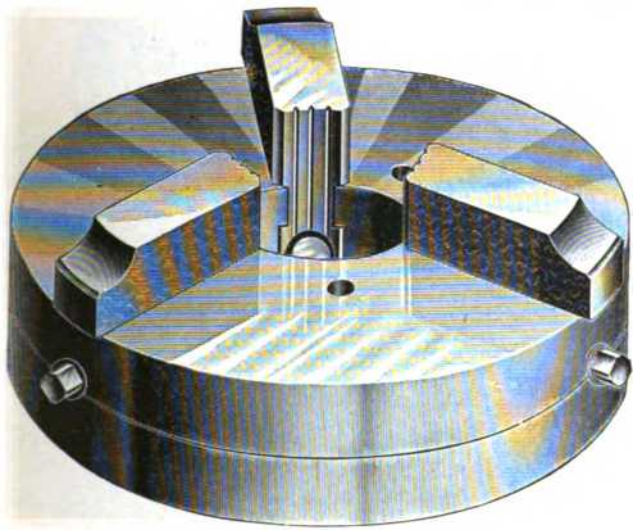


FIG. 800

DESCRIPTION, FIG. 800

Fig. 800 represents Extra Heavy Cutting Off Chuck, which is made expressly for rough and heavy work in rolling mills, etc. It will hold bars of any required length, from about 1⅛ inches in diameter up to as large as will pass through the opening in the center. We can furnish in four sizes, 9, 11, 14, and 17 inches, made expressly to fit Hurlbut & Rogers cutting off machines, 2, 3, 4, 5 inches.

PRICES, FIG. 800

Sizes, Inches.	Weight, Pounds.	Will Hold, Inches.	Diameter Over All, Inches.	
9	39	2⅛	10⅛	$40 00
11	60	3⅛	12⅜	50 00
14	99	4⅛	15 7/16	60 00
17	138	5⅛	18½	70 00

IMPROVED BENCH CENTERING CHUCK

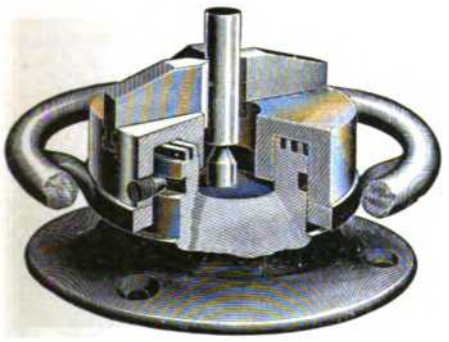


FIG. 801

Diameter of face, 5½ inches; diameter of base, 7½ inches; height, 4 inches.

This is practically a four jaw scroll chuck, having a pointed steel center, as shown in above cut.

The pieces are centered by being held in the chuck and then struck with a hammer or mallet.

They will perfectly center round, square and octagon stock from ¼ inch to 1½ inches.

Price, $12.00.

Can furnish three jaw chucks at same price, but we always send four jaw unless the three jaw is ordered.

SPECIAL GRINDING MACHINE CHUCK



FIG. 802

This chuck is especially adapted for grinding machines where light work is required. It can also be used on a lathe without face plate.

Size, 3 inches; diameter of hole, ⅝ inch. Price, $10.00.

BICYCLE CHUCK

SLIP JAWS AND SIDE SCREW TWO JAWS

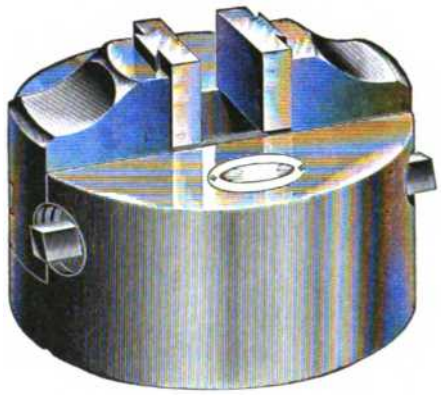


FIG. 803

We send this chuck with slip jaws of cast iron, unless otherwise ordered, but they can be made of steel, if desired, at a slight additional expense.

We desire to call attention to the fact that the 15 inch size, being extra heavy, has a double lock in the shell on both sides of the jaw.

Sizes, inches,	4½	6	7	9	12	15
Jaws take, inches...	2	2½	3	4	6	8
Diameters of hole, ins.	1	1¼	1½	2	2⅜	3½
Prices....	$16 00	20 00	24 00	30 00	36 00	42 00

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SPECIAL JAW CHUCK



FIG. 804

THIS CHUCK IS ESPECIALLY DESIGNED FOR BRASS WORK

We desire to call the attention of manufacturers who are large consumers of brass and soft metals, and whose work demands a chuck for holding special sizes and shapes of brass work, to this Special Jaw Chuck. By use of screws, as shown in above cut, the fixtures for holding odd shapes, sizes or designs can be readily attached so as to be operated by this chuck, in a most satisfactory manner.

The size mostly used is 4 inch, for which we give price below. However, we can furnish any size wanted.

4 inch, Three Jaw, price.... ....$22 00

UNION ROUND BODY CHUCK

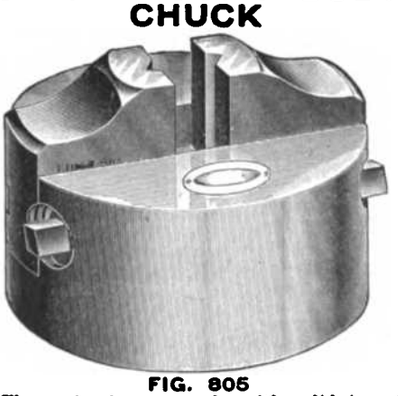


FIG. 805

These chucks are made with solid jaws in which are central V grooves for holding round or irregular work. The operating screw is so placed as to engage the jaws on their sides, leaving an unobstructed hole through the center of the chuck.

The 15 inch size, being extra heavy, has a double lock in the shell on both sides of the jaw.

This chuck when made regular is "Universal" but can be furnished "Independent" if desired.

Diam., Inches.	Diam. of Hole, Inches.	Prices.	Diam., Inches.	Diam. of Hole, Inches.	Prices.
4½	1	$12 00	9	2	$30 00
6	1¼	18 00	12	2⅜	36 00
7	1½	24 00	15	3½	42 00

UNION BOX BODY CHUCK

TWO JAWED SLIP JAWS

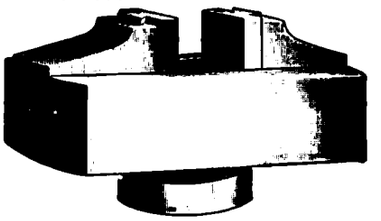


FIG. 806

If desired, we can furnish special slip jaws formed to hold any irregular piece of work, at small advance in cost.

We can furnish this chuck with jaws operating independent, when so specified, without extra charge.

Sizes, Inches.	Jaws take Inches.	Prices, Chuck.	Extra Slip Jaws—Iron, per Pair	Extra Slip Jaws—Steel, per Pair
7	3	$24 00	$1 00	$2 00
9	4	30 00	1 25	3 00
12	6	36 00	1 25	4 00
15	8	42 00	1 50	5 00

CUSHMAN IMPROVED TWO JAW CHUCKS

FOR BRASS WORKERS AND GENERAL MACHINE WORK

STYLE D. ROUND BODY, SLIP JAWS

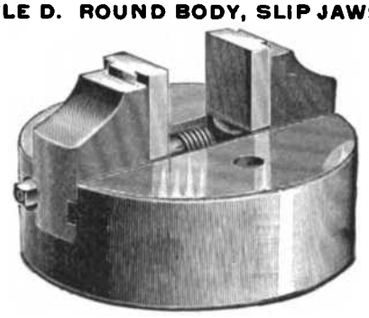


FIG. 807

STYLE C. ROUND BODY, V JAWS

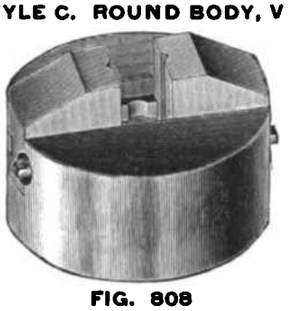


FIG. 808

STYLE E. BOX BODY, SLIP JAWS

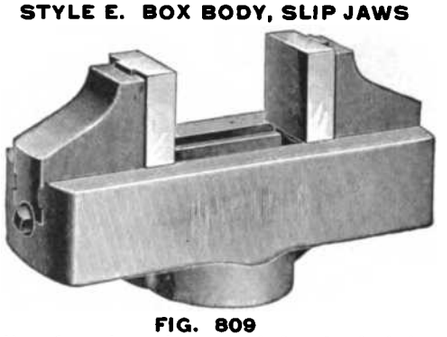


FIG. 809

DESCRIPTION, FIGS. 807 TO 809

These chucks, excepting Fig. 809, are designed to be fitted to machine by means of an intermediate face plate, the back of the chucks being recessed for that purpose. They are usually made with right and left screw, the jaws working simultaneously, but we can furnish them with independent jaws if so required. The screw of the 4½ inch (Figs. 807 and 808) has a square hole for key, but in larger sizes the screws have square heads, as shown in cuts.

Style E or box body chucks are for general brass work, and for holding valves and similar work, and are useful in many places where a round body could not be used to advantage. These chucks have a hub at the back side, which is to be threaded out to fit the spindle of machine. We furnish them having a plain hole.

DIMENSIONS

Sizes, Inches	4½	6	7	9	12	15	18
Jaws open, style C	1¼	1½	2	2½	3		
" " D or E	1½	2	2½	3½	5	6	9
Width of body, style E	....	....	3½	4¼	4½	5	5½
Diameter of hub, style E	....	....	3⅜	4	4½	5	5
Hole in hub, style E	....	....	1¼	1⅜	1⅜	1⅜	1⅞

FIGS. 807 TO 809 — PRICES

Sizes, Inches	4½	6	7	9	12	15	18
Style C, Fig. 808	$12 00	$18 00	$24 00				
" D, " 807	16 00	20 00	24 00	$30 00	$36 00		
" E, " 809	....	....	24 00	30 00	36 00	$42 00	$60 00
Extra iron slips, per pr.	1 00	1 00	1 00	1 25	1 25	1 50	2 00
" steel " "	2 00	2 00	2 00	3 00	4 00	5 00	6 00

WHITON IMPROVED TWO JAW CHUCKS

V GROOVE JAWS

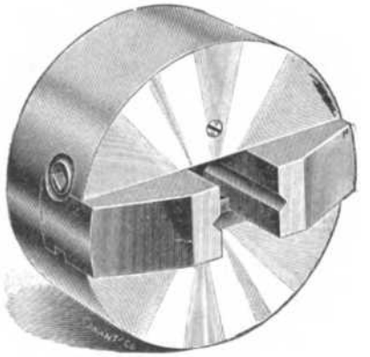


FIG. 810

Sizes, inches	4½	6	7½	9
Price	$12 00	$18 00	$24 00	$30 00

SLIP JAWS

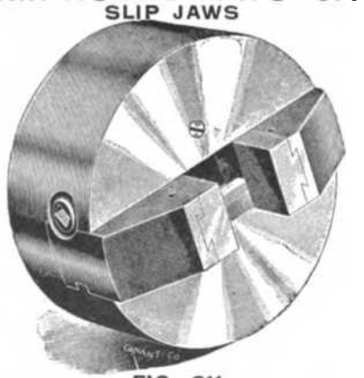


FIG. 811

Sizes, Inches	4½	6	7½	9
Price	$16 00	$20 00	$24 00	$30 00
Slip jaws, steel, per pair	2 00	2 00	2 00	3 00
Slip jaws, iron, per pair	1 00	1 00	1 00	1 25

BOX BODY SLIP JAWS

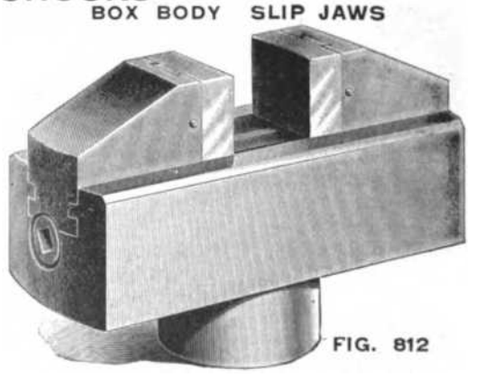


FIG. 812

Sizes, inches	7½	9	12	15
Slip jaws, flat face	$24 00	$30 00	$36 00	$42 00
" " V groove	24 00	30 00	36 00	42 00
Extra jaws, steel, per pair	2 00	3 00	4 00	5 00
" " iron, " "	1 00	1 25	1 25	1 50

These chucks are furnished regularly "Universal," but we can furnish them with independent jaws if required.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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HORTON IMPROVED BOX BODY INDEPENDENT CHUCK

WITH SLIP JAWS



FIG. 813. REAR VIEW

These chucks are attached to lathe by means of a face-plate being first fitted to lathe spindle, afterward fitted to recess in back of chuck, and held in position by strong bolts.

The permanent jaws are of forged steel; the slip jaws are of soft steel, which can be hardened after being fitted to work.

If cast-iron slip jaws are preferred, we furnish them.

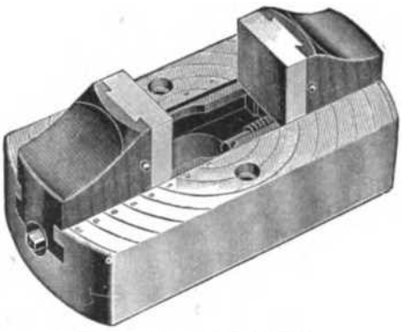


FIG. 813. TOP VIEW

WITH ONE PAIR SLIP JAWS

Size, inch	6	8	10	12	14	15
Prices	$20 00	24 00	28 00	34 00	40 00	42 00

SLIP JAWS, REGULAR SIZE

For chuck. Size, inch	6	8	10	12	14	15
Per pair	$2 00	2 25	3 00	4 00	4 50	5 00

PATENT VALVE CHUCK

WITH BALL BEARINGS

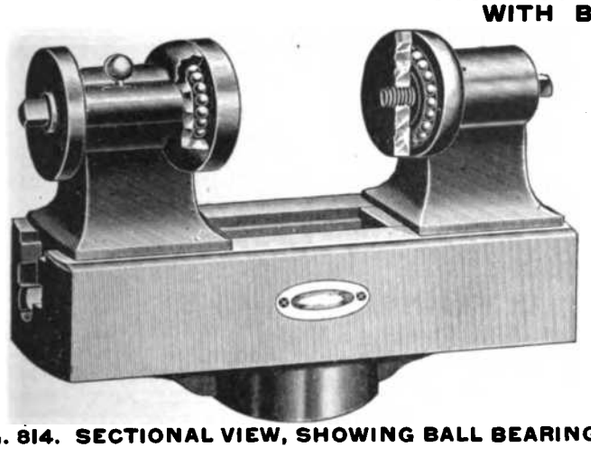


FIG. 814. SECTIONAL VIEW, SHOWING BALL BEARINGS

DESCRIPTION, FIG. 814

The Patent Valve Chuck is a special Universal Box Body Chuck. It is fitted with index plates, and jaws of any shape for holding special work can be attached.

It is specially designed for holding globe valves, faucets, fittings, etc.

The special feature of this chuck is the fact that the controlling screw does not have to be released in order to revolve the special jaws, the same being overcome by the adoption of patent ball bearings.

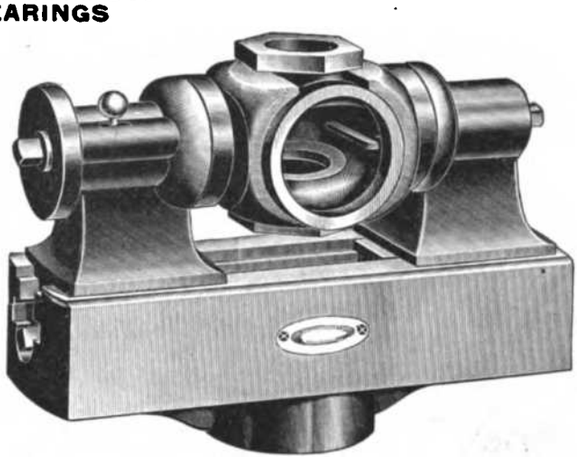


FIG. 814. CHUCKS WITH DISKS OR JAWS HOLDING VALVE

DIMENSIONS, FIG. 814

	Inches.	Inches.	Inches.	Inches
Length of body	7	9	12	15
Distance from face of chuck to center of disk	1½	2¼	3	3⅜
Takes globe valve up to	½	1	1½	2

Prices quoted on application.

COMBINATION CAR WHEEL CHUCK

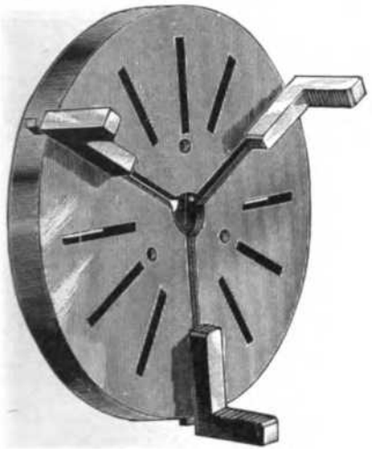


FIG. 815

THREE JAW

Diameters.	Prices.
30 inch	$185 00
36 "	250 00
42 "	300 00

BOUTON CAR WHEEL CHUCK

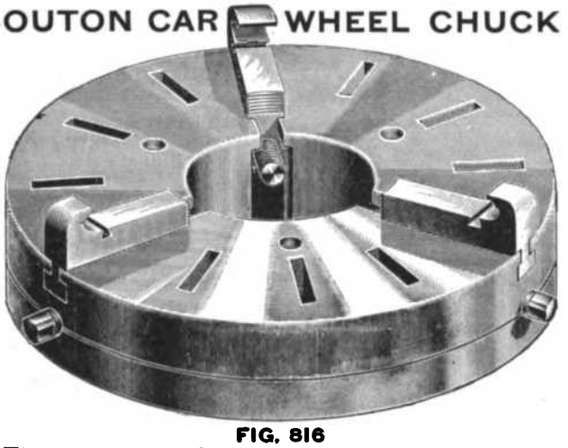


FIG. 816

The engraving above represents a new patent 36 inch car wheel chuck, recently built and placed upon the market. It is constructed with an opening in the center large enough for the hub and back of the wheel to be ground to enter sufficiently for the back of the flange to rest against the body of the jaw, while the bite of the jaw, when thrown into work, bears upon the chilled face of the wheel flange and the wheel is perfectly centered automatically for grinding the periphery up to the throat of the wheel. Prices on application.

COMBINATION CAR WHEEL CHUCK

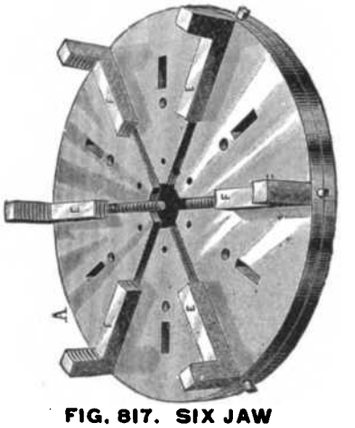


FIG. 817. SIX JAW

THREE AND SIX JAW

Diameters.		Prices.
30 inch, three jaws		$185 00
36 "	"	250 00
42 "	"	300 00
42 "	six jaws	400 00

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DRILL PRESS TABLE CHUCKS

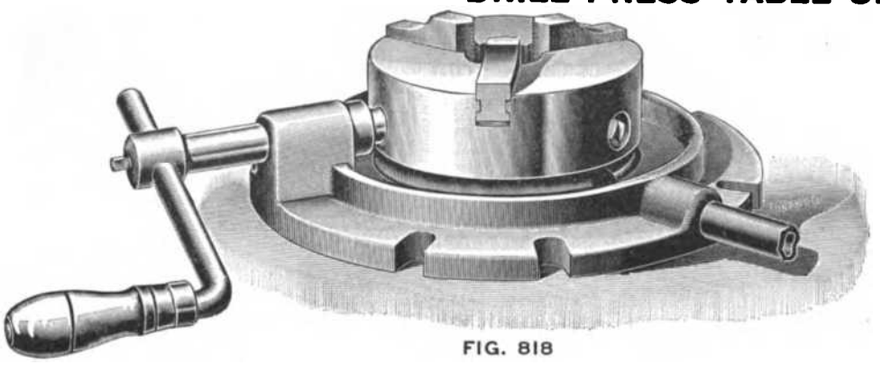


FIG. 818

DESCRIPTION, FIG. 818

Fig. 818 shows a method of mounting a geared scroll chuck for use on a drill press table for special work in oil or soda water. The pan retains the oil, and an overflow pipe may be provided, enabling the chips to drain and the oil to be used over and over. The crank handle affords means for rapidly opening and closing the chuck.

PRICES AND FULL INFORMATION ON APPLICATION

MILLING MACHINE INDEX CHUCKS

DESCRIPTION, FIG. 819

Fig. 819 shows a very useful tool, which is a great convenience in the equipment of the milling machine. The index plate has twelve accurately spaced taper reamed holes, which may be engaged by the lock pin. Bolts, collar screws, special nuts, etc., may be conveniently held in the chuck while the heads are being finished by straddle or side mills.

	Each.
Fitted with 6 inch patent chuck having one set of three jaws (No. 2 style)	$35 00
Fitted with same chuck having two sets of jaws	38 00

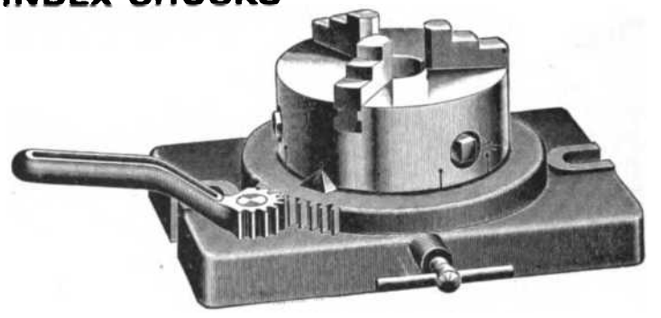


FIG. 819

ROUND SWIVEL BASE

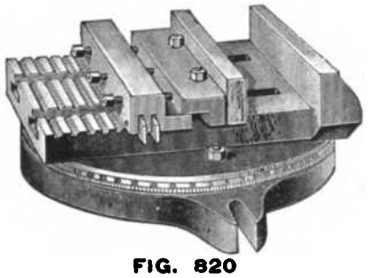


FIG. 820

SQUARE BASE

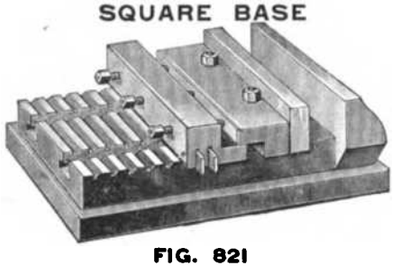


FIG. 821

IMPROVED PLANER CHUCKS

ADAPTED FOR USE ON PLANERS, SHAPERS, MILLING MACHINES, AND UPRIGHT DRILLS

PRICES, FIG. 820

ROUND SWIVEL BASE CHUCK					
Sizes Chuck, Nos.	Each.	Length of Jaws, Inches.	Depth of Jaws, Inches.	Jaws Will Open, Inches.	Space Required, Inches.
6	$25 00	7	1½	3½	10
8	30 00	9	1⅞	5	12½
10	36 00	11	2⅜	6	14½
12	40 00	13	2⅜	8	16¾
15	50 00	15½	2½	9½	20
18	60 00	18½	2¾	11¼	23
24	90 00	24¼	2¾	16	27
30	120 00	30¼	2¾	21½	34

PRICES, FIG. 821

*SQUARE BASE CHUCK		
Sizes Chucks, Nos.	Each.	Space Required, Inches.
6	$20 00	7¼ x 11
8	25 00	9 x 12½
10	30 00	11 x 15
12	35 00	13 x 17
15	45 00	15½ x 21
18	55 00	18½ x 24
24	75 00	24¼ x 28
30	100 00	30¼ x 34

*All dimensions for square base chucks are the same as round base except space required.

IMPROVED PLANER CHUCKS

Equipped with steel shield to keep chips from getting under jaws and set screws.

PRICES, FIG. 822

Length of Jaws.	Each.	Depth of Jaws.	Jaws Will Open.	Weight of Chuck.	Dist. Required Bet. Planer Posts to Take Chuck.	Diam. of Base.
6	$25 00	1¾	3½	84	11¾ in.	10
8	30 00	1⅞	5	94	14 "	11¾
10	36 00	2¼	6	128	15½ "	13½
12	40 00	2¼	7	158	17½ "	16
15	50 00	2½	9½	251	21 "	18
18	60 00	2⅝	11	277	24 "	19½
24	90 00	2⅝	16	475	29 "	25
30	120 00	2¾	21	575	34 "	31

ROUND BASE GRADUATED

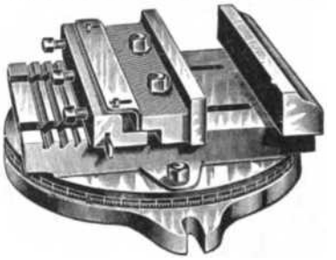


FIG. 822

PRICES, FIG. 823

Length of Jaws.	Each.	Depth of Jaws.	Jaws Will Open.	Weight of Chuck.	Dist. Required Bet. Planer Posts to Take Chuck.
6	$20 00	1¾	3½	66	11¼ in.
8	25 00	1⅞	5	76	13½ "
10	30 00	2¼	6	100	15 "
12	35 00	2¼	7	140	17 "
15	45 00	2½	9½	151	20 "
18	55 00	2⅝	11	194	23 "
24	75 00	2⅝	16	300	28 "
30	100 00	2¾	21	400	32 "

SQUARE BASE

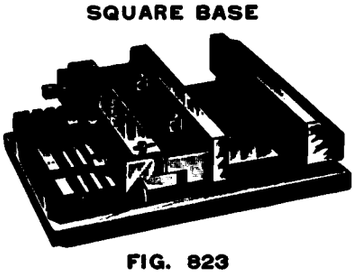


FIG. 823

IMPROVED ADJUSTABLE BLOCKING

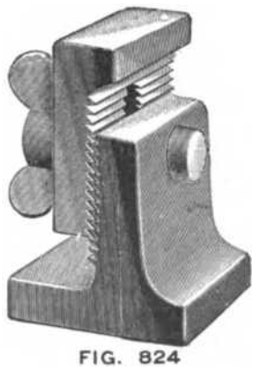


FIG. 824

DESCRIPTION FIG. 824

An improved device for use as "blocking" where work is to be "strapped" to the machine. It is quickly adjusted to any point within its range. Is strong, firm and well made.

No. 1.	Size 3	inches to 4	inches	$2 00
" 2.	" 4	" 5⅜	"	2 20
" 3.	" 5⅜	" 7¾	"	2 60
" 4.	" 7¾	" 11	"	3 50
Full set				10 30

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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LITTLE GIANT JACK SCREWS



FIG. 825

These are designed for tool room use, for leveling up work on a planer-bed or under an upright drill, setting up machinery, etc. All parts are case-hardened.

No. 190 The jack, A, is 1¼ inches diameter at the base and has a range from 2½ to 3⅝ inches. It will raise 1,000 pounds or more. Two extension bases, B and C, are made to fit the base of the main part, A, and are 2 and 1 inch high respectively. With these two extensions used singly or together a reach from 2½ to 6½ inches may be obtained.

An auxiliary pointed screw, D, is supplied to be used in place of the screw, with swivel cap in certain places where it may be preferable. The base, E, is also provided, for use in cases where such a shape may be desirable.

No. 191. A smaller size is made, 1 inch diameter. Part A, 1½ inches high; B, 1 inch; and C, ½ inch. With this size, adjustments from 1½ to 3½ inches are obtainable.

(For either the No. 190 or No. 191)

Jack A	$0 75
Extension Base B	20
" " C	15
" " E	15
Extra Screw D	15
Jack, with all attachments	1 40

CAST IRON JACK SCREWS



FIG. 826

For use as blocking on planer, drill press, milling machine, boring mills, etc. This useful little tool is strong, well made, and of great convenience in a machine shop.

PRICES, FIGURE 826

Nos.	Sizes, Inches.		Inches.	Prices, Each.
1	1⅛	to	1½	$0 45
2	1½	"	2	50
3	2	"	2¾	60
4	2⅜	"	3¼	75
5	3¼	"	5¼	95
6	5¼	"	7¼	1 50
Full set				$4 75

LEVELING JACKS

FOR USE ON PLANER OR ON ANY MACHINE TOOL

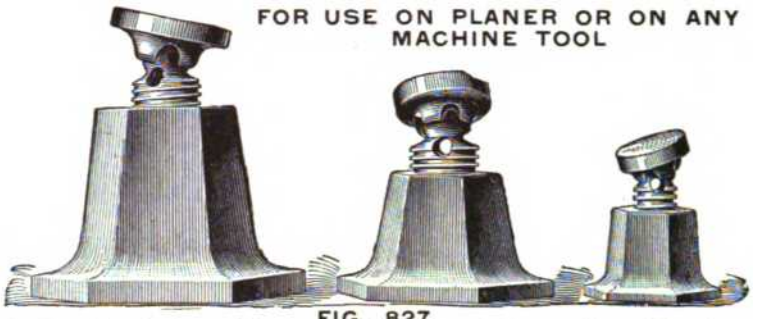


FIG. 827

The Leveling Jacks enable the workman to set the work rapidly, to any degree of refinement and with no danger of the work being sprung by the strap pressure.

Nos.	Stands Inches High.	Runs out to Inches.	Prices Per Doz.
1	2¾	3¾	$10 00
2	3¾	5	12 50
3	5	7½	15 00

FACE PLATE JAWS

FOR USE ON LARGE LATHE FACE PLATES, BORING MILL AND DRILL PRESS TABLES

IMPROVED

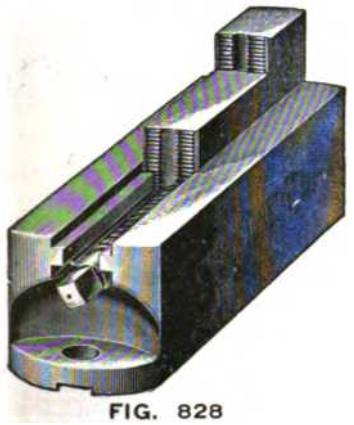
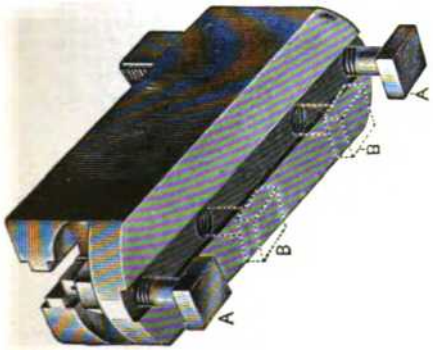


FIG. 828



Bottom view of Face-Plate Jaw (Fig. 828), with bolts in position for attaching to face-plates having "T" slots.

Sizes, Inches.	Prices per Set of Three.	Prices per Set of Four.
8	$45 00	$ 60 00
10	60 00	80 00
12	90 00	120 00

We furnish two bolts with each jaw, and a steel key-wrench with each set.

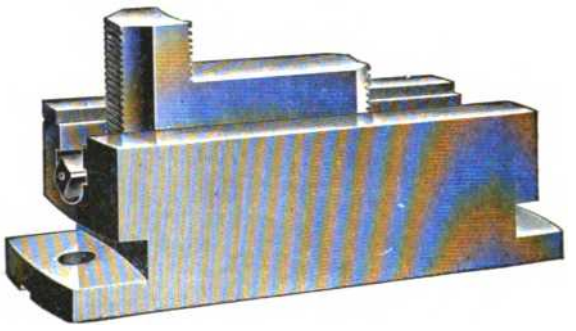


FIG. 829

Sizes, Inches.	Price per Set of Three.	Prices per Set of Four.
8	$45 00	$ 60 00
10	60 00	80 00
12	90 00	120 00

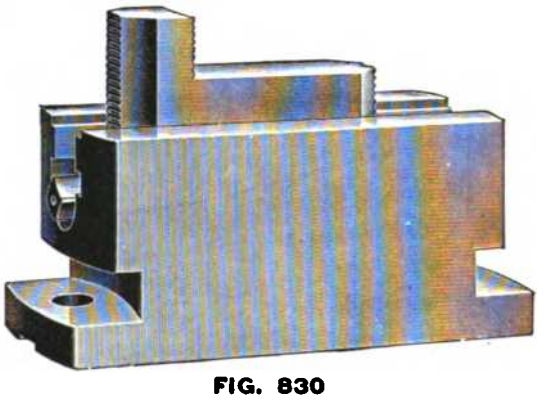


FIG. 830

Sizes, Inches.	Price per Set of Three.	Price per Set of Four.	Weight, Set of Four.
10	$80 00	$105 00	about 450 lbs.
12	120 00	160 00	" 550 "

REVERSIBLE

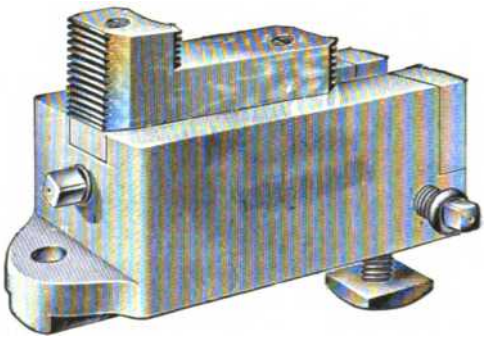


FIG. 831

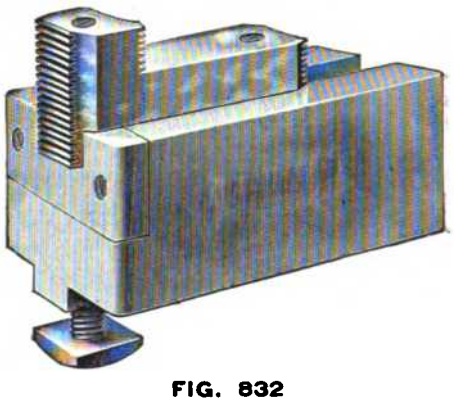


FIG. 832

PRICES FIGURES 831 AND 832

Sizes, Inches.	Per Set of Three Jaws.	Per Set of Four Jaws.
8	$45 00	$ 60 00
10	60 00	80 00
12	90 00	120 00

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IRON AND BRASS MACHINE SCREWS, WITH PRESSED HEADS



FIG. 833



FIG. 834



FIG. 835

PRICES, IRON, EITHER STYLE, PER GROSS

THREADS PER INCH

	56	48	32, 36 40		30, 32			24, 30, 32		20, 24		16, 18, 20	16, 18			14, 16			
Nos.	2	3	4	5	6	7	8	9	10	12	14	16	18	20	22	24	26	28	30
In.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.
5/16	25	25	25	29	20														
1/4	25	25	25	29	29	35	35	43	43										
5/16	27	27	27	31	31	38	38	46	46										
3/8	27	27	27	31	31	38	38	46	46	59	74	95							
7/16	29	29	29	33	33	41	41	49	49	59	74	95							
1/2	29	29	29	33	33	41	41	49	49	59	74	95	110	125	145	170			
9/16	33	33	33	36	36	46	46	54	54	66	81	100	115	135	165	190			
5/8	..	33	33	36	36	46	46	54	54	66	81	100	115	135	165	190			
3/4	..	..	37	42	42	52	52	63	63	74	88	110	130	155	175	200	245		
7/8	..	..	..	48	48	60	60	72	72	85	100	120	140	165	190	220	270	330	
1	..	..	..	..	55	70	70	85	85	97	115	135	155	180	210	255	310	375	450
1 1/8	..	..	..	..	..	85	85	105	105	125	145	165	185	210	250	300	360	435	525
1 1/4	..	..	..	..	..	85	85	105	105	125	145	165	185	210	250	300	360	435	525
1 3/8	..	..	..	..	..	..	..	135	135	160	180	200	220	250	300	360	430	510	600
1 1/2	..	..	..	..	..	..	..	..	135	160	180	200	220	250	300	360	430	510	600
1 3/4	..	..	..	..	..	..	..	..	..	180	205	240	255	290	345	410	485	570	665
2	..	..	..	..	..	..	..	..	..	..	230	275	290	335	395	465	545	635	735
2 1/4	..	..	..	..	..	..	..	..	..	..	..	310	325	370	435	500	585	680	800
2 1/2	..	..	..	..	..	..	..	..	..	..	..	..	365	415	490	575	670	775	900
2 3/4	..	..	..	..	..	..	..	..	..	..	..	..	..	475	555	645	745	860	985
3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	650	745	850	970	1100

Any size of screws not listed above shall take the list price of the next larger or longer size.

PRICES, BRASS, EITHER STYLE, PER GROSS

THREADS PER INCH

	56	48	32, 36 40		30, 32			24, 30, 32		20, 24		16, 18, 20	16, 18			14, 16			
Nos.	2	3	4	5	6	7	8	9	10	12	14	16	18	20	22	24	26	28	30
In.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.	cts.
5/16	32	32	32	40	40														
1/4	32	32	32	40	40	58	58	86	86										
5/16	35	35	35	43	43	62	62	86	86										
3/8	35	35	35	43	43	62	62	86	86	100	155	200							
7/16	39	39	39	48	48	68	68	95	95	115	170	210							
1/2	39	39	39	48	48	68	68	95	95	115	170	210	300	360	460	600			
9/16	48	48	48	57	57	77	77	105	105	130	190	235	325	390	490	630			
5/8	..	48	48	57	57	77	77	105	105	130	190	235	325	390	490	630			
3/4	..	..	60	70	70	90	90	115	115	150	210	260	350	430	540	670	810		
7/8	..	..	..	80	80	105	105	135	135	180	230	290	375	470	595	740	900	1125	
1	..	..	..	..	90	120	120	155	155	210	260	320	400	520	670	850	1060	1300	1575
1 1/8	..	..	..	..	..	150	150	190	190	255	310	370	450	600	775	990	1245	1540	1875
1 1/4	..	..	..	..	..	..	150	190	190	255	310	370	450	600	775	990	1245	1540	1875
1 3/8	..	..	..	..	..	..	..	250	250	300	360	430	500	680	890	1155	1470	1835	2250
1 1/2	..	..	..	..	..	..	..	..	250	300	360	430	500	680	890	1155	1470	1835	2250
1 3/4	..	..	..	..	..	..	..	..	..	350	415	500	650	750	985	1270	1605	2040	2425
2	..	..	..	..	..	..	..	..	..	..	490	575	650	825	1060	1355	1710	2180	2600
2 1/4	..	..	..	..	..	..	..	..	..	..	..	665	750	925	1180	1495	1870	2305	2800
2 1/2	..	..	..	..	..	..	..	..	..	..	..	..	900	1050	1250	1550	1940	2535	3050
2 3/4	..	..	..	..	..	..	..	..	..	..	..	..	..	1200	1400	1700	2180	2750	3300
3	..	..	..	..	..	..	..	..	..	..	..	..	..	..	1600	1900	2410	2970	3600

Any size of screws not listed above shall take the list price of the next larger or longer size.

DROP FORGED STEEL THUMB SCREWS

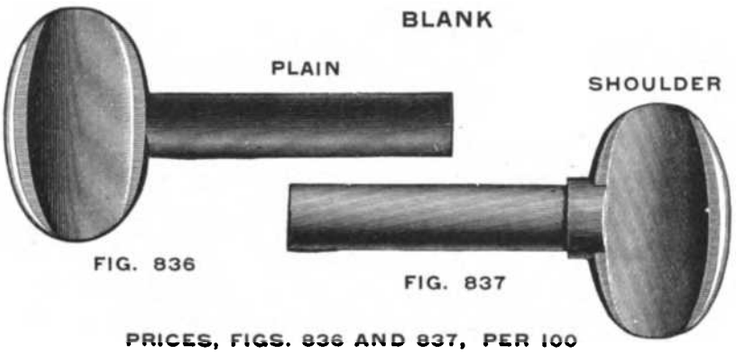


FIG. 836

FIG. 837

PRICES, FIGS. 836 AND 837, PER 100

These goods are drop forged from an excellent quality of steel, which will harden slightly in water. All sizes are regular and uniform.

Length under head. Inches.	Diameters. 1/4	5/16	1/4	5/16	3/8	7/16	1/2	9/16	5/8	3/4
1/4	$1 40	$2 00	$2 50	$2 75	$3 00					
1/2	1 50	2 10	2 60	2 90	3 25	$4 25	$5 25	$6 25		
3/4	1 60	2 20	2 70	3 05	3 50	4 50	5 50	6 50		
1	1 70	2 30	2 80	3 20	3 75	4 75	5 75	6 75	$7 75	$10 00
1 1/4	1 80	2 40	2 90	3 35	4 00	5 00	6 00	7 00	8 00	10 25
1 1/2	1 90	2 50	3 00	3 50	4 25	5 25	6 25	7 25	8 25	10 50
1 3/4	....	2 60	3 10	3 65	4 50	5 50	6 50	7 50	8 50	10 75
2	....	2 70	3 20	3 80	4 75	5 75	6 75	7 75	8 75	11 00
2 1/4	....	....	3 30	3 95	5 00	6 00	7 00	8 00	9 00	11 50
2 1/2	....	....	3 40	4 10	5 25	6 25	7 25	8 25	9 50	12 00
2 3/4	....	....	3 50	4 25	5 50	6 50	7 50	8 50	9 75	12 25
3	....	....	3 60	4 40	5 75	6 75	7 75	8 75	10 00	12 50
3 1/4	....	....	....	4 55	6 00	7 00	8 00	9 00	10 25	12 75
3 1/2	....	....	....	4 70	6 25	7 25	8 25	9 25	10 50	13 00
3 3/4	....	....	....	4 85	6 50	7 50	8 50	9 50	10 75	13 25
4	....	....	....	5 00	6 75	7 75	8 75	9 75	11 00	13 50
4 1/2	....	....	....	....	7 25	8 25	9 25	10 25	11 50	14 00
5	....	....	....	....	7 75	8 75	9 75	10 75	12 00	14 50
5 1/2	....	....	....	....	8 25	9 25	10 25	11 25	12 50	15 00
6	....	....	....	....	....	....	10 75	11 75	13 00	15 50

Please state when ordering which are desired. If not specified, plain will be sent. Special sizes and shapes made to order in quantities. Tobin bronze thumb screws to order.

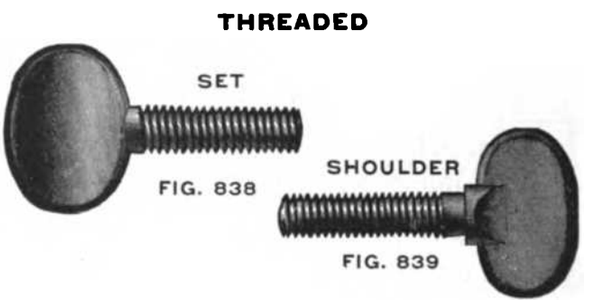


FIG. 838

FIG. 839

PRICES, FIGS. 838 AND 839, PER 100

These goods are drop forged from an excellent quality of steel, which will harden slightly in water. All sizes are regular and uniform.

Inches under head.	Diameters. 1/8	5/16	1/4	5/16	3/8	7/16	1/2	9/16	5/8
1/4	$2 80	$4 00	$5 00	$5 50	$6 00	$8 00			
1/2	3 00	4 20	5 20	5 80	6 50	8 50			
3/4	3 20	4 40	5 40	6 10	7 00	9 00			
1	3 40	4 60	5 60	6 40	7 50	9 50	$11 50	$13 50	$15 50
1 1/4	3 60	4 80	5 80	6 70	8 00	10 00	12 00	14 00	16 00
1 1/2	3 80	5 00	6 00	7 00	8 50	10 50	12 50	14 50	16 50
1 3/4	....	....	6 20	7 30	9 00	11 00	13 00	15 00	17 00
2	....	....	6 40	7 60	9 50	11 50	13 50	15 50	17 50
2 1/4	....	....	....	7 80	10 00	12 00	14 00	16 00	18 00
2 1/2	....	....	....	8 20	10 50	12 50	14 50	16 50	18 50
3	....	....	....	....	11 50	13 50	15 50	17 50	19 50
3 1/2	....	....	....	....	....	14 50	16 50	18 50	20 50
4	....	....	....	....	....	15 50	17 50	19 50	21 50
4 1/2	....	....	....	....	....	16 50	18 50	20 50	22 50
5	....	....	....	....	....	17 50	19 50	21 50	23 50

In ordering, please state pattern wanted, if plain or shoulder thumb screw, as per cuts; and whether Standard V or United States Standard Threads.

DROP FORGED ELEVATING THUMB SCREWS—BLANK

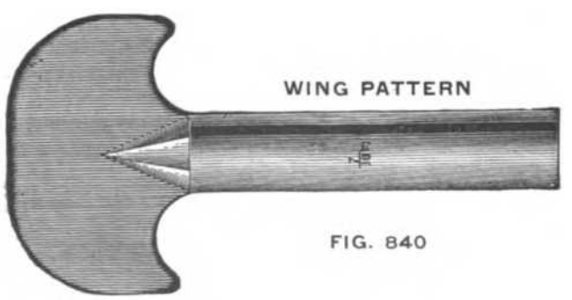


FIG. 840

PRICES, FIG. 840, PER 100

Inches under head.	Diameters. 7/16	1/2	9/16	5/8
1	$7 25	$9 25	$11 20	
1 1/4	7 50	9 50	11 50	
1 1/2	7 75	9 75	11 80	
1 3/4	8 00	10 00	12 00	
2	8 25	10 25	12 30	
2 1/4	8 50	10 50	12 60	
2 1/2	8 75	10 75	12 90	$15 40
2 3/4	9 00	11 00	13 20	15 80
3	9 25	11 25	13 50	16 20
3 1/4	9 50	11 50	13 80	16 60
3 1/2	9 75	11 75	14 10	17 00
3 3/4	10 00	12 00	14 40	17 40
4	10 25	12 25	14 70	17 80
4 1/4	10 50	12 50	15 00	18 20
4 1/2	10 75	12 75	15 30	18 60
4 3/4	11 00	13 00	15 60	19 00
5	11 25	13 25	15 90	19 40

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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STANDARD STEEL TAPER PINS



FIG. 841

Taper one-quarter inch to the foot.

PRICES PER 100

Numbers.	0	1	2	3	4	5	6	7	8	9	10
Diameters at large end.	.156	.172	.193	.219	.250	.289	.341	.409	.492	.591	.706
Approximate fractional sizes.	5/32	11/64	3/16	7/32	1/4	19/64	11/32	13/32	1/2	19/32	23/32
Longest limit of length.	1	1¼	1½	1¾	2	2¼	3¼	3¾	4½	5¼	6
From ¾	$1 80	2 00	2 10	2 30	2 50	2 75	3 00				
1	2 05	2 25	2 35	2 55	2 75	3 00	3 25	3 75			
1¼	....	2 50	2 60	2 80	3 00	3 25	3 50	4 00	4 65		
1½	....	....	2 85	3 05	3 25	3 50	3 75	4 25	5 00	7 00	9 00
1¾	....	....	....	3 30	3 50	3 75	4 00	4 50	5 40	7 50	9 50
2	....	....	....	....	3 75	4 05	4 35	4 75	5 80	8 00	10 00
2¼	....	....	....	....	....	4 40	4 75	5 25	6 25	8 60	10 75
2½	....	....	....	....	....	....	5 20	5 75	6 75	9 20	11 50
2¾	....	....	....	....	....	....	5 70	6 25	7 25	9 80	12 25
3	....	....	....	....	....	....	6 25	6 75	7 80	10 50	13 25
3¼	....	....	....	....	....	....	6 75	7 25	8 40	11 20	14 25
3½	....	....	....	....	....	....	....	7 75	9 00	11 90	15 25
3¾	....	....	....	....	....	....	....	8 25	9 60	12 60	16 25
4	....	....	....	....	....	....	....	....	10 20	13 30	17 25
4¼	....	....	....	....	....	....	....	....	10 80	14 00	18 25
4½	....	....	....	....	....	....	....	....	11 40	14 70	19 25
4¾	....	....	....	....	....	....	....	....	....	15 40	20 25
5	....	....	....	....	....	....	....	....	....	16 10	21 25
5¼	....	....	....	....	....	....	....	....	....	16 80	22 25
5½	....	....	....	....	....	....	....	....	....	....	23 25
5¾	....	....	....	....	....	....	....	....	....	....	24 25
6	....	....	....	....	....	....	....	....	....	....	25 25

MILLED IRON STUD BOLTS



FIG. 842

PRICES PER 100

Length of Studs. Diameters.	⅝	7/16	½	9/16	⅝	¾	⅞	1	1⅛	1¼
1¼	$3 35	4 05	4 40	5 10						
1½	3 50	4 20	4 60	5 30	6 10					
1¾	3 65	4 35	4 80	5 50	6 30					
2	3 80	4 50	5 00	5 70	6 50	8 80				
2¼	3 95	4 65	5 20	5 90	6 70	9 10				
2½	4 10	4 80	5 40	6 10	6 90	9 40	12 00			
2¾	4 25	4 95	5 60	6 30	7 10	9 70	12 50			
3	4 40	5 10	5 80	6 50	7 30	10 00	13 00	17 00	21 00	
3¼	....	5 25	6 00	6 70	7 50	10 30	13 50	17 75	22 00	
3½	....	5 40	6 20	6 90	7 70	10 60	14 00	18 50	23 00	27 00
3¾	....	5 55	6 40	7 10	7 90	10 90	14 50	19 25	24 00	28 00
4	....	....	6 60	7 30	8 10	11 20	15 00	20 00	25 00	29 00
4¼	....	....	6 70	7 40	8 25	11 45	15 40	20 50	25 75	29 75
4½	....	....	6 80	7 50	8 40	11 65	15 75	21 00	26 50	30 50
4¾	....	....	....	7 60	8 55	11 90	16 15	21 50	27 25	31 25
5	....	....	....	7 70	8 70	12 10	16 50	22 00	28 00	32 00
5¼	....	....	....	7 80	8 85	12 35	16 90	22 50	28 75	32 75
5½	....	....	....	....	9 00	12 55	17 25	23 00	29 50	33 50
5¾	....	....	....	....	9 15	12 80	17 65	23 50	30 25	34 25
6	....	....	....	....	9 30	13 00	18 00	24 00	31 00	35 00
Threads to inch.	16	14	12	12	11	10	9	8	7	7
Add for each ¼ inch.	$0 15	0 20	0 20	0 20	0 25	0 30	0 40	0 60	0 75	1 00

In ordering bolts, give total length, and length of A and C, as lettered above; and unless otherwise instructed, A end will be tight fit, C end regular. State what finish required at B, rough turned or finished.

SPECIAL STUD BOLTS



FIG. 843

To order only.

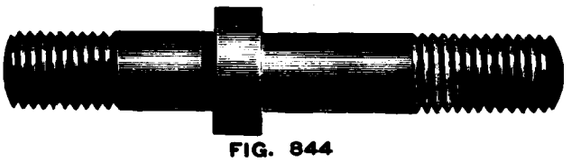


FIG. 844

To order only.

PLANER HEAD BOLTS, ALL MILLED

SQUARE HEAD

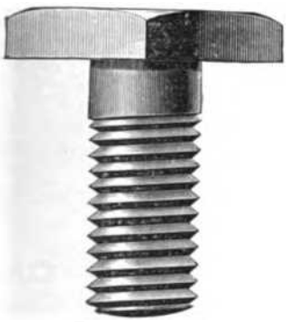


FIG. 845

HEXAGON HEAD



FIG. 846

PRICES PER 100, WITHOUT NUTS

Diameters of head	⅞	1	1⅛	1⅛	1¼
Lengths of head	9/16	9/16	⅝	⅝	7/16
Diameters of screw	½	9/16	⅝	11/16	¾
Lengths under head to extreme point. 1	$10 00				
1¼	10 50	$12 00	$13 30	$13 30	$17 00
1½	10 50	12 25	14 00	14 00	17 50
1¾	.....	12 45	14 80	14 80	18 00
2	.....	13 75	15 70	15 70	19 00
Finished, case hardened hexagon nuts for above	10 00	12 00	15 00	16 00	18 00

All 12 threads to the inch.

COUPLING BOLTS



FIG. 847

Regular coupling bolt, milled body, heads faced on top, sides rough, nut tapped and faced on the bottom. Extra finish to order.

PRICES PER 100

Diameters of head	⅞	1 1/16	1¼	1 5/16	1⅜	1 11/16	2
Lengths of head	½	⅝	¾	⅞	1	1⅛	1¼
Diameters of bolt	½	⅝	¾	⅞	1	1⅛	1¼
Lengths under Head to Extreme Point. 2	$20 00	25 00					
2¼	20 50	25 75	32 00				
2½	21 00	26 50	32 00	38 75			
2¾	21 50	27 25	33 00	39 75	56 00		
3	22 00	28 00	34 00	40 75	56 00	70 00	
3¼	22 50	28 75	35 00	41 75	57 00	71 50	100 00
3½	23 00	29 50	36 00	42 75	58 00	73 00	100 00
3¾	23 50	30 25	37 00	43 75	59 00	74 50	102 50
4	24 00	31 00	38 00	44 75	60 00	76 00	105 00
4¼	24 50	31 75	39 00	45 75	61 00	77 50	107 50
4½	25 00	32 50	40 00	46 75	62 00	79 00	110 00
4¾	25 50	33 25	41 00	47 75	63 00	80 50	112 50
5	.....	34 00	42 00	48 75	64 00	82 00	115 00
5¼	.....	.....	43 00	49 75	65 00	83 50	117 50
5½	.....	.....	.....	50 75	66 00	85 00	120 00
5¾	.....	.....	.....	.....	67 00	86 50	122 50
6	.....	.....	.....	.....	.....	88 00	125 00
Thickness of nut	½	⅝	¾	⅞	1	1⅛	1¼
Short diameter of nuts	⅞	1 1/16	1¼	1 7/16	1⅝	1 13/16	2

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BOILER PATCH BOLTS



FIG. 848

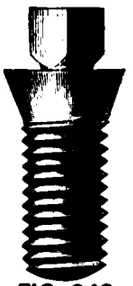


FIG. 849

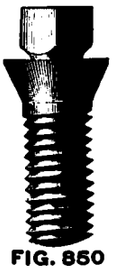


FIG. 850

PRICES, FIGS. 848 TO 850, PER 100, TURNED AND THREADED

Length from Largest Diameter of Bevel to Point.	Diameters. ½	⅝	¾	⅞	1
¾	$3 75	$4 25			
⅞	4 00	4 50	$6 00		
1	4 25	4 80	6 50	$9 50	$13 50
1⅛	....	5 10	6 80	9 85	14 00
1¼	....	5 50	7 25	10 25	14 75
Threads to inch.....	14	12	12	12	12

Boiler Patch Bolts, with heads and bevels milled, subject to special prices.

COLLAR SCREWS



FIG. 852 REGULAR



FIG. 853 SPECIAL



FIG. 854 SPECIAL

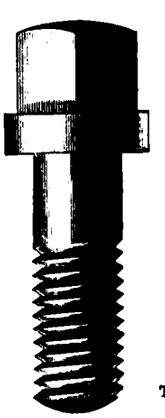


FIG. 855 SPECIAL

Threaded three-fourths of length of body.

PRICES, FIG. 852, PER 100

Length under Head to Extreme Point.	Diameter of Collars. ¼	1 1/32	7/16	½	⅝	11/16	13/16	15/16	1	1¼
	Diameter of Screws. ⅛	5/16	¼	5/16	⅜	7/16	½	9/16	⅝	¾
¾	$2 50	2 80	3 10	3 75	4 40	5 00	6 25			
1	2 80	3 10	3 40	4 05	4 70	5 30	6 60	8 25		
1¼	3 10	3 40	3 70	4 35	5 00	5 60	7 00	8 60	11 25	
1½	3 40	3 70	4 00	4 70	5 30	5 95	7 40	9 00	11 90	15 00
1¾	3 70	4 05	4 35	5 05	5 65	6 35	7 80	9 45	12 60	15 60
2	....	4 40	4 70	5 45	6 25	6 85	8 40	10 00	13 35	16 25
2¼	....	....	5 05	5 95	6 85	7 40	9 00	10 60	14 15	17 10
2½	....	....	5 45	6 45	7 55	8 05	9 60	11 25	15 00	18 00
2¾	....	....	....	6 95	8 20	8 75	10 30	11 90	15 90	19 00
3	....	....	....	7 50	8 85	9 50	11 00	12 60	16 85	20 00
3¼	....	....	....	....	9 50	10 30	11 80	13 40	17 95	21 20
3½	....	....	....	....	10 20	11 10	12 60	14 30	19 10	23 60
3¾	....	....	....	....	....	11 95	13 50	15 30	20 40	24 20
4	....	....	....	....	....	12 80	14 40	16 30	21 70	25 80
4¼	....	....	....	....	....	....	15 40	17 50	23 20	27 70
4½	....	....	....	....	....	....	16 40	18 70	24 70	29 60
4¾	....	....	....	....	....	....	....	20 10	26 50	31 80
5	....	....	....	....	....	....	....	21 50	28 30	34 00
Threads to inch.	40	24	20	18	16	14	12	12	11	10
Add for each ¼ inch.	$0 30	0 40	0 50	0 60	0 80	1 00	1 30	1 60	2 00	2 40

Prices, Figs. 853 to 855, on application.

SQUARE HEAD CAP SCREWS

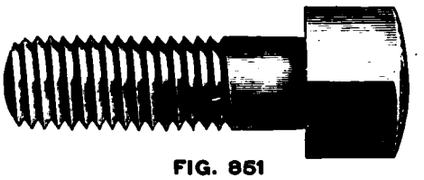


FIG. 851

REGULAR SQUARE HEAD CAP SCREW

On all screws of one inch and less in diameter, and less than four inches long, threads are cut ¾ of the length. Beyond four inches, threads are cut half of the length.

PRICES PER 100

Length under Head to Extreme Point.	Diameter of Heads. ⅝	7/16	½	9/16	⅝	11/16	¾	⅞	1⅛	1¼	1⅜	1½	1⅝
	Length of Heads. ¼	5/16	⅜	7/16	½	9/16	⅝	¾	⅞	1	1⅛	1¼	1⅜
	Diameter of Screws. ¼	5/16	⅜	7/16	½	9/16	⅝	¾	⅞	1	1⅛	1¼	1⅜
¾	$2 40	2 75	3 20	3 80	4 40	5 75							
1	2 60	2 95	3 40	4 00	4 70	5 75	7 70						
1¼	2 75	3 10	3 65	4 20	4 95	6 05	7 70	10 50					
1½	2 90	3 30	3 85	4 45	5 25	6 35	8 25	10 50	14 00				
1¾	3 05	3 50	4 10	4 70	5 55	6 65	8 80	11 10	14 80	18 00			
2	3 25	3 70	4 35	4 95	5 90	7 05	9 40	11 80	15 70	19 00	22 50		
2¼	3 50	4 00	4 65	5 25	6 30	7 55	10 10	12 60	16 70	20 20	24 00	30 00	
2½	3 75	4 35	5 00	5 60	6 75	8 15	10 90	13 50	17 80	21 50	25 80	32 00	39 00
2¾	4 00	4 70	5 45	6 00	7 25	8 85	11 80	14 60	19 10	23 10	27 90	34 20	41 50
3	4 25	5 05	5 90	6 55	7 80	9 65	12 80	15 90	20 60	25 00	30 50	37 00	45 00
3¼	....	5 40	6 35	7 10	8 45	10 55	14 00	17 40	22 40	27 30	33 50	40 50	49 00
3½	....	....	6 80	7 65	9 10	11 45	15 20	18 90	24 20	29 60	36 50	44 00	53 00
3¾	....	....	....	8 20	9 75	12 35	16 40	20 40	26 00	31 90	39 50	47 50	57 00
4	....	....	....	....	10 40	13 25	17 60	21 90	27 80	34 20	42 50	51 00	61 00
4¼	....	....	....	....	....	14 15	18 80	23 40	29 60	36 50	45 50	54 50	65 00
4½	....	....	....	....	....	....	20 00	24 90	31 40	38 80	48 50	58 00	69 00
4¾	....	....	....	....	....	....	....	26 40	33 20	41 10	51 50	61 50	73 00
5	....	....	....	....	....	....	....	....	35 00	43 40	54 50	65 00	77 00
Threads to inch.	20	18	16	14	12	12	11	10	9	8	7	7	6
Add for each ¼ inch.	$0 25	0 35	0 45	0 55	0 65	0 90	1 20	1 50	1 80	2 30	3 00	3 50	4 00

Regular cap screws are soft and have ground heads. Black heads 5 per cent. extra discount. Extra finished, 10 per cent. less discount. Case-hardened and extra finished heads, 15 per cent. less discount. Case-hardened, 5 per cent. less discount.

Cap screws with over-sized heads, take the list of regular cap screws with the same sized head.

Price of steel screws will be 25 per cent. above the price of iron.

TAP BOLT OR SQUARE HEAD CAP SCREW

THREADED TO THE HEAD

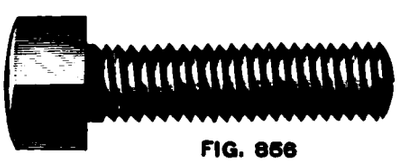


FIG. 856

Prices same as Fig. 851 above.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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HEXAGON HEAD CAP SCREWS

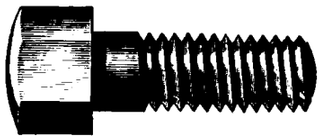


FIG. 857

PRICES PER 100

Diameters of Head.	7/16	½	9/16	⅝	¾	13/16	⅞	1	1⅛	1¼	1⅜	1½
Length of Head.	¼	5/16	⅜	7/16	½	9/16	⅝	¾	⅞	1	1⅛	1¼
Diameters of Screw.	¼	5/16	⅜	7/16	½	9/16	⅝	¾	⅞	1	1⅛	1¼
¾	$3 00	$3 25	$3 75	$4 40	$5 50	$7 00						
1	3 25	3 50	4 00	4 70	5 70	7 00	$9 50					
1¼	3 50	3 75	4 25	5 00	6 00	7 50	9 50	$12 20				
1½	3 75	4 00	4 50	5 30	6 30	8 00	10 00	12 20	$16 00			
1¾	4 00	4 25	4 75	5 60	6 60	8 50	10 60	12 80	16 60	$21 20		
2	4 25	4 60	5 05	5 95	7 00	9 10	11 20	13 40	17 20	22 30	$29 00	$37 50
2¼	4 55	5 00	5 40	6 35	7 50	9 70	11 90	14 10	17 90	23 60	30 50	39 30
2½	4 85	5 40	5 80	6 80	8 00	10 40	12 70	14 90	18 80	25 10	32 30	41 40
2¾	5 15	5 80	6 30	7 30	8 60	11 20	13 60	15 90	20 00	26 90	34 40	44 00
3	5 45	6 20	6 80	7 90	9 30	12 10	14 70	17 00	21 80	29 00	37 00	47 50
3¼	....	6 60	7 30	8 50	10 10	13 10	16 00	18 60	23 80	31 40	40 00	51 50
3½	....	....	7 80	9 10	10 90	14 10	17 30	20 20	25 80	33 80	43 00	55 50
3¾	....	....	....	9 70	11 70	15 10	18 60	21 80	27 80	36 20	46 00	59 50
4	....	....	....	....	12 50	16 10	19 90	23 40	29 80	38 60	49 00	63 50
4¼	....	....	....	....	....	17 10	21 20	25 00	31 80	41 00	52 00	67 50
4½	....	....	....	....	....	....	22 50	26 60	33 80	43 40	55 00	71 50
4¾	....	....	....	....	....	....	....	28 20	35 80	45 80	58 00	75 50
5	....	....	....	....	....	....	....	....	37 80	48 20	61 00	79 50
Threads to inch.	20	18	16	14	12	12	11	10	9	8	7	7
Add for each ¼ in.	$0 30	40	50	60	80	1 00	1 30	1 60	2 00	2 40	3 00	4 00

Length under head to extreme point.

On all screws of 1 inch and less in diameter and less than 4 inches long, threads are cut ¾ of the length. Beyond 4 inches, threads are cut half of the length.

Regular cap screws are soft and have ground heads. Black heads, 5 per cent. extra discount. Extra finished, 10 per cent. less discount. Case hardened and extra finished heads, 15 per cent. less discount. Case hardened, 5 per cent. less discount.

Cap screws with oversized heads take the list of regular cap screws with the same sized heads.

Price of steel screws will be 25 per cent. above the price of iron.

FLAT HEAD CAP SCREWS

MILLED FROM SOLID BAR

FLAT HEAD

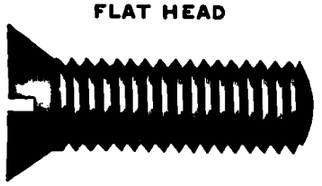


FIG. 861

FRENCH HEAD

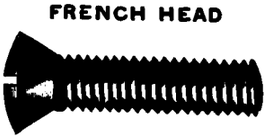


FIG. 862

PRICES PER 100

Diameters of Head.	¼	⅜	15/32	½	⅝	13/16	⅞	1	1⅛	1⅜
Diameters of Screws	⅛	5/16	¼	5/16	⅜	7/16	½	9/16	⅝	¾
¾	$2 25	$2 50	$3 10	$4 00	$5 00					
1	2 50	2 75	3 35	4 25	5 30	$6 60				
1¼	2 75	3 00	3 60	4 50	5 60	6 90	$9 00			
1½	3 00	3 25	3 85	4 75	5 90	7 20	9 50	$12 00		
1¾	3 25	3 50	4 10	5 00	6 20	7 50	10 00	12 50	$14 50	
2	....	3 75	4 35	5 50	6 75	8 00	10 75	13 00	15 25	$19 20
2¼	....	....	4 75	6 00	7 25	8 50	11 50	13 75	16 00	20 20
2½	....	....	....	6 50	7 75	9 00	12 00	14 50	16 75	21 25
2¾	....	....	....	7 00	8 25	9 50	12 75	15 25	17 50	22 40
3	....	....	....	....	8 75	10 00	13 50	16 00	18 30	23 60
Threads to Inch.	40	24	20	18	16	14	12	12	11	10
Add for Each ¼ Inch.	$0 25	25	40	50	50	50	50	75	1 00	1 25

Length over all.

TAP BOLT OR HEXAGON HEAD CAP SCREWS

THREADED TO THE HEAD



FIG. 858

PRICES SAME AS FIG. 857

ROUND AND FILISTER HEAD CAP SCREWS

FILISTER HEADS



FIG. 859

ROUND HEADS



FIG. 860

PRICES PER 100

Diameters of Heads.	5/16	¼	⅜	7/16	9/16	⅝	¾	13/16	⅞	1	1⅛	1¼
Length of Head.	⅛	5/16	¼	5/16	⅜	7/16	½	9/16	⅝	¾	⅞	1
Diameters of Screw.	⅛	5/16	¼	5/16	⅜	7/16	½	9/16	⅝	¾	⅞	1
¾	$2 00	$2 25	$2 50	$3 00	$3 50	$4 00	$5 00					
1	2 25	2 50	2 75	3 25	3 75	4 25	5 30	$6 60				
1¼	2 50	2 75	3 00	3 50	4 00	4 50	5 60	6 90	$9 00			
1½	2 75	3 00	3 25	3 75	4 25	4 75	5 90	7 20	9 50	$12 00		
1¾	3 00	3 25	3 50	4 00	4 50	5 00	6 20	7 50	10 00	12 50	$15 25	
2	3 25	3 50	3 75	4 35	5 00	5 50	6 75	8 00	10 75	13 00	16 00	$19 20
2¼	3 50	3 75	4 00	4 75	5 50	6 00	7 25	8 50	11 50	13 75	16 75	20 20
2½	3 75	4 00	4 25	5 15	6 00	6 50	7 75	9 00	12 00	14 50	17 50	21 25
2¾	....	4 25	4 50	5 55	6 50	7 00	8 25	9 50	12 75	15 25	18 30	22 40
3	....	....	4 75	5 95	7 00	7 50	8 75	10 00	13 50	16 00	19 10	23 60
3¼	....	....	....	6 35	7 50	8 00	9 25	10 50	14 25	16 75	20 00	24 85
3½	....	....	....	....	8 00	8 50	9 75	11 00	15 00	17 50	21 00	26 10
3¾	....	....	....	....	....	9 00	10 25	11 50	15 75	18 25	22 00	27 35
4	....	....	....	....	....	....	10 75	12 00	16 50	19 00	23 00	28 60
4¼	....	....	....	....	....	....	....	12 50	17 25	19 75	24 00	29 85
4½	....	....	....	....	....	....	....	....	18 00	20 50	25 00	31 10
4¾	....	....	....	....	....	....	....	....	....	21 25	26 00	32 35
5	....	....	....	....	....	....	....	....	....	....	27 00	33 60
Threads to Inch.	40	24	20	18	16	14	12	12	11	10	9	8
Add for Each ¼ Inch.	$0 25	25	25	40	50	50	50	50	75	75	1 00	1 25

Length under head to extreme point.

Threaded two-thirds of the length. Price of steel screws will be 25 per cent. above the price of iron.

BUTTON HEAD CAP SCREWS

MILLED FROM SOLID BAR

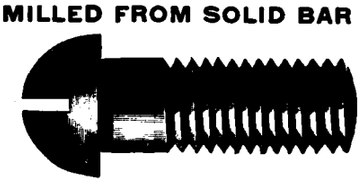


FIG. 863

PRICES PER 100

Diameters of Head.	*7/32 Full	5/16	7/16	9/16	⅝	¾	13/16	15/16	1	1¼
Diameters of Body.	⅛	5/16	¼	5/16	⅜	7/16	½	9/16	⅝	¾
¾	$2 25	$2 50	$3 00	$3 50	$4 00	$5 00				
1	2 50	2 75	3 25	3 75	4 25	5 30	$6 60			
1¼	2 75	3 00	3 50	4 00	4 50	5 60	6 90	$9 00		
1½	3 00	3 25	3 75	4 25	4 75	5 90	7 20	9 50	$12 00	
1¾	3 25	3 50	4 00	4 50	5 00	6 20	7 50	10 00	12 50	$18 20
2	....	3 75	4 35	5 00	5 50	6 75	8 00	10 75	13 00	19 20
2¼	....	....	4 75	5 50	6 00	7 25	8 50	11 50	13 75	20 20
2½	....	....	....	6 00	6 50	7 75	9 00	12 00	14 50	21 25
2¾	....	....	....	....	7 00	8 25	9 50	12 75	15 25	22 40
3	....	....	....	....	....	8 75	10 00	13 50	16 00	23 60
Threads to Inch.	40	24	20	18	16	14	12	12	11	10
Add for Each ¼ Inch.	$0 25	25	40	50	50	50	50	75	75	1 15

Length under head to Extreme Point.

*No. 4 Wire.

Price of steel screws will be 25 per cent. above the price of iron.

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IRON SET SCREWS

REGULAR ROUND POINT



FIG. 864

CUP POINT



FIG. 865

PRICES, FIGS. 864 AND 865, PER 100

Length under head to extreme point.	Diameters of Screw. ¼	5/16	⅜	7/16	½	9/16	⅝	¾	⅞	1	1⅛	1¼
¾	$2 00	2 20	2 50	2 90	3 40	4 25	5 00					
1	2 15	2 35	2 65	3 10	3 60	4 25	5 00	7 00				
1¼	2 30	2 50	2 80	3 30	3 80	4 50	5 25	7 00	11 30			
1½	2 45	2 65	2 95	3 50	4 00	4 75	5 50	7 50	11 30	14 90		
1¾	2 60	2 80	3 10	3 70	4 20	5 00	5 75	8 00	12 00	15 90	19 50	
2	2 80	3 00	3 30	3 95	4 45	5 30	6 05	8 60	12 90	17 00	21 10	25 30
2¼	3 05	3 25	3 55	4 25	4 75	5 65	6 40	9 30	13 80	18 40	22 90	27 40
2½	3 30	3 55	3 85	4 60	5 10	6 05	6 80	10 00	14 80	19 80	24 70	29 60
2¾	3 55	3 85	4 20	5 00	5 50	6 50	7 25	10 80	15 90	21 40	26 70	32 00
3	3 80	4 15	4 55	5 45	5 95	7 00	7 75	11 70	17 10	23 00	28 80	34 60
3¼	....	4 45	4 90	5 90	6 45	7 55	8 35	12 70	18 40	24 70	31 00	37 40
3½	....	....	5 25	6 35	6 95	8 10	8 95	13 70	19 70	26 40	33 20	40 20
3¾	....	....	....	6 80	7 45	8 65	9 55	14 70	21 00	28 10	35 40	43 00
4	....	....	....	....	7 95	9 20	10 15	15 70	22 30	29 80	37 60	45 80
4¼	....	....	....	....	....	9 75	10 75	16 70	23 60	31 50	39 80	48 60
4½	....	....	....	....	....	....	11 35	17 70	24 90	33 20	42 00	51 40
4¾	....	....	....	....	....	....	....	18 70	26 20	34 90	44 20	54 20
5	....	....	....	....	....	....	....	....	27 50	36 60	46 40	57 00
Threads to inch.	20	18	16	14	12	12	11	10	9	8	7	7
Add for each ¼ inch.	$0 25	0 30	0 35	0 45	0 50	0 55	0 60	1 00	1 30	1 70	2 20	2 80

STEEL SET SCREWS

REGULAR ROUND POINT



FIG. 866

CUP POINT



FIG. 867

PRICES, FIGS. 866 AND 867, PER 100

Length under head to extreme point	Diameters of Screw. ¼	5/16	⅜	7/16	½	9/16	⅝	¾	⅞	1	1⅛	1¼
¾	$2 50	2 75	3 10	3 60	4 25	5 30	6 25					
1	2 65	2 90	3 30	3 90	4 50	5 30	6 25	8 75				
1¼	2 85	3 10	3 50	4 15	4 75	5 60	6 55	8 75	14 10			
1½	3 05	3 30	3 70	4 40	5 00	5 90	6 90	9 35	14 10	18 60		
1¾	3 25	3 50	3 90	4 75	5 25	6 25	7 25	10 00	15 00	19 80	24 40	
2	3 50	3 75	4 15	4 95	5 55	6 60	7 60	10 75	16 10	21 25	26 35	31 60
2¼	3 80	4 05	4 45	5 30	5 90	7 05	8 00	11 60	17 25	23 00	28 60	34 25
2½	4 10	4 45	4 80	5 75	6 35	7 55	8 50	12 50	18 50	24 70	30 85	37 00
2¾	4 45	4 80	5 25	6 20	6 85	8 10	9 05	13 50	19 85	26 65	33 40	40 00
3	4 75	5 20	5 70	6 75	7 45	8 75	9 70	14 60	21 35	28 75	36 00	43 25
3¼	....	5 55	6 10	7 30	8 05	9 45	10 45	15 85	23 00	30 85	38 75	46 75
3½	....	....	6 55	7 90	8 70	10 15	11 20	17 10	24 60	33 25	41 50	50 25
3¾	....	....	....	8 50	9 35	10 85	11 95	18 35	26 25	35 15	44 30	53 75
4	....	....	....	....	9 95	11 50	12 70	19 60	27 85	37 25	47 00	57 25
4¼	....	....	....	....	....	12 20	13 45	20 85	29 50	39 40	49 75	60 75
4½	....	....	....	....	....	....	14 20	22 10	31 00	41 50	52 50	64 30
4¾	....	....	....	....	....	....	....	23 40	32 75	43 60	55 25	67 95
5	....	....	....	....	....	....	....	....	34 40	45 75	58 00	71 25
Threads to inch.	20	18	16	14	12	12	11	10	9	8	7	7
Add for each ¼ inch.	$0 35	0 40	0 50	0 60	0 70	0 80	0 90	1 30	1 75	2 30	3 00	3 75

SPECIAL SET SCREWS

FLAT POINT



FIG. 868

HEADLESS ROUND POINT



FIG. 869

CONE POINT



FIG. 870

FLAT PIVOT POINT



FIG. 871

ROUND PIVOT POINT



FIG. 872

NECKED UNDER HEAD



FIG. 873

Oval and cup point set screws (Figs. 864 to 867) are regular, all other kinds are special, and when ordered in lots of less than 500 of one diameter will be charged at 10 per cent. less discount.

Set screw prices shall apply to headless set screws, threaded over all or nearly so; slotted, and burrs removed from head and slot.

Set screws, with ground or polished heads, 10 per cent. less discount.

Set screws, with heads polished after hardening, 20 per cent. less discount.

No screw, which has a head more than 1/16 of an inch larger than the body, shall be classed as a set screw.

A rough screw, requiring over-size stock, shall take the same price as a soft set screw, with head of same size, limited by the article preceding.

FORGED SET SCREWS AND TAP BOLTS

FORGED SET SCREWS

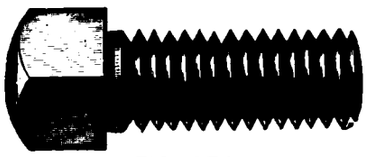


FIG. 874

PRICES, PER 100

Length. Inches.	Heads. Height and Width. 5/16	⅜	7/16	½	9/16	⅝	11/16	13/16	1	1⅛
	Diameters of Screw. ¼	5/16	⅜	7/16	½	9/16	⅝	¾	⅞	1
1½	$1 00	1 15	1 35	1 60	2 00	3 00	3 00	4 20	6 00	8 00
1¾	1 05	1 21	1 42	1 69	2 10	3 12	3 12	4 35	6 20	8 25
2	1 10	1 27	1 49	1 78	2 20	3 24	3 24	4 50	6 40	8 50
2¼	1 15	1 33	1 56	1 87	2 30	3 36	3 36	4 65	6 60	8 75
2½	1 20	1 39	1 63	1 96	2 40	3 48	3 48	4 80	6 80	9 00
2¾	1 25	1 45	1 70	2 05	2 50	3 60	3 60	4 95	7 00	9 25
3	1 30	1 51	1 77	2 14	2 60	3 72	3 72	5 10	7 20	9 50
3¼	....	1 57	1 84	2 23	2 70	3 84	3 84	5 25	7 40	9 75
3½	....	....	1 91	2 32	2 80	3 96	3 96	5 40	7 60	10 00
3¾	....	....	....	2 41	2 90	4 08	4 08	5 55	7 80	10 25
4	....	....	....	....	3 00	4 20	4 20	5 70	8 00	10 50
Threads to inch.	20	18	16	14	13 (or 12)	12	11	10	9	8
Add for each ½ inch.	$0 20	0 25	0 30	0 40	0 50	0 60	0 60	0 75	0 95	1 20

SQUARE AND HEXAGON HEAD TAP BOLTS



FIG. 875. HEXAGON HEAD

PRICES, PER 100, FOR SQUARE HEADS

Lengths under Head. Inches.	Diameters of Bolts. ¼	5/16	⅜	7/16	½	9/16 & ⅝	¾	⅞	1
1½	$1 00	1 15	1 35	1 60	2 00	3 00	4 20	6 00	8 00
1¾	1 05	1 21	1 42	1 69	2 10	3 12	4 35	6 20	8 25
2	1 10	1 27	1 49	1 78	2 20	3 24	4 50	6 40	8 50
2¼	1 15	1 33	1 56	1 87	2 30	3 36	4 65	6 60	8 75
2½	1 20	1 39	1 63	1 96	2 40	3 48	4 80	6 80	9 00
2¾	1 25	1 45	1 70	2 05	2 50	3 60	4 95	7 00	9 25
3	1 30	1 51	1 77	2 14	2 60	3 72	5 10	7 20	9 50
3¼	....	1 57	1 84	2 23	2 70	3 84	5 25	7 40	9 75
3½	....	....	1 91	2 32	2 80	3 96	5 40	7 60	10 00
3¾	....	....	....	2 41	2 90	4 08	5 55	7 80	10 25
4	....	....	....	....	3 00	4 20	5 70	8 00	10 50
Add for each ½ inch.	$0 20	0 25	0 30	0 40	0 50	0 60	0 75	0 95	1 20

With hexagon heads, 10 per cent. extra.

With heads differing from standard sizes, charged at an advanced price, and special threads at our discretion.

Cut to head (viz., within about ⅛ inch of head), 10 per cent. advance; in lots of 200 or more, 5 per cent.

Faced under head and with milled shanks, price contingent on quantity.

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SQUARE HEAD AND NUT

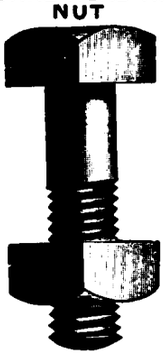


FIG. 876

MACHINE AND CAR BOLTS

SQUARE HEADS AND NUTS

FINISHED POINTS AND FITTED WITH COLD PUNCHED NUTS, CHAMFERED AND TRIMMED

HEXAGON HEAD AND NUT

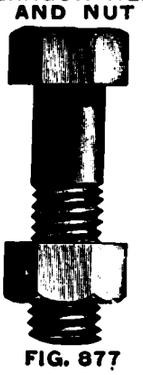


FIG. 877

PRICES, FIG. 876, PER 100

Length under Head, Inches.	¼	5/16	⅜	7/16	½	9/16 & 5/8	¾	⅞	1	1⅛*	1¼*
1½	$1 70	$2 00	$2 40	$2 80	$3 60	$5 20	$7 20	$10 50			
2	1 78	2 12	2 56	3 00	3 86	5 58	7 70	11 20	$16 00		
2½	1 86	2 24	2 72	3 20	4 12	5 96	8 20	11 90	16 90	$24 90	
3	1 94	2 36	2 88	3 40	4 38	6 34	8 70	12 60	17 80	25 10	$34 50
3½	2 02	2 48	3 04	3 60	4 64	6 72	9 20	13 30	18 70	27 30	36 00
4	2 10	2 60	3 20	3 80	4 90	7 10	9 70	14 00	19 60	28 50	37 50
4½	2 18	2 72	3 36	4 00	5 16	7 48	10 20	14 70	20 50	29 70	39 00
5	2 26	2 84	3 52	4 20	5 42	7 86	10 70	15 40	21 40	30 90	40 50
5½	2 34	2 96	3 68	4 40	5 68	8 24	11 20	16 10	22 30	32 10	42 00
6	2 42	3 08	3 84	4 60	5 94	8 62	11 70	16 80	23 20	33 30	43 50
6½	2 50	3 20	4 00	4 80	6 20	9 00	12 20	17 50	24 10	34 50	45 00
7	2 58	3 32	4 16	5 00	6 46	9 38	12 70	18 20	25 00	35 70	46 50
7½	2 66	3 44	4 32	5 20	6 72	9 76	13 20	18 90	25 90	36 90	48 00
8	2 74	3 56	4 48	5 40	6 98	10 14	13 70	19 60	26 80	38 10	49 50
9	2 90	3 80	4 80	5 80	7 50	10 90	14 70	21 00	28 60	40 50	52 50
10	3 06	4 04	5 12	6 20	8 02	11 66	15 70	22 40	30 40	42 90	55 50
11	3 22	4 28	5 44	6 60	8 54	12 42	16 70	23 80	32 20	45 30	58 50
12	3 38	4 52	5 76	7 00	9 06	13 18	17 70	25 20	34 00	47 70	61 50
13	....	....	6 08	7 40	9 58	13 94	18 70	26 60	35 80	50 10	64 50
14	....	....	6 40	7 80	10 10	14 70	19 70	28 00	37 60	52 50	67 50
15	....	....	6 72	8 20	10 62	15 46	20 70	29 40	39 40	54 90	70 50
16	....	....	7 04	8 60	11 14	16 22	21 70	30 80	41 20	57 30	73 50
17	....	....	....	....	11 66	16 98	22 70	32 20	43 00	59 70	76 50
18	....	....	....	....	12 18	17 74	23 70	33 60	44 80	62 10	79 50
19	....	....	....	....	12 70	18 50	24 70	35 00	46 60	64 50	82 50
20	....	....	....	....	13 22	19 26	25 70	36 40	48 40	66 90	85 50
21	....	....	....	....	.....	.....	26 70	37 80	50 20	69 30	88 50
22	....	....	....	....	.....	.....	27 70	39 20	52 00	71 70	91 50
23	....	....	....	....	.....	.....	28 70	40 60	53 80	74 10	94 50
24	....	....	....	....	.....	.....	29 70	42 00	55 60	76 50	97 50

Hexagon heads, or hexagon nuts (Fig. 877), 10 per cent. extra. With both hexagon heads and nuts, 20 per cent. extra.

*The list prices for these sizes apply only to 100 lots.

SQUARE UNDER HEAD

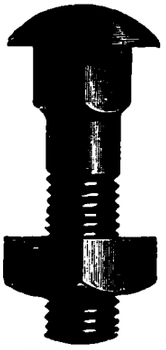


FIG. 878

N. B.—The length of the square under the head is limited to the scant diameter of the bolt; longer squares at advanced rates.

BUTTON HEAD MACHINE BOLTS

SQUARE OR ROUND UNDER THE HEAD

FINISHED POINTS AND FITTED WITH CHAMFERED NUTS

ROUND UNDER HEAD

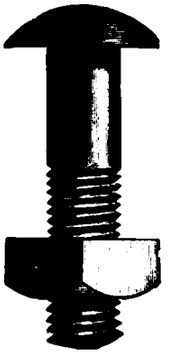


FIG. 879

PRICES, FIGS. 878 AND 879, PER 100

Length under Head, Inches.	¼	5/16	⅜	7/16	½	9/16 & 5/8	¾
1½	$1 70	$2 00	$2 40	$2 80	$3 60	$5 20	$7 20
2	1 78	2 12	2 56	3 00	3 86	5 58	7 70
2½	1 86	2 24	2 72	3 20	4 12	5 96	8 20
3	1 94	2 36	2 88	3 40	4 38	6 34	8 70
3½	2 02	2 48	3 04	3 60	4 64	6 72	9 20
4	2 10	2 60	3 20	3 80	4 90	7 10	9 70
4½	2 18	2 72	3 36	4 00	5 16	7 48	10 20
5	2 26	2 84	3 52	4 20	5 42	7 86	10 70
5½	2 34	2 96	3 68	4 40	5 68	8 24	11 20
6	2 42	3 08	3 84	4 60	5 94	8 62	11 70
6½	2 50	3 20	4 00	4 80	6 20	9 00	12 20
7	2 58	3 32	4 16	5 00	6 46	9 38	12 70
7½	2 66	3 44	4 32	5 20	6 72	9 76	13 20
8	2 74	3 56	4 48	5 40	6 98	10 14	13 70
9	2 90	3 80	4 80	5 80	7 50	10 90	14 70
10	3 06	4 04	5 12	6 20	8 02	11 66	15 70
11	3 22	4 28	5 44	6 60	8 54	12 42	16 70
12	3 38	4 52	5 76	7 00	9 06	13 18	17 70
13	....	....	6 08	7 40	9 58	13 94	18 70
14	....	....	6 40	7 80	10 10	14 70	19 70
15	....	....	6 72	8 20	10 62	15 46	20 70
16	....	....	7 04	8 60	11 14	16 22	21 70
17	....	....	....	....	11 66	16 98	22 70
18	....	....	....	....	12 18	17 74	23 70
19	....	....	....	....	12 70	18 50	24 70
20	....	....	....	....	13 22	19 26	25 70

With hexagon nuts, 10 per cent. extra.

☞ Button Head Bolts will be sent with square under head, unless otherwise specified.

BLANK BOLTS

SQUARE AND HEXAGON HEADS WITH FINISHED POINTS

PRICES, FIG. 880, PER 100 IN 100 LOTS

SQUARE HEADS



FIG. 880

Length under Head, Inches.	¼	5/16	⅜	7/16	½	9/16 & 5/8	11/16 & ¾	13/16 & ⅞	15/16 & 1
1½	$1 20	$1 40	$1 60	$2 00	$2 50	$4 00	$5 60	$7 80	$10 40
2	1 30	1 52	1 74	2 18	2 74	4 36	6 10	8 50	11 30
2½	1 40	1 64	1 88	2 36	2 98	4 72	6 60	9 20	12 20
3	1 50	1 76	2 02	2 54	3 22	5 08	7 10	9 90	13 10
3½	1 60	1 88	2 16	2 72	3 46	5 44	7 60	10 60	14 00
4	1 70	2 00	2 30	2 90	3 70	5 80	8 10	11 30	14 90
4½	1 80	2 12	2 44	3 08	3 94	6 16	8 60	12 00	15 80
5	1 90	2 24	2 58	3 26	4 18	6 52	9 10	12 70	16 70
5½	2 00	2 36	2 72	3 44	4 42	6 88	9 60	13 40	17 60
6	2 10	2 48	2 86	3 62	4 66	7 24	10 10	14 10	18 50
6½	2 20	2 60	3 00	3 80	4 90	7 60	10 60	14 80	19 40
7	2 30	2 72	3 14	3 98	5 14	7 96	11 10	15 50	20 30
7½	2 40	2 84	3 28	4 16	5 38	8 32	11 60	16 20	21 20
8	2 50	2 96	3 42	4 34	5 62	8 68	12 10	16 90	22 10
9	....	....	3 70	4 70	6 10	9 40	13 10	18 30	23 90
10	....	....	3 98	5 06	6 58	10 12	14 10	19 70	25 70
11	....	....	4 26	5 42	7 06	10 84	15 10	21 10	27 50
12	....	....	4 54	5 78	7 54	11 56	16 10	22 50	29 30
13	....	....	....	....	8 02	12 28	17 10	23 90	31 10
14	....	....	....	....	8 50	13 00	18 10	25 30	32 90
15	....	....	....	....	8 98	13 72	19 10	26 70	34 70
16	....	....	....	....	9 46	14 44	20 10	28 10	36 50
17	....	....	....	....	9 94	15 16	21 10	29 50	38 20
18	....	....	....	....	10 42	15 88	22 10	30 90	40 10
19	....	....	....	....	10 90	16 60	23 10	32 30	41 90
20	....	....	....	....	11 38	17 32	24 10	33 70	43 70

Less quantities than 100, special prices.

With hexagon heads (Fig. 881), 10 per cent. extra.

HEXAGON HEADS

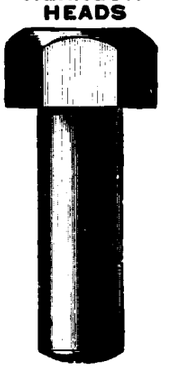


FIG. 881

We can furnish bolts of Muntz metal, Tobin bronze, brass and other metals, for acid work, with hexagon or square nuts, cast or turned. Prices on application.

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COMMON CARRIAGE BOLTS

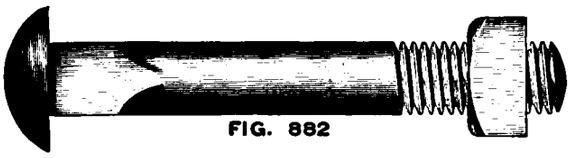


FIG. 882

With short full size square under heads, forged nuts and finished points.

PRICES PER 100

Lengths.	Diams. 5/16 and 1/4 Inch.	Diams. 5/16 Inch.	Diams. 3/8 Inch.	Diams. 7/16 Inch.	Diams. 1/2 Inch.	Diams. 9/16 and 5/8 Inch.	Diams. 3/4 Inch
1 to 1½ inch....	$1 00	$1 20	$1 50	$2 20	$3 00	$5 00	$7 20
1¾ "	1 04	1 25	1 50	2 20	3 00	5 00	7 20
2 "	1 08	1 30	1 50	2 20	3 00	5 00	7 20
2¼ "	1 12	1 35	1 57	2 28	3 00	5 00	7 20
2½ "	1 16	1 40	1 64	2 36	3 00	5 00	7 20
2¾ "	1 20	1 45	1 71	2 44	3 00	5 00	7 20
3 "	1 24	1 50	1 78	2 52	3 00	5 00	7 20
3¼ "	1 28	1 55	1 85	2 60	3 10	5 15	7 40
3½ "	1 32	1 60	1 92	2 68	3 20	5 30	7 60
3¾ "	1 36	1 65	1 99	2 76	3 30	5 45	7 80
4 "	1 40	1 70	2 06	2 84	3 40	5 60	8 00
4¼ "	1 44	1 75	2 13	2 92	3 50	5 75	8 20
4½ "	1 48	1 80	2 20	3 00	3 60	5 90	8 40
4¾ "	1 52	1 85	2 27	3 08	3 70	6 05	8 60
5 "	1 56	1 90	2 34	3 16	3 80	6 20	8 80
5½ "	1 64	2 00	2 48	3 32	4 00	6 50	9 20
6 "	1 72	2 10	2 62	3 48	4 20	6 80	9 60
6½ "	1 80	2 20	2 76	3 64	4 40	7 10	10 00
7 "	1 88	2 30	2 90	3 80	4 60	7 40	10 40
7½ "	1 96	2 40	3 04	3 96	4 80	7 70	10 80
8 "	2 04	2 50	3 18	4 12	5 00	8 00	11 20
8½ "	2 12	2 60	3 32	4 28	5 20	8 30	11 60
9 "	2 20	2 70	3 46	4 44	5 40	8 60	12 00
9½ "	2 28	2 80	3 60	4 60	5 60	8 90	12 40
10 "	2 36	2 90	3 74	4 76	5 80	9 20	12 80
10½ "	2 44	3 00	3 88	4 92	6 00	9 40	13 20
11 "	2 52	3 10	4 02	5 08	6 20	9 80	13 60
11½ "	2 60	3 20	4 16	5 24	6 40	10 10	14 00
12 "	2 68	3 30	4 30	5 40	6 60	10 40	14 40
13 "	2 84	3 50	4 58	5 72	7 00	11 00	15 20
14 "	3 00	3 70	4 86	6 04	7 40	11 60	16 00
15 "	3 16	3 90	5 14	6 36	7 80	12 20	16 80
16 "	3 32	4 10	5 42	6 68	8 20	12 80	17 60
17 "	3 48	4 30	5 70	7 00	8 60	13 40	18 40
18 "	3 64	4 50	5 98	7 32	9 00	14 00	19 20
19 "	3 80	4 70	6 26	7 64	9 40	14 60	20 00
20 "	3 96	4 90	6 54	7 96	9 80	15 20	20 80

UNION CARRIAGE BOLTS

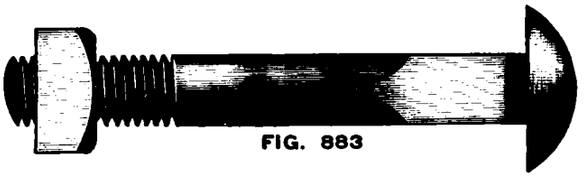


FIG. 883

Philadelphia finish. With full size square under heads, forged nuts, turned heads and finished points.

PRICES PER 100

Lengths.	Diameters 5/16 & 1/4 Inch.	Diameters 5/16 Inch.	Diameters 3/8 Inch.	Diameters 7/16 Inch.	Diameters 1/2 Inch.	Diameters 9/16 Inch.
1¼ inch.....	$2 40	$2 70	$3 60	$5 40	$7 20	$11 00
1½ "	2 40	2 70	3 60	5 40	7 20	11 00
1¾ "	2 45	2 80	3 70	5 40	7 20	11 37
2 "	2 50	2 90	3 70	5 40	7 20	11 63
2¼ "	2 55	3 00	3 82	5 55	7 40	12 00
2½ "	2 60	3 10	3 95	5 70	7 60	12 37
2¾ "	2 65	3 20	4 08	5 85	7 80	12 63
3 "	2 70	3 30	4 20	6 00	8 00	13 00
3¼ "	2 75	3 40	4 32	6 15	8 20	13 38
3½ "	2 80	3 50	4 45	6 30	8 40	13 75
3¾ "	2 85	3 60	4 58	6 45	8 60	14 12
4 "	2 90	3 70	4 70	6 60	8 80	14 50
4¼ "	2 95	3 80	4 88	6 75	9 00	14 88
4½ "	3 00	3 90	4 95	6 90	9 20	15 25
4¾ "	3 05	4 00	5 07	7 05	9 40	15 62
5 "	3 10	4 10	5 20	7 20	9 60	16 00
5½ "	3 20	4 30	5 45	7 50	10 00	16 75
6 "	3 30	4 50	5 70	7 80	10 40	17 50
6½ "	3 40	4 70	5 95	8 10	10 80	18 25
7 "	3 50	4 90	6 20	8 40	11 20	19 00
7½ "	....	5 10	6 45	8 70	11 60	19 75
8 "	....	5 30	6 70	9 00	12 00	20 50
8½ "	....	5 50	6 95	9 30	12 40	21 25
9 "	....	5 70	7 20	9 60	12 80	22 00
9½ "	....	....	7 45	9 90	13 20	22 75
10 "	....	....	7 70	10 20	13 60	23 50
10½ "	....	....	7 95	10 50	14 00	24 25
11 "	....	....	8 20	10 80	14 40	25 00
11½ "	....	....	8 45	11 10	14 80	25 75
12 "	....	....	8 70	11 40	15 20	26 50
12½ "	....	....	....	....	15 60	27 25
13 "	....	....	....	....	16 00	28 50
14 "	....	....	....	....	16 80	30 00

PHILADELPHIA EAGLE CARRIAGE BOLTS



FIG. 884

Made from best material, with turned heads, full size squares, forged nuts and finished points.

PRICES PER 100

Lengths.	Diams. 1/8, 5/16 and 1/4 Inch.	Diams. 5/16 Inch.	Diams. 3/8 Inch.	Diams. 7/16 Inch.	Diams. 1/2 Inch.	Diams. 9/16 and 5/8 Inch.	Diams. 3/4 Inch.
1 inch.....	$3 00	$4 00	$5 40	$7 30	$9 50		
1¼ "	3 10	4 00	5 40	7 30	9 50		
1½ "	3 20	4 00	5 40	7 30	9 50		
1¾ "	3 30	4 00	5 40	7 50	9 80		
2 "	3 40	4 10	5 40	7 70	10 10	$16 75	
2¼ "	3 50.	4 20	5 60	7 90	10 35	17 25	
2½ "	3 60	4 40	5 80	8 15	10 65	17 75	
2¾ "	3 70	4 50	6 00	8 35	10 90	18 25	
3 "	3 80	4 70	6 20	8 55	11 20	18 75	$21 50
3¼ "	3 90	4 90	6 50	8 75	11 50	19 25	22 35
3½ "	4 00	5 00	6 70	8 95	11 75	19 75	23 25
3¾ "	4 10	5 20	6 90	9 15	12 00	20 25	24 50
4 "	4 20	5 30	7 10	9 40	12 30	20 75	25 00
4¼ "	4 35	5 50	7 30	9 60	12 60	21 25	26 85
4½ "	4 50	5 70	7 50	9 80	12 90	21 75	27 80
4¾ "	4 65	5 85	7 70	10 00	13 15	22 25	28 30

Lengths.	Diams. 1/8, 5/16 and 1/4 Inch	Diams. 5/16 Inch.	Diams. 3/8 Inch.	Diams. 7/16 Inch.	Diams. 1/2 Inch.	Diams. 9/16 and 5/8 Inch.	Diams. 3/4 Inch.
5 inch.....	$4 80	$6 00	$7 90	$10 25	$13 45	$22 75	$28 75
5½ "	5 10	6 30	8 40	10 65	14 00	23 75	30 50
6 "	5 40	6 60	8 80	11 05	14 55	24 75	32 50
6½ "	....	7 00	9 30	11 50	15 10	25 75	33 50
7 "	....	7 30	9 70	11 85	15 70	26 75	36 25
7½ "	....	7 60	10 10	12 35	16 25	27 75	38 00
8 "	....	7 90	10 50	12 75	16 80	28 75	40 00
8½ "	....	8 20	10 90	13 15	17 35	29 75	42 00
9 "	....	8 50	11 40	13 60	17 90	30 75	43 75
9½ "	....	....	11 90	14 00	18 50	31 75	45 75
10 "	....	....	12 40	14 45	19 00	32 75	47 50
10½ "	....	....	....	14 85	19 60	33 75	49 30
11 "	....	....	....	15 25	20 15	34 75	51 25
11½ "	....	....	....	15 70	20 70	35 75	53 00
12 "	....	....	....	16 15	21 30	36 75	55 00

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STUB OR BOLT ENDS

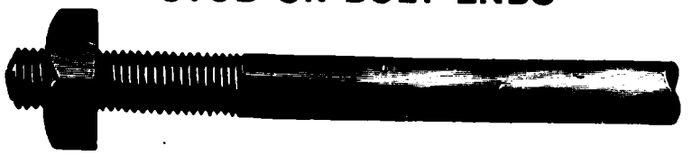


FIG. 885

$\frac{3}{16}$ to $1\frac{1}{8}$ inches diameter, fitted with chamfered nuts, $1\frac{1}{4}$ inches and larger with plain nuts, unless otherwise ordered.

Size of Iron, Inches.	Length, Inches.	Price per lb., Cents.	Size of Iron, Inches.	Length, Inches	Price per lb. Cents.
$\frac{3}{16}$	6 & 8	32	$1\frac{1}{4}$	14	11
$\frac{1}{4}$	"	25	$1\frac{3}{8}$	15	11
$\frac{5}{16}$	"	20	$1\frac{1}{2}$	16	11
$\frac{3}{8}$	7 & 10	18	$1\frac{5}{8}$	17	12
$\frac{7}{16}$	"	16	$1\frac{3}{4}$	18	12
$\frac{1}{2}$ & $\frac{9}{16}$	8 & 12	14	$1\frac{7}{8}$	19	12
$\frac{5}{8}$	9 & 12	12	2	20	12
$\frac{3}{4}$	10 & 12	10	$2\frac{1}{4}$	22	14
$\frac{7}{8}$	11 & 12	10	$2\frac{1}{2}$	24	14
1	12	10	$2\frac{3}{4}$	24	16
$1\frac{1}{8}$	13	10	3	26	18

With Hexagon Nuts, 10 per cent extra.

Bolt ends ordered shorter than above standard lengths in lots of 100 and over, will be charged at the price per hundred of machine bolts of same length, subject to same discount, in smaller lots extra. Only the longer sizes enumerated are kept in stock.

ROUGH BOILER PATCH BOLTS



FIG. 887

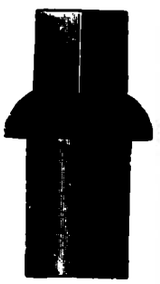


FIG. 888



FIG. 889



FIG. 890

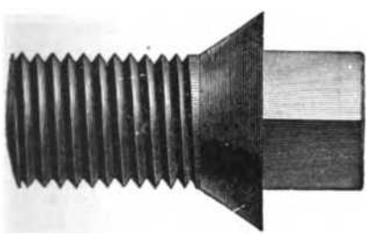


FIG. 891

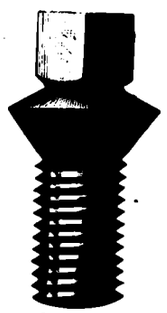


FIG. 892

Diameter, Inches.	Length, Inches.	Price Each* for Small Lots. Blank, Cents.	Cut, Cents.	Price per lb.** in Lots of 25 lbs. or more. Blank, Cents.	Cut, Cents.
$\frac{1}{2}$	$\frac{1}{2}$ to 1	04	05	25	33
$\frac{9}{16}$	$\frac{5}{8}$ $1\frac{1}{4}$	05	06	22	29
$\frac{5}{8}$	$\frac{3}{4}$ $1\frac{1}{2}$	05	06	20	26
$\frac{11}{16}$	$\frac{3}{4}$ $1\frac{1}{2}$	06	07	20	26
$\frac{3}{4}$	$\frac{7}{8}$ 2	07	08	19	24
$\frac{13}{16}$	1 2	09	11	19	24
$\frac{7}{8}$	1 2	10	12	18	22
$\frac{15}{16}$	1 2	13	15	18	22
1	1 $2\frac{1}{2}$	15	17	17	20
$1\frac{1}{16}$	1 $2\frac{1}{2}$	18	21	17	20
$1\frac{1}{8}$	1 $2\frac{1}{2}$	18	21	17	20
$1\frac{1}{4}$	1 $2\frac{1}{2}$	22	25	17	20

* Of greater length than specified, at special prices.

** Patch Bolts of shorter length are charged at 2 cents per pound advance.

Please state, when cut Patch Bolts are required, whether they are to be cut to U. S. standard gauge, or 12 threads to the inch.

If cut with a special thread in small quantities, an extra charge will be made.

Nicked, 10 per cent. additional; in small lots, extra price.

Patch Bolts, Fig. 889, will be sent, unless otherwise specified.

BRIDGE AND ROOF BOLTS

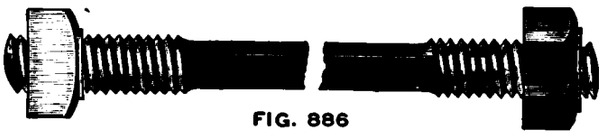


FIG. 886

With square head on one end and square nut on the other, or square nut on each end, as preferred.

PRICE PER POUND

Length, Feet.		Diam. $\frac{5}{8}$ Inch, Cts.	Diam. $\frac{3}{4}$ to $1\frac{1}{8}$ Inches, Cts.	Diam. $1\frac{1}{4}$ to $1\frac{1}{2}$ Inches, Cts.	Diam. $1\frac{5}{8}$ to 2 Inches, Cts.
$1\frac{1}{3}$ to	4	9.2	8.8	9.2	10
4	8	8.8	8.4	8.8	9.4
8	12	8.4	8	8.4	8.8
14	20	8	7.6	8	8.4

With both ends upset and fitted with hexagon nuts.

PRICE PER POUND

Length, Feet.		Diam. $\frac{3}{4}$ to $1\frac{1}{8}$ Inches, Cts.	Diam. $1\frac{1}{4}$ to $1\frac{1}{2}$ Inches, Cts.	Diam. $1\frac{5}{8}$ to 2 Inches, Cts.	Diam. $2\frac{1}{8}$ to 3 Ins., Cts.
4 to	8	12	12.4	13.2	14.4
8	12	11	11.4	12.2	13.2
12	16	10	10.4	11.2	12.4
16	20	9.2	9.6	10.4	11.6

STUDDING OR STAY BOLTS

Cut to U. S. Standard threads, and with ends squared.

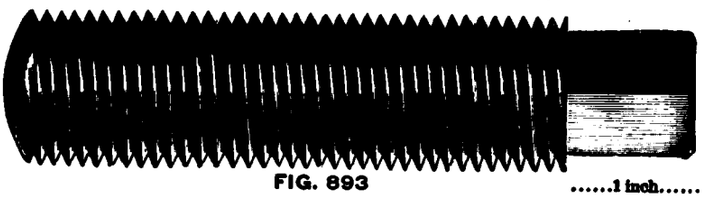


FIG. 893 .....1 inch.....

PRICE PER HUNDRED, IN 100 LOTS

Length of threaded part..	$2\frac{1}{2}$	3	$3\frac{1}{2}$	4	$4\frac{1}{2}$	5	$5\frac{1}{2}$	6	7	8	Longer than 8 ins. Cts. per lb.
$\frac{3}{4}$ in. diam.	$13.75	14.10	14.25	14.75	15.25	16.00	17.00	18.00	20.00	22.00	$22\frac{1}{2}$
$\frac{13}{16}$ and $\frac{7}{8}$ in. diam..	16.50	17.00	17.75	18.50	19.50	21.01	22.50	24.00	27.50	30.50	21
$\frac{15}{16}$ and 1 in. diam.....	21.50	22.50	22.75	25.00	26.25	27.75	29.25	31.25	35.25	38.75	20

When a few in number are ordered, special prices. For considerable quantities these prices are subject to a special allowance.

Cut 12 threads per inch at same rate; odd thread extra.

Orders should be accompanied by gauge.

STOVE BOLTS

FLAT HEAD



FIG. 894

ROUND HEAD



FIG. 895

PRICES PER 100

Length, Inches.	FIG. 894 Diam. $\frac{5}{32}$ & $\frac{3}{16}$ Inch.	Diam. $\frac{7}{32}$ & $\frac{1}{4}$ Inch.	Diam. $\frac{5}{16}$ Inch.	Diam. $\frac{3}{8}$ Inch.	FIG. 895 Diam. $\frac{5}{32}$ & $\frac{3}{16}$ Inch.	Diam. $\frac{7}{32}$ & $\frac{1}{4}$ Inch.	Diam. $\frac{5}{16}$ Inch.	Diam. $\frac{3}{8}$ Inch.
$\frac{3}{8}$	$0 75	....	....	....	....	....	....	....
$\frac{1}{2}$	75	$0 80	$0 85	....	....	$0 85	$0 90	$0 95	$1 35	$2 50
$\frac{5}{8}$	75	80	85	....	....	85	90	95	1 35	2 50
$\frac{3}{4}$	75	80	85	$1 20	$2 25	85	90	95	1 35	2 50
$\frac{7}{8}$	80	85	90	1 30	2 30	90	95	1 00	1 40	2 55
1	80	85	90	1 30	2 35	90	95	1 00	1 45	2 60
$1\frac{1}{8}$	85	90	95	1 40	2 45	95	1 00	1 05	1 50	2 65
$1\frac{1}{4}$	85	90	95	1 40	2 45	95	1 00	1 05	1 55	2 70
$1\frac{3}{8}$	90	95	1 00	1 50	2 55	1 00	1 05	1 10	1 60	2 75
$1\frac{1}{2}$	90	95	1 00	1 50	2 55	1 00	1 05	1 10	1 65	2 80
$1\frac{3}{4}$	95	1 00	1 05	1 55	2 65	1 05	1 10	1 15	1 70	2 85
2	1 00	1 05	1 10	1 60	2 75	1 10	1 15	1 20	1 75	2 90
$2\frac{1}{4}$	1 05	1 10	1 15	1 65	2 85	1 15	1 20	1 25	1 80	3 00
$2\frac{1}{2}$	1 10	1 15	1 20	1 70	2 95	1 20	1 25	1 30	1 85	3 10
$2\frac{3}{4}$	1 15	1 20	1 25	1 75	3 05	1 25	1 30	1 35	1 90	3 20
3	1 20	1 25	1 30	1 80	3 15	1 30	1 35	1 40	1 95	3 30
$3\frac{1}{4}$	1 25	1 30	1 35	1 85	3 25	1 35	1 40	1 45	2 00	3 40
$3\frac{1}{2}$	1 30	1 35	1 40	1 90	3 35	1 40	1 45	1 50	2 05	3 50
$3\frac{3}{4}$	1 35	....	1 45	1 95	3 45	1 45	1 50	1 55	2 10	3 60
4	1 40	....	1 50	2 00	3 55	1 50	1 55	1 60	2 15	3 70
$4\frac{1}{4}$	1 45	....	1 55	2 05	3 65	1 55	1 60	1 65	2 20	3 85
$4\frac{1}{2}$	1 50	....	1 60	2 10	3 75	1 60	1 65	1 70	2 25	4 00
$4\frac{3}{4}$	1 55	....	1 65	2 15	3 85	1 65	1 70	1 75	2 30	4 05
5	1 60	....	1 70	2 20	3 95	1 70	1 75	1 80	2 35	4 10
$5\frac{1}{4}$	1 65	....	1 75	2 25	4 05	1 75	1 80	1 85	2 40	4 20
$5\frac{1}{2}$	1 70	....	1 80	2 30	4 15	1 80	1 85	1 90	2 45	4 30
$5\frac{3}{4}$	1 75	....	1 85	2 35	4 25	1 85	1 90	1 95	2 50	4 40
6	1 80	....	1 90	2 40	4 35	1 90	1 95	2 00	2 55	4 50
$6\frac{1}{4}$	1 85	....	1 95	2 45	4 45	1 95	2 00	2 05	2 60	4 60
$6\frac{1}{2}$	1 90	....	2 00	2 50	4 55	2 00	2 05	2 10	2 65	4 70

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BELT OR ELEVATOR BOLTS

BUTTON HEAD

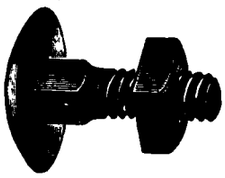


FIG. 896

COUNTERSUNK HEAD

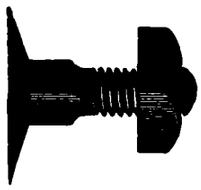


FIG. 897

OVAL HEAD

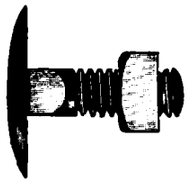


FIG. 898

KEY HEAD

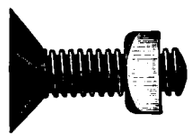


FIG. 899

RELIANCE HEAD

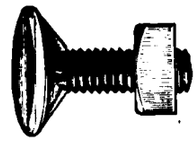


FIG. 900

PRICES, FIGS. 896 AND 897, PER 100

IN 100 LOTS ONLY

Diameters. Sizes of Heads.	¼ inch. 1¹⁄₁₆ x ⅛	5⁄16 inch. 1⁹⁄₁₆ x 5⁄32	⅜ inch. 1⁵⁄₁₆ x ⅜	7⁄16 inch. 1⁷⁄₁₆ x 7⁄16
¾ inch long	$3 00	$3 60		
1 " "	3 10	3 70	$4 40	$5 80
1¼ " "	3 20	3 80	4 55	5 80
1½ " "	3 30	3 90	4 70	6 00
1¾ " "	....	4 00	4 85	6 20
2 " "	....	....	5 00	6 40

PRICES, PER 100

FIG. 898 ⅜ and ¼ inch wrought iron.		FIGS. 899 AND 900 ⅜ and ¼ inch wrought iron.	
¾ inch	$1 50	¾ inch	$1 50
⅞ "	1 60	⅞ "	1 60
1 "	1 60	1 "	1 60
1⅛ "	1 70	1¼ "	1 80
1¼ "	1 80		

ELEVATOR AND CONVEYOR BOLTS

SLOT HEAD



FIG. 901

EXCELSIOR



FIG. 902

SQUARE HEAD



FIG. 903

Sizes.	⅜ x ½, ¼x⅝	Sizes. ¼x¾, 5⁄16x¾, ⅜x¾, ½x1¼	Sizes. ¼x¾, 5⁄16x1, ⅜x1
Per 100,	$0 80, $1 00	$1 70, $2 00, $2 50, $4 00	$1 70, $2 00, $2 40

DOUBLE AND SINGLE EXPANSION BOLTS

WEDGE HEAD, DOUBLE



FIG. 904

PRICES, PER 100.

Lengths, over all.	¼	5⁄16	⅜	7⁄16	½	9⁄16	⅝	¾
2	$13 00	$14 50						
2½	13 05	14 55	$17 50	$22 00				
3	13 10	14 60	17 58	22 10	$26 00	$32 00	$33 00	
3½	13 15	14 65	17 66	22 20	26 12	32 15	33 20	
4	13 20	14 70	17 74	22 30	26 24	32 30	33 40	$48 00
4½	....	14 75	17 82	22 40	26 36	32 45	33 60	48 25
5	....	14 80	17 90	22 50	26 48	32 60	33 80	48 50
5½	....	14 85	17 98	22 60	26 60	32 75	34 00	48 75
6	....	14 90	18 06	22 70	26 72	32 90	34 20	49 00
6½	....	....	18 14	22 80	26 84	33 05	34 40	49 25
7	....	....	18 22	22 90	26 96	33 20	34 60	49 50
7½	....	....	18 30	23 00	27 08	33 35	34 80	49 75
8	....	....	18 38	23 10	27 20	33 50	35 00	50 00
Lengths of expansion.	1½	1⅞	2⅛	2¼	2⅜	3	3	3¾
Size hole to receive expansion.	7⁄16	9⁄16	⅝	11⁄16	13⁄16	⅞	15⁄16	1⅛

Single expansions....per cent. less.

SQUARE HEAD, DOUBLE



FIG. 905

PRICES, PER 100

Lengths, Inches.	¼	5⁄16	⅜	7⁄16	½	9⁄16	⅝	¾	⅞	1
2	$9 00	$11 00	$12 40	$16 35	$19 70					
2½	9 05	11 08	12 50	16 50	19 85	$24 75	$26 75			
3	9 10	11 16	12 60	16 65	20 00	25 00	27 00	$41 40		
3½	9 15	11 24	12 70	16 80	20 15	25 25	27 25	41 70		
4	9 20	11 32	12 80	16 95	20 30	25 50	27 50	42 00		
4½	....	11 40	12 90	17 10	20 45	25 75	27 75	42 30	$61 59	$83 34
5	....	11 48	13 00	17 25	20 60	26 00	28 00	42 60	62 00	83 90
5½	....	11 56	13 10	17 40	20 75	26 25	28 25	42 90	62 43	84 45
6	....	11 64	13 20	17 55	20 90	26 50	28 50	43 20	62 86	85 00
6½	....	....	13 30	17 70	21 05	26 75	28 75	43 50	63 29	85 55
7	....	....	13 40	17 85	21 20	27 00	29 00	43 80	63 72	86 10
7½	....	....	13 50	18 00	21 35	27 25	29 25	44 10	64 15	86 65
8	....	....	13 60	18 15	21 50	27 50	29 50	44 40	64 58	87 20
9	....	....	....	....	....	27 75	29 75	44 70	65 01	87 75
10	....	....	....	....	....	28 00	30 00	45 00	65 44	88 30
Lengths of expansion.	1½	1⅞	2⅛	2¼	2⅜	3	3	3¾	4½	5
Size hole to receive expansion.	7⁄16	9⁄16	⅝	11⁄16	13⁄16	⅞	15⁄16	1⅛	1¼	1½

Single expansions....per cent. less.

Bolts and expansions made in brass to order at special prices.

DIAMOND EXPANSION BOLTS AND SHIELDS



FIG. 906. SHOWING HEXAGON HEAD

PRICES, PER 100, FOR SQUARE HEADS

	Inches.	1½	2	2½	3	4	5	6	7	8	9	10	11
Bronze or Composition.	3⁄16	$8 00	$8 10										
	¼	....	9 00	$ 9 05	$ 9 10								
	5⁄16	....	....	10 00	10 10	$10 20							
	⅜	....	....	.....	12 50	13 00	$13 90	$14 10					
Malleable Iron.	½	....	....	.....	.....	20 00	20 60	20 90	$21 20				
	⅝	....	....	.....	.....	25 00	26 00	27 00	28 00	$29 00	$30 00	$31 00	$32 00
	¾	....	....	.....	.....	.....	34 00	35 00	36 00	37 00	38 00	39 00	40 00
	⅞	....	....	.....	.....	.....	.....	45 00	46 00	47 00	48 00	49 00	50 00
	1	....	....	.....	.....	.....	.....	56 00	57 00	58 00	59 00	60 00	61 00
	1¼	....	....	.....	.....	.....	.....	70 00	71 50	73 00	74 50	76 00	77 50

In figuring lists for longer expansions than those given here, make same advance per inch as on list. Hexagon heads 10 per cent. extra. Put up in packages of 25 each.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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POSITIVE EXPANSION HEAD BOLT



FIG. 907

PRICES PER 100

Length in inches below head.	DIAMETER. ¼	⅜	½	⅝	¾	⅞	1
2	$9 00						
2½	9 05	$12 40					
3	9 10	12 50	$20 00				
3½	9 15	12 60	20 15	$27 25			
4	9 20	12 70	20 30	27 50	$40 00		
4½	9 25	12 80	20 45	27 75	40 30		
5	9 30	12 90	20 60	28 00	40 60	$52 00	$73 90
5½	9 35	13 00	20 75	28 25	40 90	52 45	74 45
6	9 40	13 10	20 90	28 50	41 20	52 90	75 00
6½	9 45	13 25	21 05	28 75	41 50	53 35	75 55
7	....	13 40	21 20	29 00	41 80	53 80	76 10
7½	....	13 60	21 35	29 25	42 10	54 25	76 65
8	....	13 80	21 50	29 50	42 40	54 70	77 20
9	....	.....	21 65	29 75	42 70	55 15	77 75
10	....	.....	21 80	30 00	43 00	55 60	78 30
11	....	.....	.....	30 25	43 30	56 05	78 85
12	....	.....	.....	30 75	43 60	56 50	79 40
Length of Expansion.	1¼	1¾	2⅜	2⅞	3⅝	4	4⅜
Size hole to receive Expansion.	9/16	¾	1	1¼	1½	1 11/16	1⅞
Size of Expansion.	1¼	1⅝	2	2½	3	3½	4

POSITIVE EXPANSION HOOK BOLT



FIG. 908

PRICES PER 100

Length in inches below hook.	DIAMETER. ¼	⅜	½	⅝
2	$15 00			
2½	15 10			
3	15 20	$18 00		
3½	15 30	18 10		
4	15 40	18 20	$25 00	
4½	15 60	18 30	25 25	
5	15 75	18 50	25 50	$30 00
5½	15 90	18 70	25 75	30 35
6	16 10	18 90	26 00	30 70
6½	.....	19 15	26 25	31 10
7	.....	19 40	26 50	31 50
8	.....	19 65	26 75	31 90
9	.....	19 90	27 00	32 30
10	.....	.....	27 25	32 70
Length of Expansion.	1¼	1¾	2⅜	2⅞
Size hole to receive Expansion.	9/16	¾	1	1¼
Size of Expansion.	1¼	1⅝	2	2½

Thickness of material should be mentioned when ordering above bolts.

EXPANSION BOLT

The shell is in one piece and made of malleable iron.

PRICES, FIG. 909

Diam. bolt,	3/16	¼		5/16		3/8	
Length, inch.	1¼ to 3	1¼ to 2	2½ to 4	1¼ to 1½	1¾ to 4	4½ to 6	3 to 4½	5 to 8
Per 100,	$6 00	$7 00	$8 00	$8 00	$9 00	$10 00	$10 00	$11 00
Diam. bolt,		½				5/8		
Length, inch.	4 to 6	7 to 10	11 to 13	14 to 17	18	5 to 7	8 to 11	12 to 15
Per 100,	$17 00	$18 00	$19 00	$20 00	$21 00	$24 00	$25 00	$26 00
Diam. bolt,	5/8			¾				
Length, inch.	16 to 19	20	5–6	7–8	9 to 11	12 to 15	16 to 18	19-20
Per 100,	$27 00	$28 00	$34 00	$35 00	$36 00	$37 00	$38 00	$39 00

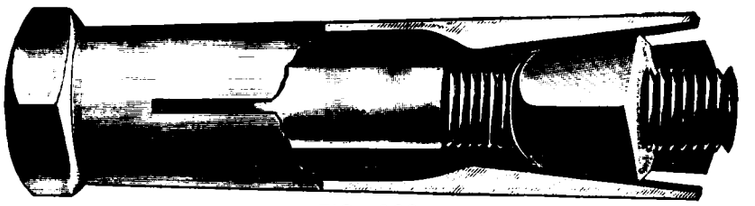


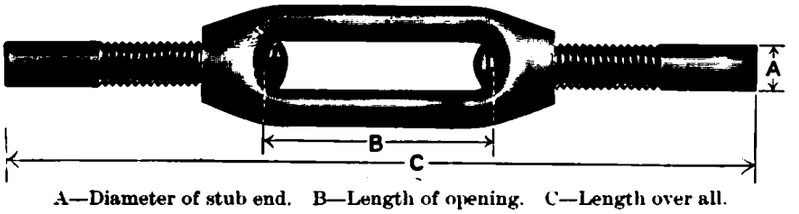
FIG. 909

Cut shows bolt after being expanded, showing inclined ways.

MEASUREMENTS

Diameter bolts	3/16	¼	5/16	3/8	½	5/8	¾
Length shell, inches	1	1½	2	2¾	3½	4	4
Diameter " "	3/8	½	5/8	¾	15/16	1⅛	1¼

DROP FORGED TURNBUCKLES



A—Diameter of stub end. B—Length of opening. C—Length over all.

PRICES, FIG. 910

Diam. stub end A, inches,	3/8	7/16	½	9/16	5/8	¾	⅞	1
Inside opening B, "	5	5	6	6	6	6	6	6
Total length C, "	19½	19½	21	22	23	23	23	23
Prices, each	$0 40	$0 42	$0 45	$0 48	$0 50	$0 63	$0 75	$0 88
Diam. stub end A, inches,	1⅛	1¼	1⅜	1½	1⅝	1¾	1⅞	2
Inside opening B, "	6	6	6	6	6	6	6	6
Total length C, "	24	25	26	26	26	27	28	29
Prices, each	$1 00	$1 25	$1 38	$1 50	$1 75	$2 00	$2 25	$2 65

Second lengths or 9 inch inside openings.

Diam. stub end A, inches,	½	5/8	¾	⅞	1	1⅛	1¼	1⅜	1½
Inside opening B, "	9	9	9	9	9	9	9	9	9
Total length C, "	24	26	26	26	26	27	28	29	29
Prices, each	$0 56	$0 63	$0 79	$0 94	$1 10	$1 25	$1 56	$1 73	$1 88

TURNBUCKLES WITHOUT STUB ENDS



FIG. 911

EXTRA LONG TURNBUCKLES



FIG. 912

Diam. stub end A, inches,	1	1⅛	1¼	1⅜	1½	1⅝	1¾	2
Price, per pound	$0 17	.17	.16	.16	.16	.16	.17	.18
Average weight with stub ends, lbs.	10½	16	23½	28	43	50	63	76
Inside opening B, inches,	9	11	12	12	16	16	17	17
Outside length of buckle, inches	12¼	15	17½	17½	22½	22½	23	23
Total length of buckle with stub in. C, inches,	42	45	48	52	64	64	69	73

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PRESSED WROUGHT IRON OPEN TURNBUCKLES

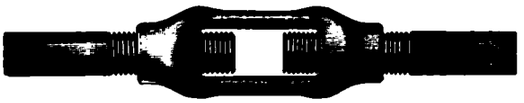


FIG. 913

WITH RIGHT AND LEFT BOLT ENDS

Sizes, Inches.	Prices, Each.	Sizes, Inches.	Prices, Each.	Sizes, Inches.	Prices, Each.
5/8	$0 40	1 3/8	$1 38	2 5/8	$5 00
7/16	42	1 1/2	1 50	2 3/4	5 50
1/2	45	1 5/8	1 75	2 7/8	6 00
9/16	48	1 3/4	2 00	3	6 50
5/8	50	1 7/8	2 25	3 1/8	7 50
3/4	63	2	2 65	3 1/4	8 00
7/8	75	2 1/8	3 10	3 3/8	9 00
1	88	2 1/4	3 50	3 1/2	10 00
1 1/8	1 00	2 3/8	4 00	3 3/4	15 00
1 1/4	1 25	2 1/2	4 50	4	20 00

Above prices are for first or standard length buckles, viz., 6 inches clear between heads.

PRICES AND DIMENSIONS OF EXTRA LENGTHS

For second length, viz., 9 in. between heads A, and 6 in. longer over all, L, add 25 per cent. to list prices.

For third length, viz., 12 in. between heads A, and 12 in. longer over all, L, add 50 per cent. to list prices.

For fourth length, viz., 15 in. between heads A, and 18 in. longer over all, L, double list figures.

Fifth length, viz., 18 in. between heads A, and 24 in. longer over all, L, are two and one-half times the price of standard first length.

Sixth length, viz., 24 in. between heads A, and 36 in. longer over all, L, are three and one-half times the prices given in list.

Seventh length, viz., 36 in. between heads A, and 60 in. longer over all, L, are four times the prices of first length.

Eighth length, viz., 4 feet between heads A, and 7 feet longer over all, L, are six times the list prices for first length.

Ninth length, viz., 6 feet between heads A, and 11 feet longer over all, L, when extended, are eight times the prices of first standard lengths.

PIPE SWIVELS



FIG. 916

ARM SWIVELS

WITH SCREW ENDS CUT RIGHT AND LEFT HAND



FIG. 917

TURNBUCKLE

WITH BOLT HEAD, SWIVEL, IN ONE END



FIG. 918

HOOK AND EYE TURNBUCKLES



FIG. 919

WROUGHT IRON

Size, Inch,		3/16	1/4	5/16	3/8	7/16	1/2	9/16	5/8	3/4	7/8	1
Plain,	Each,	$0 80	0 85	0 90	1 10	1 25	1 55	1 85	2 00	2 75	3 50	4 25
Galvanized,	"	0 95	1 00	1 10	1 30	1 50	1 80	2 10	2 40	3 50	4 25	5 50

DIMENSIONS

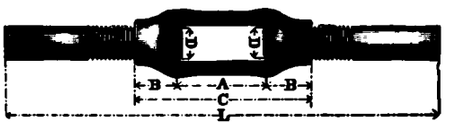


FIG. 914

D. Size=outside diameter of screw.
A. Length in clear between heads=6 in. first length for all sizes.
B. Length of tapped heads=1½ D, nearly.
C. Total length of buckle without bolt ends=6 in. + 3 D, nearly
L. Total length of buckle and stub ends when extended.

Size D, Inches.	L, Inches.	Size D, Inches.	L, Inches.	Size D, Inches.	L, Inches.
5/8	22	1 3/8	27	2 5/8	32
7/16	22	1 1/2	27	2 3/4	33
1/2	22	1 5/8	28	2 7/8	33
9/16	22	1 3/4	28	3	34
5/8	22	1 7/8	29	3 1/8	36
3/4	23	2	29	3 1/4	36
7/8	24	2 1/8	29	3 3/8	37
1	25	2 1/4	30	3 1/2	37
1 1/8	25	2 3/8	31	3 3/4	39
1 1/4	26	2 1/2	32	4	41

BUCKLES

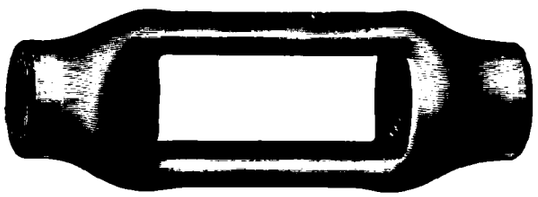


FIG. 915

Prices of buckles without bolt ends on application.

PRICES, FIG. 916

Size of Bolt or Rod, Inches.	Length of Swivel, Inches.	Weight, Blank, Lbs.	Weight, with Ends, Lbs.	Each.
5/8	5	1/4	3/4	$1 20
1/2	5 1/2	1/2	1 1/2	1 35
5/8	7	1 1/4	2 3/4	1 65
3/4	7	1 1/4	3 1/2	2 00
7/8	8	2 1/4	5 1/4	2 60
1	9 1/2	4	9	3 40
1 1/8	9 1/2	4	11	3 75
1 1/4	11 1/2	6	16	4 75
1 3/8	11 1/2	6	19	5 50
1 1/2	13 1/2	11	26	7 25
1 5/8	13 1/2	11	29	8 00
1 3/4	13 1/2	11	34	9 00
1 7/8	15	17	45	11 00
2	15	17	50	12 00
2 1/4	16 1/2	25	77	17 00
2 1/2	18 1/2	34	95	22 00
3	19 1/2	45	143	30 00

PRICES, FIGS. 917 AND 918

Length of Swivel, Inches.	Weight, Blank, Lbs.	Weight, with Ends, Lbs.	Each.
6 1/2	5/8	1	$1 50
8	1	1 3/4	1 85
9 1/2	2	3 1/2	2 40
11	3 1/2	5 3/4	3 00
12 1/2	5	8 1/2	3 75
13	6 1/2	12	4 60
14 1/2	10	16	5 00
13 1/2	25	25	6 75
17	20	30	8 50
17	23	33	9 00
18	25	37	11 00
18	26	48	12 00
18 1/2	30	57	14 00
19	35	65	16 00
19	37	95	24 00
19 1/4	45	124	33 00
21	75	172	43 00

WROUGHT IRON SCREW RING BOLTS

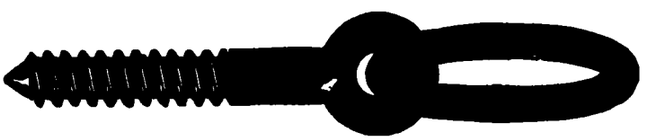


FIG. 920

Size, Inch,		1/4	5/16	3/8	7/16	1/2	5/8	3/4	7/8	1
Length under eye, In.		2	2 1/4	2 1/2	2 3/4	3 1/4	4	4 1/2	5	6
Plain,	Per Doz.,	$1 50	2 20	2 40	3 00	3 30	4 25	8 85	12 00	17 00
Galvanized,	" "	1 60	2 40	2 80	3 20	3 60	4 80	9 60	13 50	19 00

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WROUGHT IRON EYE BOLTS

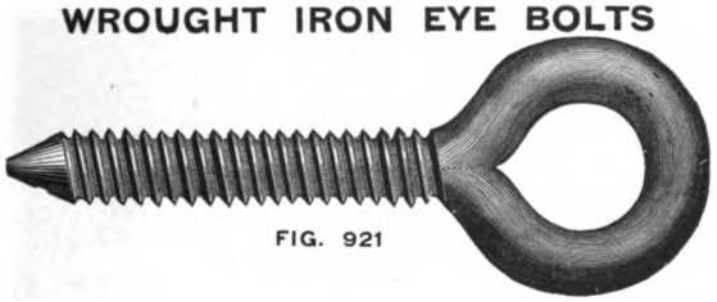


FIG. 921

Sizes.	PRICES	Galvanized, per Doz.	Plain, per Doz.
¼	inch	$1 00	$0 90
5/16	"	1 20	1 10
⅜	"	1 60	1 50
7/16	"	2 00	1 90
½	"	2 40	2 25
⅝	"	3 20	2 95
¾	"	5 80	5 30
⅞	"	8 00	7 25
1	"	9 60	8 50

ORE WASHER, WOOD OR LAG SCREWS

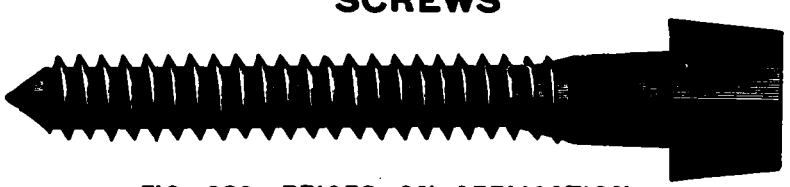


FIG. 923. PRICES ON APPLICATION

HANGER BOLTS, FINISHED POINTS

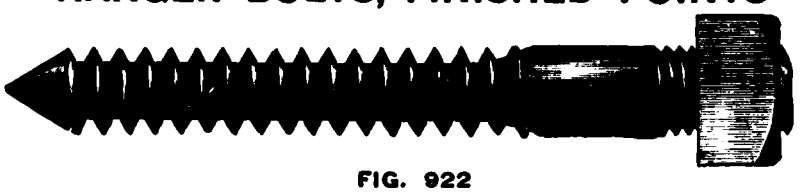


FIG. 922

PRICES, PER 100, IN 100 LOTS

One end cut with deep wood screw thread, the other end fitted with chamfered nuts.

Length Over All.	⅜	½	⅝	¾	⅞	1	1⅛	1¼	1⅜	1½
3 in.	$5 00	$5 75								
4 "	5 50	6 50								
5 "	....	7 50	$9 50							
6 "	....	8 00	10 50	$13 00	$16 00					
7 "	....	8 50	11 25	14 50	18 00	$25 00				
8 "	....	9 00	12 00	15 50	19 50	27 00	$36 00			
9 "	....	....	12 75	16 50	21 00	28 50	38 00	$52 00		
10 "	....	....	13 50	17 50	22 00	30 00	41 00	56 00	$70 00	$80 00
11 "	....	....	....	18 25	23 00	31 50	43 00	59 50	74 00	85 00
12 "	....	....	....	19 00	24 00	33 00	45 00	63 00	78 00	90 00
14 "	....	....	....	20 50	26 00	35 50	48 50	69 00	86 00	100 00
16 "	....	....	....	22 00	28 00	38 00	52 00	75 00	94 00	110 00
18 "	....	....	....	....	....	40 50	55 50	81 00	102 00	120 00

Less quantities, special prices. With hexagon nuts, 10 per cent. extra.

LAG SCREWS

CONICAL POINTS

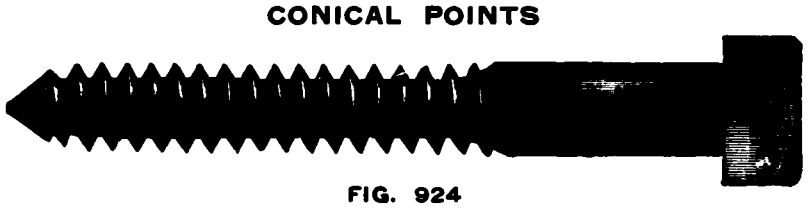


FIG. 924

PRICES PER 100

Length Under Head.	5/16	⅜	7/16	½	9/16 & ⅝	¾	⅞	1
1½ inches.	$2 25	$2 70	$3 15	$3 75				
2 "	2 45	2 96	3 47	4 11	$5 00			
2½ "	2 65	3 22	3 79	4 47	5 50	$7 90		
3 "	2 85	3 48	4.11	4 83	6 00	8 60	$12 50	
3½ "	3 05	3 74	4 43	5 19	6 50	9 30	13 50	$18 20
4 "	3 25	4 00	4 75	5 55	7 00	10 00	14 50	19 50
4½ "	3 45	4 26	5 07	5 91	7 50	10 70	15 50	20 80
5 "	3 65	4 52	5 39	6 27	8 00	11 40	16 50	22 10
5½ "	3 85	4 78	5 71	6 63	8 50	12 10	17 50	23 40
6 "	4 05	5 04	6 03	6 99	9 00	12 80	18 50	24 70
6½ "	....	....	6 35	7 35	9 50	13 50	19 50	26 00
7 "	....	....	6 67	7 71	10 00	14 20	20 50	27 30
7½ "	....	....	6 99	8 07	10 50	14 90	21 50	28 60
8 "	....	....	7 31	8 43	11 00	15 60	22 50	29 90
9 "	....	....	7 95	9 15	12 00	17 00	24 50	32 50
10 "	....	....	....	9 87	13 00	18 40	26 50	35 10
11 "	....	....	....	10 59	14 00	19 80	28 50	37 70
12 "	....	....	....	11 31	15 00	21 20	30 50	40 30

With hexagon heads, 10 per cent. extra in 100 lots; smaller lots at discretion.

GIMLET POINTS

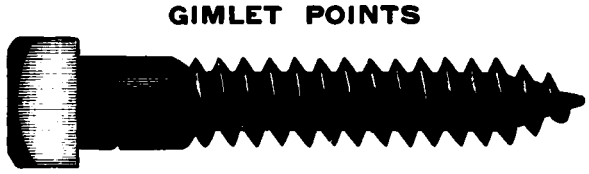


FIG. 925

PRICES PER 100

Length Under Head.	5/16	⅜	7/16	½	9/16 & ⅝	¾	⅞	1
1½ inches.	$2 25	$2 70	$3 15	$3 75				
2 "	2 45	2 96	3 47	4 11	$5 00			
2½ "	2 65	3 22	3 79	4 47	5 50	$7 90		
3 "	2 85	3 48	4 11	4 83	6 00	8 60	$12 50	
3½ "	3 05	3 74	4 43	5 19	6 50	9 30	13 50	$18 20
4 "	3 25	4 00	4 75	5 55	7 00	10 00	14 50	19 50
4½ "	3 45	4 26	5 07	5 91	7 50	10 70	15 50	20 80
5 "	3 65	4 52	5 39	6 27	8 00	11 40	16 50	22 10
5½ "	3 85	4 78	5 71	6 63	8 50	12 10	17 50	23 40
6 "	4 05	5 04	6 03	6 99	9 00	12 80	18 50	24 70
6½ "	....	....	6 35	7 35	9 50	13 50	19 50	26 00
7 "	....	....	6 67	7 71	10 00	14 20	20 50	27 30
7½ "	....	....	6 99	8 07	10 50	14 90	21 50	28 60
8 "	....	....	7 31	8 43	11 00	15 60	22 50	29 90
9 "	....	....	7 95	9 15	12 00	17 00	24 50	32 50
10 "	....	....	....	9 87	13 00	18 40	26 50	35 10
11 "	....	....	....	10 59	14 00	19 80	28 50	37 70
12 "	....	....	....	11 31	15 00	21 20	30 50	40 30

SPECIAL LAG SCREWS

FETTER DRIVE SCREW

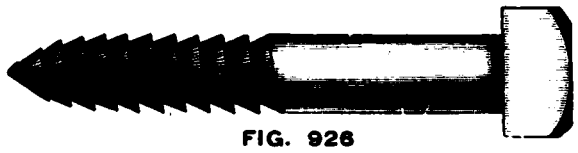


FIG. 926

DOUBLE END, GIMLET POINT



FIG. 927

GIMLET POINT, WITH PIPE THREAD

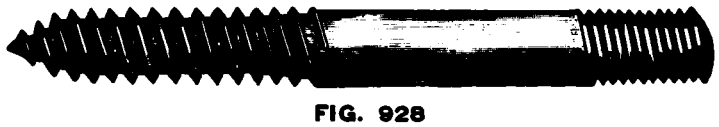


FIG. 928

DOUBLE END LAG SCREW



FIG. 929

FOR PRICES, FIGS. 926 TO 929, SEE LIST ABOVE, FIG. 924

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DROP FORGED STEEL THUMB NUT BLANKS

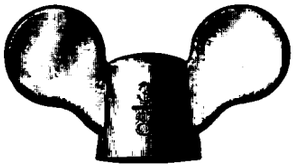


FIG. 930

PRICES, FIG. 930

Sizes, for Bolts....	¼	5/16	⅜	7/16	½	9/16	⅝	¾	⅞
Diam. across Top..	¼	5/16	⅜	7/16	½	9/16	⅝	11/16	¾	⅞
Prices, per 100.....	$3 00	3 50	4 00	4 50	5 00	6 00	8 00	10 00	12 00	14 00

Threaded Thumb Nuts double above list.

PRICES, FIG. 931

Sizes, for Bolts.....	3/32	5/32	3/16	5/16	⅜	7/16	½
Prices, per 100.....	$2 00	3 00	4 00	4 50	5 00	6 00	8 00

Threaded Thumb Nuts double above list.

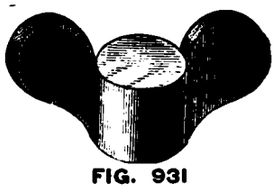


FIG. 931



FIG. 932

MALLEABLE THUMB OR WING NUTS

TAPPED TO U. S. STANDARD

For Bolts, Inches.	Weight per 100 Lbs.	Price per Lb., in 25 lb. lots.	Price per Lb., in smaller lots.
¼	1⅞	$0 28	$0 34
5/16	2¼	25	29½
⅜	4½	20	24
7/16	6½	17¾	20¾
½	9¼	15½	17½
⅝	19	13½	15
¾	20	13	14½

100 lb. lots at 10 per cent. reduction.

DOUBLE CUPPED NUTS

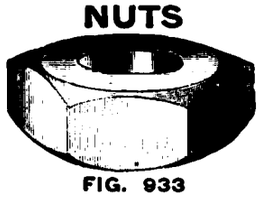


FIG. 933

Made to order.

PRICES ON APPLICATION

ROUND NUTS OR COLLARS

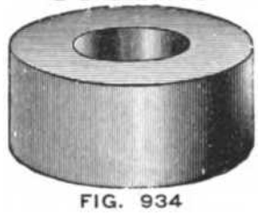


FIG. 934

Can furnish almost any sizes.

PRICES ON APPLICATION

SQUARE MACHINE SCREW NUTS

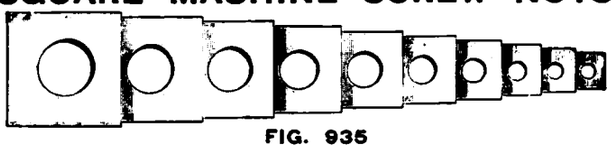


FIG. 935

SQUARE IRON

TAPPED, COLD PRESSED

No.	Threads.	Per 100.	No.	Threads.	Per 100.
4	32, 36, 40	$0 16	18	16, 18	$0 43
6	30, 32	16	20	16, 18	57
8	30, 32	18	22	16, 18	64
10	24, 30, 32	20	24	14, 16	73
12	20, 24	22	26	14, 16	83
14	20, 24	25	28	14, 16	94
16	16, 18, 20	33	30	14, 16	1 05

SQUARE BRASS

TAPPED, PRESSED

No	Threads.	Per 100.	No.	Threads.	Per 100.
4	32, 36, 40	$0 50	18	16, 18	$1 30
6	30, 32	50	20	16, 18	1 70
8	30, 32	55	22	16, 18	1 95
10	24, 30, 32	60	24	14, 16	2 20
12	20, 24	65	26	14, 16	2 50
14	20, 24	75	28	14, 16	2 85
16	16, 18, 20	1 00	30	14, 16	3 15

HEXAGON MACHINE SCREW NUTS



FIG. 936

HEXAGON IRON

TAPPED, COLD PRESSED

No.	Threads.	Per 100.	No.	Threads.	Per 100.
4	32, 36, 40	$0 25	18	16, 18	$0 65
6	30, 32	25	20	16, 18	85
8	30, 32	28	22	16, 18	1 00
10	24, 30, 32	30	24	14, 16	1 10
12	20, 24	33	26	14, 16	1 25
14	20, 24	38	28	14, 16	1 40
16	16, 18, 20	50	30	14, 16	1 60

HEXAGON BRASS

TAPPED, PRESSED

No.	Threads.	Per 100.	No.	Threads.	Per 100.
4	32, 36, 40	$0 75	18	16, 18	$1 95
6	30, 32	75	20	16, 18	2 55
8	30, 32	85	22	16, 18	3 00
10	24, 30, 32	90	24	14, 16	3 30
12	20, 24	1 00	26	14, 16	3 75
14	20, 24	1 15	28	14, 16	4 20
16	16, 18, 20	1 50	30	14, 16	4 80

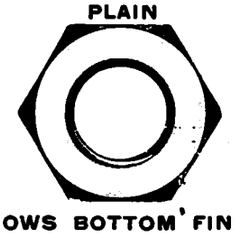
FINISHED CASE HARDENED AND SEMI-FINISHED HEXAGON NUTS

FINISHED



FIG. 937

PLAIN



SHOWS BOTTOM FINISH

SEMI-FINISHED



FIG. 938

The thread and outside of each finished nut are made to an accurate gauge, and to the standard adopted by the U. S. Government. First class in all respects.

The semi-finished nuts correspond with the finished nuts in all dimensions; they are our rough cold punched U. S. Standard nuts, tapped and faced true on the bottom.

For Bolt, Inches.	Width.	Thickness.	Number of Threads.	Finished Case Hardened Nuts. Price per 100.	Finished Case Hardened with Double Chamfer Price per 100*	Semi-Finished Nuts. Bottom Faced Price per 100.	Semi-Finished with Double Chamfer, or Top & Bottom Finish. Price per 100*
¼	½	¼	20	$6 00	$6 50	$2 00	$2 50
5/16	19/32	5/16	18	7 00	7 50	2 50	2 75
⅜	11/16	⅜	16	8 00	8 75	3 25	4 00
7/16	25/32	7/16	14	9 00	10 00	3 75	4 75
½	⅞	½	(13 or 12)	10 00	11 00	4 00	5 00
9/16	31/32	9/16	12	12 00	13 00	5 00	6 00
⅝	1 1/16	⅝	11	15 00	16 00	6 00	7 50
11/16	1 5/32	11/16	11	20 00	22 00	8 50	10 50
¾	1¼	¾	10	20 00	22 00	8 50	10 50
⅞	1 7/16	⅞	9	25 00	27 50	11 00	13 50
1	1⅝	1	8	35 00	38 50	15 00	18 50
1⅛	1 13/16	1⅛	7	45 00	49 50	20 00	24 50
1¼	2	1¼	7	60 00	66 00	27 00	33 00
1⅜	2 3/16	1⅜	6	75 00	82 00	39 00	46 50
1½	2⅜	1½	6	95 00	105 00	55 00	64 00
1⅝	2 9/16	1⅝	5½	125 00	138 00	72 00	83 50
1¾	2¾	1¾	5	155 00	170 00	105 00	119 00
1⅞	2 15/16	1⅞	5	210 00	230 00	130 00	148 00
2	3⅛	2	4½	275 00	300 00	160 00	182 00
2¼	3½	2¼	4½	500 00	550 00	235 00	265 00
2½	3⅞	2½	4	850 00	950 00	375 00	415 00
2¾	4¼	2¾	4	1200 00	1350 00	500 00	560 00
3	4⅝	3	3½	1800 00	2000 00	800 00	900 00

*In lots of 100 and more; small lots at special prices.

Finished nuts, not case hardened, at regular prices; polished, not case hardened, at 10 per cent. advance.

Nuts, polished after case hardening, 30 per cent. additional.

Case hardened semi-finished nuts, 20 per cent. additional.

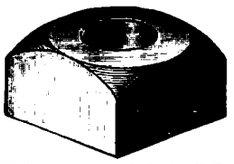
Semi-finished square nuts made to order.

Check nuts in limited numbers, at discretion; in 100 lots at regular prices.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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U. S. STANDARD SIZES NUTS, COLD PUNCHED



COLD PUNCHED NUTS

Chamfered and trimmed, with drilled holes.

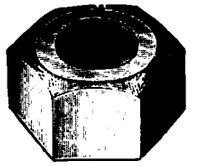


FIG. 939. SQUARE — FIG. 940. HEXAGON

PRICES, FIGS. 939 AND 940, BLANK AND TAPPED

Wide. Inches.	Thick. Inches.	Hole. Inches.	Bolt, Inches	Square, Prices per Lb. Blank.	Square, Prices per Lb. Tapped.	Hexagon, Prices per Lb. Blank.	Hexagon, Prices per Lb. Tapped.	Approx. Numbers in 100 Lbs. Blank Nuts, Chamfered and Trimmed. Square	Hex'g'n.
⅜	5/16	5/32sct	5/16	$0 32.5	$0 37	$0 48	$0 54	16,400	19,600
½	¼	13/64	¼	20	22	27	29.5	7,200	8,400
19/32	5/16	¼	5/16	18	19.5	24	26	4,300	5,100
11/16	⅜	19/64	⅜	14.5	15.6	18.5	20.1	2,550	3,000
25/32	7/16	11/32	7/16	14	14.9	18	19.3	1,770	2,030
⅞	½	25/64	½	11.3	12	14	15	1,180	1,400
31/32	9/16	29/64	9/16	11.3	11.9	14	14.9	915	1,065
1 1/16	5/8	33/64	5/8	10	10.5	12.5	13.2	655	780
1¼	¾	37/64	11/16	9.4	9.8	10.9	11.5	380	470
1¼	¾	5/8	¾	9.4	9.8	10.9	11.5	385	475
1 7/16	⅞	47/64	⅞	9.4	9.8	10.9	11.5	260	308
1⅝	1	27/32	1	9.4	9.8	10.9	11.5	172	212
1 13/16	1⅛	15/16	1⅛	9.4	9.8	10.9	11.5	130	150
2	1¼	1 1/16	1¼	10.1	10.5	11.5	12.1	96	111
2 1/16	1⅜	1 5/32	1⅜	10.3	10.8	12	12.7	70	85
2⅛	1½	1 9/32	1½	10.7	11.3	12.6	13.4	59	69
2 9/16	1⅝	1⅜	1⅝	11.1	11.8	13.2	14.1	46	54
2¾	1¾	1½	1¾	11.5	12.2	14	14.9	35	41
2 15/16	1⅞	1⅝	1⅞	12	12.8	14.5	15.5	29	35
3⅛	2	1 23/32	2	12	12.9	14.5	15.6	24	29
3 5/16	2⅛	1 13/16	2⅛	12.5	13.5	15	16.2	20	25
3½	2¼	1 15/16	2¼	12.5	13.6	15	16.3	17½	21
*3 11/16	2⅜	2 1/16	2⅜	13.5	14.7	16	17.4	15	19½
3⅞	2½	2 3/16	2½	13.5	14.8	16	17.5	12	15½
4 1/16	2⅝	2 5/16	2⅝	14	15.4	16.5	18.1	11	14
4¼	2¾	2 7/16	2¾	14	15.4	16.5	18.1	9	11
4⅝	3	2 11/16	3	14.5	16	17	18.7	7⅓	8½
5	3¼	2 15/16	3¼	14.5	16.1	17	18.8	6	7
5⅜	3½	3 5/32	3½	14.5	16.2	17	18.9	5	5¾
5¾	3¾	3⅜	3¾	15.5	17.2	18	19.9	4⅛	4⅝
6⅛	4	3 9/16	4	15.5	17.2	18	19.9	3⅓	4

Nuts with holes differing from Standard Sizes or tapped with special threads, extra.
*Nuts for 2⅜ in. bolt and larger sizes are forged and subject to special discount in quantity.

PLAIN COLD PUNCHED NUTS

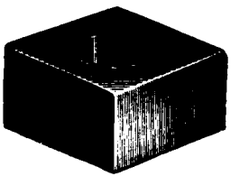


FIG. 941. SQUARE

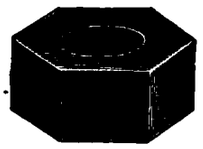


FIG. 942. HEXAGON

PRICES, FIGS. 941 AND 942

Wide. Inches.	Thick. Inches.	Hole. Inches.	Bolt. Inches.	Square, Prices per Lb. Blank.	Square, Prices per Lb. Tapped.	Hexagon, Prices per Lb. Blank.	Hexagon, Prices per Lb. Tapped.	Approx. Numbers in 100 Lbs. Blank Nuts. Plain Square.	Hex'g'n
½	¼	13/64	¼	$0 13.8	$0 15.8	$0 21	$0 23.5	6,700	7,650
19/32	5/16	¼	5/16	12.8	14.3	19	21	4,250	4,850
11/16	⅜	19/64	⅜	11	12.1	14.7	16.3	2,400	2,800
25/32	7/16	11/32	7/16	10.5	11.4	13.7	15	1,550	1,830
⅞	½	25/64	½	9.3	10	11.5	12.5	1,100	1,300
31/32	9/16	29/64	9/16	9.3	9.9	11.5	12.4	825	990
1 1/16	5/8	33/64	5/8	8.9	9.4	10.7	11.4	580	700
1¼	¾	37/64	11/16	8.6	9	10.2	10.8	345	430
1¼	¾	5/8	¾	8.6	9	10.2	10.8	348	438
1 7/16	⅞	47/64	⅞	8.6	9	10.2	10.8	228	290
1⅝	1	27/32	1	8.4	8.8	10	10.6	156	198
1 13/16	1⅛	15/16	1⅛	8.4	8.8	10	10.6	122	140
2	1¼	1 1/16	1¼	8.8	9.2	10.5	11.1	88	103
2 1/16	1⅜	1 5/32	1⅜	8.8	9.3	10.5	11.2	65	77
2⅛	1½	1 9/32	1½	9.6	10.2	11.3	12.1	54	63
2 9/16	1⅝	1⅜	1⅝	9.6	10.3	11.3	12.2	42	50
2¾	1¾	1½	1¾	10.2	10.9	12.1	13	33	39
2 15/16	1⅞	1⅝	1⅞	10.2	11	12.1	13.1	27	33
3⅛	2	1 23/32	2	10.6	11.5	12.6	13.7	23	28
3 5/16	2⅛	1 13/16	2⅛	11	12	13	14.2	19	24
3½	2¼	1 15/16	2¼	11.5	12.6	13.5	14.8	17	20

Nuts with holes differing from Standard Sizes, or tapped with Special Threads, extra.

Larger sizes charged at same rates as Chamfered and Trimmed Nuts, Figs. 939 and 940

MANUFACTURERS' STANDARD SIZES NUTS, COLD PUNCHED

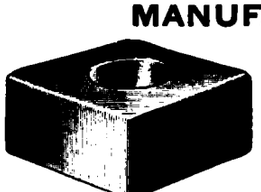


FIG. 943. PLAIN

COLD PUNCHED SQUARE NUTS

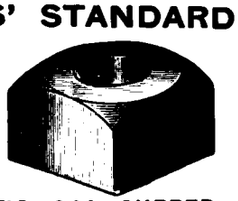


FIG. 944. CUPPED

PRICES, FIGS. 943 AND 944

Wide. Inches.	Thick. Inches.	Hole. Inches.	Bolt. Inches.	Plain. Prices per Lb. Blank.	Plain. Prices per Lb. Tapped.	Cupped. Prices per Lb. Blank.	Cupped. Prices per Lb. Tapped.	Approx. Numbers in 100 Lbs. Blank Nuts. Square Nuts. Plain.	Cupp'd
½	¼	7/32	¼	$0 13.8	$0 15.8	$0 20	$0 22	6,750	7,300
5/8	5/16	9/32	5/16	12.3	13.8	16	17.5	3,540	4,000
¾	⅜	11/32	⅜	10.8	11.9	13.5	14.6	2,100	2,380
⅞	7/16	13/32	7/16	9.3	10.2	11.3	12.2	1,330	1,460
⅞	½	7/16	½	9.3	10	11.3	12	1,120	1,280
1	½	7/16	½	9.2	9.9	10.2	10.9	840	930
1⅛	9/16	½	9/16	9	9.6	10	10.6	650	700
1⅛	⅝	9/16	⅝	8.9	9.4	10	10.5	575	620
1¼	⅝	9/16	⅝	8.7	9.2	9.7	10.1	485	475
1⅜	¾	21/32	¾	8.6	9	9.6	10	315	345
1½	¾	21/32	¾	8.4	8.8	9.4	9.8	244	270
1½	⅞	25/32	⅞	8.6	9	9.6	10	215	240
1⅝	⅞	25/32	⅞	8.4	8.8	9.4	9.8	180	205
1¾	⅞	25/32	⅞	8.4	8.8	9.4	9.8	163	183
1¾	1	⅞	1	8.4	8.8	9.4	9.8	141	156
2	1	⅞	1	8.4	8.8	9.4	9.8	105	115
2	1⅛	15/16	1⅛	8.4	8.8	9.4	9.8	98	106
2¼	1⅛	15/16	1⅛	8.4	8.8	9.4	9.8	74	81
2¼	1¼	1 1/16	1¼	8.8	9.2	10.1	10.5	64	70
2½	1¼	1 1/16	1¼	8.8	9.2	10.1	10.5	52	57
2¾	1⅜	1 5/16	1⅜	8.8	9.3	10.1	10.6	40	44
3	1½	1 5/16	1½	9.6	10.2	10.7	11.3	31½	35
3¼	1⅝	1 7/16	1⅝	9.6	10.3	11.1	11.8	22	25
3½	1¾	1 9/16	1¾	10.2	10.9	11.5	12.2	18	20
3¾	1⅞	1 11/16	1⅞	10.2	11	12	12.8	15	16
4	2	1 13/16	2	10.6	11.5	12	12.9	12½	12¾

Nuts with holes differing from Standard Sizes or tapped with special threads, extra.

COLD PUNCHED HEXAGON NUTS

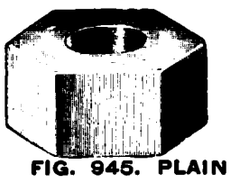


FIG. 945. PLAIN

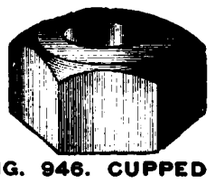


FIG. 946. CUPPED

PRICES, FIGS. 945 AND 946

Wide. Inches.	Thick. Inches.	Hole. Inches.	Bolt. Inches.	Plain. Prices per Lb. Blank.	Plain. Prices per Lb. Tapped.	Cupped. Prices per Lb. Blank.	Cupped. Prices per Lb. Tapped.	Approx. Numbers in 100 Lbs. Blank Nuts. Hex'g'n Nuts Plain.	Cupp'd
½	¼	7/32	¼	$0 21	$0 23.5	$0 27	$0 29.5	7,800	8,500
5/8	5/16	9/32	5/16	17.5	19.5	21.5	23.5	4,440	4,790
¾	⅜	11/32	⅜	13.8	15.4	17.5	19.1	2,380	2,510
⅞	7/16	13/32	7/16	11.5	12.8	14	15.3	1,430	1,580
⅞	½	7/16	½	11.5	12.5	14	15	1,330	1,440
1	½	7/16	½	11.2	12.2	13	14	1,010	1,090
1	9/16	7/16	½	11.2	12.2	13	14	930	980
1⅛	9/16	½	9/16	10.7	11.6	12.5	13.3	730	800
1⅛	⅝	9/16	⅝	10.7	11.4	12.5	13.2	630	660
1⅛	¾	9/16	⅝	10.7	11.4	12.5	13.2	560	588
1¼	⅝	9/16	⅝	10.2	10.9	11.4	12	514	541
1¼	¾	9/16	⅝	10.2	10.9	11.4	12	435	460
1⅜	¾	21/32	¾	10.2	10.9	11.2	11.8	376	394
1⅜	⅞	21/32	¾	10.2	10.9	11.2	11.8	330	347
1½	¾	21/32	¾	10	10.6	10.9	11.5	290	310
1½	⅞	21/32	¾	10	10.6	10.9	11.5	250	266
1½	⅞	25/32	⅞	10.2	10.8	11.1	11.7	265	288
1½	1	25/32	⅞	10.2	10.8	11.1	11.7	218	230
1⅝	⅞	25/32	⅞	10	10.6	10.9	11.5	221	235
1⅝	1	25/32	⅞	10	10.6	10.9	11.5	197	210
1¾	1	⅞	1	10	10.6	10.9	11.5	174	186
1¾	1⅛	⅞	1	10	10.6	10.9	11.5	157	168
2	1¼	15/16	1⅛	10.2	10.8	11.5	12.1	100	110
2¼	1⅜	1 1/16	1¼	10.5	11.1	11.5	12.1	72	79
2½	1½	1 1/16	1⅜	10.5	11.2	12	12.7	54	59
2¾	1⅝	1 5/16	1½	11.3	12.1	12.5	13.3	41	45
3	1¾	1 7/16	1⅝	11.3	12.2	13.2	14.1	30	33
3¼	1⅞	1 9/16	1¾	12.1	13	14	14.9	24½	27
3½	2	1 11/16	1⅞	12.1	13.1	14.5	15.5	20¼	21¾
3½	2	1 13/16	2	12.6	13.7	14.5	15.6	20½	22
3½	2⅛	1 15/16	2	12.6	13.7	14.5	15.6	19½	20½

Nuts with holes differing from Standard Sizes or tapped with special threads, extra.

We can furnish Extra Sizes, Cold Punched Nuts, Manufacturers' Standard Sizes. Special Lists of Sizes and Prices sent on application.

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SQUARE AND HEXAGON HOT PRESSED NUTS

U. S. STANDARD

SQUARE



FIG. 947

HEXAGON



FIG. 948

PRICES, FIGS. 947 AND 948

Short Diam., Inches.	Thickness, Inches.	Hole, Inches.	Size Bolt, Inches.	SQUARE Prices per Pound, Hot Pressed, Blank, Cts.	SQUARE Prices per Pound, Ream'd Tapped, Cts.	SQUARE Prices per Pound, Ream'd Blank, Cts.	HEXAGON Prices per Pound Hot Pressed, Blank, Cts.	HEXAGON Prices per Pound, Tapped, Cts.	HEXAGON Prices per Pound, Ream'd Blank, Cts.
½	¼	.185—$\frac{3}{16}$ scant	¼	13.0	15.0	13.8	20.0	22.5	21.0
$\frac{19}{32}$	$\frac{5}{16}$	.240—¼ "	$\frac{5}{16}$	12.0	13.5	12.8	18.0	20.0	19.0
$\frac{11}{16}$	$\frac{3}{8}$	.294—$\frac{19}{64}$ "	$\frac{3}{8}$	10.5	11.6	11.0	14.0	15.6	14.7
$\frac{25}{32}$	$\frac{7}{16}$	.344—$\frac{11}{32}$ "	$\frac{7}{16}$	10.0	10.9	10.5	13.0	14.3	13.7
⅞	½	.400—$\frac{13}{32}$ "	½	9.0	9.7	9.3	11.2	12.2	11.5
$\frac{31}{32}$	$\frac{9}{16}$	.454—$\frac{29}{64}$ "	$\frac{9}{16}$	9.0	9.6	9.3	11.2	12.1	11.5
$1\frac{1}{16}$	$\frac{5}{8}$	.507—½ full	$\frac{5}{8}$	8.7	9.2	8.9	10.5	11.2	10.7
$1\frac{1}{4}$	$\frac{3}{4}$	.620—$\frac{5}{8}$ scant	$\frac{3}{4}$	8.5	8.9	8.6	10.0	10.6	10.2
$1\frac{7}{16}$	⅞	.731—$\frac{47}{64}$ "	⅞	8.4	8.8	8.6	9.9	10.5	10.2
$1\frac{5}{8}$	1	.837—$\frac{27}{32}$ "	1	8.2	8.6	8.4	9.7	10.3	10.0
$1\frac{13}{16}$	$1\frac{1}{8}$	.940—$\frac{15}{16}$ full	$1\frac{1}{8}$	8.2	8.6	8.4	9.7	10.3	10.0
2	$1\frac{1}{4}$	1.065—$1\frac{1}{16}$ "	$1\frac{1}{4}$	8.4	8.8	8.8	9.9	10.5	10.5
$2\frac{1}{16}$	$1\frac{3}{8}$	1.160—$1\frac{5}{32}$ "	$1\frac{3}{8}$	8.5	9.0	8.8	10.0	10.7	10.5
$2\frac{3}{16}$	$1\frac{1}{2}$	1.284—$1\frac{9}{32}$ "	$1\frac{1}{2}$	8.8	9.4	9.6	10.3	11.1	11.3
$2\frac{5}{16}$	$1\frac{5}{8}$	1.389—$1\frac{25}{64}$ scant	$1\frac{5}{8}$	9.0	9.7	9.6	10.5	11.4	11.3
$2\frac{7}{16}$	$1\frac{3}{4}$	1.491—$1\frac{1}{2}$ "	$1\frac{3}{4}$	9.3	10.0	10.2	10.8	11.7	12.1
$2\frac{15}{16}$	$1\frac{7}{8}$	1.616—$1\frac{5}{8}$ "	$1\frac{7}{8}$	9.5	10.3	10.2	11.0	12.0	12.1
$3\frac{1}{8}$	2	1.712—$1\frac{23}{32}$ "	2	9.7	10.6	10.6	11.2	12.3	12.6
$3\frac{5}{16}$	$2\frac{1}{16}$	1.836—$1\frac{27}{32}$ "	$2\frac{1}{8}$	10.0	11.0	11.0	11.7	12.9	13.0
$3\frac{1}{2}$	$2\frac{1}{4}$	1.962—$1\frac{31}{32}$ "	$2\frac{1}{4}$	10.0	11.1	11.5	11.7	13.0	13.5
$3\frac{11}{16}$	$2\frac{3}{8}$	2.086—$2\frac{3}{64}$ "	$2\frac{3}{8}$	10.3	11.5	12.0	12.2	13.6	14.0
$3\frac{7}{8}$	$2\frac{1}{2}$	$2\frac{1}{16}$	$2\frac{1}{2}$	10.5	11.8	12.2	12.4	13.9	14.2
$4\frac{1}{4}$	$2\frac{3}{4}$	$2\frac{7}{16}$	$2\frac{3}{4}$	11.0	12.4	12.7	13.0	14.6	15.0
$4\frac{5}{8}$	3	$2\frac{11}{16}$	3	11.5	13.0	13.2	13.5	15.2	15.6

For less than keg lots, 200 pounds, of a size the following extras will be charged, viz.:
At the rate of 20 cents per 100 pounds for 100 pounds or more.
At the rate of 50 cents per 100 pounds for less than 100 pounds.

MANUFACTURERS' STANDARD

SQUARE

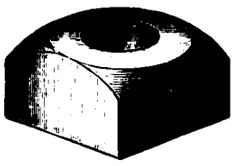


FIG. 949

HEXAGON

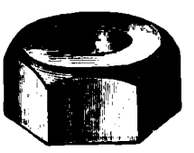


FIG. 950

PRICES, FIGS. 949 AND 950

Short Diam. Inches.	Thickness, Inches.	Hole, Inches.	Size Bolt, Inches.	SQUARE Prices per Pound, Blank, Cts.	SQUARE Prices per Pound, Tapped Cts.	Short Diam. Inches.	Thickness, Inches.	Hole, Inches.	Size Bolt, Inches.	HEXAGON Prices per Pound, Blank, Cts.	HEXAGON Prices per Pound, Tapped Cts.
½	¼	$\frac{7}{32}$	¼	13.0	15.0	½	¼	$\frac{7}{32}$	¼	20.0	22.5
$\frac{5}{8}$	$\frac{5}{16}$	$\frac{9}{32}$	$\frac{5}{16}$	11.5	13.0	$\frac{5}{8}$	$\frac{5}{16}$	$\frac{9}{32}$	$\frac{5}{16}$	16.0	18.0
¾	¾	$\frac{11}{32}$	⅜	10.0	11.1	¾	⅜	$\frac{11}{32}$	⅜	13.0	14.6
⅞	$\frac{7}{16}$	$\frac{25}{64}$	$\frac{7}{16}$	9.2	10.1	⅞	$\frac{7}{16}$	$\frac{25}{64}$	$\frac{7}{16}$	11.4	12.7
1	½	$\frac{7}{16}$	½	8.7	9.4	1	½	$\frac{7}{16}$	½	10.5	11.5
$1\frac{1}{8}$	$\frac{9}{16}$	½	$\frac{9}{16}$	8.6	9.2	$1\frac{1}{8}$	$\frac{9}{16}$	½	$\frac{9}{16}$	10.4	11.3
$1\frac{1}{4}$	$\frac{5}{8}$	$\frac{9}{16}$	$\frac{5}{8}$	8.5	9.0	$1\frac{1}{4}$	$\frac{5}{8}$	$\frac{9}{16}$	$\frac{5}{8}$	10.1	10.8
$1\frac{1}{2}$	¾	$\frac{21}{32}$	¾	8.4	8.8	$1\frac{1}{2}$	¾	$\frac{21}{32}$	¾	9.9	10.5
$1\frac{3}{4}$	⅞	$\frac{25}{32}$	⅞	8.3	8.7	$1\frac{3}{4}$	⅞	$\frac{25}{32}$	⅞	9.8	10.4
2	1	$\frac{7}{8}$	1	8.2	8.6	2	1	⅞	1	9.7	10.3
$2\frac{1}{4}$	$1\frac{1}{8}$	$\frac{31}{32}$	$1\frac{1}{8}$	8.2	8.6	$2\frac{1}{4}$	$1\frac{1}{8}$	$\frac{31}{32}$	$1\frac{1}{8}$	9.7	10.3
$2\frac{1}{2}$	$1\frac{1}{4}$	$1\frac{1}{32}$	$1\frac{1}{4}$	8.3	8.7	$2\frac{1}{2}$	$1\frac{1}{4}$	$1\frac{1}{32}$	$1\frac{1}{4}$	9.8	10.4
$2\frac{3}{4}$	$1\frac{3}{8}$	$1\frac{3}{16}$	$1\frac{3}{8}$	8.5	9.0	$2\frac{3}{4}$	$1\frac{3}{8}$	$1\frac{3}{16}$	$1\frac{3}{8}$	10.0	10.7
3	$1\frac{1}{2}$	$1\frac{5}{16}$	$1\frac{1}{2}$	8.7	9.3	3	$1\frac{1}{2}$	$1\frac{5}{16}$	$1\frac{1}{2}$	10.2	11.0
$3\frac{1}{4}$	$1\frac{5}{8}$	$1\frac{7}{16}$	$1\frac{5}{8}$	8.9	9.6	3	$1\frac{3}{4}$	$1\frac{7}{16}$	$1\frac{5}{8}$	10.4	11.3
$3\frac{1}{2}$	$1\frac{3}{4}$	$1\frac{9}{16}$	$1\frac{3}{4}$	9.2	9.9	$3\frac{1}{4}$	$1\frac{7}{8}$	$1\frac{9}{16}$	$1\frac{3}{4}$	10.7	11.6
$3\frac{3}{4}$	$1\frac{7}{8}$	$1\frac{11}{16}$	$1\frac{7}{8}$	9.4	10.2	$3\frac{1}{2}$	2	$1\frac{11}{16}$	$1\frac{7}{8}$	10.9	11.9
4	2	$1\frac{13}{16}$	2	9.6	10.5	$3\frac{1}{2}$	2	$1\frac{13}{16}$	2	11.1	12.2
4	$2\frac{1}{8}$	$1\frac{7}{8}$	$2\frac{1}{4}$	9.7	10.7	$3\frac{3}{4}$	$2\frac{1}{8}$	$1\frac{7}{8}$	$2\frac{1}{8}$	11.4	12.6
$4\frac{1}{4}$	$2\frac{1}{4}$	2	$2\frac{1}{4}$	9.9	11.0	$3\frac{3}{4}$	$2\frac{1}{4}$	2	$2\frac{1}{4}$	11.6	12.9
$4\frac{1}{4}$	$2\frac{3}{8}$	$2\frac{1}{8}$	$2\frac{3}{8}$	10.1	11.3	4	$2\frac{3}{8}$	$2\frac{1}{8}$	$2\frac{3}{8}$	12.0	13.4
$4\frac{1}{2}$	$2\frac{1}{2}$	$2\frac{1}{4}$	$2\frac{1}{2}$	....	....	$4\frac{1}{4}$	$2\frac{1}{2}$	$2\frac{1}{4}$	$2\frac{1}{2}$	....	....
$4\frac{3}{4}$	$2\frac{3}{4}$	$2\frac{7}{16}$	$2\frac{3}{4}$	....	....	$4\frac{1}{2}$	$2\frac{3}{4}$	$2\frac{7}{16}$	$2\frac{3}{4}$	....	....
5	3	$2\frac{11}{16}$	3	....	....	$4\frac{3}{4}$	3	$2\frac{11}{16}$	3	....	....
$5\frac{1}{2}$	$3\frac{1}{4}$	$2\frac{15}{16}$	$3\frac{1}{4}$	....	....	5	$3\frac{1}{4}$	$2\frac{15}{16}$	$3\frac{1}{4}$	....	....
6	$3\frac{1}{2}$	$3\frac{1}{8}$	$3\frac{1}{2}$	....	....	$5\frac{1}{4}$	$3\frac{1}{2}$	$3\frac{1}{8}$	$3\frac{1}{2}$	....	....

For less than keg lots, 200 pounds, of a size the following extras will be charged, viz.:
At the rate of 20 cents per 100 pounds for 100 pounds or more.
At the rate of 50 cents per 100 pounds for less than 100 pounds.
In ordering nuts other than U. S. Standard sizes, always give short diameter, thickness and size of hole wanted.

PLATE WASHERS

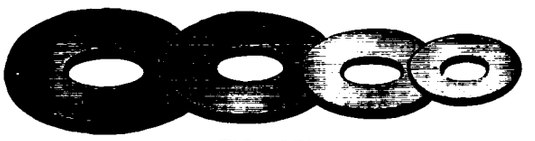


FIG. 951

STANDARD SIZES

Diameters, Inches.	Thickness, Wire Gauge, Nos.	Size of Hole, Inches.	Size of Bolt, Inches.	Prices per Pound, Cts.	Number in 100 Pounds.
$\frac{9}{16}$	18($\frac{5}{64}$)	¼	$\frac{5}{16}$	17.	39,400
¾	16($\frac{1}{16}$)	$\frac{5}{16}$	¼	12.5	13,900
⅞	16 "	⅜	$\frac{5}{16}$	11.5	11,250
1	14($\frac{5}{64}$)	$\frac{7}{16}$	⅜	10.5	6,800
$1\frac{1}{4}$	14 "	½	$\frac{7}{16}$	9.5	4,300
$1\frac{5}{8}$	12($\frac{9}{32}$)	$\frac{9}{16}$	½	9.	2,600
$1\frac{1}{2}$	12 "	⅝	$\frac{9}{16}$	9.	2,250
$1\frac{3}{4}$	10($\frac{1}{8}$)	$1\frac{1}{16}$	⅝	8.5	1,300
2	10 "	$1\frac{5}{16}$	¾	8.5	1,010
$2\frac{1}{4}$	10 "	$1\frac{5}{16}$	⅞	8.5	860
$2\frac{1}{2}$	9($\frac{5}{32}$)	$1\frac{1}{16}$	1	8.5	625
$2\frac{3}{4}$	9 "	$1\frac{1}{4}$	$1\frac{1}{8}$	8.5	520
3	9 "	$1\frac{5}{8}$	$1\frac{1}{4}$	8.5	400
$3\frac{1}{2}$	8($\frac{11}{64}$)	$1\frac{1}{2}$	$1\frac{3}{8}$	9.	280
$3\frac{3}{4}$	8 "	$1\frac{5}{8}$	$1\frac{1}{2}$	9.	240
$3\frac{3}{4}$	8 "	$1\frac{3}{4}$	$1\frac{5}{8}$	9.	245
4	8 "	$1\frac{7}{8}$	$1\frac{3}{4}$	9.	220
$4\frac{1}{4}$	8 "	2	$1\frac{7}{8}$	9.	190
$4\frac{1}{2}$	8 "	$2\frac{1}{8}$	2	9.	175
$4\frac{3}{4}$	6($\frac{7}{32}$)	$2\frac{3}{8}$	$2\frac{1}{4}$	9.5	110
5	6 "	$2\frac{3}{8}$	$2\frac{1}{2}$	9.5	91
$5\frac{1}{2}$ } 6 }	¼ to ⅝ inch thick.....Special price on specifications.				

ADDITIONAL SIZES

Diameters, Inches.	Thickness, Wire Gauge, Nos.	Size of Hole, Inches.	Size of Bolt, Inches.	Prices per Pound, Cts.	Number in 100 Pounds.
½	18	¼	$\frac{5}{16}$	19.5	45,500
$\frac{5}{8}$	16	$\frac{5}{16}$	¼	15.5	21,500
¾	16	⅜	$\frac{5}{16}$	14.	16,500
⅞	14	$\frac{7}{16}$	⅜	12.5	11,500
1	14	½	$\frac{7}{16}$	11.5	7,400
$1\frac{1}{8}$	14	½	$\frac{7}{16}$	10.5	5,450
$1\frac{1}{8}$	12	$\frac{9}{16}$	½	12.	4,800
$1\frac{1}{4}$	12	$\frac{9}{16}$	½	10.5	3,650
$1\frac{1}{2}$	12	$\frac{9}{16}$	½	9.	2,000
$1\frac{1}{4}$	12	⅝	$\frac{9}{16}$	11.	3,900
$1\frac{5}{8}$	12	⅝	$\frac{9}{16}$	10.	3,000
$1\frac{1}{4}$	12	$1\frac{1}{16}$	⅝	11.5	4,100
$1\frac{5}{8}$	12	$1\frac{1}{16}$	⅝	10.5	3,200
$1\frac{1}{2}$	10	$1\frac{1}{16}$	⅝	9.5	2,150
$1\frac{1}{2}$	10	$1\frac{5}{16}$	¾	10.	2,200
$1\frac{3}{4}$	10	$1\frac{5}{16}$	¾	9.3	1,400
2	9	$1\frac{5}{16}$	⅞	9.3	1,150
$2\frac{1}{4}$	9	$1\frac{1}{16}$	1	9.3	940

Sizes for finishing and cupped washers made to order.
Washers made of other gauges than detailed, at advanced rates.



FIG. 952

PLATE WASHERS EXTRA SIZES

In 200 pound lots. Smaller lots extra.

Diameters, Inches.	Thickness, Wire Gauge, Nos.	Size of Hole, Inches.	Size of Bolt, Inches.	Prices per Pound, Cts.
$\frac{9}{16}$	16	$\frac{5}{16}$	¼	19.
¾	16	$\frac{7}{16}$	⅜	16.
⅞	14	½	$\frac{7}{16}$	15.
1	14	$\frac{9}{16}$	½	14.
$1\frac{1}{16}$	12	$\frac{9}{16}$	½	14.
$1\frac{1}{8}$	12	$1\frac{1}{16}$	⅝	14.
$1\frac{1}{8}$	10	$1\frac{1}{16}$	⅝	10.
$1\frac{1}{8}$	10	$1\frac{5}{16}$	¾	13.
$1\frac{1}{8}$	10	$1\frac{5}{16}$	¾	10.
$1\frac{1}{8}$	10	$1\frac{5}{16}$	⅞	11.
$1\frac{1}{8}$	10	$1\frac{5}{16}$	⅞	10.
$1\frac{1}{8}$	10	$1\frac{1}{16}$	1	13.
2	9	$1\frac{1}{16}$	1	11.
2	9	$1\frac{1}{4}$	$1\frac{1}{8}$	12.
$2\frac{1}{4}$	9	$1\frac{1}{4}$	$1\frac{1}{8}$	11.
$2\frac{1}{2}$	9	$1\frac{1}{4}$	$1\frac{1}{8}$	10.
$2\frac{1}{2}$	9	$1\frac{5}{8}$	$1\frac{1}{4}$	11.
$2\frac{3}{4}$	9	$1\frac{5}{8}$	$1\frac{1}{4}$	10.
3 or $3\frac{1}{4}$	9	$1\frac{1}{2}$	$1\frac{3}{8}$	10.
3	8	$1\frac{5}{8}$	$1\frac{1}{2}$	11.
$3\frac{1}{4}$ or $3\frac{1}{2}$	8	$1\frac{5}{8}$	$1\frac{1}{2}$	10.
$3\frac{1}{2}$	8	$1\frac{7}{8}$	$1\frac{3}{4}$	11.
$3\frac{3}{4}$	8	$1\frac{7}{8}$	$1\frac{3}{4}$	10.
4	8	$2\frac{1}{8}$	2	11.

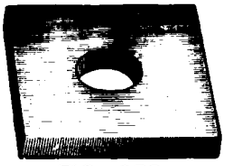


FIG. 953

SQUARE WASHERS

STANDARD SIZES

Wide, Inches.	Thick, Inches.	Hole, Inches.	Bolt, Inches.	Prices per Pound, Cts.	Number in 100 Pounds.
$1\frac{1}{2}$	⅛	$\frac{7}{16}$	⅜	9.6	1,300
$1\frac{3}{4}$	⅛	½	$\frac{7}{16}$	9.1	1,100
2	$\frac{5}{16}$	$\frac{9}{16}$	½	8.5	500
$2\frac{1}{4}$	¼	$2\frac{5}{32}$	⅝	8.3	315
$2\frac{1}{2}$	¼	$2\frac{7}{32}$	⅝	8.3	250
3	¼	$3\frac{1}{32}$	⅞	8.2	165
$3\frac{1}{2}$	$\frac{5}{16}$	$1\frac{9}{32}$	1	8.2	87
4	$\frac{5}{16}$	$1\frac{1}{4}$	$1\frac{1}{8}$	8.2	65
$4\frac{1}{2}$	$\frac{5}{16}$	$1\frac{5}{8}$	$1\frac{1}{4}$	8.2	48
5	$\frac{5}{16}$	$1\frac{1}{2}$	$1\frac{3}{8}$	8.2	40
6	$\frac{5}{16}$	$1\frac{5}{8}$	$1\frac{1}{2}$	8.3	28
$6\frac{1}{2}$	$\frac{5}{16}$	$1\frac{7}{8}$	$1\frac{3}{4}$	8.4	24
7	$\frac{5}{16}$	$2\frac{1}{8}$	2	8.4	21

MANNING, MAXWELL, & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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CAST IRON WASHERS

COUNTERSUNK FOR BOLT HEAD

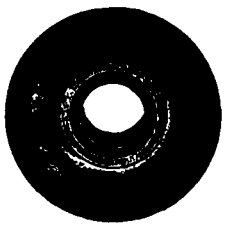


FIG. 954

ROUND WASHER



FIG. 955

SQUARE BEVELED

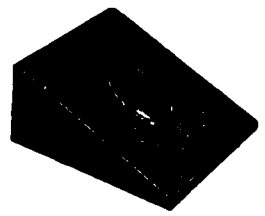


FIG. 956

ROUND BEVELED

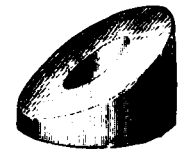


FIG. 957

We can furnish any style of cast washers on receipt of pattern or description. Regular sizes carried in stock. Prices quoted on application.

FLAT SPRING KEYS

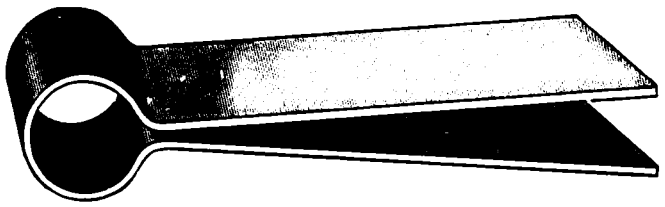


FIG. 958

PRICES PER THOUSAND

Lengths, inches... / Width, Inches.	1¼	1½	1¾	2	2¼	2½	2¾	3	3¼	3½
⅜	$14 00	$15 75	$17 50	$19 25	$21 00	$22 75	$24 50	$26 25		
½	21 00	22 75	24 50	26 25	28 00	29 75	31 50	33 25		
⅝	....	....	26 25	28 00	30 75	33 25	36 00	38 50	$41 25	$43 75
¾	....	....	....	34 25	36 75	39 25	42 00	44 75	47 25	50 00

NUBBED END SPRING KEYS

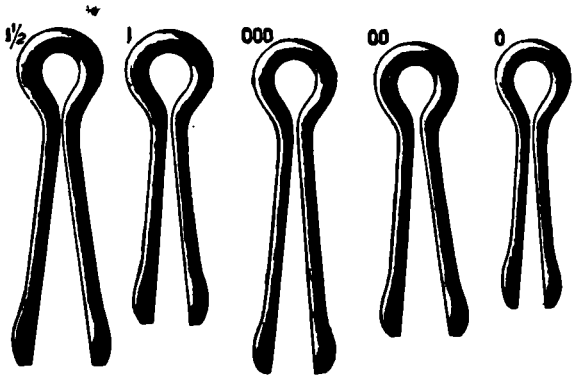


FIG. 959

Numbers	000	00	0	1	1½	2	3	4
Wire gauge	12	12	12	11	11	10	10	10
Price per 100	$0 50	$0 55	$0 60	$0 65	$0 68	$0 70	$0 75	$0 80

SPLIT AND RIVETED KEYS AND SINGLE KEYS



FIG. 960

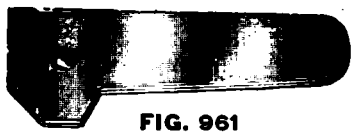


FIG. 961



FIG. 962

PRICES, IN LOTS OF 100 OR MORE

Nos. on Cards.	For Bolts, Inches.	Number in 100 Lbs.	Sizes Under Head, Inches.	Thickness, Inches.	Price per 100.
1	⅜	3,640	13/32 x 1½	⅛	$2 00
3	9/16 (Old ½)	2,260	9/16 x 1¾	⅛	2 20
5	11/16 (" ⅝)	1,250	11/16 x 2	5/32	2 50
7	13/16 (" ¾)	880	13/16 x 2¼	5/32	3 20
8	15/16 (" ⅞)	700	13/16 x 2⅞	5/32	3 30
26	15/16	450	15/16 x 3½	7/32	4 60
9	1	770	1 x 2	5/32	3 20
10	1 (long pattern)	700	1 x 2½	3/16	3 30
13	1⅛	413	1⅛ x 3⅝	3/16	4 60
12	1¼	410	1¼ x 2⅞	3/16	4 60
20	1¼	300	1¼ x 3½	¼	6 50
16	1½	232	1½ x 3½	7/32	8 50
2	½ inch. P. R. R. pattern	3,090	½ x 1¼	3/32	2 00
4	⅝ " " "	1,500	⅝ x 1¾	⅛	2 40
6	¾ " " "	1,070	¾ x 2	5/32	3 00
11	15/16 or 1 inch brake shoe keys.	338	15/16 x 2⅝	9/32	5 50
17	" "	316	15/16 x 3	9/32	5 75
18	" "	260	15/16 x 4	9/32	7 50
19	13/16 inch brake shoe keys	426	13/16 x 2⅝	9/32	4 75
14	1⅛ " d'ble riveted keys	450	1⅛ x 2¾	3/16	6 00
15	1¼ " " " "	388	1¼ x 2¾	3/16	6 00
21	1¾ inches Single keys.	....	1¾ x Any length.	5/16 or ⅜	Special.
22	2 "	....	2 x	5/16 " ⅜	"
23	2½ "	....	2½ x	5/16 " ⅜	"
24	Single steel keys Tapering and with out head	333	⅞ at top, ⅝ at	¼	6 75
25	Double " "	129	end x 6 in. long.	½	17 50

Key bolts made to order.

Sizes of slots, 9/16 x 5/32; 11/16 x 3/16; 7/8 x 3/16.

SPRING COTTERS



FIG. 963

PRICES PER THOUSAND

Wire gauge.... / Diameter..... / Length, inches.	13 / 5/32	12 / 7/64	11 / 1/8	10 / 9/64	9 / 5/32	8 / 11/64	7 / 5/16	6 / 13/64
½	$3 75	$4 25	$4 75	$5 00	$5 50	$6 00		
¾	4 40	4 90	5 50	5 80	6 50	7 20	$7 50	$8 00
1	5 00	5 50	6 25	6 60	7 50	8 40	8 80	9 50
1¼	5 60	6 10	7 00	7 40	8 50	9 60	10 10	11 00
1½	6 20	6 70	7 75	8 20	9 50	10 80	11 40	12 50
1¾	6 80	7 30	8 50	9 00	10 50	12 00	12 70	14 00
2	7 40	7 90	9 25	10 00	11 50	13 20	14 00	15 50
2¼	....	....	10 00	11 00	12 50	14 40	15 30	17 00
2½	....	....	10 75	12 00	13 50	15 60	16 80	18 50
2¾	....	....	....	....	....	....	18 30	20 50
3	....	....	....	....	....	....	19 80	22 50

Wire gauge.... / Diameter..... / Length, inches.	5 / 3/32	4 / ¼	1 / 5/16	3/8	7/16	½	5/8
1	$12 00	$15 00	$20 50				
1¼	13 50	16 50	22 75				
1½	15 00	18 00	25 00	$28 50			
1¾	16 50	20 00	27 25	30 75	$39 00		
2	18 00	22 00	29 50	33 50	43 50	$52 50	
2¼	19 50	24 00	31 75	36 00	47 25	57 75	
2½	21 00	26 25	34 00	38 75	51 00	63 00	
2¾	23 50	28 00	36 75	40 50	54 75	68 00	
3	25 00	30 00	39 75	43 25	58 50	73 50	$112 50
3¼	....	32 00	42 75	46 00	62 25	78 75	118 50
3½	....	34 00	45 00	48 75	66 00	84 00	124 50
3¾	....	36 50	47 25	51 75	69 75	89 25	130 50
4	....	39 00	49 50	54 75	73 50	94 50	136 50
5	....	....	....	....	88 50	115 50	160 50
6	....	....	....	....	....	136 00	184 50

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NORWAY IRON RIVETS AND BURRS

(FULL SIZE CUTS)

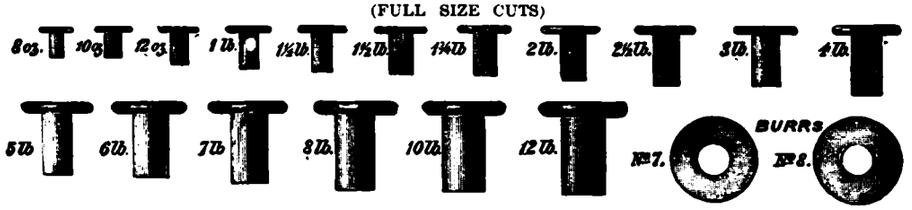


FIG. 964

BLACK AND TINNED IRON RIVETS

IN PAPERS OF 1,000 EACH. PRICES, PER PAPER

Sizes.	Black.	Tinned.	Tin Plated.	Sizes.	Black.	Tinned.	Tin Plated.
8 ounce	$0 20	$0 25	$0 22	3½ lb.	$0 70	$1 05	$0 84
10 "	22	28	25	4 "	76	1 16	92
12 "	24	31	27	5 "	90	1 40	1 10
14 "	26	35	30	6 "	1 08	1 68	1 32
1 lb.	27	37	31	7 "	1 26	1 97	1 54
1¼ "	29	42	34	8 "	1 44	2 24	1 76
1½ "	33	48	39	9 "	1 53	2 43	1 89
1¾ "	37	55	44	10 "	1 75	2 75	2 15
2 "	42	62	50	12 "	1 96	3 12	2 34
2½ "	55	80	65	14 "	2 31	3 71	2 87
3 "	60	90	72	16 "	2 64	4 24	3 28

Oval or countersunk heads, or extra lengths, 10 cents per 1,000 in addition to the above prices.

BLACK AND TINNED IRON RIVETS IN BULK

Sizes.	Black, Per lb.	Tinned, Per lb.	Tin Plated, Per lb.		Sizes.	Black, Per lb.	Tinned, Per lb.	Tin Plated, Per lb.
8 ounce	$0 38	$0 48	$0 42		3½lb.	$0 19	$0 29	$0 23
10 "	34	44	38		4 "	18	28	22
12 "	31	41	35	Barrel Rivets.	5 "	18	28	22
14 "	29	39	33		6 "	17	27	21
1 lb.	26	36	30		7 "	17	27	21
1¼ "	23	33	27		8 "	17	27	21
1½ "	22	32	26		9 "	17	27	21
1¾ "	21	31	25		10 "	16	26	20
2 "	20	30	24		12 "	15½	26	20
2½ "	20	30	24		14 "	15½	26	20
3 "	19	29	28		16 "	15½	26	20

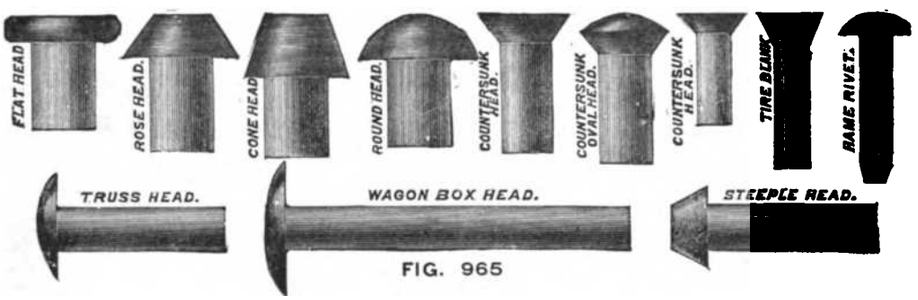


FIG. 965

IRON RIVETS IN BULK. ANY STYLE OF HEAD

PRICES, PER POUND

Sizes.	Length of Rivets. ½	9/32	5/16	11/32	3/8	13/32	7/16	15/32	¼	17/32	9/16	19/32	⅝	21/32
7/16, 3/8, 11/32	15c.	15c.	15c.											
5/16	15½	16½	16½	16½c.	16½c.									
1	15½	16½	16½	16½	16½	16½c.								
2 or 9/32	15½	16½	16½	16½	16½	17	17c.							
3	15½	16	17	17	17	17	18	18c.	18c.					
¼	15½	16	17	17	17	17	18	18	18	19c.	19c.			
4	15½	17	17	18	18	18	18	18	18	19	19	20c.		
5 or 7/32	16	17	18	18	18	18	19	20	20	21	21	22	22c.	23c.
6	16	17	18	18	19	19	20	20	21	22	23	23	23	24
5/16	16	17	18	18	19	19	20	20	21	22	23	24	25	26
7	16½	18	18	18	19	19	20	20	21	22	23	24	25	26
8 or 5/32	17	18	19	19	20	20	21	21	22	23	24	25	26	27
9	18	19	20	20	21	21	23	23	23	24	25	27	29	30
10	19	20	21	22	23	25	27	28	28	30	33	35	37	38
11	20	22	24	26	27	28	30	31	31	33	37	40	42	45
12	21	24	26	28	29	30	32	34	35	36	41	45	50	55
13 or 3/32	25	27	30	33	34	35	37	39	40	41	45	50	55	60
14	27	30	35	38	40	45	50	52	55	58	58	60	63	65

Rivets made from smaller wire than No. 14, all lengths, 70 cents per pound.

BLACK, TINNED AND COPPERED SWEDES IRON BURRS

Sizes, Inches and Nos.	Black, Per lb.	Tinned, Per lb.	Coppered or Tin Plated, Per lb.
3/8	$0 23	$0 33	$0 27
11/32	23	33	27
5/16	23	33	27
1	23	33	27
2	23	33	27
3	23	33	27
¼	23	33	27
4	24	34	28
5	25	35	29
6	28	38	32
3/16	28	38	32
7	30	40	34
8	33	43	37
9	34	44	38
10	35	45	39
11	36	46	40
12	42	52	46
13	42	53	46
14	45	55	49

CANVAS RIVETS TINNED



FIG. 966

⅜ x No. 8, ¾ x No. 8, ⅞ x No. 8, ¾ x No 9.
Per pound.....$0 50

COOPERS' RIVETS

PRICE PER POUND

1d	2d	3d	4d	5d	6d
16½c.	16c.	15½c.	15½c.	15½c.	15c.

POINTED HAME RIVETS

PRICE PER POUND

	6	3/16	7	8
½ inch and longer.	16c.	16c.	16½c.	17c.

TINNED OR COPPERED IRON BELT RIVETS AND BURRS

PRICE PER POUND

	7	8	9	10	11	12	13	14
Any Length.	31c.	32c.	33c.	34c.	35c.	42c.	43c.	45c.

BIFURCATED OR SLOTTED RIVETS (COPPERED)

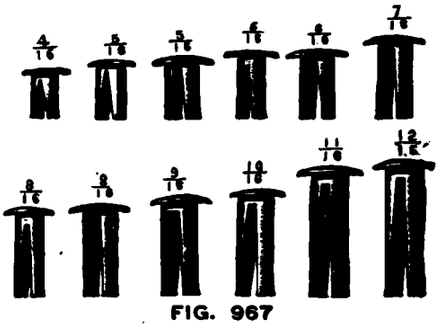


FIG. 967

It makes a strong clinch on the opposite side.

Price, per dozen boxes, No. 6.....$4 80
" " " " 9..... 3 00

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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COPPER BRAZIERS' RIVETS

OVAL HEAD BRAZIERS' RIVETS

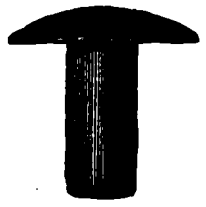


FIG. 968

Nos.	No. to Lb.	Thickness.	Length.
00	160	5/32	5/16
0	148	3/16	3/8
1	66	1/4	1/2
2	49	17/64	1/2
3	37	9/32	5/8
4	28	5/16	11/16
5	23	23/64	3/4
6	19	3/8	13/16
7	13	7/16	15/16
8	8	17/32	1 1/8
9	6	5/8	1 1/4
10	5	21/32	1 1/4

Price, per pound, 35 cents.

Are packed in 5 lb. paper boxes, and wooden cases of 50 lbs. each, in bulk.

FLAT HEAD

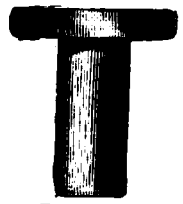


FIG. 969

CONE HEAD

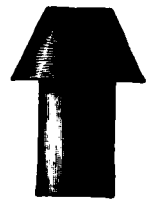


FIG. 970

No. to the pound, Fig. 969.

Sizes, thick,	1/4 x 3/4	1	1 1/4	1 1/2	inches long.	
	48	36	32	30	"	"
Sizes, thick,	5/16 x 3/4	1	1 1/4	1 1/2	"	"
	26	24	21	17	"	"
Sizes, thick,	3/8 x 1	1 1/4	1 3/8	1 1/2	2	inches long.
	17	15	13	12	10	"
Sizes, thick,	1/2 x 1	1 1/4	1 3/8	1 1/2	2	"
	9	8	7	6	5	"

PRICES

Fig. 969, per pound, 40 cents.
Fig. 970, made to order, any size.

OVAL HEAD BRASS JACKET RIVETS



FIG. 971

1/4 inch under head, Nos. 7, 8, 9 and 12.
3/16 " " " No. 8.

Price per pound, 35 cents.

Put up in 1 pound paper boxes or in bulk packed 50 pounds in case.

FLAT HEAD BRASS RIVETS

1, 1¼, 1½, 2 and 2½ pounds to 1000, in packages containing 1000 each.

	Per Pound.
1 pound to 1000	$0 50
1¼ " "	45
1½ " "	40
2 " " and larger	35

BOILER, BRIDGE AND SHIP RIVETS

BUTTON HEAD

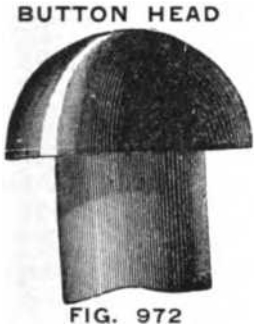


FIG. 972

CONE HEAD

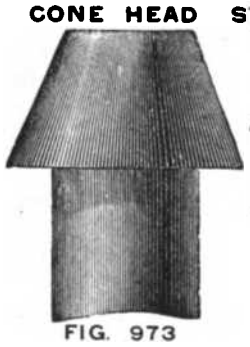


FIG. 973

STEEPLE HEAD



FIG. 974

OVAL COUNTER-SINK HEAD

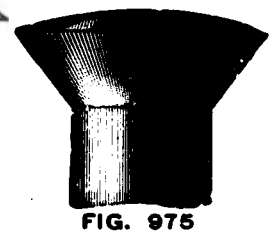


FIG. 975

FLAT COUNTER-SINK HEAD

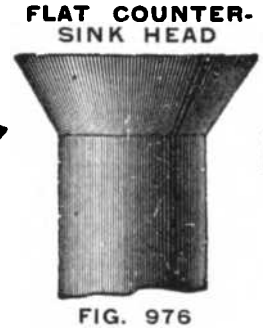


FIG. 976



FIG. 977

PRICES, EITHER STYLE

1/2 and 9/16 diameter	cents per pound.						5/8 or larger diameter	cents per pound.			

WITH SCREW



FIG. 978

WROUGHT IRON ANCHOR SHACKLES

PRICES, FIG. 978

Sizes, Inches.	Galvanized, Per Dozen.	Black, Per Dozen.
1/4	$3 00	$2 75
5/16	3 00	2 75
3/8	3 25	3 00
7/16	3 75	3 50
1/2	4 50	4 00
9/16	5 00	4 50
5/8	5 75	5 00
3/4	6 75	5 50
7/8	8 75	7 00
1	13 00	10 00
1 1/8	20 00	16 00
1 1/4	25 00	20 00
1 3/8 and larger, galvanized	per lb.	20
Black	per lb.	16

PRICES, FIG. 979

Sizes, Inches	Galvanized, Per Dozen.	Black, Per Dozen.
1/4	$2 75	$2 50
5/16	2 75	2 50
3/8	3 00	2 75
7/16	3 65	3 40
1/2	4 25	3 75
9/16	4 75	4 25
5/8	5 50	4 75
3/4	6 50	5 50
7/8	8 70	7 25
1	14 00	11 00
1 1/8	19 00	15 00
1 1/4	25 00	20 00
1 3/8 and larger, galvanized	per lb.	20
Black	per lb.	16

WITH PIN

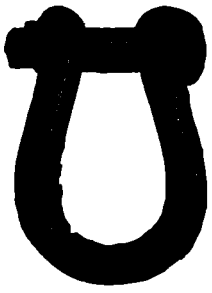


FIG. 979

WROUGHT IRON CHAIN SHACKLES

WITH SCREW



FIG. 980

PRICES, FIG. 980

Sizes, Inches	Galvanized, Per Dozen.	Black, Per Dozen.
1/4	$3 00	$2 75
5/16	3 00	2 75
3/8	3 25	3 00
7/16	3 75	3 50
1/2	4 50	4 00
9/16	5 00	4 50
5/8	5 75	5 00
3/4	6 75	5 50
7/8	8 75	7 00
1	13 00	10 00
1 1/8	20 00	16 00
1 1/4	25 00	22 00
1 3/8 and larger, galvanized	per lb.	20
Black	per lb.	16

PRICES, FIG. 981

Sizes, Inches.	Galvanized, Per Dozen.	Black, Per Dozen.
1/4	$2 75	$2 50
5/16	2 75	2 50
3/8	3 00	2 75
7/16	3 60	3 40
1/2	4 00	3 50
9/16	4 50	4 00
5/8	5 00	4 50
3/4	6 00	5 00
7/8	8 00	6 25
1	12 00	9 50
1 1/8	16 00	12 00
1 1/4	20 00	19 00
1 3/8 and larger, galvanized	per lb.	20
Black	per lb.	16

WITH PIN

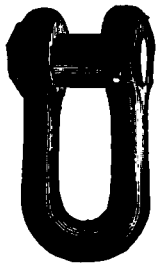


FIG. 981

CONNECTING SHACKLES

PRICES, FIG. 982

Sizes Iron, Inch	1/4	5/16	3/8	7/16	1/2	9/16	5/8	1 1/16	3/4	7/8	1
Per Dozen	$2 50	$2 60	$2 75	$2 87	$3 10	$3 38	$3 62	$4 00	$4 25	$6 00	$7 25



FIG. 982

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KEYSTONE OPEN LINK

CLOSED



FIG. 983

OPEN



FIG. 983

Drop forged from bar steel.

Size, inches...	¼	5/16	⅜	7/16	½	⅝	¾	1
Per dozen..	$2 00	$2 25	$2 50	$3 25	$4 00	$7 50	$10 00	$15 00

GRAB HOOKS

FOR R. R. SWITCH OR WRECKING CHAIN

WITH BLUNT POINTS



FIG. 986

POINTED

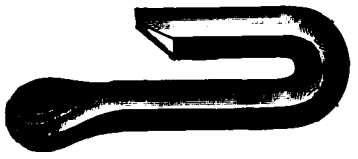


FIG. 987

Prices on application, giving size of chain the hooks are for.

SWIVELS

FOR CHAIN



FIG. 984

FOR ROPE



FIG. 985

PRICES, FIGS. 984 AND 985

MALLEABLE IRON

No.	1	2	3	4	5	6	7
Whole length, inches	1½	2	2½	3	3½	4	4½
Per dozen	$0 30	$0 35	$0 40	$0 55	$0 75	$1 00	$1 25

WROUGHT IRON

Diameter, inches	⅜	½	⅝	¾
Whole length, inches	5	6	7	9
Per dozen	$1 80	$5 25	$9 50	$11 00

WROUGHT IRON, GALVANIZED

Diameter, inches	⅜	½	⅝	¾
Whole length, inches	5	6	7	9
Per dozen	$2 00	$6 00	$10 50	$12 50

VULCAN DROP FORGED HOIST HOOK

WITH EYE, WELDLESS



FIG. 988
No. 23, ½ size.

PRICES, FIG. 988

No.	For Size Hoist. Tons.	Inside Diameter of Eye.	Extreme Length.	Dimensions. Width.	Safe Capacity, Tons.	Strain required to straighten Hooks, Tons.	Prices, Each.
22	⅛	9/16	4	2⅞	1	2	$0 15
23	¼	⅝	4⅜	3⅛	1½	2	18
24	½	¾	4 15/16	3½	2	3½	21
26	1	1	6⅜	4⅜	3	7	36
27	1½	1⅛	7 5/16	4⅞	4	11	51
29	2	1⅜	9¼	6⅜	6	14	1 00
31	3	1¾	11	7½	10	21	1 80
32	4	2	12⅛	8¼	12	27	2 48
33	5	2¼	13¾	9¼	15	33	3 30

PRICES, FIG. 989

Number	2	3	4	6	7	9	11	12	13
For size hoist, tons	⅛	¼	½	1	1½	2	3	4	5
Shank, length	1¼	1½	1¾	2¼	2½	3	3½	4	4½
" diameter	½	9/16	⅝	⅞	1	1¼	1½	1⅝	1¾
Extreme dimensions, length	4½	4¾	5¼	6⅝	7½	9½	11⅛	12⅜	13⅞
" " width.	2⅞	3⅛	3½	4⅜	4⅞	6⅜	7½	8¼	9¼
Prices, each	$0 15	0 18	0 21	0 36	0 51	1 00	1 80	2 48	3 30

WITH SHANK



FIG. 989
No. 3, ½ Size

FLAT HOOK

ADAPTED FOR GENERAL USE

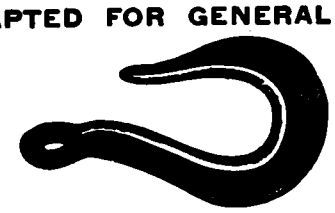


FIG. 990

Drop forged. Prices on application, giving size of chain hook is intended for.

SLING CHAINS



FIG. 991

Prices on application, giving diameter chain and length.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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CHAINS

PRICES, FIGS. 992 TO 994 ON APPLICATION, GIVING SIZE, GRADE AND QUANTITY WANTED

Made in the following grades:

COMMON PROOF COIL, BB CRANE, BBB CRANE, AND CROWN CRANE OR DREDGE

Furnished either natural color, black or galvanized.

TABLE WEIGHTS AND STRENGTHS

Size Chain. Inches.	Weight per Ft.	Proof Test. Proof Coil.	Proof Test (in lbs.) for "BB" Chain.	Proof Test (in lbs.) for "BBB" Chain.	Proof Test (in lbs.) for Dredge Chain.	Size of Link. Dredge and "BBB" Chain. L'ngth. Inches.	Width. Inches.
3/16	7 Oz.	700	770	900	1,000	1	3/4
1/4	11 "	1,200	1,320	1,500	1,650	1 5/16	7/8
5/16	1 Lb.	2,500	2,750	3,200	3,500	1 5/8	1 1/16
3/8	1 1/2 "	3,500	3,850	4,425	4,900	1 7/8	1 3/8
7/16	2 "	4,800	5,280	6,100	6,700	2 1/16	1 1/2
1/2	2 1/2 "	6,200	6,820	7,850	8,600	2 3/8	1 3/4
9/16	3 1/4 "	7,800	8,580	9,870	10,850	2 3/4	1 7/8
5/8	4 1/10 "	9,600	10,560	12,150	13,375	3	2 1/8
11/16	4 3/4 "	11,500	12,650	14,550	16,000	3 1/4	2 1/4
3/4	5 1/2 "	13,800	15,180	17,475	18,140	3 1/2	2 1/2
13/16	6 1/2 "	16,200	17,820	20,500	23,000	3 3/4	2 11/16
7/8	8 "	18,800	20,680	23,780	26,000	4	3
15/16	8 3/4 "	21,500	23,650	27,200	29,900	4 3/8	3 1/4
1	10 "	24,600	27,100	31,200	34,300	4 5/8	3 1/2
1 1/16	11 1/4 "	26,300	28,930	33,300	36,600	5	3 11/16
1 1/8	12 1/2 "	29,500	32,450	37,300	41,000	5 3/4	3 7/8
1 3/16	13 1/4 "	33,000	36,300	41,750	45,870	5 9/16	4
1 1/4	15 "	36,500	40,150	46,175	50,700	5 3/4	4 1/4
1 5/16	16 3/4 "	.....	44,000	50,600	55,600	6	4 1/2
1 3/8	17 1/2 "	.....	48,400	55,660	61,100	6 7/16	4 3/4
1 7/16	19 "	.....	53,000	60,650	66,990	6 3/4	4 7/8
1 1/2	22 "	.....	57,750	66,400	73,400	6 7/8	5 1/8
1 9/16	24 3/4 "	.....	62,700	72,100	79,000	7 1/4	5 7/16
1 5/8	26 3/8 "	.....	67,870	78,050	85,000	7 1/2	5 3/4
1 11/16	28 1/2 "	.....	73,150	84,120	92,100	8	5 7/8
1 3/4	31 "	.....	78,760	90,575	99,500	8 1/2	5 7/8

Breaking strain, about twice the proof test; safe working load, about one-half the proof test.

STRAIGHT LINK COIL CHAIN



FIG. 992

Standard Sizes, 3/16 to 1 1/4 inches.

"BB," "BBB" AND CROWN CRANE OR DREDGE CHAIN

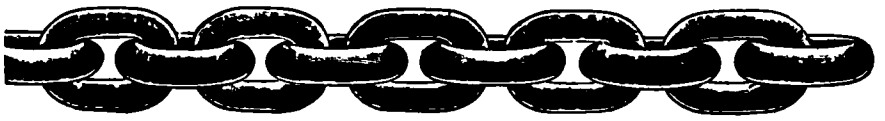


FIG. 993

Standard sizes, 3/16 to 1 3/4 inches.

TWIST COIL CHAIN



FIG. 994

Sizes, 3/16, 1/4, 5/16, 3/8, 7/16, 1/2, 9/16 and 5/8.

We do not guarantee any proof test, as we have to be governed in testing twist chain by the amount it will stand without pulling the links out of shape.

CLOSE AND STUD LINK CABLE CHAINS

We furnish this chain in the regular proof, "BB" and "BBB" qualities, to the standard dimensions as adopted by the leading manufacturers of iron windlasses. It is all tested to the proof strains required by the American Ship Masters' Association and certificate of test furnished when required.

STANDARD CLOSE LINK CABLE CHAIN



FIG. 995

Standard sizes, 1 to 1 5/8 inches; larger sizes to order.

STANDARD STUD LINK CABLE CHAIN

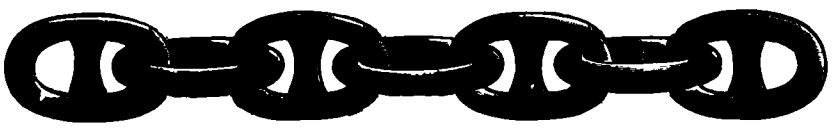


FIG. 996

Standard sizes, 3/4 to 2 1/4 inches; larger sizes to order.

PRICES FIGS. 995 AND 996 ON APPLICATION GIVING SIZE, QUALITY AND QUANTITY WANTED

TABLE SIZES, WEIGHTS AND STRENGTHS

CLOSE LINK

Size, inches,	1,	1 1/16,	1 1/8,	1 3/16,	1 1/4,	1 5/16,	1 3/8,	1 7/16,	1 1/2,	1 9/16,	1 5/8
Out. length, in.	4 5/8,	5,	5 3/8,	5 1/2,	5 3/4,	6,	6 1/4,	6 3/8,	6 7/8,	7 1/4,	7 1/2
" width, "	3 1/2,	3 5/8,	3 7/8,	4 1/8,	4 1/4,	4 1/2,	4 3/4,	5,	5 1/4,	5 1/2,	5 3/4
Av. weight per fathom, lbs.	62,	71,	76,	82,	91,	99,	113,	118,	130,	138,	152
Proof test in tons,	12,	12 1/2,	15 1/8,	16 9/10,	18 1/4,	20 5/8,	22 5/8,	24 3/4,	27,	29 1/4,	31 5/8

STUD LINK

Size, inches,	3/4,	13/16,	7/8,	15/16,	1,	1 1/16,	1 1/8,	1 3/16,	1 1/4,	1 5/16,	1 3/8,	1 7/16
Out. length,	4 3/8,	4 3/4,	5,	5 3/8,	5 7/8,	6 1/4,	6 1/2,	6 3/4,	7 1/8,	7 3/8,	7 3/4,	8 1/8
Out. width,	2 3/4,	3,	3 1/4,	3 1/2,	3 3/4,	3 7/8,	4 1/8,	4 1/4,	4 1/2,	4 5/8,	4 7/8,	5 1/8
Av. wt. per fathom,	33,	38,	49,	55,	61,	69,	74,	81,	90,	97,	110,	113
Proof test in tons,	10 1/8,	12,	13 3/4,	15 3/4,	18,	20 3/10,	22 1/5,	25 1/2,	28 1/10,	31,	34,	37 1/5
Size, inches,	1 1/2,	1 9/16,	1 5/8,	1 11/16,	1 3/4,	1 7/8,	1 15/16,	2,	2 1/16,	2 1/8,	2 3/16,	2 1/4
Out. length,	8 1/2,	8 7/8,	9 1/4,	9 5/8,	10,	10 1/2,	10 3/4,	11 1/8,	11 1/2,	12,	12 1/2,	13
Out. width,	5 3/8,	5 5/8,	5 7/8,	6,	6 1/4,	6 3/4,	7,	7 1/4,	7 1/2,	7 3/4,	8,	8 1/4
Av. wgt. per fathom,	127,	143,	150,	157,	173,	203,	215,	233,	254,	276,	290,	300
Proof test in tons.	40 1/2,	44,	47 1/2,	51 1/5,	55 1/10,	63 3/10,	67 1/2,	72,	76 5/10,	81 1/4,	86 1/8,	91

Above are the U. S. Standard dimensions, and are the same as adopted by the leading manufacturers of ship windlasses.

COIL LOG OR BINDING CHAINS

PRICES, FIGS. 997 AND 898

CLOSE LINK

Size,	1/4.	5/16.	3/8.	7/16.	1/2	5/8

Self Colored, per pound, price on application.

Order by figure number, and state if wanted self colored or black.

Regular lengths, 12, 14, and 16 feet.

Don't fail to give length wanted when ordering.

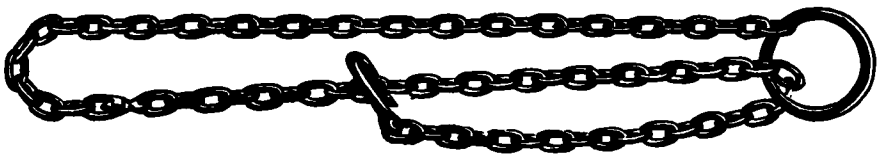


FIG. 997

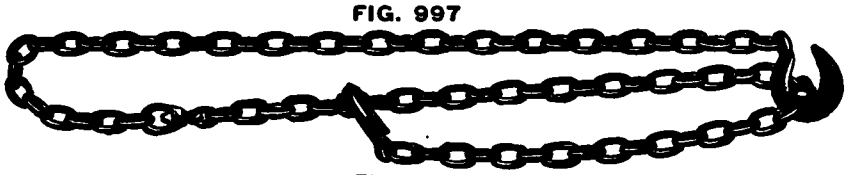


FIG. 998

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STANDARD RAILROAD BRAKE CHAINS

WITH END LINKS



FIG. 999

WITH EYEBOLT AND END LINK



FIG. 1000

Sizes, ⅜, 7/16, and ½ inch. Made with or without eyebolts or end links; also with double eyebolt or double end links; also of twist link chain. Made either in the proof, B. B., or B. B. B. qualities, and subject to tests accordingly. Prices on Figs. 999 and 1000 on application, giving size, style, quality, and quantity wanted.

RAILROAD SWITCH, OR WRECKING CHAINS

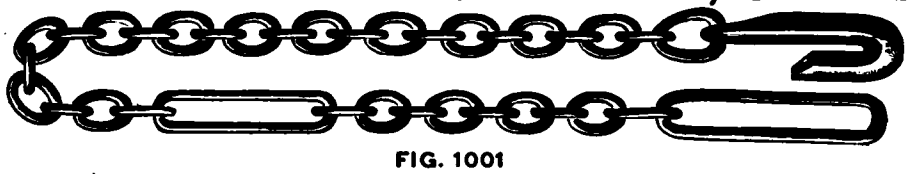


FIG. 1001

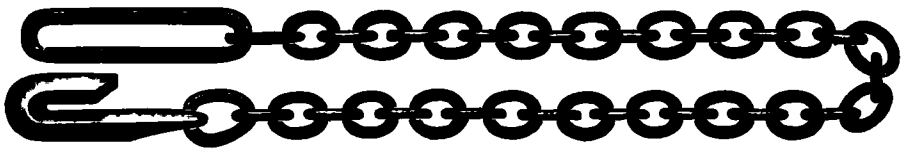


FIG. 1002

DESCRIPTION, FIGS. 1001 AND 1002

Sizes, ⅝ to 1⅛ inches. Standard length, 13 feet. Made in either the proof, B. B., or B. B. B. qualities, and tested accordingly. Made any length desired.

PRICES, FIGS. 1001 AND 1002

On application, giving size, style, quality, and quantity wanted. We will furnish with blunt point hook, Fig. 986, if desired.

MACHINE CHAIN



FIG. 1003

Best quality twisted link.

Nos.	4–0	3–0	2–0	0	1	2	3	4
Per 100 feet,	$15 00	14 00	13 00	12 50	12 00	11 50	11 00	10 80

GERMAN COIL CHAIN

Twisted or straight link.

Nos.	6–0	5–0	4–0	3–0	2–0	0
Per 100 ft.,	$18 00	15 50	13 00	11 00	10 00	8 80
Nos.	1	2	3	4	5	6
Per 100 ft.,	$7 80	7 20	6 80	6 60	6 50	6 50

Galvanizing extra.

POLISHED STEEL COIL CHAINS

"TRIUMPH" CHAIN



FIG. 1004

"BROWN" CHAIN

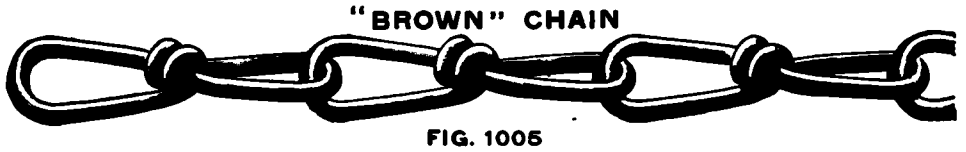


FIG. 1005

"PERFECTION" (TWISTED LINK) CHAIN

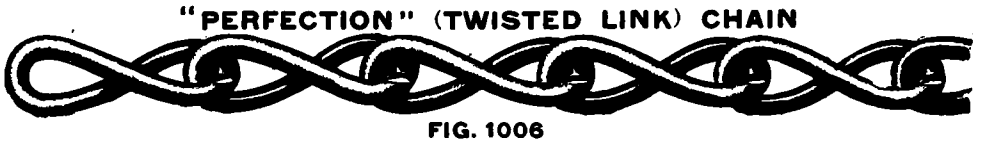


FIG. 1006

PRICES, FIG. 1004

Nos.	6–0	5–0	4–0	3–0	2–0	0
Per 100 ft.,	$13 50	11 00	10 00	7 75	6 75	6 00
Nos.	1	2	3	4	5	6–7
Per 100 ft.,	$5 25	4 65	4 25	4 00	3 90	3 80

PRICES, FIG. 1005

Nos.	6–0	5–0	4–0	3–0	2–0	0
Per 100 ft.,	$13 50	11 00	10 00	7 75	6 75	6 00
Nos.	1	2	3	4	5	6–7
Per 100 ft.,	$5 25	4 65	4 25	4 00	3 90	3 80

PRICES, FIG. 1006

Nos.	4–0	3–0	2–0	0	1	2	3
Per 100 ft.,	$9 50	7 75	7 10	6 60	6 20	5 85	5 60

NIAGARA CHAIN



FIG. 1007 NO. 1

AMERICAN CHAIN

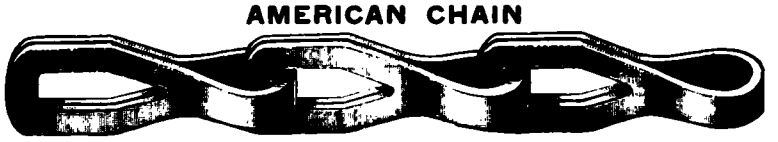


FIG. 1008 NO. 1

PRICES, FIGS. 1007 AND 1008

Nos.	6–0	5–0	4–0	3–0	2–0	0	1	2	3	4	5	6	7	8
Per 100 feet,	$11 00	9 75	8 50	7 30	6 15	5 50	4 75	4 10	3 90	3 80	3 70	3 60	3 60	3 60

STEEL FURNACE CHAIN

For use on furnaces, heaters, etc., and for all purposes requiring light but strong chain.

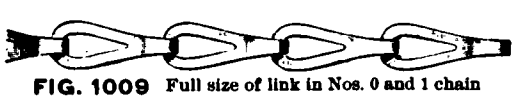


FIG. 1009 Full size of link in Nos. 0 and 1 chain



FIG. 1010 Full size of link in Nos. 2, 3, 4, and 5 chain

PRICES, FIGS. 1009 AND 1010

Bright or copper dip finish

Nos.	0	1	2	3	4	5
Tensile strength, pounds,	150	200	250	350	480	600
Per box, 50 feet,	$1 50	2 00	2 50	3 00	4 00	5 00

In ordering be sure to specify which finish is desired.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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BRASS AND IRON JACK CHAIN

PRICES, FIGS. 1011 TO 1016

PER BOX OF TWELVE YARDS.

Nos.	SINGLE Iron.	SINGLE Brass.	SINGLE Nickel-Plated or Silvered.	DOUBLE Iron.	DOUBLE Brass.	DOUBLE Nickel-Plated or Silvered.
5	$1 60	$10 00	$12 50			
6	1 30	8 00	10 00			
7	1 05	6 35	7 94			
8	95	5 25	6 56		$6 00	
9	90	4 25	5 31		5 00	
10	80	3 50	4 37	$0 95	4 25	$5 31
11	55	2 55	3 19	75	3 45	4 31
12	44	2 05	2 56	65	3 00	3 75
13	42	1 70	2 12	60	2 15	2 69
14	40	1 35	1 69	55	1 90	2 37
15	35	1 00	1 25	43	1 50	1 87
16	30	86	1 07	38	1 20	1 50
17	30	82	1 02	34	1 00	1 25
18	28	60	94	33	75	94
19	27	54	67	33	65	81
20	26	50	62	33	62	77
21	25	45	56	33	60	75
22	25	40	50	33	60	75
23	25	40	50	33	60	75
24	25	40	50	33	60	75

Add 5 cents per dozen, net, for tinning chain not larger than No. 14 B. & S. gauge.



FIG. 1011 No. 24 Double Jack Chain.

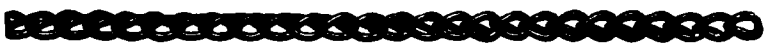


FIG. 1012 No. 20 Double Jack Chain.



FIG. 1013 No. 18 Double Jack Chain.



FIG. 1014 No. 15 Double Jack Chain.



FIG. 1015 No. 14 Single Jack Chain.



FIG. 1016 No. 10 Single Jack Chain.

BRASS LADDER CHAIN



FIG. 1017 Nos. 17 and 18.

	Nos. 17	18	19
Brass, per box of 12 yards	$1 20	$1 10	$0 90
Bronze, " "	1 50	1 35	1 05

PLUMBERS' CHAINS

SAFETY LINKS



FIG. 1018

PER HUNDRED FEET

	Nos. 000	00	0	1	2	3	4
Brass	$3 30	$3 60	$4 30	$5 20	$6 40	$9 00	$10 30
Nickled or Silvered	3 40	3 70	4 50	5 50	6 70	9 20	10 60

PLUMBERS' LINKS



FIG. 1019

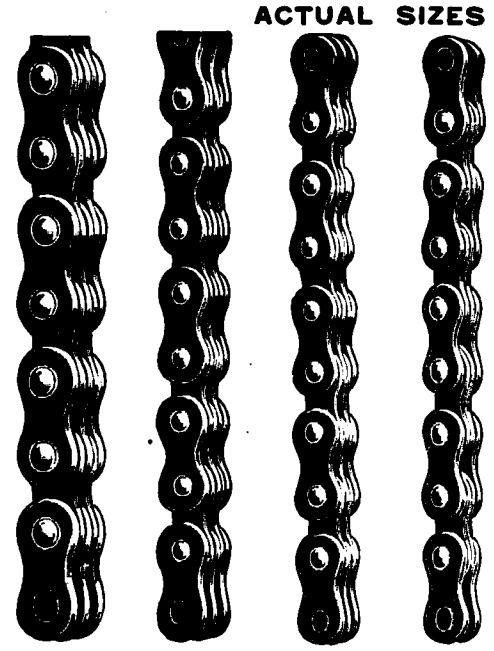
IN BOXES OF TWELVE YARDS EACH

	Nos. 000	00	0	1	2	3	4
Brass	$1 15	$1 25	$1 50	$1 85	$2 30	$3 15	$3 65
Nickeled or Silvered	1 25	1 35	1 60	1 95	2 40	3 30	3 80

(Reels contain 500 feet.)

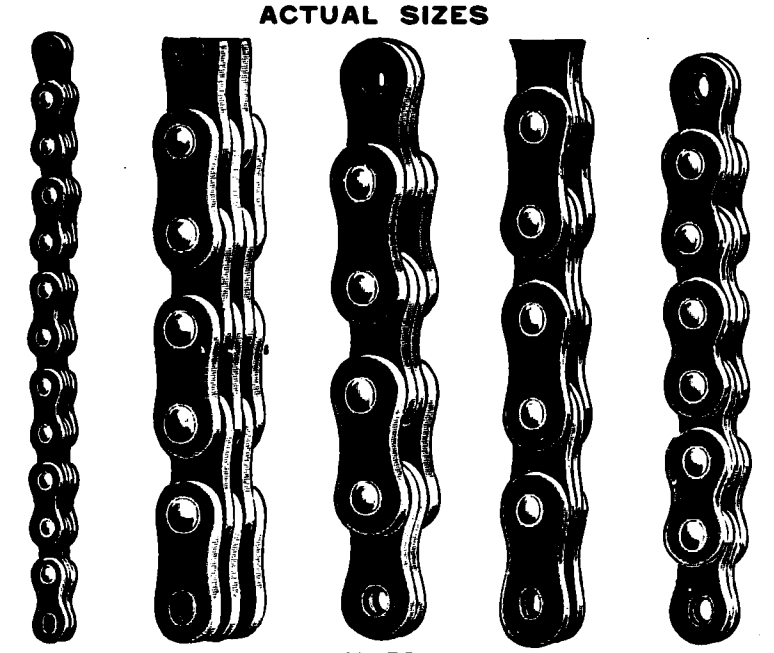
CABLE CHAINS

ACTUAL SIZES



No 110. FIG. 1020 | No 10. FIG. 1021 | No. 30 FIG. 1022 | No. 40. FIG. 1023 | No. 6. FIG. 1024

ACTUAL SIZES



No. 75 FIG. 1025 | No. 60. FIG. 1026 | No 50. FIG. 1027 | No. 55. FIG. 1028 | No. 115. FIG. 1029

STEEL

			Per Foot.
Fig. 1020.	No. 110,	for sash of 400 lbs	$0 17
" 1021.	" 10,	" " 250 "	14
" 1022.	" 30,	" " 125 "	10
" 1023.	" 40,	" " 75 "	9
" 1027.	" 50		22
" 1029.	" 115		16
" 1024.	" 6		35
" 1026.	" 60		25
" 1028.	" 55		20

COPPER

			Per foot.
Fig. 1020.	No. 110,	for sash of 400 lbs	$0 23
" 1021.	" 10.	" " 250 "	17
" 1022.	" 30.	" " 125 "	12
" 1023.	" 40.	" " 75 "	11
" 1025.	" 75,	Brass Bell Hangers' Chain	11

Fastenings for attaching chains to sashes, 25 cents per window.

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BRASS STEAMBOAT CHAIN



FIG. 1030

This chain is specially made for use on the steering gear of launches, steamboats, and wherever a reliable substitute for breaking or stretching wires is needed. Is used over a pulley, and, having no projecting rivet heads, is specially desirable for this class of work.

PRICES, FIG. 1030

In lengths of 100 feet, per foot.....$0 25

Also put up in lengths of one foot, large link on each end to attach wires.

Per dozen lengths.....$3 00

STEEL CABLE CHAINS

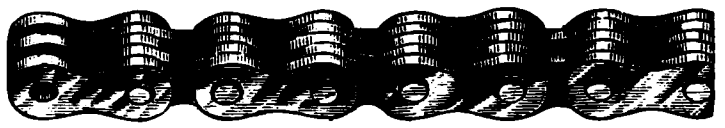


FIG. 1031. NO. 5



FIG. 1032. NO. 4

PRICES, FIGS. 1031 AND 1032

No. 6, for load 1,000 pounds, per foot.....30 cents
" 5, " 800 " " .....22 "
" 4, " 500 " " .....20 "
Fastenings for suspending doors, gates, etc., per set for 1 door, etc. 75 "

Special pulleys, with heavy frames, turned wheel and steel pin for use with these chains.

For No. 6, with 6 inch wheel, per dozen.....$24 00
" " 5, " 4 " " " 8 00
" " 4, " 4 " " " 8 00

STRAIGHT LINK CHAIN

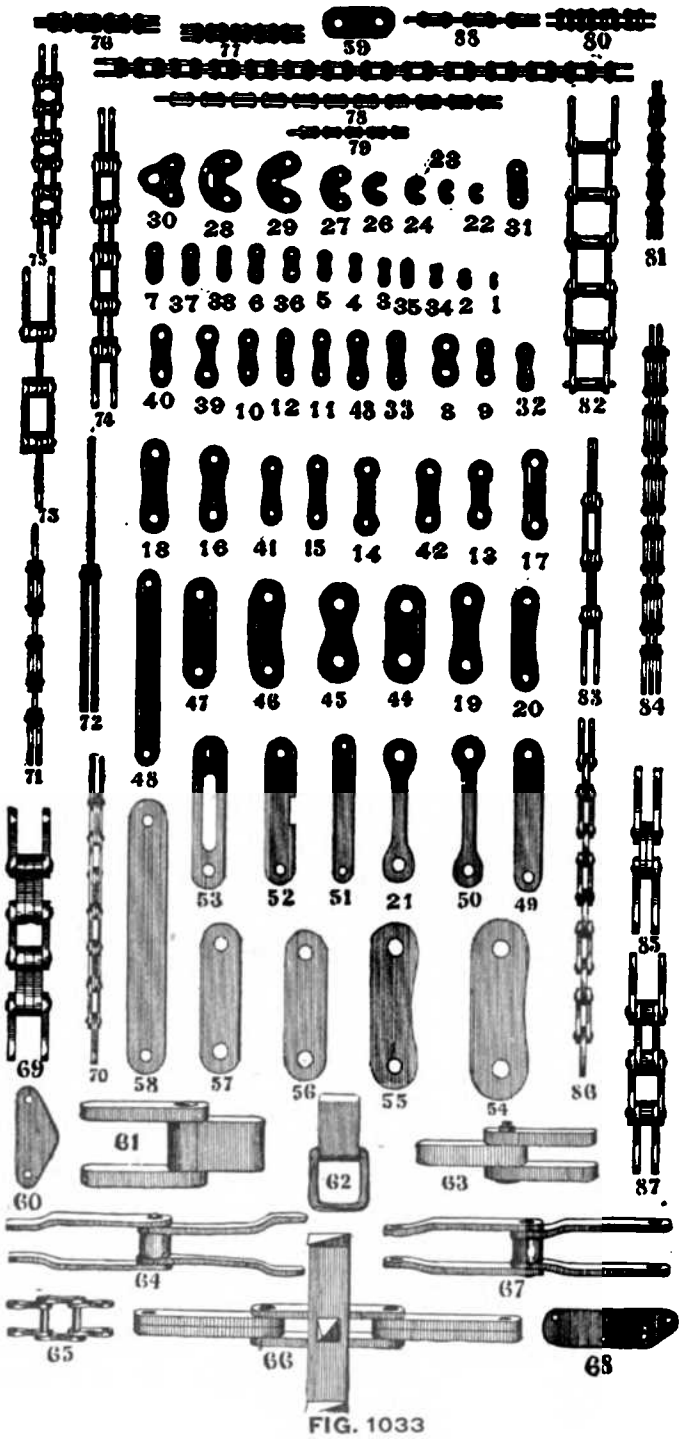


FIG. 1033

PRICES, FIG. 1033

No. on Card.	Breaking-strain. 1 & 2 Links. Pounds.	Entire Length. Inches.	Length from cen. to cen. Inches.	Thickness.	Diameter of holes. Inch.	Weight per 100 links. Pounds.	Prices for loose Links. Per 100.	Chain, prices per foot. 1 & 2 Links.
1	615	⅞	½	No. 16	5/32	.32	$0 25	$0 24
2	750	15/16	½	" 14	3/16	.50	25	24
34	900	1 3/16	⅝	" 12	7/32	1.40	40	27
35	1,000	1⅜	¾	" 11	¼	1.87	45	27
3	1,000	1⅜	¾	" 11	¼	2.00	45	27
4	1,450	1 7/16	⅞	" 10	¼	2.15	50	27
5	1,100	1 9/16	⅞	" 10	9/32	2.80	50	27
36	1,500	1⅝	⅞	" 8	5/16	4.75	80	33
6	1,600	1¾	1	" 10	5/16	3.75	65	30
37	1,575	1 13/16	1 3/32	" 10	9/32	2.75	55	27
38	1,225	1¾	1⅛	" 11	¼	2.66	55	27
7	2,200	2	1¼	" 10	9/32	4.37	75	33
							Per Pound.	
8	4,400	2½	1¼	3/16 in.	7/16	15.62	18	45
9	4,450	2⅜	1½	No. 7	5/16	8.00	18	33
10	3,500	2¾	1¾	3/16 in.	⅜	11.50	18	36
11	4,200	2¾	1 15/16	¼ "	5/16	11.43	18	36
12	4,200	2¾	1 15/16	¼ "	5/16	12.75	18	36
39	7,200	3⅛	2	5/16 "	15/32	16.00	18	48
40	7,800	3⅛	2	⅜ "	15/32	23.00	17	54
13	7,900	3 9/16	2⅜	⅜ "	½	36.25	17	54
41	3,900	3 7/16	2½	3/16 "	⅜	12.00	17	39
42	5,900	3¾	2½	¼ "	½	24.00	17	45
15	5,000	4	3	¼ "	⅜	30.50	17	45
14	11,800	4 1/16	2⅞	⅜ "	½	36.00	16	54
16	9,200	4⅜	3	5/16 "	½	36.62	16	54
17	9,000	4½	3 5/16	7/16 "	⅝	56.00	15	66
18	11,500	4¾	3¼	⅜ "	9/16	45.00	15	60
19	12,500	5⅛	3½	7/16 "	21/32	81.00	14	90
20	12,000	5⅜	4	7/16 "	17/32	74.62	14	69
21	10,000	7 17/32	5 31/32	⅜ "	½	62.50	13	60

COG LINKS AND CHAIN

							Per 100.	
22	650	1	⅝	No. 12	5/32	.94	60	33
23	775	1 3/16	23/32	" 12	3/16	1.75	65	39
24	925	1 7/16	15/16	" 11	7/32	3.20	80	42
25	1,275	1⅞	1⅛	" 10	5/16	6.43	1 25	48
26	1,275	1⅞	1⅛	" 10	5/16	5.20	1 00	42
							Per Pound.	
27	1,975	2½	1½	3/16 in.	⅜	11.43	26	60
28	2,200	3¼	2	3/16 "	½	18.90	25	66
29	2,200	3¼	2	3/16 "	½	19.70	25	66

Chain, less than 25 feet in length, special.

For chain made of links 2 x 2, 2 x 3 or of more links in number, add one-third, two-thirds, or relative proportion, to the list prices per foot.

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DETACHABLE LINK BELTING



FIG. 1034

No. 25. Full size ; working strain, 75 pounds.

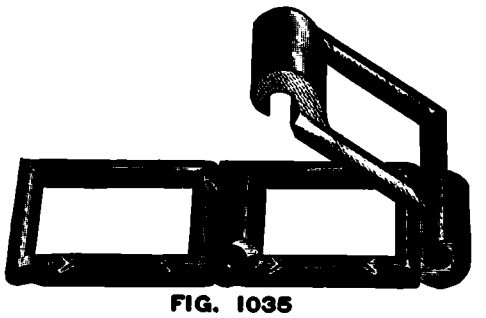


FIG. 1035

Showing method of Coupling Links

ATTACHMENTS FOR LINK BELTING

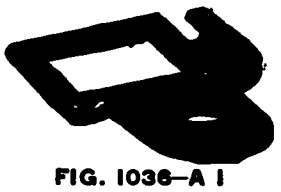


FIG. 1036—A 1

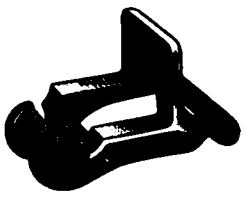


FIG. 1037—F 2

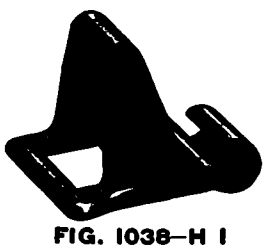


FIG. 1038—H 1

PRICES, FIGS. 1034 TO 1041

Nos.	PRICE PER FOOT—All Plain Links.	PRICE PER FOOT—All Attachment Links.	PRICE PER FOOT—With Attachments at Intervals.	Links, Per Foot.	Working Strain.	Approximate in Leather Belting.
25	$0 10	$0 23	$0 14	13.3	75 lbs.	1 in. single.
32	10	21	14	10.4	150 "	1½ " "
33	10	21	14	8.6	200 "	2 " "
34	10	21	14	8.6	225 "	2½ " "
35	10	21	14	7.4	250 "	2½ " "
42	11	22	15	8.8	300 "	3 " "
45	11	22	15	7.4	350 "	3½ " "
51	14	25	18	10.4	375 "	3½ " "
52	15	25	18	8.	500 "	4 " "
55	15	23	17	7.4	450 "	4 " "
57	15	30	20	5.2	600 "	6 " "
62	20	34	25	7.3	650 "	6½ " "
66	20	34	25	6.	700 "	6½ " "
67	20	34	25	5.2	700 "	7 " "
75	23	37	28	4.6	750 "	7½ " "
77	23	37	28	5.2	800 "	8 " "
78	26	47	33	4.6	1000 "	10 " "
83	31	56	44	3.	1200 "	12 " "
85	34	56	45	3.	1300 "	9 " double.
88	31	56	44	4.6	1200 "	8 " "
93	37	56	47	3.	1600 "	10 " "
95	40	75	57	3.	1600 "	10 " "
103	50	75	62	4.	1800 "	12 " "
105	44	62	53	2.	1500 "	10 " "
108	50	88	69	2.55	1800 "	12 " "
110	63	1 00	82	2.55	2000 "	13 " "
114	63	80	72	3.7	2000 "	13 " "
122	75	1 15	95	2.	2200 "	15 " "
124	75	1 25	1 00	3.	2250 "	17 " "
146	75	1 15	95	2.	2800 "	19 " "
160	1 00	1 50	1 25	1.2	4000 "	

The above prices of attachments are for A^1, A^2, A^3, C^1, E^1, F^2, G^1, G^6, H^1, H^2, K^1, K^2, M^1, M^3, R^1, R^3, S^1 and S^2, and as they are now made for the respective chains. Other attachments will be furnished at special prices. Special illustrated lists, showing attachments not illustrated here but included in above list prices, sent on application.

ATTACHMENTS FOR LINK BELTING

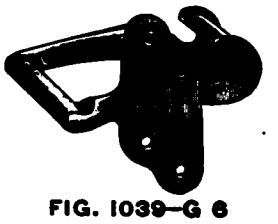


FIG. 1039—G 6

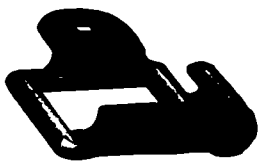


FIG. 1040—K 1

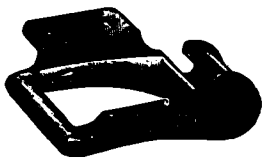


FIG. 1041—K 2

STANDARD SPROCKET WHEELS.

BORED AND SET SCREWED, OR KEY-SEATED



FIG. 1042

For all numbers of chain. In ordering give number of chain, diameter of wheel, size of hole, and if wanted with key-seat or set screw. Special price list on application.

DESCRIPTION

FIG. 1043

Traction Wheels have turned rims and are very satisfactory for use in elevators, handling heavy or gritty material, the grip being ample to do all the work that the Link-Belting and Buckets should be called upon to do; and at the same time, in the event of a serious obstruction, the chain may slip. Elevators provided with these wheels will run smoother and last longer in gritty material than they would if sprocket wheels were used.

TRACTION WHEELS

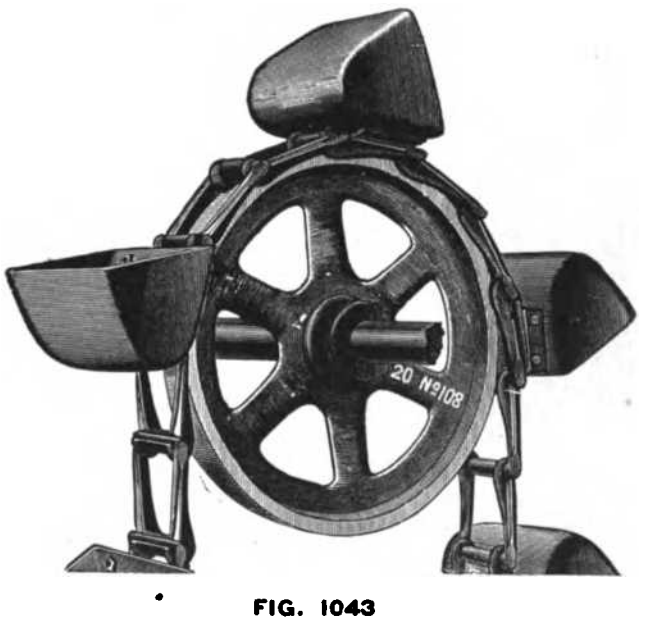


FIG. 1043

Pitch Diameter....	12	16	18	20	22	24	25	28	30	36	40	42
Chain No. 85	$4 60	$6 00	$7 50	$9 00	.....	.....	$11 75	$14 50	$15 85	$19 00	.....	.....
" " 108	.....	7 25	8 00	9 85	$10 90	$11 60	.....	.....	16 50	22 75	.....	.....
" " 122	7 00	7 50	9 75	10 00	11 00	12 75	.....	.....	16 85	22 00	.....	$25 00
" " 160	.....	.....	.....	.....	.....	.....	.....	.....	25 00	.....	$40 00	.....

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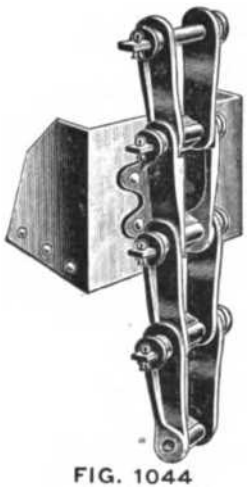


FIG. 1044
OPEN FRONT BUCKET ON LEY BUSHED CHAIN

LEY BUSHED CHAINS OR INDESTRUCTIBLE LINK-BELT

Used in elevating sand, phosphate rock, and other gritty materials, and in heavy power transmission.

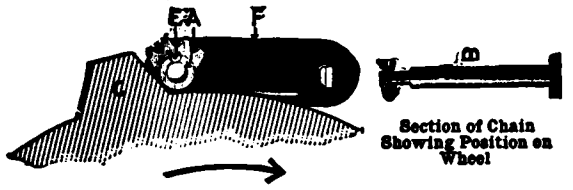


FIG. 1045

DESCRIPTION

Each link consists of a malleable iron frame (F), case hardened bushing, (A), and steel pin (B). The bridged end of the link is cut away on the under side, so that only the case hardened bushing comes in contact with the wheel teeth. Neither bushing nor pin can turn in the link, so there is no wear of the malleable iron frame, and, as both pins and bushing can be reversed when partly worn, and renewed at relatively small cost when worn out, Ley chain is practically indestructible link-belting. It should in all cases be run with the teeth of the wheel bearing against the outside of the bushings as indicated on the above cuts.

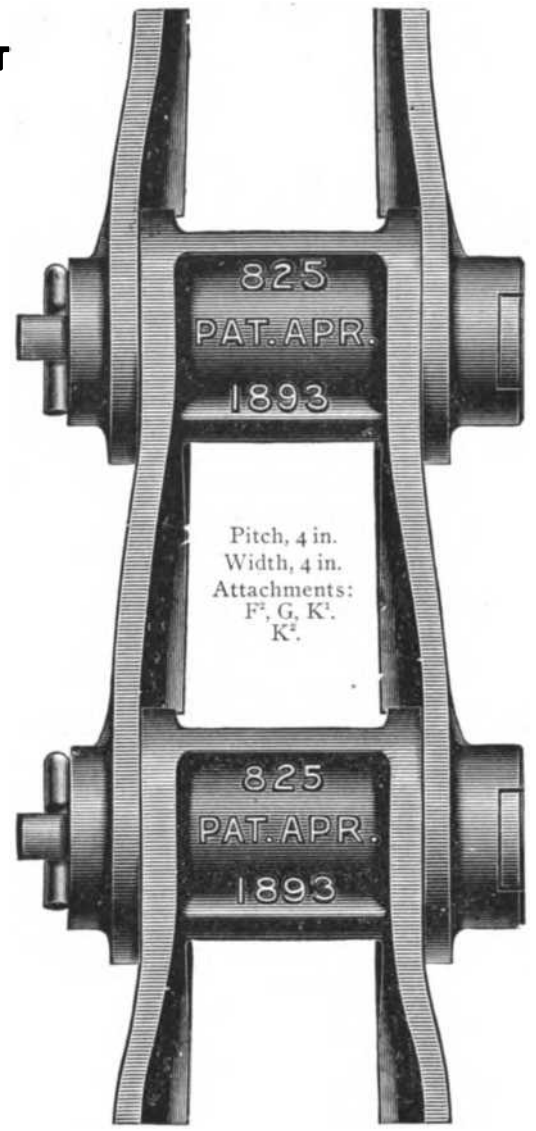


FIG. 1050

ATTACHMENTS FOR LEY BUSHED CHAIN



FIG. 1046



FIG. 1047

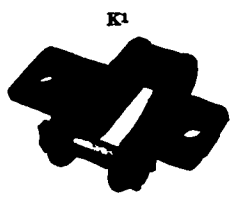


FIG. 1048

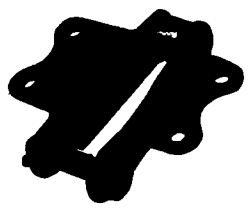


FIG. 1049

No.	823	825	826	835	842	844	845	855
Links per Foot.	3	3	3	3	2	2	1⅓	1
Working Strain, pounds.	3,000	4,000	3,800	3,500	8,500	5,000	6,000	8,000

PRICE PER FOOT, FIGS. 1044 TO 1050

Plain Links.	$0 90	$1 30	$1 30	$1 50	$2 25	$1 50	$1 10	$1 50
With Attachments.	A³⁸	A⁴²	A⁶⁵	F²	G¹ or G⁶	K¹	K²	K³⁰
For No. 823	.....	$1 30	$1 00	$1 30	$1 30	.....	$1 00	.....
" 825	$1 50	1 90	2 00	2 10	1 90	$2 00	.....	.....
" 835	.....	.....	.....	.....	.....	.....	.....	$2 00
" 842	.....	.....	.....	.....	.....	.....	3 00	.....
" 844	.....	.....	.....	.....	.....	.....	1 65	.....
" 845	.....	.....	.....	.....	.....	.....	1 60	.....
" 855	.....	.....	.....	.....	.....	.....	2 00	.....

WHEELS FOR LEY BUSHED CHAINS

PRICES

NO. 826

Pitch Diam. Inches.	No. of Teeth.	Each.	Note.
10½	8	$4 50	Gray Iron Sprocket Wheels.
11¾	9	4 75	
13	10	5 10	
14½	11	5 60	
15¾	12	6 25	
17	13	7 00	
18¼	14	8 00	
19½	15	9 00	
22	17	11 00	
24½	19	$13 00	
26	20	14 00	
28½	22	15 00	
29¾	23	15 75	
31	24	16 50	
36¼	28	20 00	
41½	32	24 00	
44	34	26 00	
49¼	38	35 00	

NO. 825

Pitch Diam. Inches.	No. of Teeth.	Each.	Note.
15¾	..	$5 50	Tract'n
18	..	6 00	"
18	14	6 00	
18	14	5 50	Face
23	18	12 00	Chilled
30	23	18 00	"

NO. 841

Pitch Diam. Inches.	No. of Teeth.	Each.	Note.
19½	10	$12 00	Chilled
20	..	9 00	Tract'n
25	..	13 00	"
25	13	16 00	Chilled
29	15	24 00	"
30	..	16 00	Tract'n

NO. 855

Pitch Diam. Inches.	No. of Teeth.	Each.	Note.
35¼	9	$39 00	Chilled
43	11	45 00	"

No. 730 CHAIN

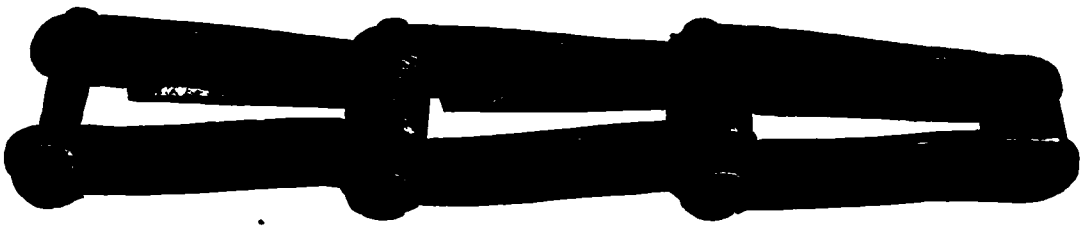


FIG. 1051

Illustration above is a strong chain, light and readily detachable. Its lower price makes it desirable for elevators and conveyors where the hardened bearings of the Ley Chain are not a necessity. Pitch, 6 inches. Working strain, 4,000 pounds.

Nos. 745 and 755 are of like design, and correspond in dimensions with Ley Chains Nos. 845 and 855.

Prices quoted on application.

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MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

DODGE CHAIN

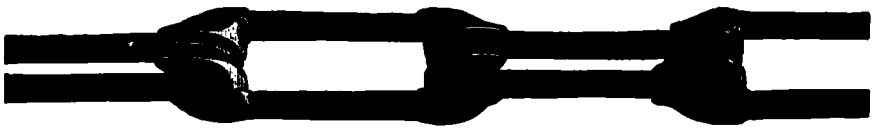


FIG. 1052

Dodge chain is an accurately pitched cable chain in which detachable bearing blocks are inserted between the links. These blocks present large bearing surfaces to both links and wheel teeth, keep the links at right angles to each other, preserve the pitch of the chain, and materially increase its strength. The construction of the chain allows it to turn any number of angles, in any direction, in the same installation.

For this chain we have F attachments for flights, K² attachments for buckets, etc., and coupling links.

PRICES, FIGS. 1052 TO 1057

Sizes. Inches.	Pitch. Inches.	Working Strain.	Prices Per Foot.	Bearing Blocks.	Attachments. Flight.	Attachments. Bucket.	Connecting Links.
½	6	10,000	$1 00	$0 30	$0 45	$0 45	$1 00
⅝	6	12,000	1 20	35	50	50	1 65
¾	8	20,000	1 50	60	80	85	1 75
⅞	12	25,000	1 75	80	1 00	1 00	2 50

ATTACHMENTS FOR DODGE CHAIN

K² ATTACHMENT FOR BUCKETS



FIG. 1053

F ATTACHMENT FOR FLIGHTS

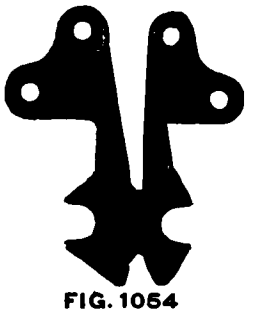


FIG. 1054

MALLEABLE COUPLER



FIG. 1055

PLAIN BEARING BLOCK



FIG. 1056

SPLIT COUPLER



FIG. 1057

DODGE CHAIN WHEELS

TRACTION WHEEL



FIG. 1058

SPROCKET IDLER

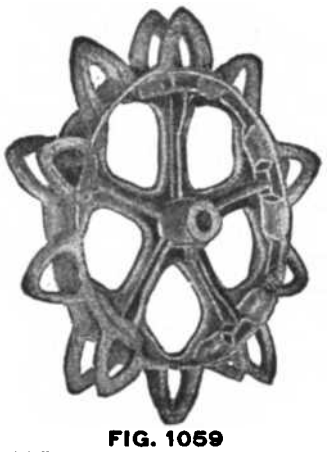


FIG. 1059

PRICES, FIG. 1058

Diameters. Inches.	24 Inches.	30 Inches.	37 Inches.	40 Inches.	42 Inches.	49 Inches.
Chain, ½ and ⅝	$10 00	$20 00	....	....	$26 00	
" ¾	....	25 00	30 00	35 00		
" ⅞	....	....	....	....	....	$40 00

PRICES, FIG. 1059

Chain, ½ and ⅝ inch; diameter, 20 inches.....$5 75
" ¾ inch; diameter, 24 inches.....11 00

EXTRA TEETH, WITH BOLTS, FOR FIG. 1061

½ inch, 65 cents. ⅝ inch, 65 cents ¾ inch, $1.10

DODGE CHAIN WHEELS

PLAIN WHEEL



FIG. 1060

REMOVABLE TOOTH SPROCKET WHEEL



FIG. 1061

PRICES, FIG. 1060 AND 1061

Size Chain. Inches.	Diameters. Inches.	Number of Teeth.	Plain Wheel.	Removable Tooth Wheel.
½ and ⅝	23¼	6	$15 00	$25 00
"	30¾	8	25 00	45 00
"	38¼	10	30 00	
"	42¾	11	....	55 00
"	46	12	....	60 00
"	95	18	145 00	Special Wheel
¾	32	6	....	50 00
"	37	7	....	57 00
"	42¾	8	....	65 00
"	52¾	10	....	90 00
"	68½	13	Special Wheel	80 00
⅞	46½	6		100 00

GIANT CHAIN

DESCRIPTION, FIG. 1062

The giant is a strong detachable chain, and has been in use many years, giving entire satisfaction in car hauls, barrel elevators, log hauls, heavy apron conveyors, and other severe duties. We can furnish giant chain so that rollers may be placed between the double links for use in very heavy and long slat conveyors, if so ordered. As a log haul chain it has been well appreciated by both lumber and pulp manufacturers.

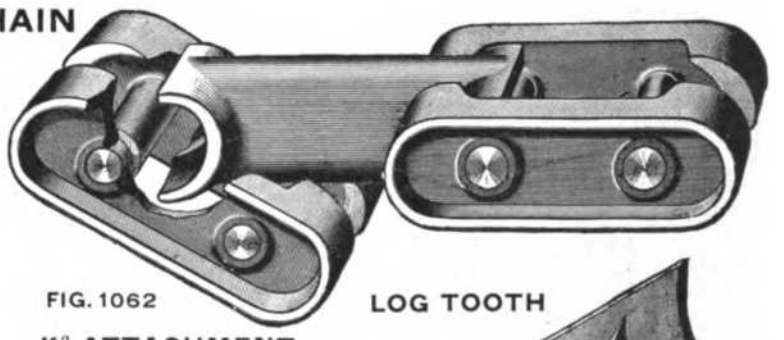


FIG. 1062

PRICES, FIGS. 1062 TO 1064

Sizes.	Pitch, Coupler, and Double Link. Inches.	Prices Per Foot.	Double Links. Prices, Each.	Coupler.	K² or Slat Links.	K⁵	All K Attachments.	Log Tooth.
600	6	$1 00	$0 30	$0 20	....	$0 40	$1 20	$0 70
1,200	12	90	60	30	.80	80	1 10	
1,050	10	1 30	75	35	....	1 05	1 68	1 40
1,075	10	1 40	80	40	....	....	....	1 50

K² ATTACHMENT

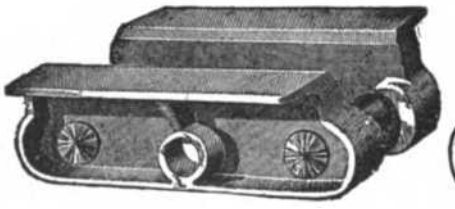


FIG. 1063

LOG TOOTH

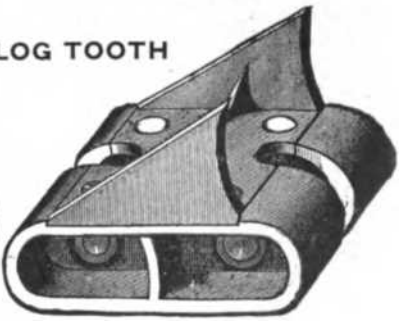


FIG. 1064

GIANT CHAIN SPROCKET WHEELS

Special price list on application.

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BLOCK CHAIN

Designed for use in inclined and horizontal conveyors, where a strong pushing action is required, as the "H" or box links, which are placed in the chain at intervals, carry everything before them.

Price (with "H" attachment every 8 feet), 60 cents per foot.

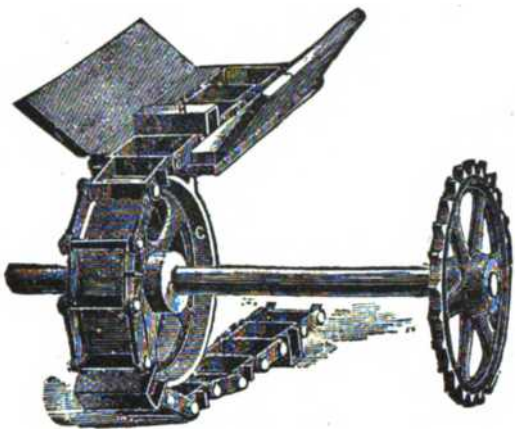


FIG. 1065

In Fig. 1066 we show a few links of patent block chain. The chain is 6⅝ inches wide, and should run in a groove 7¼ inches wide, and in an angle side carrier, as shown in Fig. 1065, made of hard wood plank, maple or oak.

The plain links are 1½ inches deep up and down, and the "H" attachment is 1½ inches high, and is placed in the chain every 8 feet.

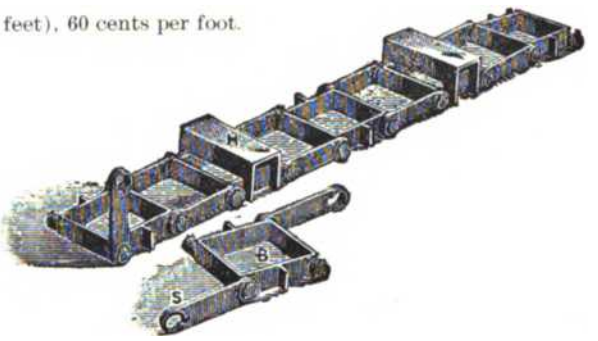


FIG. 1066, SHOWING "H" ATTACHMENT

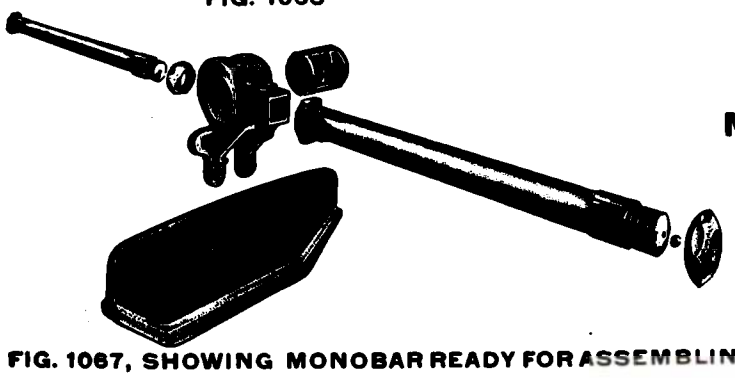


FIG. 1067, SHOWING MONOBAR READY FOR ASSEMBLING

MONOBAR

DETACHABLE AT EVERY JOINT

Readily and quickly assembled or taken apart.
For conveying and elevating purposes is excellent.



SHOWING CONTINUOUS BUCKETS ON MONOBAR

FIG. 1068

It is STRONG.—No welds, which are the chief element of weakness in wrought chains, the malleable iron joints being properly proportioned with uniform distribution of metal, the working strain is that of high grade wrought iron bolts of the diameter employed.

It is LIGHT.—Its design permitting use of long bolts, the knuckles or joints are relatively few.

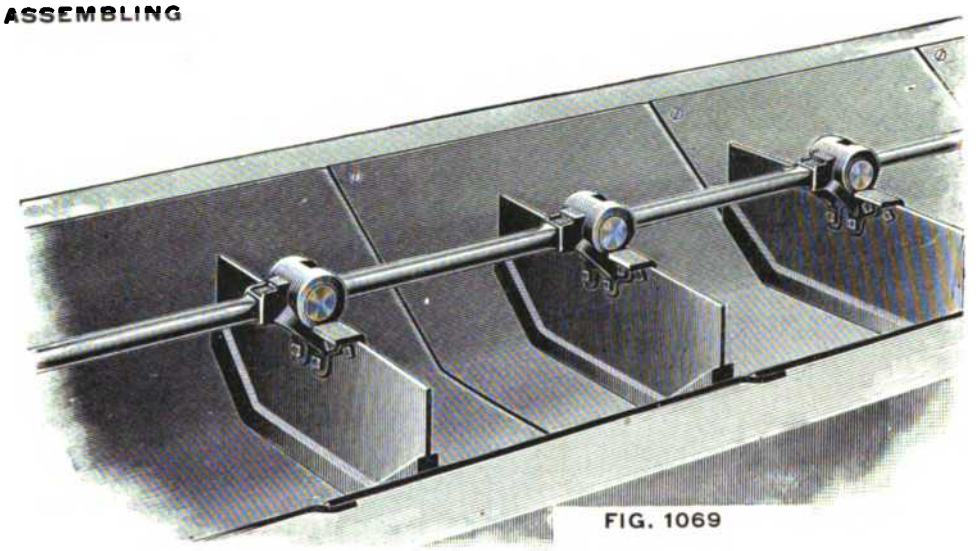


FIG. 1069

SHOWING MONOBAR ATTACHED TO MALLEABLE IRON FLIGHTS IN STEEL CONVEYOR TROUGH

PRICES

No.	Diam. of Bolts. Inches.	Pitch. Inches.	Prices per Foot.	Breaking Strain. Lbs.
612	¾	12	$0 85	18,200
618	¾	18	65	18,200
818	1	18	1 00	30,000
824	1	24	80	30,000
1018	1¼	18	1 80	41,000
1024	1¼	24	1 45	41,000
1224	1½	24	2 40	63,000
1636	2	36	3 60	120,000

Factor of safety varies with conditions of the work to be done. Figures in column headed "Pitch" give shortest distance between attachments.

PRICES OF MONOBAR SPROCKET WHEELS WITH REMOVABLE MALLEABLE IRON TEETH

No.	612	618	818	824	1018	1024	1224	1636
Pitch Diam. Ins.	27¾	41½	41½	55¼	41½	55¼	55¼	83
No. of Teeth.	7	7	7	7	7	7	7	7
Prices. Each.	$24 00	$45 50	$51 00	88 00	$56 00	$90 00	$97 00	$425 00

EXTRA MALLEABLE IRON TEETH WITH BOLTS

No.	612	618	818	824	1018	1024	1224	1636
Prices. Each.	$1 35	$2 20	$2 55	$3 40	$3 15	$4 10	$4 25	$19 50

MALLEABLE IRON FLIGHTS

Malleable iron flights are stiff and strong and have thickened wearing edges, greatly increasing durability.

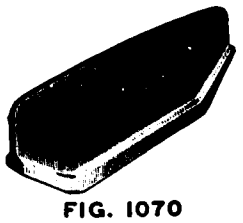


FIG. 1070

PRICES, FIG. 1070

Sizes. Inches.	Each.	Sizes. Each.	Each.
4 x 10	$0 40	6 x 18	$0 90
4 x 12	45	6 x 18	1 35
5 x 10	50	8 x 20	1 45
5 x 12	55	8 x 24	1 95
5 x 15	60		

Wearing shoes for flights (for sliding on return guides) either riveted on or with bolts, per flight ..... cents.

Bolts, for securing flights to Monobar, per hundred.....$2 40

STEEL CONVEYOR FLIGHTS

All steel flights are drop-forged in dies, and have all holes punched at one operation, making them uniform.

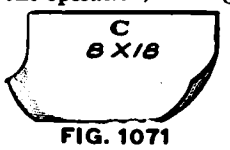


FIG. 1071

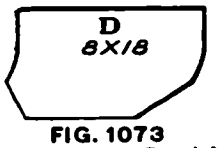


FIG. 1073

PRICES, FIGS. 1071 TO 1074

Style C, D, E, F, or Plain Scrapers

Sizes. Inches.	Each.	Sizes. Inches.	Each.
4 x 10	$0 20	6 x 12	$0 30
4 x 12	22	6 x 18	40
5 x 10	23	8 x 18	60
5 x 12	25	8 x 20	65
5 x 15	30	8 x 24	75

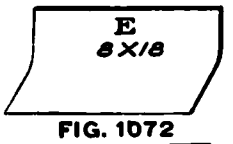


FIG. 1072

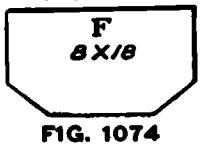


FIG. 1074

Standard Drop Forged Steel Conveyor Trough, and discharge gates for conveyors. Special price lists on application.

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DETACHABLE CHAIN BELTING

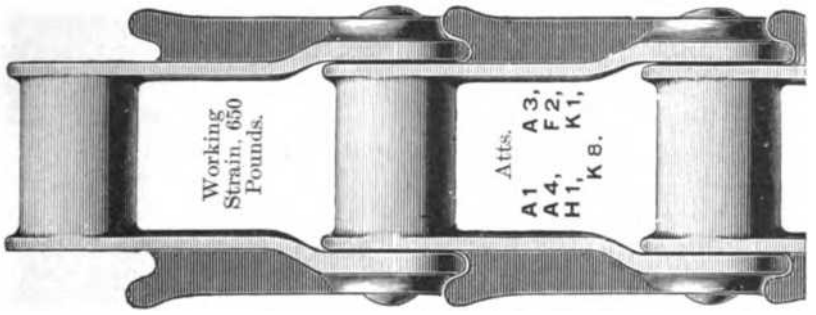


FIG. 1075. NO. 55. FULL SIZE

MADE TO WORK ON STANDARD SPROCKET WHEELS

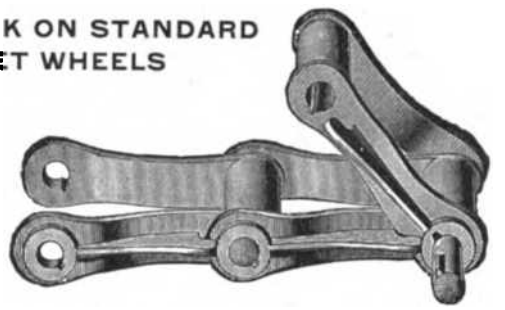


FIG. 1076. SHOWING METHOD OF ATTACHING

ATTACHMENTS FOR DETACHABLE CHAIN BELTING



FIG. 1077. A 1

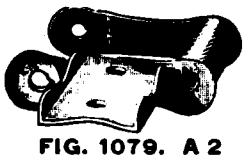


FIG. 1079. A 2

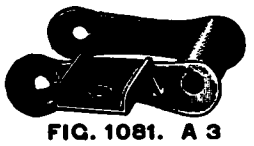


FIG. 1081. A 3

PRICES, FIGS. 1075 TO 1082

No.	Links per Foot.	Size of Pin. Inches.		Working Strain. In Pounds.	Prices per Foot.
25	13.3	3/16	Malleable	100	$0 14
33	8.6	7/32	"	300	14
34	8.6	7/32	"	350	14
50	12.	3/16	"	300	16
42	8.7	1/4	"	450	16
45	7.4	1/4	"	450	16
52	8.	19/64	"	600	24
55	7.4	19/64	"	650	22
57	5.2	5/16	"	800	24
62	7.3	11/32	"	900	26
67	5.2	11/32	"	900	26
75	4.6	3/8	"	1,000	28
77	5.2	3/8	"	1,000	30
78	4.6	27/64	"	1,200	34
83	3.	33/64	Steel	1,600	43
85	3.	31/64	"	1,800	50
88	4.6	15/32	Malleable	1,300	43
103	4.	37/64	Steel	2,200	65
108	2.5	5/8	"	2,400	70
146	2.	13/16	"	3,300	1 00
121	2.	19/32	"	2,400	70
122	2.	3/4	"	3,000	1 00
128	1.5	3/4	"	3,000	On application

Above prices include attachments at intervals of not less than twelve inches. Special illustrated lists showing attachments not illustrated here but included in above list prices sent on application. For sprocket wheels for these chains see page 159, Fig. 1042.

ATTACHMENTS FOR DETACHABLE CHAIN BELTING

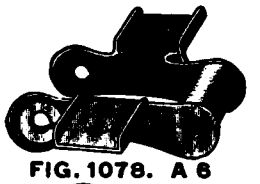


FIG. 1078. A 6



FIG. 1080. D 5

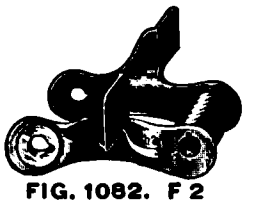


FIG. 1082. F 2

ROLLER CHAIN

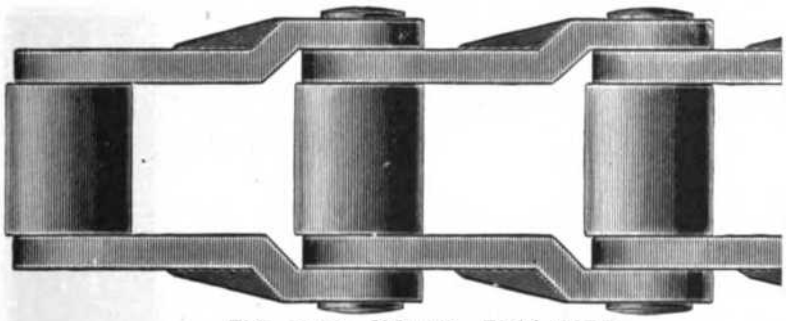


FIG. 1083. NO. 52. FULL SIZE

This style of chain works in either direction.

Made of the best malleable iron, with malleable iron and steel pins.

COUPLING PINS USED IN MAKING CONNECTIONS



FIG. 1084



FIG. 1085

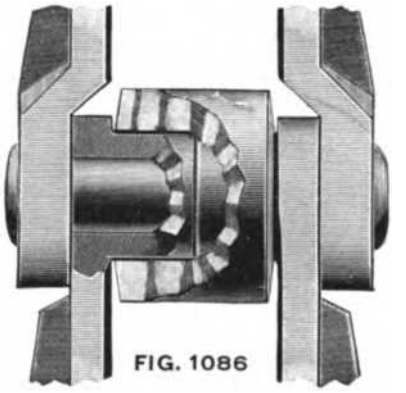


FIG. 1086

SHOWING SECTION OF ROLLER

ATTACHMENTS FOR ROLLER CHAIN

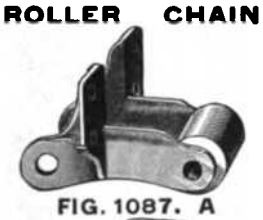


FIG. 1087. A

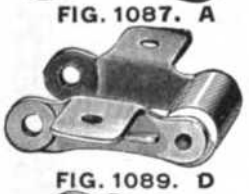


FIG. 1089. D

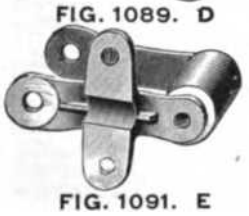


FIG. 1091. E

PRICES FIG. 1083 TO 1092

No.	Working Strain. In Pounds.	Pitch of Link. Inches.	Width of Link. Inches.	Size Pin. Inches.		Prices, per Foot.
20	500	1.52	15/16	9/32	Malleable Irom	$0 30
52	600	1.5	1 3/8	5/16	"	34
55	600	1.625	1 5/8	5/16	"	34
77	800	2.29	2	3/8	"	42
15	800	2.03	1 5/8	3/8	"	40
0	800	2.02	1 1/2	5/16	"	40
62	800	1.668	1 7/8	3/8	"	40
8	900	2.63	1 3/4	3/8	"	40
9	900	2.97	1 3/4	3/8	"	40
88	1,200	2.64	2 1/4	15/32	"	60
17	1,200	2.58	2	7/16	"	60
18	1,500	3.02	2	1/2	"	70
14	1,600	4.	2 1/4	1/2	"	75
11	1,800	3.1	2 5/8	1/2	Steel	80
2	1,850	3.69	2 7/8	5/8	"	1 00
12	2,000	3.52	2 7/16	17/32	Malleable Iron	80
103	2,000	3.11	2 3/4	5/8	Steel	90
114	2,400	3.23	3 1/8	11/16	"	1 20
1	2,000	2.97	3	5/8	"	1 00
3	2,700	4.04	3 1/4	11/16	"	1 20
126	3,000	6.01	3 1/8	11/16	"	1 20
124	3,200	4.06	3 3/4	3/4	"	1 50
5	4,000	5.06	3 3/4	7/8	"	1 80

Prices include attachments at intervals of not less than twelve inches—except attachments M1, N1, P, Q, V, F1, F2, special and T1, for which a slight additional charge is made. Roller Chain Sprocket Wheels. Special price list on application.

ATTACHMENTS FOR ROLLER CHAIN

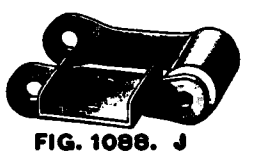


FIG. 1088. J



FIG. 1090. J 1

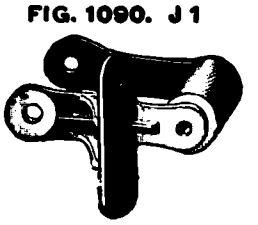


FIG. 1092. M

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STEEL THIMBLE ROLLER CHAIN



FIG. 1093

Made in strengths capable of transmitting 10, 20, 30, 50 or 100 Horse Power.

Every part of this chain is perfectly made. Links are exactly true to pitch. Rollers and thimbles are true and well finished.

PRICES, FIGS. 1093 TO 1095

No.	Working Strain in Lbs.	Sizes: Width of Steel, Inches.		Thickness, Inches.		Pitch of Link, Inches.	Pin, Inches.	Per Foot.
17	2,000	1⅛	x	¼	x	2.56	½	$1 60
27	2,500	1⅜	x	5/16	x	3	9/16	1 80
14	3,500	1½	x	⅜	x	3.58	⅝	2 00
112	6,000	2	x	½	x	4.04	¾	3 00
115	6,000	2	x	½	x	5	¾	3 00
116	6,000	2	x	½	x	6	¾	3 00
117	15,000	3	x	⅝	x	6	1¼	Upon application.

STEEL ROLLER CHAINS
WITHOUT THIMBLES

To work on standard sprocket wheels, replacing standard chains.

No.	Working Strain in Lbs.	Sizes: Width of Steel, Inches.		Thickness, Inches.		Pitch of Link, Inches.	Pin, Inches.	Per Foot.	Works on Standard Sprocket Wheels as below No.
29A	1,200	¾	x	5/16	x	2.31	⅜	$1 00	77
17A	1,500	1⅛	x	¼	x	2.56	½	1 20	17
27A	1,900	1⅜	x	5/16	x	3	9/16	1 35	27
14A	2,600	1½	x	⅜	x	3.58	⅝	1 50	14
112A	4,500	2	x	½	x	4.04	¾	2 00	112
116A	4,500	2	x	½	x	6	¾	2 00	116
301	2,600	1¾	x	⅜	x	3¼	⅝	1 60	114
300	4,500	2	x	½	x	3¼	¾	2 00	114
304	3,000	1½	x	½	x	4	⅝	1 80	3
700	.....	2½	x	⅝	x	7.63	1⅛	Applic'n	7

The working strain of the above chains represents but a small portion of the breaking strain, thus insuring a large margin for safety and wear

Sprocket wheels for above chains. Special prices on application

PINS FOR THIMBLE ROLLER CHAIN, RIVETED



FIG. 1094

DETACHABLE



FIG. 1095

ADJUSTABLE TAKE-UP BOXES
FOR ELEVATORS AND CONVEYORS

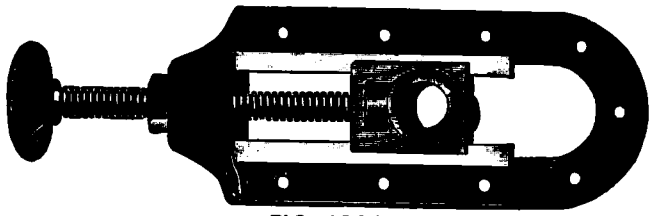


FIG. 1096
STYLE B

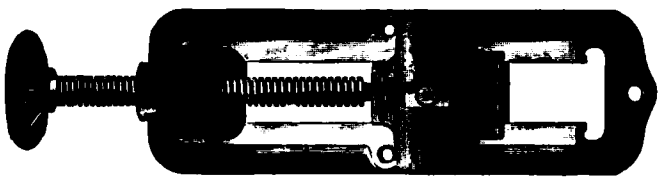
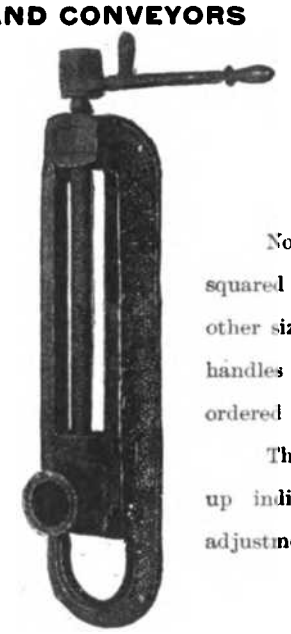


FIG. 1097
STYLE C

PRICES, FIGS. 1096 AND 1097

Diameter of Shaft, Inches.	Length of Bearing, Inches.	Length of Adjustment, Inches.	Each.	Diameter of Shaft, Inches.	Length of Bearing, Inches.	Length of Adjustment, Inches.	Each.
15/16	3	4	$2 00	2 5/16	8	12	$10 00
1 3/16	4	7	2 60	2 5/16	8	24	13 50
1 7/16	4½	7	3 25	3 3/16	8½	14	11 00
1 11/16	5½	9	4 50	3 3/16	8½	30	14 00
1 11/16	5½	18	7 25	3 7/16	9	14	12 00
1 15/16	6	9	4 75	3 7/16	9	30	15 00
1 15/16	6	18	7 50	3 11/16	9½	16	14 00
2 3/16	6½	11	6 50	3 11/16	9½	36	19 00
2 3/16	6½	20	8 50	3 15/16	10	16	15 00
2 7/16	7	11	7 00	3 15/16	10	36	20 00
2 7/16	7	20	9 00	4 7/16	12	18	
2 11/16	7½	12	9 50	4 7/16	12	48	
2 11/16	7½	24	13 00	4 15/16	12	18	
				4 15/16	12	48	





No. 4 has screw with squared end for wrench. All other sizes made with clutch handles unless otherwise ordered

The number of the Take-up indicates its length of adjustment in inches,

FIG. 1098
STYLE A

FIG. 1099
STYLE B

PRICES, FIGS. 1098 AND 1099

No. of Frame.	Diameter of Shaft, Inches.	Each.	No. of Frame.	Diameter of Shaft, Inches.	Each.
4	11/16	$1 75	16	2 11/16	$8 75
4	1 3/16	1 90	16	2 15/16	9 00
4	1 5/16	2 00	20	2 7/16	9 00
5	1 3/16	2 55	20	2 9/16	9 50
5	1 5/16	2 70	20	2 11/16	10 00
7	1 7/16	3 25	20	2 13/16	11 00
7	1 9/16	3 50	20	2 15/16	12 00
7	1 11/16	4 00	24	2 15/16	13 50
9	1 15/16	4 75	24	3 7/16	14 00
9	2 3/16	5 00	24	3 15/16	15 00
12	2 3/16	6 00	36	3 15/16	20 00
12	2 5/16	6 25	48	3 15/16	35 00
12	2 7/16	6 75	60	3 15/16	40 00
16	2 3/16	8 00	72	4 7/16	50 00
16	2 7/16	8 25			

NOTE.—In ordering, give diameter of shaft for which Take-up is desired.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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HELICOID STEEL CONVEYOR

STANDARD GAUGE OF FLIGHTS AND REGULAR SIZE OF PIPE



FIG. 1100

How to Order:

Use order blanks, which will be furnished on application.

State whether right-hand conveyor or left-hand conveyor is wanted.

State whether linings and hangers are wanted, and state style of hanger preferred.

State length and diameter of driving end, and, if possible, order driving ends of standard diameters. See Fig. 1101.

When possible, order conveyors in feet without fractional parts of a foot, and we can fill promptly with stock lengths.

All conveyors made of steel unless otherwise ordered.

All conveyors shipped right-hand unless otherwise ordered.

Unless order specifies exact length of pipe, we deduct from length given the width of one hanger bearing.

A conveyor complete consists:

First—Of sections of hollow shaft, upon which are properly fastened the spiral flights.

Second—Couplings and bolts to connect the sections and to give supporting bearings for same at proper distances.

Third—Hangers to support the sections.

Fourth—Curved iron to line the box. Plain-perforated if desired at extra cost.

Fifth—Wooden box.

Sixth—Driving end properly supported.

PRICES, FIG. 1100, COMPLETE AS ABOVE

Diameters.	Prices per Foot, Black.	Galvanized.	Standard Lengths.	Diameters of Couplings.	Inside Diameters of Hollow Shaft.	Outside Diameters of Hollow Shaft.	Revolutions per Minute.	Capacity per Hour.
Inches			Ft.	Inches.	Inches.	Inches.		Bushels
4	$1 00	$1 28	8	1	1¼	1 11/16	100	100
6	1 67	2 63	10	1½	1¾	2⅛	140	300
9	2 00	2 68	10	1½	2	2⅜	150	1,000
12	2 80	3 48	12	2	2½	2⅞	160	2,000
16 on 3 in.	5 08	6 38	12	3	3½	4	160	5,000
18	6 15	7 79	12	3	4	4½	160	6,000

The standard lengths, as given above, include the width of one hanger bearing.

We do not include in the above price list more than one hanger and one coupling for each standard length, with necessary bolts and linings. If it is intended to use one of the regular hangers as a bearing for the drive end, it should be specially ordered. An extra charge for same will be made. The reason for this rule is that it is the approved practice to use either a cast-iron box end or pillow blocks instead of the regular conveyor hanger, so that the firmest possible bearing for the drive end may be provided.

When the fittings included in the above price list are not required, a proper deduction is made.

Sections of conveyor of any length desired will be furnished, although, in order to draw from our regular stock in case of repairs, it is recommended that standard lengths be used as far as possible.

We can furnish the above conveyor made entirely of brass or copper, of any diameter or of any weight of metal necessary. Prices on application.

CONVEYOR DELIVERY GATES

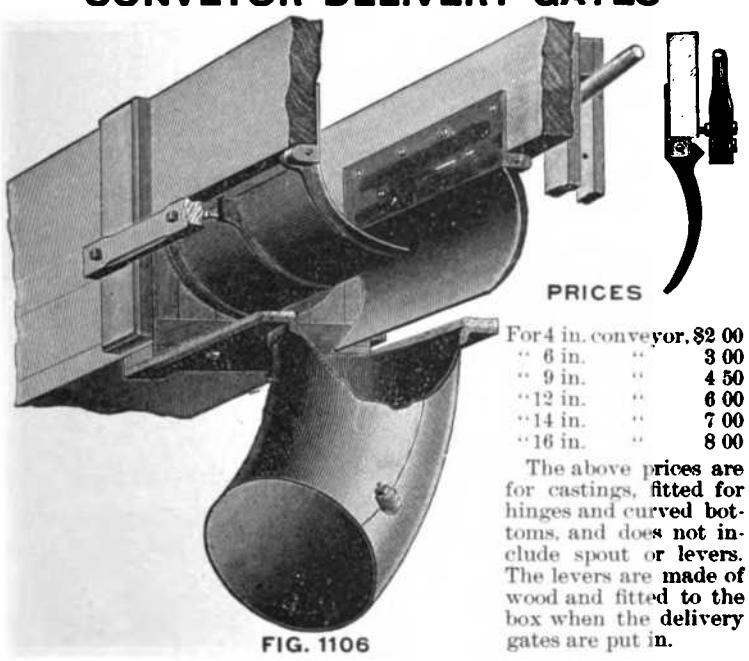


FIG. 1106

PRICES

For	4 in. conveyor,	$2 00
"	6 in. "	3 00
"	9 in. "	4 50
"	12 in. "	6 00
"	14 in. "	7 00
"	16 in. "	8 00

The above prices are for castings, fitted for hinges and curved bottoms, and does not include spout or levers. The levers are made of wood and fitted to the box when the delivery gates are put in.

DRIVING ENDS FOR CONVEYORS



FIG. 1101

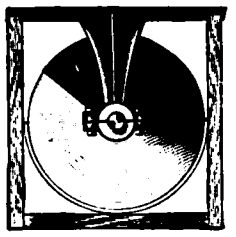
Driving ends, sometimes called gudgeons or projections, extend about 6 inches inside of conveyor shaft and project suitable distance to attach driving power and to give bearing in pillow block.

We charge for standard diameter driving ends at conveyor rates when less than 12 inches long. For standard driving ends longer than 12 inches we charge for shaft used and labor in cutting off, drilling, and fitting same.

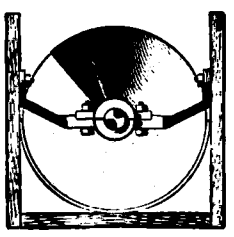
The standard diameters of driving ends are as follows:

Diameters of conveyor,	4 in.	6 in.	9 in.	12 in.	16-2 in.	16 on 3 in.	18 in.
" " drive end,	1 in.	1½ in.	1½ in.	2 in.	2 in.	3 in.	3 in.

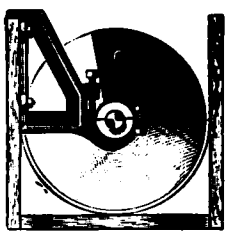
CONVEYOR PARTS AND FITTINGS FOR EXTRAS AND REPAIRS



NO. 13—FIG. 1102



NO. 14—FIG. 1103



NO. 15—FIG. 1104

Price list of conveyors includes linings and hangers, but when wanted for repairs or extras we charge as follows:

HANGERS

The following prices are for Nos. 13, 14, and 15 styles of hangers, where they are regularly made for the different sizes of conveyors (see list below). Prices on special hangers quoted upon application.

PRICES

Diameters of Conveyors. Inches.	Diameters of Bearings. Inches.	Lengths of Bearings. Inches.	Styles of Hangers Regularly Made. No.	Prices.
4	1	1½	13	$0 25
6	1½	2	13	40
9	1½	2	13, 14, 15	55
12	2	2	13, 14, 15	1 25
16 in. on 2 in.	2	2	13, 14	2 50
16 in. on 3 in.	3	3	13, 14, 15	3 00

PRICES—LININGS AND FLIGHTS

Diameter conveyor,	4 in.	6 in.	9 in.	12 in.	16 in. 2 in. pipe	16 in. 3 in. pipe
Linings, plain, per foot,	$0 03½	$0 05	$0 07	$0 12	$0 20	$0 20
Flights, each,	20	30	45	75	1 20	1 85

In ordering flights be particular to state the pitch of screw, inside diameter of pipe, and whether right or left hand.

CAST-IRON BEARING ENDS BABBITTED FOR CONVEYOR BOXES

We recommend our customers to use at all driving ends of conveyor a cast-iron bearing end, as shown in cut. These box ends close up and strengthen the conveyor box and give a rigid bearing for the driving end. In most cases their use will dispense with the necessity of outside bearings. When the drive end is 12 inches or longer, use a box end, and for the outer end a pillow block or other suitable shaft support.

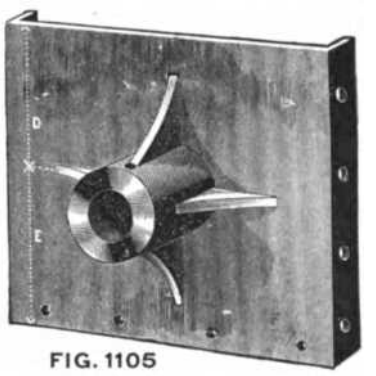


FIG. 1105

PRICES

Diameters Conveyors. Inch.	Diameters Shaft. Inch.	Prices.	Diameters Conveyors. Inch.	Diameters Shaft. Inch.	Prices.
4	1	$1 50	12	2	$6 00
6	1½	2 00	12	3	6 75
8	1½	2 75	14	2	7 50
9	1½	3 00	16	2	9 00
9	2	3 25	16	3	10 00
10	1½	3 75	18	3	12 00
10	2	4 25			

We can furnish bearing ends for steel conveyor boxes if desired, same list prices as above. Can also furnish discharge and countershaft box ends. Special price list on application.

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STANDARD STEEL ELEVATOR BUCKETS

FOR GRAIN, SEEDS, FLOUR, AND FOR LIGHT AND MEDIUM WORK IN GENERAL

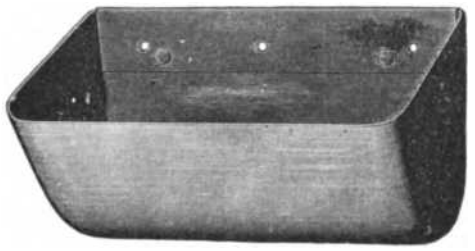


FIG. 1107—FRONT VIEW

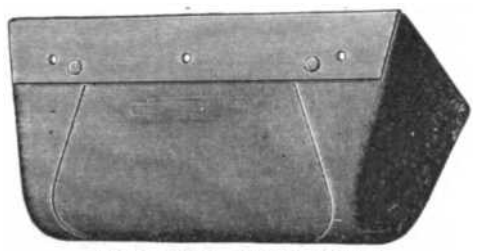


FIG. 1107—BACK VIEW

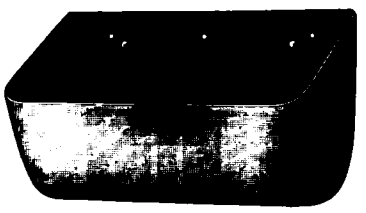


FIG. 1108

Have seamless corners, shovel edge, rounded bottom and corners.

These standard buckets are supplied in the natural finish of the steel—are made to order with coating to suit the buyers, either japanned, galvanized, or tinned.

We can furnish to order buckets of any pattern in steel, iron, brass, copper, zinc, or tin.

FOR ORES, BROKEN STONE, AND EXTRA HEAVY WORK IN GENERAL

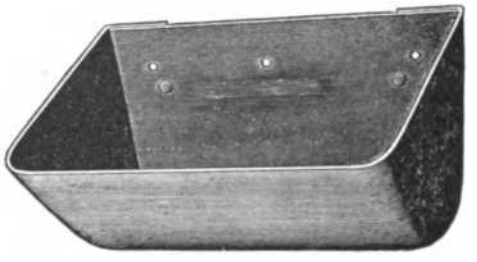


FIG. 1109—FRONT VIEW

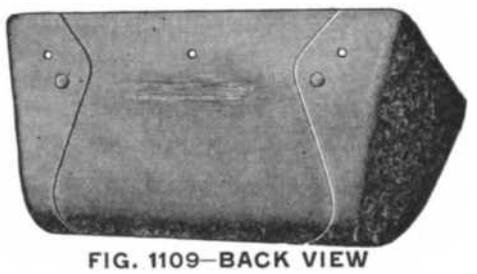


FIG. 1109—BACK VIEW

PRICES, FIGS. 1107 TO 1109

FOR GRAIN ELEVATORS AND FLOUR MILL WORK

Size of Buckets. Width on Belt.	Projection from Belt.	Capacity Bu. per h. 200 feet per minute, Bucket every 12 in. Can run 500 feet.	Steel Gauge.	Prices.
3	x 3	87	23.....	$0 09
3½	x 3	103	23.....	10
4	x 3	115	23.....	11
4½	x 3½	179	22.....	13
5	x 3½	200	22.....	14
5	x 4	230	22.....	18
5½	x 4	250	21.....	19
6	x 4	275	21.....	20
7	x 4½	500	20.....	30
8	x 5	670	19.....	41
9	x 5	755	19.....	43
10	x 5½	974	19.....	54
9	x 6	1100	18.....	59
10	x 6	1220	18.....	62
11	x 6	1340	18.....	65
12	x 6	1465	18.....	68
14	x 6	1710	18.....	74
16	x 6	1950	18.....	81
18	x 6	2190	18.....	89
20	x 6	2445	18.....	95

FOR HANDLING EAR CORN, COBS, AND MEDIUM CLASS WORK

Size of Buckets. Width on Belt.	Projection from Belt.	Capacity Bu. per h. 200 feet per minute. Bucket every 12 in. Can run 500 feet.	Prices of No. 16 Gauge.	Prices of No. 14 Gauge.
9	x 6	1100.....	$0 77	$0 86
10	x 6	1220.....	81	90
11	x 6	1340.....	85	94
12	x 6	1465.....	89	98
14	x 6	1710.....	97	1 06
16	x 6	1950.....	1 05	1 15
18	x 6	2190.....	1 13	1 25
20	x 6	2445.....	1 21	1 35
10	x 7	1590.....	1 01	1 10
11	x 7	1750.....	1 05	1 15
12	x 7	1910.....	1 09	1 20
13	x 7	2065.....	1 13	1 25
14	x 7	2225.....	1 17	1 30
15	x 7	2385.....	1 21	1 35
16	x 7	2545.....	1 25	1 40
18	x 7	2865.....	1 33	1 50
20	x 7	3180.....	1 41	1 62
14	x 8	2785.....		1 57
16	x 8	3185.....		1 69
18	x 8	3580.....		1 81
20	x 8	3980.....		1 93
24	x 8	4780.....		2 17

Buckets of lengths other than above are made to order.

FOR HANDLING CORN, COBS, SAND, COAL, ORES, STONE, ETC.

Size of Buckets. Width on Belt.	Projection from Belt.	Capacity Bu. per h. 200 feet per min. Bucket every 12 in. Can run 500 feet.	Prices of No. 16 Gauge.	Prices of No. 14 Gauge.	Prices of No. 12 Gauge.	Prices of No. 10 Gauge.
5	x 4	230.....	$0 39	$0 44	$0 52	.....
6	x 4	275.....	41	46	56	.....
7	x 4½	500.....	49	54	67	.....
8	x 5	670.....	59	66	78	.....
9	x 5	755.....	63	70	82	.....
10	x 5½	974.....	76	88	1 06	.....
10	x 6	1220.....		90	1 14	$1 41
11	x 6	1340.....		94	1 20	1 48
12	x 6	1465.....		98	1 26	1 55
14	x 6	1710.....		1 06	1 38	1 69
16	x 6	1950.....		1 15	1 50	1 85
18	x 6	2190.....		1 25	1 61	2 01
20	x 6	2445.....		1 35	1 73	2 17
10	x 7	1590.....		1 10	1 36	1 72
11	x 7	1750.....		1 15	1 43	1 81
12	x 7	1910.....		1 20	1 50	1 89
13	x 7	2065.....		1 25	1 57	1 97
14	x 7	2225.....		1 30	1 64	2 04
15	x 7	2385.....		1 35	1 71	2 13
16	x 7	2545.....		1 40	1 78	2 22
18	x 7	2865.....		1 50	1 92	2 41
20	x 7	3180.....		1 62	2 06	2 61
14	x 8	2785.....		1 57	1 96	2 50
16	x 8	3185.....		1 69	2 12	2 70
18	x 8	3580.....		1 81	2 28	2 90
20	x 8	3980.....		1 93	2 44	3 10
24	x 8	4580.....		2 17	2 76	3 50

The above buckets are made to order in other lengths.

STANDARD STEEL ELEVATOR BUCKETS

MADE TO ORDER IN MODIFIED FORMS, AS FOLLOWS

LOW FRONT

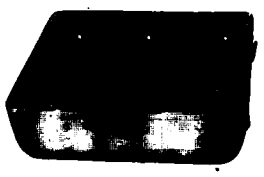


FIG. 1110

HOODED BACK

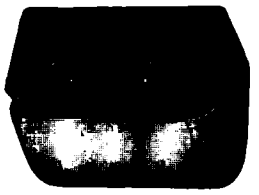


FIG. 1111

DIGGER EDGE



FIG. 1112

SHARP TOOTH

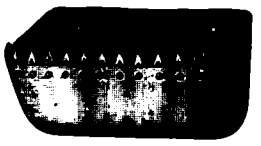


FIG. 1113

SAW TOOTH



FIG. 1114

GRAVITY DISCHARGE

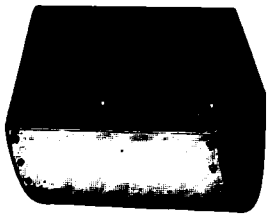


FIG. 1115

HIGH BACK

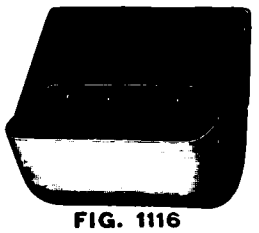


FIG. 1116

RE-ENFORCED BACK



FIG. 1117

RE-ENFORCED EDGE

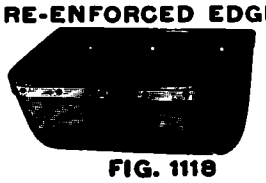


FIG. 1118

PERFORATED

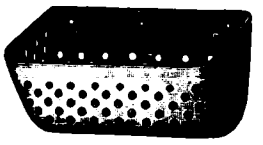


FIG. 1119

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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MALLEABLE IRON BUCKETS

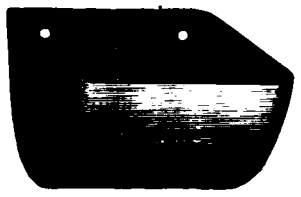


FIG. 1120

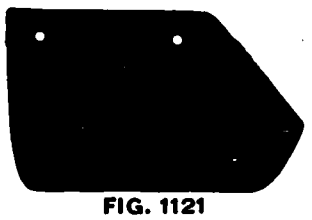


FIG. 1121

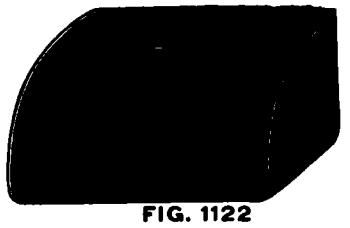


FIG. 1122

PRICES, FIG. 1120

Lengths. Inches.	Widths. Inches.	Capacity in Pints.	Each.
4½	3	¾	$0 40
5	3½	1	45
6	4	1¼	50
7	4½	2	65
8	5	3	80
10	6	5¼	1 10
10	7	7	1 15
11	6	5¾	1 25
12	6	7	1 40
12	7	7½	1 50
14	6	9	1 60
14	7	13¾	1 80
14	8	14	2 00
16	7	10¼	2 00
16	8	15	2 25
18	8	19½	2 60

PRICES, FIG. 1121

Lengths. Inches.	Widths. Inches.	Capacity in Pints.	Each.
5	3¼	.6	$0 40
8	3½	1.4	65
10	4	1.8	90
12	5½	4.0	1 15
20	10	22.0	3 20

PRICES, FIG. 1122

Lengths. Inches.	Widths. Inches.	Depths. Inches.	Capacity. Cubic Inches.	Pints.	Each.
8	4½	4	80	2	$0 65
10	5	4	120	3	90
12	6	6	180	3¾	1 25

AVERY PLAIN ELEVATOR BUCKETS

PRICES, FIG. 1124

Width on Belt. Inches.		Projection. Inches.	Plain.	Galvanized.	Gauge of Steel. *Stub's.	Capacity in Quarts.	Elevating Bushels per Hour at 200 Feet per Min. Can run 500 Feet.
			—Extra Heavy—				
5	x	4	$0 60	Prices quoted on application.	16	.64	240
6	x	4	72		16	.92	345
7	x	4½	84		16	1.31	491
8	x	5	1 00		15	1.73	649
9	x	5½	1 28		15	2.32	811
10	x	5½	1 56		14	2.57	963
11	x	6	1 84		14	3.42	1,282
12	x	6½	2 12		13	4.18	1,567
14	x	6½	2 48		13	5.02	1,882
16	x	6½	3 00		12	5.94	2,227
18	x	7	3 60		12	7.75	2,906

*Stub's gauge is two gauges heavier than American gauge.

Width on Belt. Inches.		Projection. Inches.	Plain.	Galvanized.	Gauge of Steel.	
8	x	5	$0 54	$0 73	19	Elevating capacity, see Extra Heavy.
9	x	5½	68	96	18	
10	x	5½	80	1 10	18	
11	x	6	92	1 27	18	
12	x	6½	1 04	1 44	18	
14	x	6½	1 20	1 74	16	
16	x	6½	1 60	2 27	16	
18	x	7	2 00	2 84	15	
20	x	7	2 40	3 40	15	

Punched for belt or chain as wanted. If buckets are to replace others, or to go on belt already punched, send templet.

AVERY CORRUGATED ELEVATOR BUCKET



FIG. 1123

The Avery bucket is made of seamless steel, all corners and bottom rounded.

The rib that is pressed into the bucket from the back side forms a corrugation that stiffens the bucket and acts as a brace or truss.

Width on Belt. Inches.		Projection. Inches.	Plain.	Galvanized.	Gauge of Steel.	Elevating Bushels per Hour at 200 Feet per Minute.
8	x	5	$0 54	$0 73	19	649
9	x	5½	68	96	18	811
10	x	5½	80	1 10	18	963
11	x	6	92	1 27	18	1,282
12	x	6½	1 04	1 44	18	1,567
14	x	6½	1 20	1 74	16	1,882
16	x	6½	1 60	2 27	16	2,227
18	x	7	2 00	2 84	15	2,906
20	x	7	2 40	3 40	15	3,177

Punched for belt or chain as wanted. If buckets are to replace others, or to go on belt already punched, send templet.

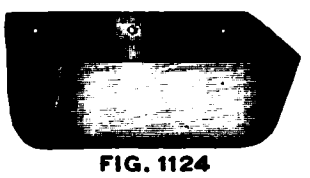


FIG. 1124

This bucket is stamped and pressed from one piece of steel. All corners round. Stock sizes named. No other sizes made.

DUC'S STEEL ELEVATOR BUCKET



FIG. 1125

PRICES, FIG. 1125

MILL BUCKETS

On belt, width. In.	Proj'n, broad. In.	Deep. In.	Capacity in Cu. In.	20 Gau. steel. Ea.
3½	2⅝	2¾	11¾	$0 15
4	2¾	3	13¾	18
4½	2⅞	3	17½	20
5	3¼	3⅛	24½	23
5½	3⅝	3⅛	28	25
6	4⅛	3⅝	46	30
7	4⅝	4⅛	65	38
8	5⅛	4¾	104	40
9	5¾	4⅞	131	50
10	6⅛	5⅛	158	60

PRICES

STORE HOUSE BUCKETS

On belt, Proj. width. In.	Proj. In.	Deep. In.	Cap. in Cu. In.	Cap. in Dry Meas. Qts.	16 Gau. steel Each.
12	6⅛	5⅛	216	3¼	$1 00
14	6⅛	6⅛	282	4¼	1 25
16	6¾	6⅛	395	6	1 50
17	7	6¾	436	6½	1 75

PRICES—ORE BUCKET

On belt, width. In.	Proj'n, broad. In.	Deep. In.	Capacity in Cu. In.	16 Gauge steel. Ea.
4	2⅝	3	13¾	$0 37½
4½	2⅞	3	17½	42
5	3¼	3⅛	24½	47
5½	3⅝	3⅛	28	50
6	4⅛	3⅝	46	55
7	4⅝	4⅛	65	65
8	5⅛	4¾	104	70
9	5¾	4⅞	131	78
10	6⅛	5⅛	158	85

CENTURY STEEL RIVETED BUCKETS

REGULAR TYPE

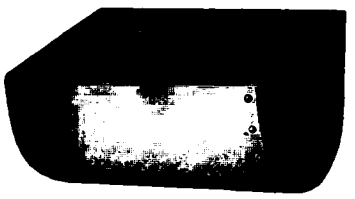


FIG. 1126

LOW FRONT TYPE

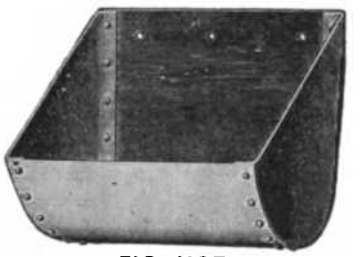


FIG. 1127

PRICES, FIGS. 1126 AND 1127

Size of Bucket Width on Belt. Inches.		Projection. Inches.	Reg. Type. Capacity elevating bu. per hr., speed 200 feet per min. Bucket every 12 inches.	16 Gauge. Each.	14 Gauge. Each.	12 Gauge. Each.	10 Gauge. Each.
6	x	4	275	$0 41	$0 46	$0 56	
8	x	4	365	47	54	64	
10	x	4	460	55	62	74	
7	x	4½	500	49	54	67	$0 82
12	x	4½	856	67	73	87	1 09
8	x	5	670	59	66	78	98
10	x	5	839	67	74	87	1 14
12	x	5	1,000	73	80	99	1 26
9	x	5½	875	71	81	99	1 24
12	x	5½	1,170	83	96	1 14	1 44
10	x	6	1,220	81	90	1 14	1 41
12	x	6	1,465	89	98	1 26	1 55
16	x	6	1,950	1 05	1 15	1 50	1 85
18	x	6	2,195	1 13	1 25	1 61	2 01
24	x	6	2,930	1 37	1 55	1 98	2 49
12	x	7	1,910	1 09	1 20	1 50	1 89
18	x	7	2,865	1 33	1 50	1 92	2 41
24	x	7	3,815	1 57	1 76	2 34	3 01
12	x	8	2,390	1 21	1 45	1 80	2 30
16	x	8	3,185	1 41	1 69	2 12	2 70
20	x	8	3,980	1 61	1 93	2 44	3 10
24	x	8	4,780	1 81	2 17	2 76	3 50

Prices on intermediate sizes not listed, or upon larger sizes, will be given upon application.

STONE AND ORE STEEL ELEVATOR BUCKET

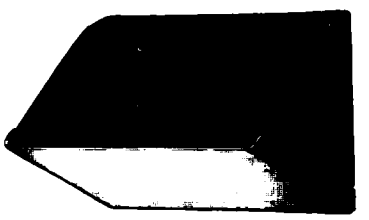


FIG. 1128

PRICES, FIG. 1128

Width Across the Belt, in Inches.		Projection from the Belt, in Inches.		Length with the Belt, in Inches.	18 Gauge, Each.	16 Gauge, Each.	14 Gauge, Each.	12 Gauge, Each.	10 Gauge, Each.
5	x	3	x	4	$0 20	$0 23	$0 28	$0 33	
6	x	3½	x	4½	22	25	30	33	
7	x	4	x	5	29	32	36	40	
8	x	4½	x	6	30	34	38	44	$0 53
9	x	5	x	7	....	36	40	46	55
10	x	5	x	8	....	40	45	50	58
11	x	5½	x	9	....	45	52	60	67
12	x	6	x	9½	....	50	58	66	72
13	x	6½	x	10	....	55	62	72	80
14	x	7	x	11	....	....	75	83	95
15	x	7	x	11½	....	....	80	90	1 00
16	x	7½	x	12	....	....	93	1 00	1 10
17	x	7½	x	13	....	....	1 00	1 10	1 25
18	x	8	x	12	....	....	1 12	1 25	1 38
20	x	8	x	12½	....	....	1 20	1 32	1 45
22	x	8½	x	13	....	....	1 32	1 45	1 55
24	x	9	x	14	....	....	1 45	1 60	1 75

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FUSIBLE PLUGS



FIG. 1129

PRICES

Size, Inches.	⅜	½	¾	1	1¼
Each.....	30c.	35c.	50c.	75c.	$1.00

ATLAS TUBE EXPANDERS

RATCHET TYPE

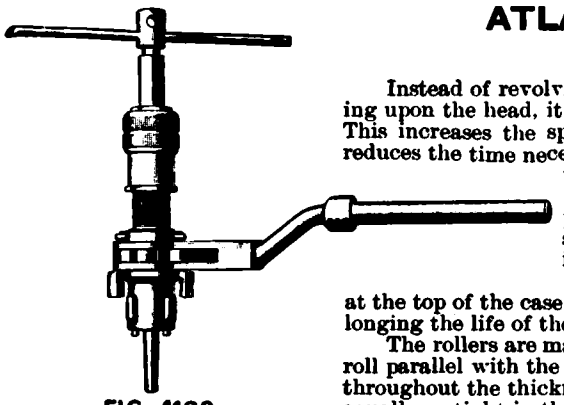


FIG. 1130

Instead of revolving the taper pin and feeding it by continued hammering upon the head, it revolves the entire roller case with the ratchet lever. This increases the speed of the expander about three times, and likewise reduces the time necessary to expand the tube to one-third the time consumed with the regular expander.

Applying the power to the case instead of the taper pin also facilitates rolling imperfect interior tube surfaces, such as lumps or rough welds, etc., and eliminates the jerking motion.

The taper pin is fed with the screw feed nut shown at the top of the case, thus avoiding all hammering upon the pin and prolonging the life of the tool to a great degree.

The rollers are made with the proper taper to bring the surface of the roll parallel with the interior surface of the tube. This insures a good joint throughout the thickness of the head and expands the tube against the head equally as tight in the rear as in the front of the sheet.

At the bottom of the feed nut a thin hexagon nut is shown which acts as a depth gauge. This is advantageous where a number of tubes are to be expanded, for with this gauge nut the operator can feed the taper pin to the same depth for each tube, thus obtaining uniformity.

PRICES

Size, Inches.		Size, Inches.	
1½ to 1¾	$30 00	2¼ to 2¾	$50 00
1¾ " 2	35 00	2¾ " 3¼	65 00
2 " 2¼	40 00		

FERRULES FOR LEAKY BOILER TUBES

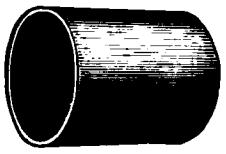


FIG. 1131

PRICES

Outside Diameter of Tube, Inches.	1¼	1½	1¾	2	2¼	2½	2¾	3
Each.	$0 20	$0 20	$0 20	$0 20	$0 25	$0 30	$0 35	$0 40
Outside Diameter of Tube, Inches.	3¼	3½	4	4½	5	6	....	....
Each.	$0 45	$0 50	$0 60	$0 80	$0 80	$1 10	....	....

When ordering ferrules, give outside diameter of tube for which they are required.

SPRING TUBE EXPANDER

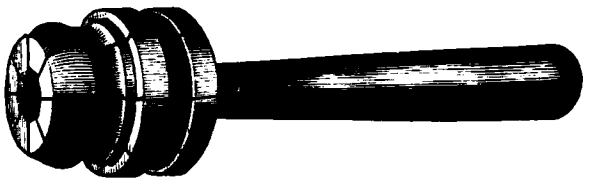


FIG. 1132

PRICES

Outside Diameter of Tube, Inches.	1	1¼	1½	1¾	2	2¼	2½	2¾
Each.	$8 00	$8 00	$9 00	$11 00	$12 00	$13 00	$15 00	$18 00
Outside Diameter of Tube, Inches.	3	3¼	3½	4	4½	5	6	....
Each.	$22 00	$26 00	$30 00	$33 00	$37 00	$42 00	$60 00	....

When ordering expanders, state thickness of tube sheet for which they are required.

GUIDE RING TUBE EXPANDER

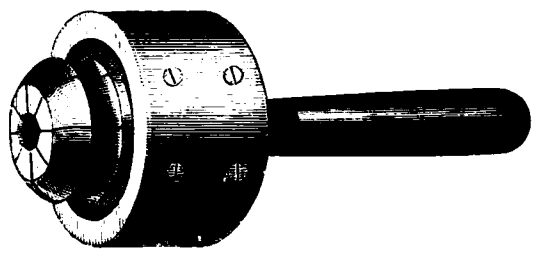


FIG. 1135

PRICES

Outside Diameter of Tube, Inches.	1¼	1½	1¾	2	2¼	2½	2¾	3
Each.	$11 00	$12 00	$13 00	$15 00	$18 00	$22 00	$26 00	$30 00
Outside Diameter of Tube, Inches.	3¼	3½	4	4½	5	6	....	....
Each.	$33 00	$37 00	$45 00	$52 00	$56 00	$75 00	....	....

ATLAS TUBE EXPANDERS

PLAIN TYPE

It will be noticed that with the exception of the ratchet lever attached to the case the plain tool is in all respects the same as the "Ratchet Type" shown on Fig. 1130.

In these heavier sizes the taper pin is revolved instead of the case, which reduces the speed and correspondingly increases the power, while at the same time lessens the weight.

The feed mechanism is exactly the same, but the scope of the tool is much wider.

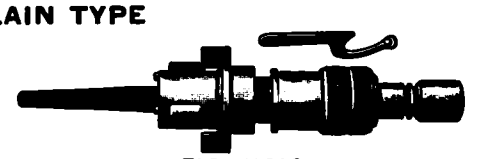


FIG. 1131A

PRICES

Size, Inches.	
3¼ to 4	$85 00
4 " 5	120 00
5 " 6	150 00

PHOENIX TUBE EXPANDERS

RATCHET TYPE



FIG. 1133

To suit special conditions and narrow limits of working space.

The tool can be operated easily in a 27 inch drum, and by making only a partial circumference with the ratchet lever it can be used in even a still smaller space.

PRICE

Size 1 inch..... $45 00

PHOENIX TUBE EXPANDERS

GEARED TYPE

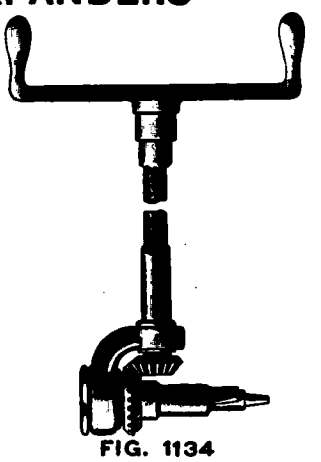


FIG. 1134

For very small working spaces where the operator is obliged to work outside the shell, we offer the above tool as a very excellent device.

The feed and roller mechanism is the same as in the "ratchet type" Fig. 1130, but the roller case in this type is driven by a bevel pinion on the taper pin and a shaft passing through a pipe support.

Revolving the case instead of the pin secures all the advantages of the Atlas Expander in relation to speed, and makes this tool faster than the regular pin driven tools.

Mention length of shaft desired in ordering.

PRICE

Size 1 inch..... $96 00

DUDGEON ROLLER TUBE EXPANDER

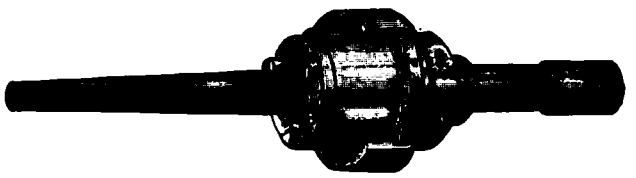


FIG. 1136

PRICES

Size, Inches.	Each.	Size, Inches.	Each.
1	$20 00	3	$55 00
1¼	20 00	3¼	60 00
1½	20 00	3½	70 00
1¾	25 00	4	85 00
1⅞	25 00	4½	100 00
2	30 00	5	120 00
2¼	35 00	6	130 00
2½	42 00	7	180 00
2¾	48 00		

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IMPROVED TYPE ROLLER TUBE EXPANDER

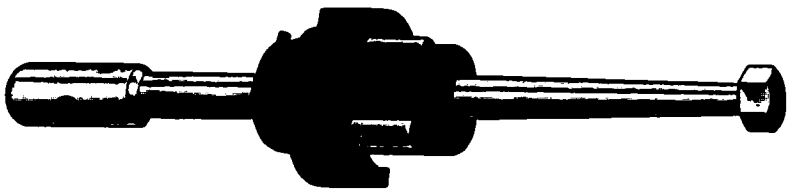


FIG. 1137

Diameters, inches	1	1¼	1½	1¾	1⅞	2	2¼	2½	2¾
Price	$10 00	$10 00	$10 00	$10 00	$10 00	$10 00	$12 00	$14 00	$16 00
Diameters, inches	3	3¼	3½	3¾	4	4¼	4½	5	6
Price	$18 00	$20 00	$23 00	$25 00	$30 00	$35 00	$40 00	$50 00	$60 00

DUDGEON'S IMPROVED TUBE EXPANDER

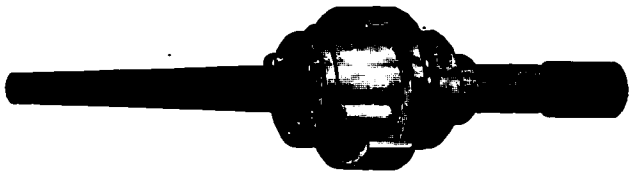


FIG. 1139

This tool will expand two sizes, up to two inches, and three sizes above, as shown on list.

Inches.		Inches.	
1⅝ and 1¾	$20 00	3½, 3⅝ and 3¾	$70 00
1¾ " 1⅞	20 00	3¾, 3⅞ " 4	75 00
1⅞ " 2	25 00	4, 4⅛ " 4¼	80 00
2, 2⅛ and 2¼	30 00	4¼, 4⅜ " 4½	85 00
2¼, 2⅜ " 2½	36 00	4½, 4⅝ " 4¾	85 00
2½, 2⅝ " 2¾	39 00	4¾, 4⅞ " 5	90 00
2¾, 2⅞ " 3	45 00	5, 5¼ " 5½	100 00
3, 3⅛ " 3¼	52 00	5½, 5¾ " 6	105 00
3¼, 3⅜ " 3½	60 00	6, 6¼ " 6½	115 00

Larger sizes made to order.

TUBE CUTTER

FOR CUTTING TUBES TO LENGTH, AFTER EXPANDING THEM IN THE BOILER AT ONE END

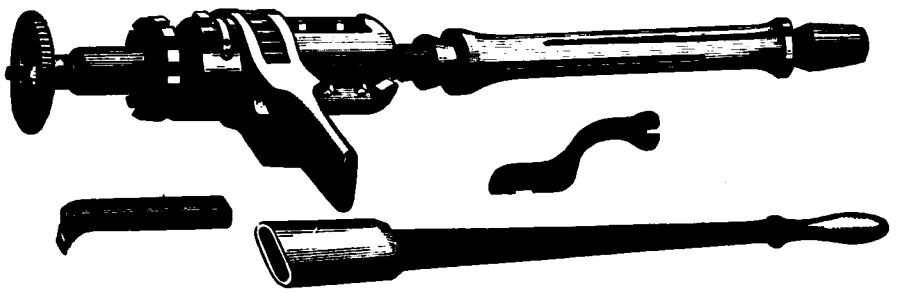


FIG. 1142

No. 1, to cut—2, 2¼, 2½, 3, 3½, 4, 4½ inch tubes $70 00
No. 2, to cut—1¾, 2, 2¼ inch tubes 40 00

FERGUSON SELF-FEED ROLLER TUBE EXPANDER

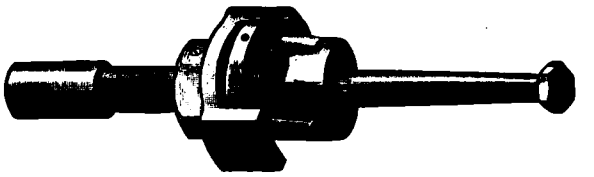


FIG. 1138

This expander can be used in close spaces, such as headers of boilers where there is not sufficient room to drive mandrel. Can be made with either right or left hand feed.

Diameters, inches	1½	1¾	1⅞	2	2¼	2½	2¾	3
Prices	$12 00	$14 00	$15 00	$16 00	$18 00	$20 00	$23 00	$26 00
Diameters, inches	3¼	3½	3¾	4	4¼	4½	5	6
Prices	$29 00	$32 00	$35 00	$38 00	$41 00	$44 00	$50 00	$60 00

COLLINS SELF-FEED TUBE EXPANDER



FIG. 1140

Outside Diameters of Tubes. Inches.		Outside Diameters of Tubes. Inches.	
1¼	$12 00	2¾	$21 00
1½	12 00	3	22 00
1¾	14 00	3¼	24 00
1⅞	14 00	3½	28 00
2	15 00	3¾	30 00
2¼	18 00	4	35 00
2½	20 00		

LIGHTNING TUBE CUTTER

FOR QUICKLY REMOVING OLD BOILER TUBES

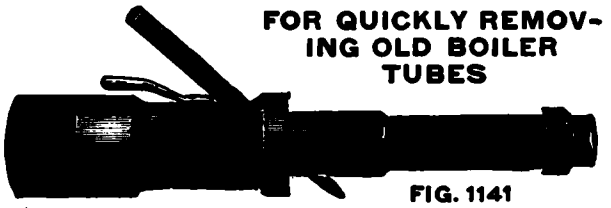


FIG. 1141

A single revolution of this tool cuts out the tube (one end) and leaves it scarfed, ready for welding.

No.	Size of Tube. Inches.	Prices. Each.	Smoke Box Extension, Extra.	No.	Size of Tube. Inches.	Prices. Each.	Smoke Box Extension, Extra.
1	1½	$10 00	$1 75	7	3	$16 00	$2 00
2	1¾	10 00	1 75	8	3¼	16 00	2 00
3	2	12 00	1 75	9	3½	18 00	2 25
4	2¼	12 00	1 75	10	3¾	18 00	2 25
5	2½	14 00	1 75	11	4	20 00	2 50
6	2¾	14 00	2 00				

HAYES TUBE SHEET CUTTERS

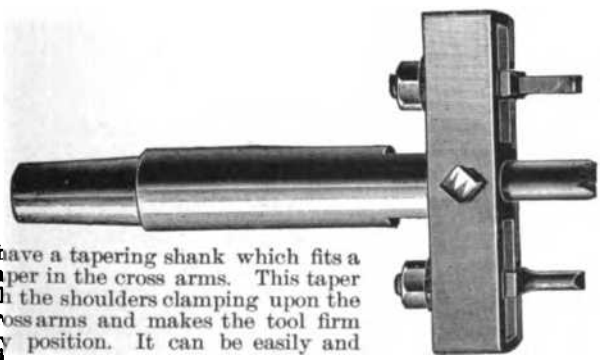


FIG. 1143

The knives have a tapering shank which fits a corresponding taper in the cross arms. This taper fits together with the shoulders clamping upon the bottom of the cross arms and makes the tool firm and rigid in any position. It can be easily and quickly adjusted.

PRICES

FIG. 1143 WILL CUT HOLES FROM 21-2 TO 6 INCHES IN DIAMETER—EACH, $30.00

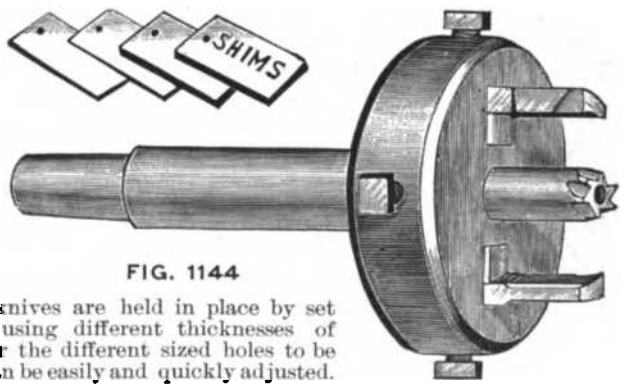


FIG. 1144

The knives are held in place by set screws, using different thicknesses of shims for the different sized holes to be cut. It can be easily and quickly adjusted.

PRICES

FIG. 1144 WILL CUT HOLES FROM 1 3-4 TO 21.4 INCHES IN DIAMETER—EACH, $24.00

Three pairs of shims furnished with each tool for cutting 1¾, 2, and 2¼ inch hole. The centers are best tool steel No. 1, ¾, and No. 2, ⅝ inches in diameter. It is fluted on the end. The main shank is purposely left large in order that it may be turned to fit any taper.

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VACUUM TUBE CLEANER

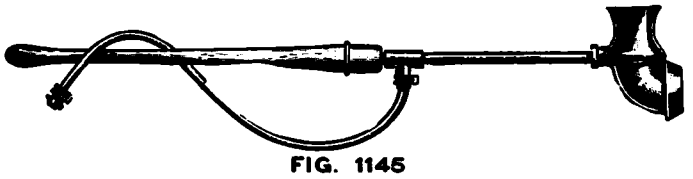


FIG. 1145

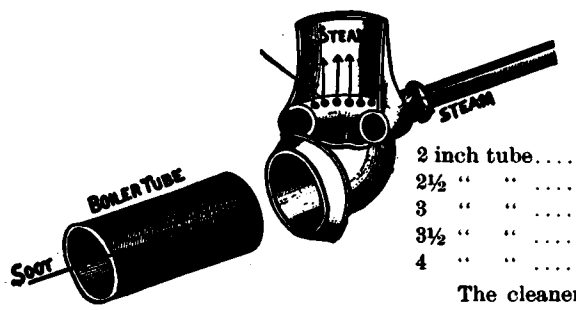


FIG. 1145
(Showing Interior of Nozzle)

DESCRIPTION AND PRICES, FIG. 1145

This cleaner is an ejector, cleaning boiler tubes without admitting steam into them, therefore forming no scale. By its use a vacuum is formed in the tube and the hot gases rush through with sufficient velocity to perfectly clean any tube. There is but a small amount of steam used, which is first superheated, by wire drawing through the small apertures, and then coming in contact with the hot gases within the combining chamber is thoroughly dried; therefore it is impossible for the soot to stick in the chimney or passages, but is discharged with great velocity up the chimney and into the atmosphere, thereby cleaning the chimney and flues leading to it. No soot is blown around the boiler room, or into the other tubes, but it is drawn out in the direction of the draft, leaving each tube perfectly clean.

2 inch tube	$10 00	4½ inch tube	$12 50
2½ " "	10 50	5 " "	13 00
3 " "	11 00	Handle and fittings	3 50
3½ " "	11 50	4 ply steam hose, ¾ inch per foot	67
4 " "	12 00	" " " 1 " "	88

The cleaner can be placed on the handle and fittings of any of the various blowers, or a straight piece of pipe, if desired.

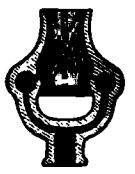
GRIMM'S INJECTOR BLOWER

SECTION VIEW OF NOZZLE

For Horizontal Boilers



FIG. 1146



For Upright Boilers

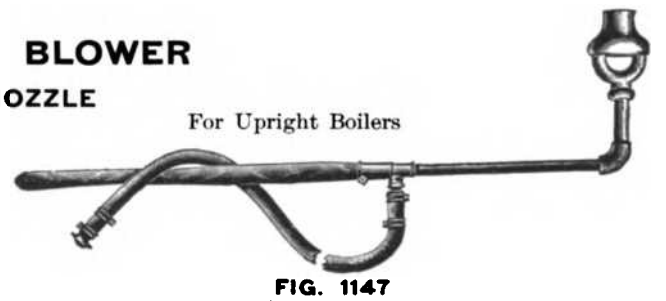


FIG. 1147

PRICES, FIGS. 1146 AND 1147

No. 0.	For 1 to 2 inch tubes, inclusive, without hose	$6 00 ;	with 8 foot hose and couplings $10 00
" 1.	" 2 " 3 " " " " "	6 00 ;	" " " " " 10 00
" 2.	" 3 " 4 " " " " "	8 00 ;	" " " " " 12 00
" 3.	" 4 " 5 " " " " "	10 00 ;	" " " " " 15 00

CYCLONE STEAM FLUE CLEANER

FOR UPRIGHT BOILERS

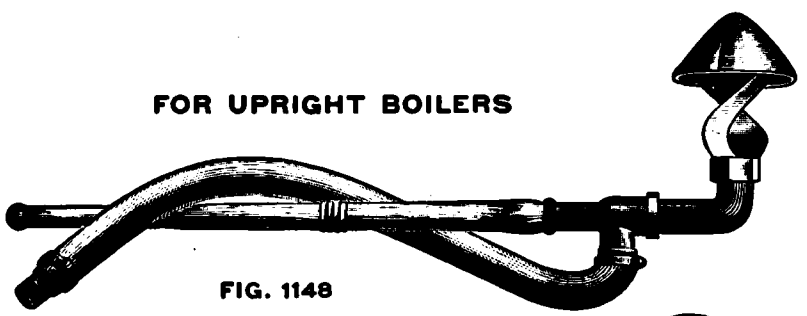


FIG. 1148

FOR HORIZONTAL BOILERS

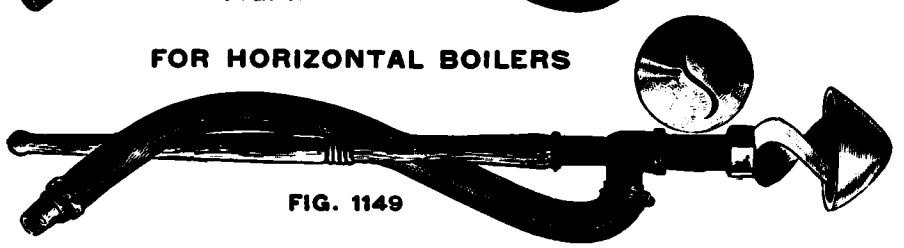


FIG. 1149

DIRECTIONS FOR USE

In making connections take steam from the dome of boiler, to get dry steam.

Connections should never be smaller than the pipe on the cleaner, and preferably larger.

Before using the cleaner, blow all condensed steam from the pipe and hose, and shut off the draft to prevent the soot from being sucked back in the flues.

PRICES, FIGS. 1148 AND 1149

Size Nos.	Cleans tubes "outside measurement."	Prices of Cleaners with Clamps and Couplings.	Prices of Cleaner Heads only.
0	¾ to 1¼ inches,	$7 50	$5 00
1	1¼ " 2¼ "	8 00	5 50
2	2½ " 3½ "	9 00	6 00
3	4 " 5 "	10 00	7 00
4	6 " 8 "	12 00	9 00
5	6 " 10 "	13 00	11 00
6	6 " 12 "	14 00	12 00
7	6 " 14 "	15 00	13 00
8	6 " 16 "	16 00	14 00

THE CORRECT STEAM FLUE CLEANER

DESCRIPTION AND PRICES, FIG. 1150

This cleaner is made of brass and malleable iron. Is perfectly automatic in its working, as it permits of the passage of steam through the head only when in use. After opening the steam connection at the boiler, the full force of the steam pressure is on the head of the cleaner and within two inches of the end of the flue when in position ready to use.

No. 1.	For 2, 2¼, 2½ and 2¾ inch flues inclusive	$10 00
" 2.	" 3, 3¼, 3½, 3¾ and 4 inch flues "	12 00
" 3.	" 5 and 6 inch flues inclusive	14 00

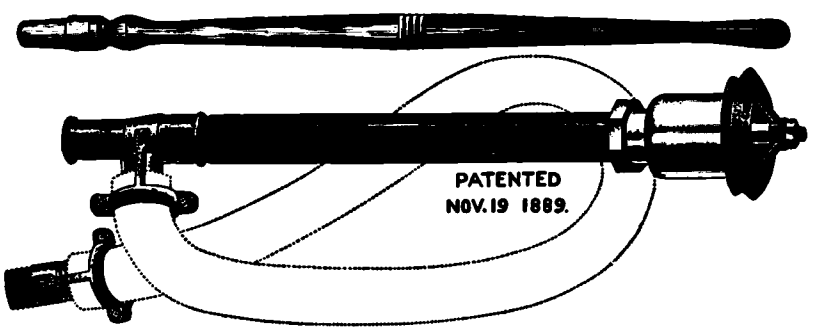


FIG. 1150

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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STEAM TUBE AND FLUE CLEANERS

WHIRLWIND

PRICES, FIG. 1151

For tubes from 1 to 2¼ inch.....$8 00
" " " 2¼ " 3¼ " 9 00
" " " 3¼ " 6 " 12 00

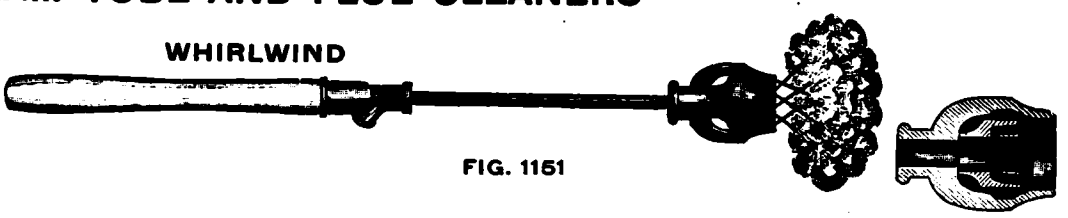


FIG. 1151

HURRICANE

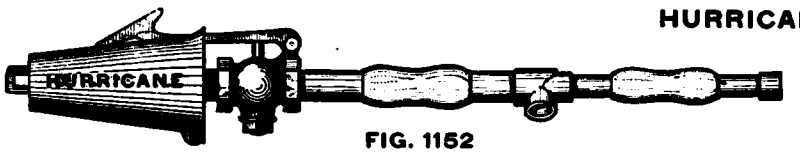


FIG. 1152

PRICES, FIG. 1152

No. 1, for 2 to 3 inch flues, with connection for ½ inch hose.....$7 00
" 2, " 3½ " 4 " " " " ¾ " 8 00

PRICES, FIG. 1153

No. 1, for 2 to 3 inch tubes.....$9 50
" 2, " 3 " 3½ " " 10 00
" 3, " 3½ " 5 " " 10 50

No extra charge is made for fitting up these Cleaners for Vertical Boilers.

When ordering for Vertical Boilers state the diameter of the Fire Box and the height of the tubes above the bottom of the Fire Box door.

STEAM TUBE CLEANER



FIG. 1153

THE FAVORITE STEAM FLUE BLOWER



FIG. 1154

PRICES, FIG. 1154

Number of Blower.	Size of Tubes, Outside Diameters.	Price, with Clamps and Nipple.
0	1¼ to 1¾	$5 00
1	2 " 2¼	5 00
2	2½ " 2¾	6 25
3	3 " 3¼	7 50
4	3½ " 3¾	8 75
5	4 " 4½	10 00
6	5 " 6	12 50

The above prices do not include hose and globe valves, which we can furnish of very best quality and at lowest market price.

STATIONARY AIR JET BOILER FLUE CLEANER



FIG. 1155

Handle can be used in either position.

With this cleaner the boiler flue is cleaned, not by steam pressure, but by the air injected by the vacuum created as the steam draws it into the flue. The air, being cold, expands as it enters the hot boiler flue, carrying all dust and scales with it.

It will clean one tube per second.

PRICE, EACH, $10.00

ADJUSTABLE HOT AIR INJECTOR BOILER FLUE CLEANER



FIG. 1156

With this cleaner the boiler flue is cleaned not by steam pressure but by the air injected by the vacuum created as the steam draws it into the flue. The air, being cold, expands as it enters the hot boiler flue, carrying all dust and scales with it. It will clean one tube per second.

The above cut explains the adjustability of steam outlet, so that the air pressure can be increased or diminished at will. Will clean any size tube from 1½ to 5 inches.

PRICE, EACH, $15.00

STEAM JET AIR BLOWER

ESPECIALLY ADAPTED FOR CREATING CIRCULATION, DRAFT UNDER BOILERS, AND PREVENTION OF SMOKE, ETC.—FOR PUMPING GASES, FOUL AIR VAPORS, FUMES

DESCRIPTION, FIG. 1157

It is operated by a jet of steam—and will promptly clear any room, cellar, inclosure, mine, pit, etc., of foul air, gases, fumes, vapors, etc., etc., in a most effective and satisfactory manner.

It is invaluable for creating a circulation of air, a draft under boiler, and for prevention of smoke. All that is necessary, after putting it in place, is to turn on the steam, and it begins its work, and keeps right on until steam is shut off.

This Steam Jet "Air Blower" and all the inside parts are of brass. It has no movable parts. All pipe connections are of standard gas-pipe thread and sizes.



FIG. 1157

PRICES FIG. 1157

Size of Pump.	Discharge Pipe.	Suction Pipe.	Steam Pipe.	Price, Complete.
No. 5, "Ex."	1½ inch	2 inch	⅜ inch	$13 00
" 6, "	2 "	2½ "	½ "	16 00
" 7, "	2½ "	3 "	½ "	20 00

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FURNACE BLOWER AND VENTILATOR

For boiler firing, ventilation and similar purposes where a low counter pressure or rarefaction meets the requirements.

When used as a blower, attachment is made to the bottom flange, and when used as a ventilator or exhauster, attachment is made to top flange, or it can be used as a blower and exhauster combined to accelerate flow of gas in a continuous pipe.



The machine can be placed vertically or horizontally.

When used for boiler firing it is generally placed vertical on an elbow attached to the side wall of boiler, or on top of a brick flue carried through the side wall from ash pit. The passage leading into the ash pit must always be from the side, front or back, as an inlet from bottom would blow a hole through the fire bed and prevent a proper distribution of the blast under the grate.

MANIPULATION

Regulate blast with side handle start and stop, by opening and closing a valve in steam pipe, full.

FIG. 1158

STEEL FLUE BRUSH

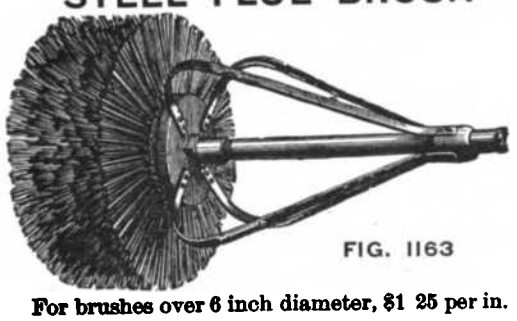


FIG. 1163

For brushes over 6 inch diameter, $1 25 per in.

PRICES FIG. 1158, AND TABLE OF CAPACITIES

Size Nos.	Prices of Blower.	Prices of Elbow	Capacity in Cubic Feet per Hour.	Diam. in Inches. Steam Pipe.	Inlet.	Discharge.	Maximum lbs. of Coal to be Burnt in Boiler per Hour for which Blower is Suitable.
00	$25 00	$3 00	8,000	⅜	4	3	40
0	30 00	4 00	16,000	½	5	4	80
1	40 00	6 00	30,000	½	8	6	150
1½	50 00	7 00	45,000	¾	9	7	225
2	60 00	8 00	60,000	¾	11	8	300
2½	70 00	9 00	90,000	¾	12	9	450
3	80 00	10 00	120,000	1	14	10	600
3½	90 00	12 00	180,000	1	16	12	900
4	100 00	15 00	240,000	1¼	18	14	1200
6	200 00	30 00	500,000	1½	24	18	2500
8	350 00	60 00	1,000,000	2	32	24	5000
10	600 00	90 00	2,000,000	2½	42	32	10000

The volumes given in the above table are under the supposition of 60 lbs. steam and an intermediate position of spindle and working against a counter-pressure of from ½ to 2 inches of water.

By an increase in steam pressure and a higher position of spindle both volumes and counter-pressure may be increased, or both may be decreased by the reverse.

It is of utmost importance that blower be of sufficient capacity when used for boiler firing; and it will be a failure to use a smaller size blower for burning the corresponding amount of coal, as given in the above list.

SPENCER STEEL FLUE BRUSH



FIG. 1162

Sizes, Inches..	1½	2	2¼	2½	2¾	3	3¼
Prices, each,	$2 00	2 00	2 25	2 50	2 75	3 00	3 25
Sizes, Inches..	3½	3¾	4	4½	5	5½	6
Prices, each,	$3 50	3 75	4 00	4 50	5 00	5 50	6 00

Above sizes are outside measurement of tube.

STEEL INTERNAL BOTTOM BOILER SCRAPER



FIG. 1159

Dia. Boiler, Inches...	28 to 30,	32 to 34,	36 to 38,	40 to 42,	44 to 46
Prices, each,	$4 00	4 50	5 00	5 50	6 00
Dia. Boiler, Inches:	48 to 50,	52 to 54,	60 to 62,	64 to 66	
Prices, each,	$7 00	8 00	9 00	10 00	

STEEL EXTERNAL BOILER FLUE SCRAPER

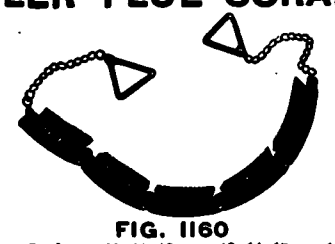


FIG. 1160

Dia. Flues, Inches:	10, 11, 12,	13, 14, 15,	16, 17, 18
Prices, each,	$3 00	3 50	4 00

FARLEY STEEL BRUSH

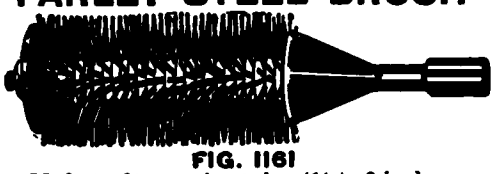


FIG. 1161

Made to fit any size tube, 1½ to 9 inches.
With leather washers, per inch diameter, $1 00
With metal washers, per inch diameter, 1 25
Brushes under two inches, same price as two inch.

STEEL WIRE, WHALEBONE AND RATTAN BRUSHES

PRICES, FIG. 1164

Steel wire, per in. dia.	$1 00
Whalebone, per in. dia.	75
Rattan, per inch dia..	30



FIG. 1164

WHALEBONE FLUE BRUSH

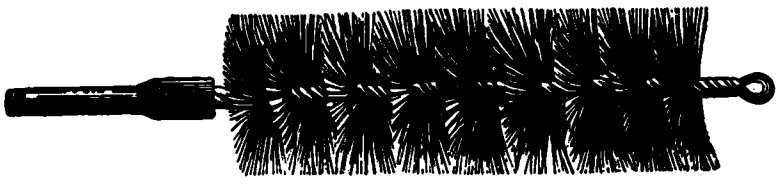


FIG. 1165

STEEL WIRE FLUE BRUSH



FIG. 1166

PRICES

Outside Diameter of Tubes, inches.....	1	1¼	1½	1¾	2	2¼	2½	2¾	3	3¼	3½	4	4½	5	5½	6	7
Whalebone brushes, Fig. 1165, each,	$0 75	0 75	0 75	0 80	0 90	1 00	1 00	1 25	1 40	1 50	1 75	2 00	2 25	2 25	2 75	3 00	3 50
Steel wire brushes, Fig. 1166, "	1 10	1 10	1 20	1 20	1 25	1 40	1 50	1 60	1 75	2 00	2 25	2 50	2 75	3 00	3 25	3 50	4 50

CHRISTOFFEL'S STEEL COIL BRUSH AND FLEXIBLE SCRAPER COMBINED



FIG. 1167

Sizes.....1 to 1¼	2	2¼	2½	2¾	3	3¼	3½	3¾	4 in.
Each, $1 00	1 10	1 20	1 30	1 40	1 50	1 65	1 75	1 90	2 00

Over 4 inches, 75 cents per inch. Outside measurement of tube.

CHRISTOFFEL'S ELLIPTIC SPRING STEEL AND ADJUSTABLE TUBE SCRAPER



FIG. 1168

Sizes.....1 to 2	2¼	2½	2¾	3	3¼	3½	3¾	4 in.
Each, $2 00	2 25	2 50	2 75	3 00	3 25	3 50	3 75	4 00

Over 4 inches, $1 25 per inch. Outside measurement of tube.

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FLUE AND TUBE CLEANERS AND SCRAPERS

PHOENIX BOILER FLUE CLEANER

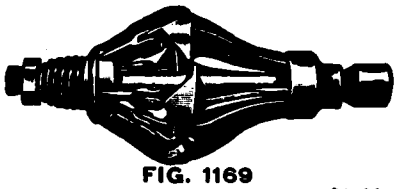


FIG. 1169

Price.....$1 00 per inch.

EXCELSIOR STEEL TUBE CLEANER



FIG. 1170

Price.....$1 00 per inch.

COGGESHALL SCRAPER

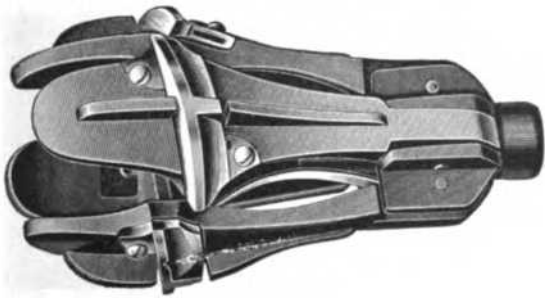


FIG. 1171

Price.....$1 25 per diameter inch.

PRATT'S PATENT ELASTIC BOILER TUBE SCRAPER

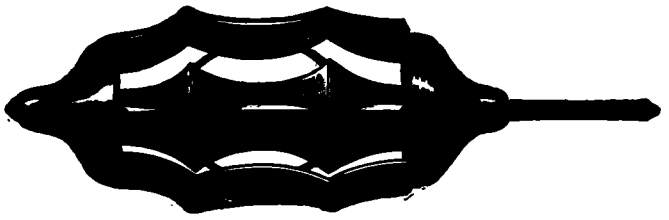


FIG. 1172

The sizes begin at 1½ inches and run by quarter inches up to 4 inches.

Price, per inch.....$1 00

COMBINATION SCRAPER AND WIRE BRUSH

DESCRIPTION, FIG. 1173

It has covered spiral spring, thus protecting it from the influence of heat and dirt; a movable nut on the end of scraper rod, so that the tension of spring may be readily and instantly changed. It is self-centering, and in consequence of tapering from each end toward the center it never catches on the rear end of the tubes. Cleans while passing both ways in the tubes. With the wire brush attached, it will leave the tubes as clean as when new.

Sizes, 1½ to 6 inches. Price.....$1 25 per inch.

SCRAPERS WITHOUT BRUSH

Sizes, 1½ to 6 inches. Price.....$1 00 per inch.

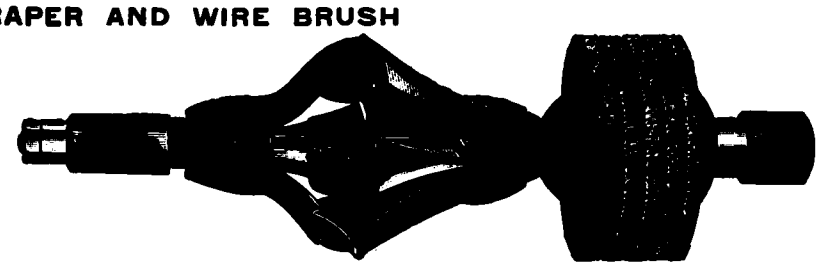


FIG. 1173

ENGINEERS' FAVORITE FLUE SCRAPER

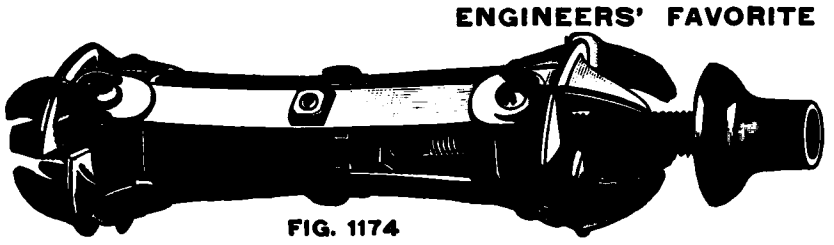


FIG. 1174

PRICES, FIG. 1174

	Each.		Each.		Each.		Each.
1½ in....	$2 00	2¼ in....	$2 25	3 in....	$3 00	3¾ in....	$3 75
1¾ "	2 00	2½ "	2 50	3¼ "	3 25	4 "	4 00
2 "	2 00	2¾ "	2 75	3½ "	3 50	4½ "	5 00
		5 "	6 25	6 "	7 50		

Scrapers are made to fit boiler tubes having outside diameter of sizes given.

DUPLEX BOILER TUBE SCRAPER

PRICES, FIG. 1175

	Each.		Each.
1½, 1¾, 2 inches	$2 00	3½ inches	$3 50
2¼ inches	2 25	3¾ "	3 75
2½ "	2 50	4 "	4 00
2¾ "	2 75	4½ "	5 00
3 "	3 00	5 "	6 25
3¼ "	3 25	6 "	7 50

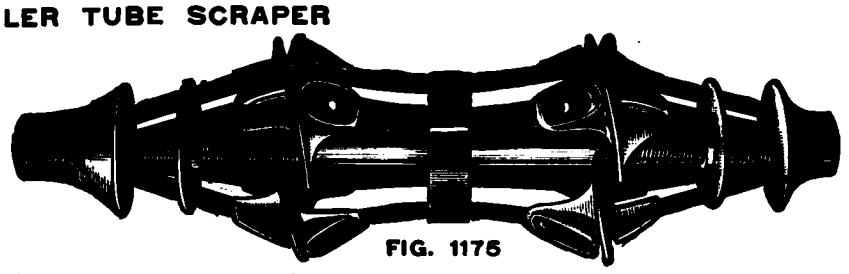


FIG. 1175

THE KING ADJUSTABLE FLUE SCRAPER

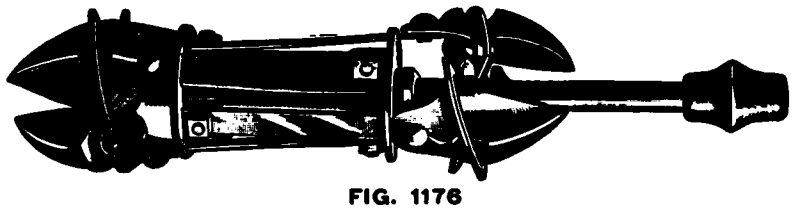


FIG. 1176

PRICES, FIG. 1176

Steel (not malleable iron) Scraping Knives.

1½ inches	$2 00	3 inches	$3 00
1¾ "	2 00	3¼ "	3 25
2 "	2 00	3½ "	3 50
2¼ "	2 25	3¾ "	3 75
2½ "	2 50	4 "	4 00
2¾ "	2 75	4½ "	5 00
5 inches	$6 25	6 inches	$7 50

Scrapers are made to fit boiler tubes having outside diameter of sizes given.

THE ESSEX ADJUSTABLE FLUE SCRAPER

PRICES, FIG. 1177

Malleable iron (not steel) Scraping Knives.

1½ inches	$2 00	3 inches	$3 00
1¾ "	2 00	3¼ "	3 25
2 "	2 00	3½ "	3 50
2¼ "	2 25	3¾ "	3 75
2½ "	2 50	4 "	4 00
2¾ "	2 75	4½ "	5 00
5 inches	$6 25	6 inches	$7 50

Scrapers are made to fit boiler tubes having outside diameter of sizes given.

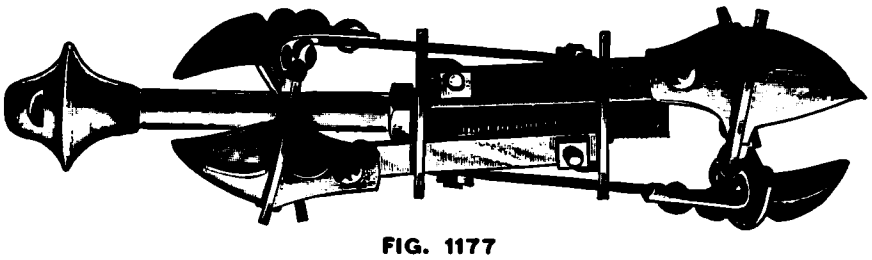


FIG. 1177

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FLUE AND TUBE CLEANERS AND SCRAPERS

NATIONAL STEEL TUBE CLEANER

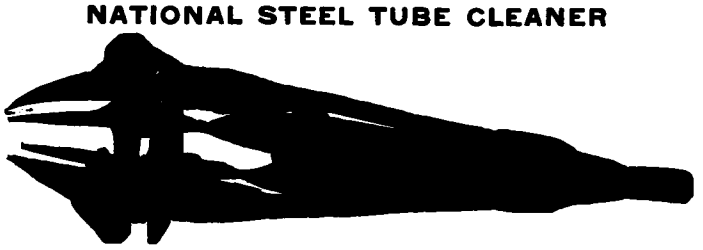


FIG. 1178

All the working parts are of steel.

Inches.	Prices.	Inches.	Prices.	Inches.	Prices.	Inches.	Prices.
1½	$2 00	2¾	$2 75	4	$4 00	6	$7 50
1¾	2 00	3	3 00	4½	4 50	7	18 75
2	2 00	3¼	3 25	5	5 00	8	21 25
2¼	2 25	3½	3 50	5½	5 50	10	23 75
2½	2 50						

DETROIT TUBE CLEANER



FIG. 1180

Adjusted by turning the handle to the right or left. Should the operator strike a welded tube, he can, by simply turning the handle, contract the scraper blades so as to pass. In using steam, attach blow pipe to thread. It can be used with or without steam. To use it as a blower, attach it to the blow-pipe on the hose.

Price, $1 per inch, from 2 to 4 inch diam. Less than 2 in., $2. Extra sizes made to order.

SELF EXPANDING AND CONTRACTING TUBE CLEANER



FIG. 1182

PRICES, EACH

Sizes, Inches,	2	2¼	2½	2¾	3	3¼	3½	4	4½	5	5½	6
Prices,	$2 00	$2 25	$2 50	$2 75	$3 00	$3 25	$3 50	$4 00	$5 00	$5 50	$6 00	$6 50
Ram, extra.				50	50	50	50	50	75	75	75	75

WEINLAND WATER POWER BALL BEARING TUBE CLEANER

The cut shows the water power cleaner ready for use. It can be operated with water, requiring a pressure of at least 70 lbs., which is sufficient in thin scale, but it is amply strong to stand the heaviest pressure. The water power cleaner can be connected to water supply by means of ordinary hose and suitable couplings attached to the threaded end of the machine. When ready for use the cleaner is inserted in the tube to be cleaned and the water turned on, its force being applied directly to buckets arranged on the plan of a turbine water wheel, which causes the machine to revolve at a very high speed and with such force that the cutters shatter and loosen the scale. The water escapes through the buckets and flows on through the tube carrying the loosened scale with it. We provide two sets of steel balls with suitable bearings at both ends of the revolving parts of the cleaner, so that it is amply supported and the friction reduced to a minimum. Provision is made for taking up any wear or lost motion, and adjustment quickly made without taking the machine apart. It is made from brass and steel, all wearing parts thoroughly hardened and interchangeable. We can furnish this machine for straight or curved tubes of the Stirling type, 2¾, 3, 3½ and 4 inches in diameter.

PRICES

2½ and 3 inch cleaner with 3 dozen extra cutters and 1 set of pins.....$45 00
3½ and 4 inch cleaner with 3 dozen extra cutters and 1 set of pins..... 50 00
2½ and 3 inch cleaner with 6 dozen extra cutters and 1 dozen pins, extra cone bearings and set of arms..... 70 00
3½ and 4 inch cleaner with 6 dozen extra cutters and 1 dozen pins, extra cone bearings and set of arms..... 75 00

TURBINE WATER TUBE BOILER CLEANER

The machine is attached to the end of a strong wire bound hose and driven by a water or air pressure of 80 to 125 pounds. This pressure causes the motor to revolve with great speed and force and supplies an ample and convenient power sufficient for the severest work. The turbine parts are of brass, mounted on ball-bearings to reduce friction to a minimum. It is equally adapted to straight or bent tube boilers. It can be taken to the top of a bent tube and sent clear through to the bottom.

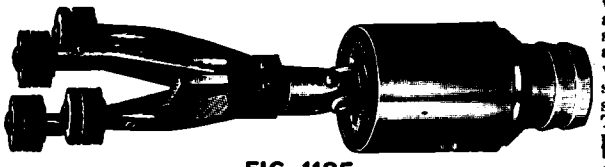


FIG. 1185

PRICES

No. 2. For 2 and 2¼ inch tubes....$75 00
No. 3. For 3 and 3¼ inch tubes.... 90 00
No. 3½. For 3½ inch tubes....$100 00
No. 4. For 4 inch tubes.... 100 00

THE SPIRAL FLUE SCRAPER

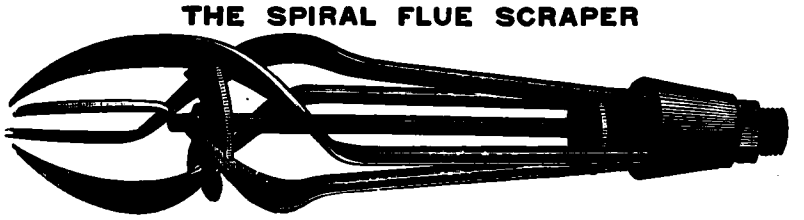


FIG. 1179

Prices are governed by outside measurement of tubes.

Inches.	Prices.	Inches.	Prices.	Inches.	Prices.	Inches.	Prices.	Inches.	Prices.
1½	$2 00	2¼	$2 25	3	$3 00	3¾	$3 75	5	$5 00
1¾	2 00	2½	2 50	3¼	3 25	4	4 00	6	6 00
2	2 00	2¾	2 75	3½	3 50	4½	4 50		

GILMORE TUBE SCRAPER

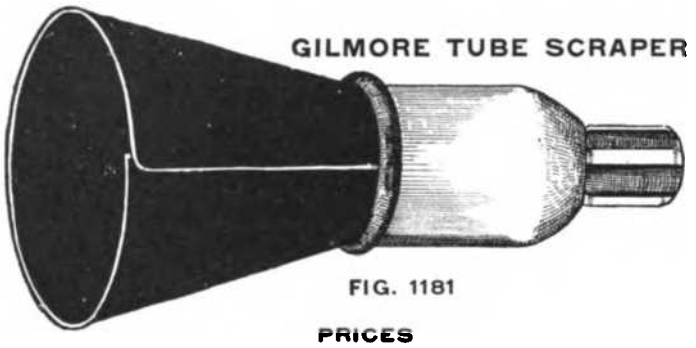


FIG. 1181

PRICES

Inches.	Prices.	Inches.	Prices.	Inches.	Prices.	Inches.	Prices.	Inches.	Prices.
1½	$1 50	2¼	$2 25	3	$3 00	4½	$4 50	7	$7 00
1¾	1 75	2½	2 50	3½	3 50	5	5 00	8	8 00
2	2 00	2¾	2 75	4	4 00	6	6 00	9	9 00

FOUR PRONG TUBE CLEANER

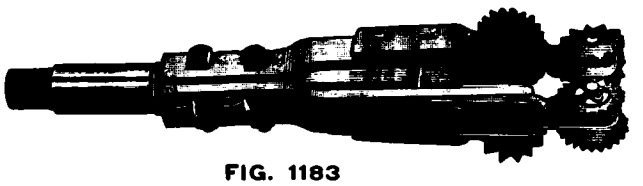


FIG. 1183

The sharp-toothed hard steel cutters are attached to strong, stiff steel springs for straight tubes only, from 1 inch to 6 inches. Each, $12.00.

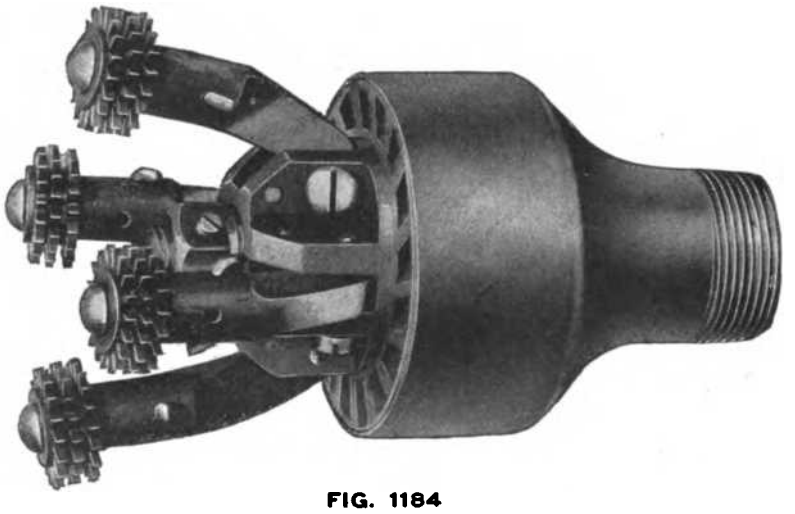


FIG. 1184

NIAGARA WATER TUBE BOILER CLEANER

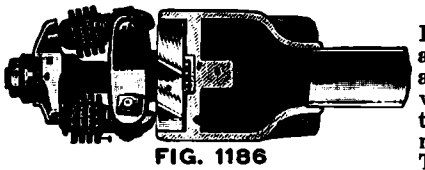


FIG. 1186

Can be used on Babcock-Wilcox, Heine, Zell, Standard, Root, Wood and Stirling Boilers. Can be operated by steam or water power—water being preferable for water tube boilers. Cutters and arms made of best drop forge tool steel. The cut shows a sectional view of the Niagara Tube Cleaner. It consists of very few parts, all of which are made interchangeable, and repairs for same can be furnished at a very low cost. No accessories are needed, except a piece of steam hose which is connected direct to cleaner, a set of clamps for this purpose being furnished with each machine. Price including one extra head and five extra sets cutters and arms, $75.00.

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TOOLS FOR BRASS PIPE

TAPS, BRASS THREAD

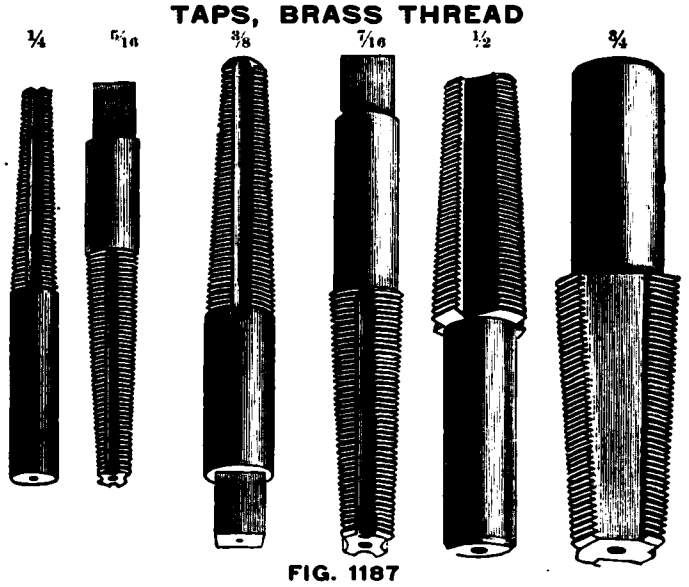


FIG. 1187

¼	5/16	⅜	7/16	½	¾	⅞
$1 00	$1 00	$1 00	$1 25	$1 25	$1 50	$1 75

LIGHTNING SCREW PLATE FOR BRASS PIPE AND TUBING

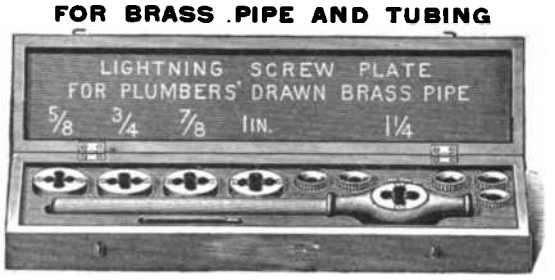


FIG. 1188

FOR DRAWN BRASS PIPE

No.	Stock length. Inches.	Cutting.	Prices Complete. In Case.	Stocks. Each.	Dies. Each.	Guides. Each.
265	35	5/8 20 ¾ 20 ⅞ 18 1 18 1¼ 18	$12 25	$3 50	$1 50	$0 25
FOR BRAZED BRASS TUBING						
267	35	¼ 5/16 ⅜ 7/16 ½ 5/8 ¾ All 27 Threads.	$15 75	3 50	1 50	25
268	35	¼ 5/16 ⅜ 7/16 ½ 5/8 ¾ ⅞ 1 All 27 Threads.	19 25	3 50	1 50	25
269	35	½ 5/8 ¾ ⅞ 1 All 27 Threads.	12 25	3 50	1 50	25

Will be sent right hand unless otherwise ordered. Left hand, same price.

BRASS PIPE SCROLL DIE STOCK

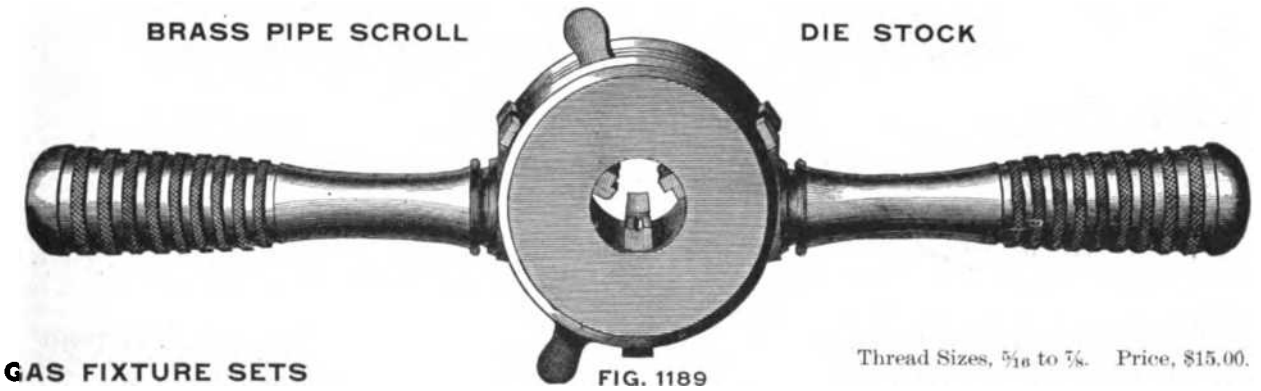


FIG. 1189

Thread Sizes, 5/16 to ⅞. Price, $15.00.

GAS FIXTURE SETS

FOR BRASS WORK.—IN HARDWOOD CASES

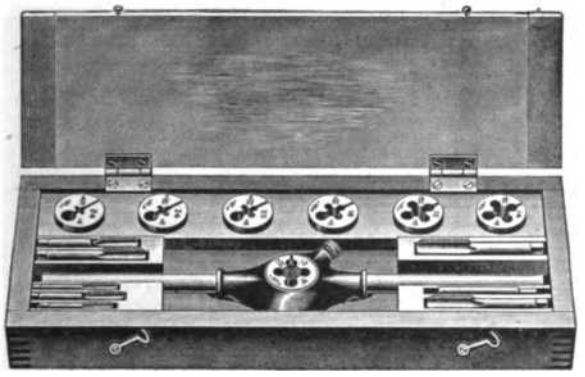


FIG. 1190

No.	Stock L'gth. Inches.	Diam. Die. Inches.	Cutting. All 27 Threads.	Price Comp. in case.
Set L	17	1½	⅛ 3/16 ¼ 5/16 ⅜ 7/16 ½	$14 75
Set M	23	2	⅜ 7/16 ½ 5/8 ¾	16 00
Set N	29	2½	½ 5/8 ¾ ⅞ 1	22 00

POLISHED TUBING VISE



FIG. 1194

PRICE, FIG. 1194

Holding ¼, ⅜, ½, ¾ and 1 inch $13 00

ADJUSTABLE BRASS STOCK AND DIES

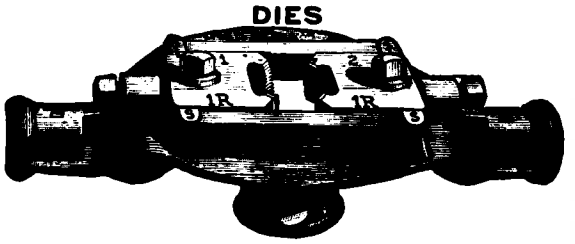


FIG. 1191

PRICES

5 brass dies, ⅝, ¾, ⅞, 1 and 1¼ inch.....$15 00
5 " " and taps, ⅝, ¾, ⅞, 1 and 1¼ inch. 26 25

PRICES OF PARTS

Stock.....each, $4 00
Brass dies, right or left, ⅝ to 1¼ inch.. " 2 00
Bushings—pipe, bowl or brass..... " 25

VISE FOR HOLDING FINISHED BRASS AND NICKEL PLATED PIPE

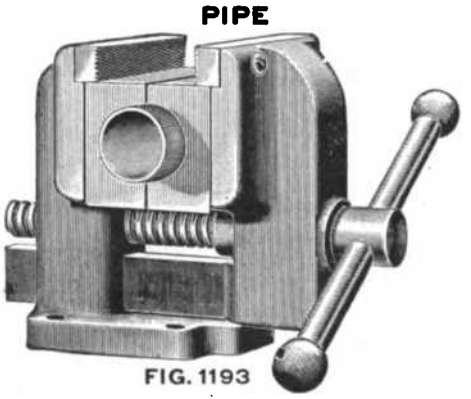


FIG. 1193

No. 1 vise holds ¼ to 1 in. brass pipe, vise only, $10 00
One pair of any one size of brass pipe clamp jaw, 1 50

BRASS AND IRON PIPE VISE

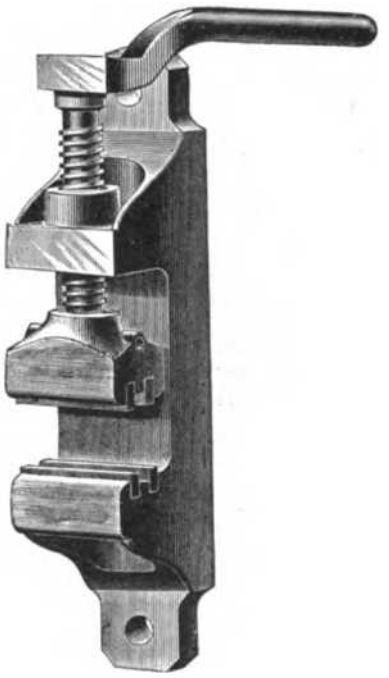


FIG. 1192

No. 1 holds from ⅛ to ½ inch pipe.....Price, $5 00
" 2 holds from ⅛ to 1 inch pipe..... " 6 50
" 3 holds from ¾ to 2 inch pipe..... " 10 00

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TOOLS FOR BRASS, IRON, AND STEEL PIPE

BRASS PIPE JAWS



FIG. 1195

This shows brass pipe jaws attached to hinged vise.

PRICES, FIG. 1195

⅝, ¾ or ⅞ O. Dia. pipe / ⅛, ¼ or ⅜ I. P. size "	$0 75
1, 1⅛ or 1¼ O. Dia. "	1 00
1⅜, 1½ or 1⅝ O. Dia. " / ½, ¾ or 1 I. P. size "	1 25
1¾, 1⅞ or 2 O. Dia. "	1 50
2⅛, 2¼ or 2⅜ O. Dia. " / 1¼, 1½ or 2 I. P. size "	1 75

BRASS PIPE CLAMP



FIG. 1196

This clamp is for holding brass, nickel-plated, and finished pipe. Can be used in any vise. These clamps are made of steel, with milled joints, and are tempered in oil.

PRICES, FIG. 1196

For I. P. Sizes. No.	Holds, Inches.	Price.	For Fine Thread Tubing. No.	Holds, Inches.	Price.
1	⅜	$1 50	1	⅝	$1 50
2	½	1 50	3	¾	1 50
5	¾	2 00	4	⅞	1 50
6	1	2 25	5	1	2 00
7	1¼	2 50	6	1¼	2 25
8	1½	3 00			
9	2	3 50			

HAYDEN PIPE WRENCH FOR BRASS AND NICKEL PIPE

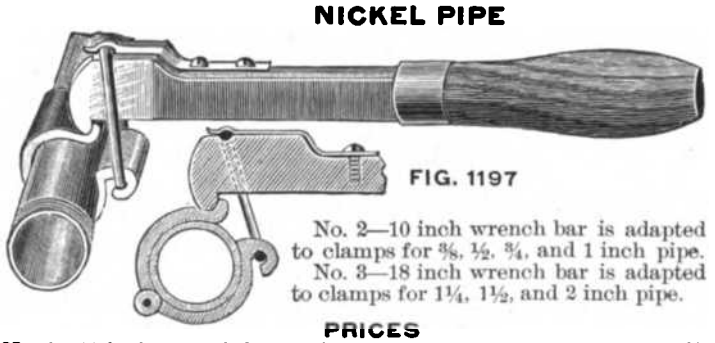


FIG. 1197

No. 2—10 inch wrench bar is adapted to clamps for ⅜, ½, ¾, and 1 inch pipe.
No. 3—18 inch wrench bar is adapted to clamps for 1¼, 1½, and 2 inch pipe.

PRICES

No. 2—10 inch wrench bar (only)	$1 25
⅜, ½, ¾, 1 inch clamps for No. 2 wrench, each	75
" 3—18 inch wrench bar (only)	2 50
1¼, 1½, 2 inch clamps for No. 3 wrench, each	1 50

GIRDLE PIPE WRENCH FOR BRASS AND PLATED PIPE

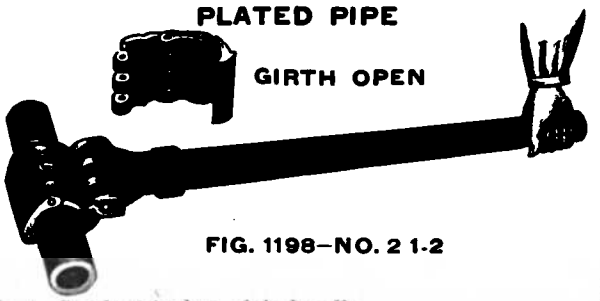


FIG. 1198—NO. 2 1-2

	Each.
No. 1—Stock 10 inches, plain handle	$1 00
Girths for ⅛, ¼, ⅜, ½, and 1 inch I. S. pipe	75
" " ⅝, ¾, and ⅞ inch F. T. tubing	75
No. 2—Stock 20 inches, plain handle	1 50
" 2½— " " improved handle, as per cut	2 00
Girths for Nos. 2 and 2½ for ¾, 1, and 1¼ inch I. S. pipe	1 00

TOOL CUTTER FOR CUTTING BRASS, COPPER, AND IRON TUBE FOR BOILERS, ETC.

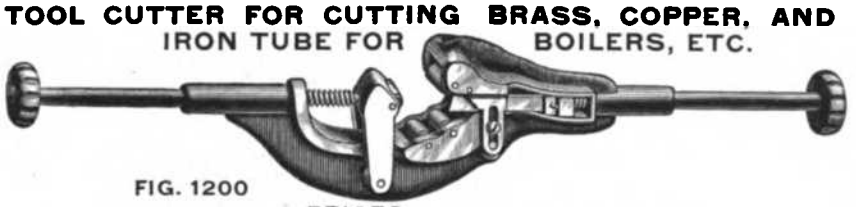


FIG. 1200

PRICES

Nos.	Cutters Complete. Cuts, Inches.	
1	⅜ to 1¼	$6 50
2	1¼ " 2	8 00
3	2¼ " 2½	16 00
4	3 " 4½	25 00

Nos.	Extra Plain Rollers.	
1		$0 24
2		32
3		50
4		75

Nos.	Extra Blocks and Rollers.	
1		$1 25
2		1 75
3		3 25
4		4 25

Nos.	Extra Bead Rollers.	
1		$0 40
2		60
3		1 00
4		1 25



FIG. 1199—NO. 3 1-2

	Each.
No. 3—Stock 20 inches, plain handle	$2 00
" 3½— " 25 " improved handle	2 50
Girths for Nos. 3 and 3½ for 1½, 2, 2½, and 3 inch I. S. pipe	1 25
" " " 2 and 2½ are adjustable to Nos. 3 or 3½ stocks.	

HALL BRASS PIPE WRENCH

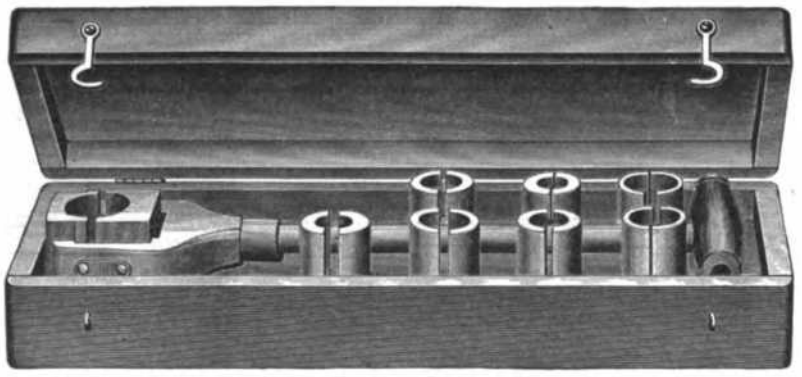


FIG. 1201

	Each.
No. 1—Grips ¼, ⅜, ½, ¾, 1 inch iron size pipe, and ⅝, ¾, ⅞, 1 inch plumbers' pipe	$7 50
" 2—Grips 1, 1¼, 1½, 2 inch iron size pipe, and 1¼, 1½, 1¾, 2 inch plumbers' pipe	12 00
Extra bushings, No. 1 $0 50	Extra bushings, No. 2 1 00

PIPE END REAMERS

For wrought iron and steel pipe from ⅜ to 3 inches, inclusive.

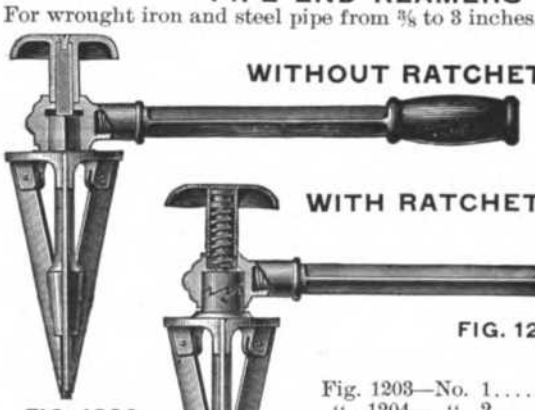


FIG. 1203

FIG. 1204

	Each.
Fig. 1203—No. 1	$5 00
" 1204— " 2	7 00

HALL'S PATENT PIPE REAMER FOR REMOVING THE BURRS FROM ENDS OF PIPE

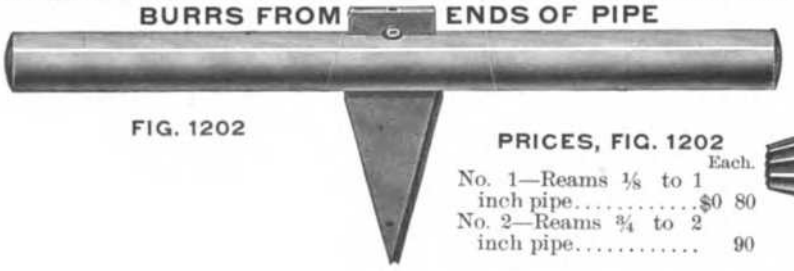


FIG. 1202

PRICES, FIG. 1202

	Each.
No. 1—Reams ⅛ to 1 inch pipe	$0 80
No. 2—Reams ¾ to 2 inch pipe	90

LIGHTNING BURRING REAMERS FOR PIPE

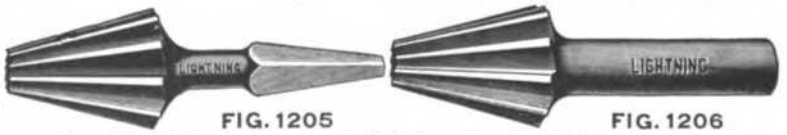


FIG. 1205 FIG. 1206

Size—Point, 7/16 inch; largest part, 1¾ inches; length of fluting, 1 9/16 inches.
Price, either style, $14.00 per dozen.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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HALL PIPE REAMER

FOR REMOVING THE BURRS FROM ENDS OF PIPE

For use in Die Plate.

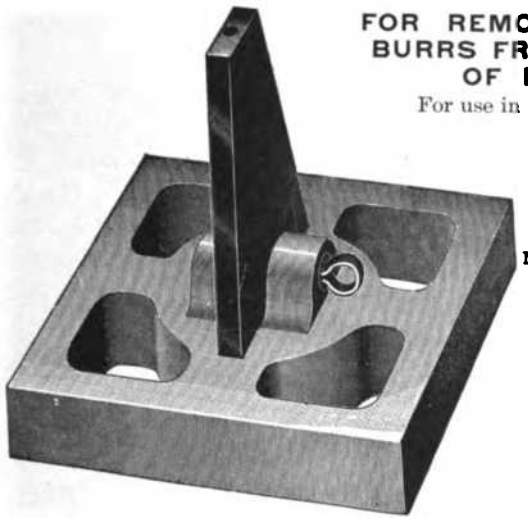


FIG. 1207

PRICES, FIG. 1207

No.	Style.	Block.	Reams.	Each.
0	B	2 inches square	⅛ to ¾ inch.....	$0 65
1	"	2½ "	⅛ " 1 "	65
1½	"	2½ "	¾ " 2 "	80
2	"	4 "	¾ " 2 "	1 00

LIGHTNING PIPE REAMERS

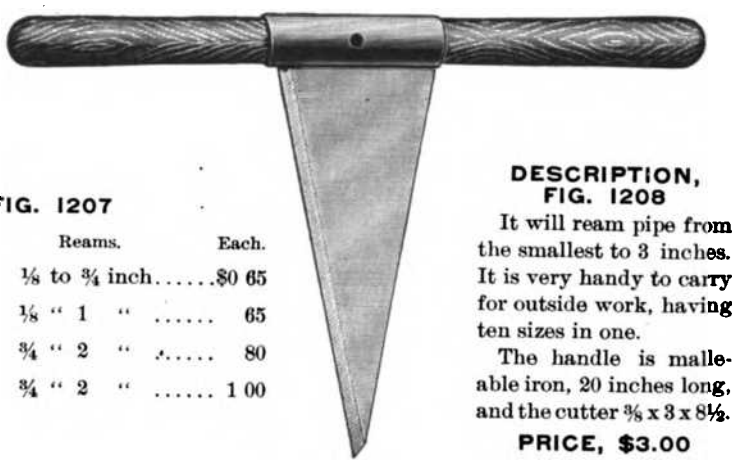


FIG. 1208

DESCRIPTION, FIG. 1208

It will ream pipe from the smallest to 3 inches. It is very handy to carry for outside work, having ten sizes in one.

The handle is malleable iron, 20 inches long, and the cutter ⅜ x 3 x 8½.

PRICE, $3.00

PIPE TAPS AND REAMERS

PRICES, FIGS. 1209 AND 1210

Diameter, Inches.	Threads, per inch.	Prices, Each.
⅛	27	$ 1 12
¼	18	1 25
⅜	18	1 50
½	14	1 87
¾	14	2 50
1	11½	3 12
1¼	11½	3 75
1½	11½	4 62
2	11½	6 25
2½	8	10 50
3	8	15 00



FIG 1209

Standard taper is ¾ inch to the foot. Pipe taps, 2½ inches and larger, have inserted teeth.

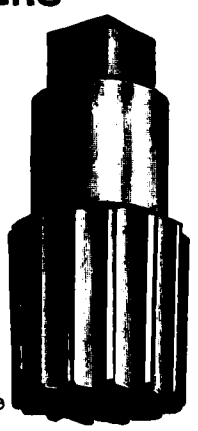


FIG. 1210

COMBINED PIPE TAPS AND DRILLS

FOR TAPPING GAS AND WATER PIPES

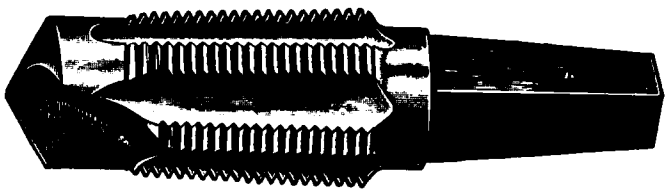


FIG. 1211

Standard Taper ¾ inch to the foot.

Size, Inches.	Length, Inches.	Prices, Each.
¼	3 15/16	$ 1 50
⅜	4 1/8	1 75
½	4½	2 20
¾	4 11/16	3 00
1	4 15/16	3 80
1¼	5 3/16	4 80
1½	5 7/16	5 80
2	6¼	7 60
2½	7	10 00

TAP DRILLS

Sizes for Pipe Taps, Briggs' Standard.

Diameters of Tap, Inches.	Diameters of Drill, Inches.	Diameters of Tap, Inches.	Diameters of Drill, Inches.
⅛	11/32	1¼	1½
¼	7/16	1½	1 23/32
⅜	37/64	2	2 3/16
½	45/64	2½	2 5/8
¾	29/32	3	3¼
1	1 9/64		

Shanks for sizes ¼ to 1½ inches are 11/16 inch by ½ inch, and 1¾ inches long.

Shanks for sizes 2 to 2½ inches are 1 inch by ¾ inch, and 2 inches long.

HUMPHREY'S COMBINED DRILL, REAMER AND TAP

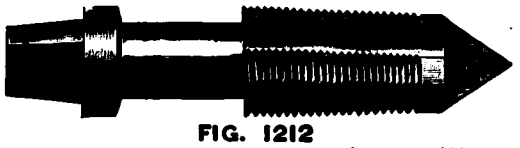


FIG. 1212

Diameters	¼	⅜	½	¾	1	1¼	1½	2 in.
Prices....	$2 50	$2 50	$3 00	$4 50	$6 00	$7 25	$8 50	$10 75

PIPE TAP WRENCHES

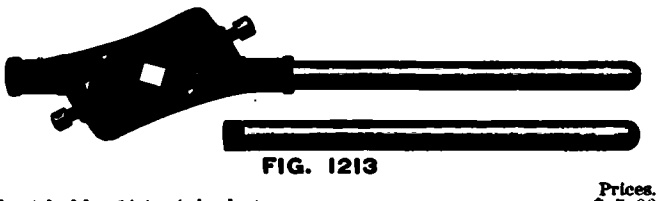


FIG. 1213

	Prices.
No. 1 holds ¼ to 1 inch taps.....	$ 5 00
" 2 " 1" " 2 "	8 00
" 3 " 2 " 4 "	16 00



FIG. 1214

	Prices.
No. 2. 18 inches long, fitting pipe taps ⅛ to ½.....	$2 50
" 3. 30 " " " " " ½ " 1	4 00

PIPE TAP WRENCH

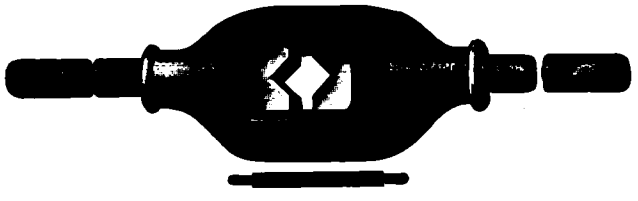


FIG. 1215

	Prices.
No. 4. 50 inches long, fitting pipe taps 1 to 2 in.....	$18 00
" 5. 78 " " " " " 2½ " 4 "	30 00

ADJUSTABLE PIPE DIE

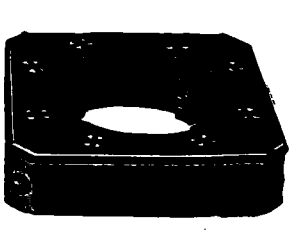


FIG. 1216, FRONT

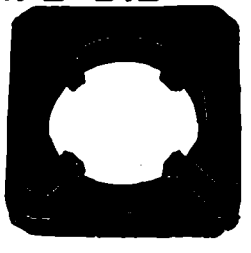


FIG. 1216, BACK

Size 4 inches by 1 inch. Right and left.

Inch.	Prices.	Inches.	Prices.	Inches.	Prices.
½.....	$3 50	1	$3 50	1½.....	$3 50
¾.....	3 50	1¼	3 50	2	3 50

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ASHCROFT PIPE DIES, BUSHINGS AND DIE FRAMES

FOR WROUGHT IRON AND STEEL PIPE

PIPE DIE



FIG. 1217

BUSHING

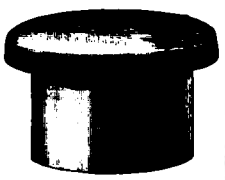


FIG. 1218

DIE FRAME

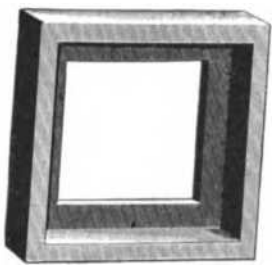


FIG. 1219

PIPE DIES, RIGHT OR LEFT HAND

PRICES, FIG. 1217

Nos.	Measures.	Sizes.	Each.
0	2 x ½	⅛, ¼, ⅜, ½	$1 50
1	2½ x ¾ or 2⅜ x ¾	⅛, ¼, ⅜, ½, ¾, 1	2 00
1½	3 x ¾	⅛, ¼, ⅜, ½, ¾, 1, 1¼	2 50
1¾	3 x ¾	⅛, ¼, ⅜, ½, ¾, 1, 1¼, 1½	2 50
2	4 x ⅞, 4 x 1 or 3⅞ x ⅞	½, ¾, 1, 1¼, 1½, 2	3 50
3	5 x 1¼ or 4⅞ x 1¼	2½, 3	9 00
3½	5 x 1¼ or 4⅞ x 1¼	2½, 3	9 00

BUSHINGS

PRICES FIG. 1218

Nos.	Sizes.	Each.
0	⅛, ¼, ⅜	$0 25
1	⅛, ¼, ⅜, ½, ¾, 1	35
1½	⅛, ¼, ⅜, ½, ¾, 1	45
1¾	⅛, ¼, ⅜, ½, ¾, 1, 1¼	45
2	½, ¾, 1, 1¼, 1½,	60
3	2, 2½	1 00
3½	2, 2½	1 00

DIE FRAMES

PRICES, FIG. 1219

Nos.	Taking.	Each.
1	No. 0	$0 30
1½	No. 1	40
1¾	No. 1	40
2	No. 1 or 1½	50
3	No. 2	60
3½	No. 2	60

These goods are made to interchange with all standard makes of pipe stocks and dies for hand use.

NO. 0, 1, 1½, 1¾, 2 AND 3

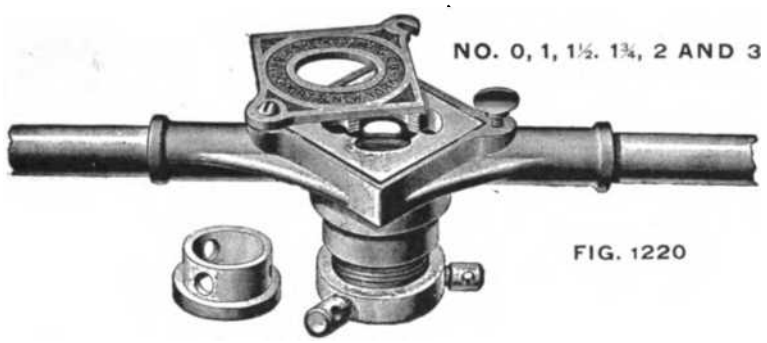


FIG. 1220

NO. 3½

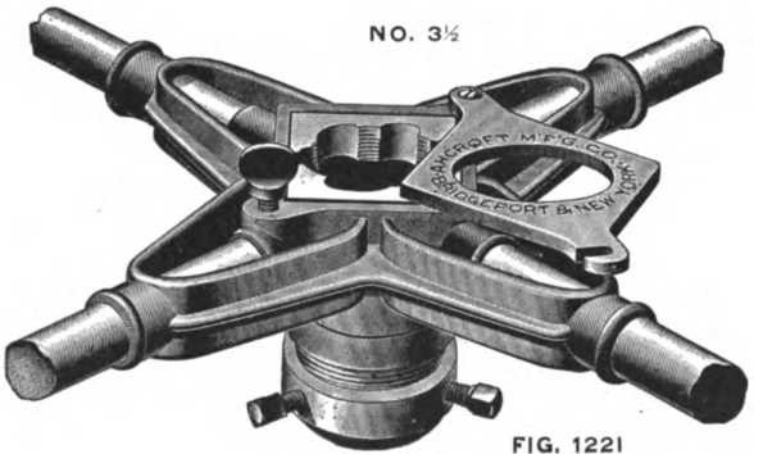


FIG. 1221

ASHCROFT PIPE STOCKS AND DIES

FOR WROUGHT IRON OR STEEL PIPE

PRICES, FIGS. 1220 AND 1221

Nos.	Threads.	Sizes of Dies.	Complete.	Stock only.	Extra Dies.	Extra Bushings.	Die Frames.
0	⅛, ¼, ⅜, ½	2 x ½	$9 50	$3 50	$1 50	$0 25	
1	¼, ⅜, ½, ¾, 1	2½ x ¾	15 00	5 00	2 00	35	$0 30
1½	¾, 1, 1¼,	3 x ¾	13 50	6 00	2 50	45	40
1¾	1, 1¼, 1½	3 x ¾	13 50	6 00	2 50	45	40
2	1¼, 1½, 2	4 x ⅞	20 00	9 50	3 50	60	50
3	2½, 3	5 x 1¼	43 00	25 00	9 00	1 00	60
3½	2½, 3	5 x 1¼	51 00	33 00	9 00	1 00	60

Stocks Nos. 2, 3 and 3½ have leader screw.

When ordered in quantities, brass cap plates, with customer's name cast in them, will be furnished, without extra charge, if so stated in order.

Prices on above, with dies for English gas pipe thread, on application.

ASHCROFT PIPE STOCKS AND DIES, WALWORTH SIZES

FOR WROUGHT IRON OR STEEL PIPE

PRICES, FIG. 1222

Nos.	Threads.	Sizes of Dies.	Complete.	Stock only.	Extra Dies.	Extra Bushings.	Die Frames.
0	⅛, ¼, ¾, ½	2 x ½	$9 50	$3 50	$1 50	$0 25	
1	¼, ⅜, ½, ¾, 1	2⅜ x ¾	15 00	5 00	2 00	35	$0 30
1½	¾, 1, 1¼	3 x ¾	13 50	6 00	2 50	45	40
1¾	1, 1¼, 1½	3 x ¾	13 50	6 00	2 50	45	40
2	1¼, 1½, 2	3⅞ x ⅞	20 00	9 50	3 50	60	50
3	2½, 3	4⅞ x 1¼	43 00	25 00	9 00	1 00	60
3½	2½, 3	4⅞ x 1¼	51 00	33 00	9 00	1 00	60

Stocks Nos. 2, 3, and 3½ have leader screw.

When ordered in quantities, brass cap plates, with customer's name cast in them, will be furnished, without extra charge, if so stated in order.

Prices on above, with dies for English gas pipe thread, on application.

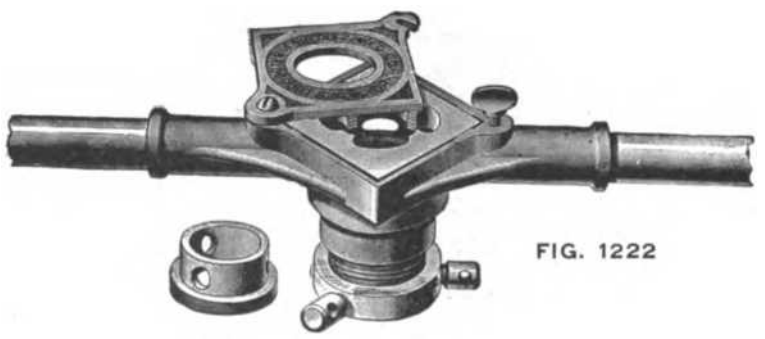


FIG. 1222

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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FOUR ARM PIPE STOCK, WITH INSERTED TEETH DIES

PRICES, FIG. 1223

No. 4. With dies, bushings and leader screw, cutting 2½ and 3 inch pipe.....$40 00
Dies are 5 x 1¼ inches.
Extra dies..... 10 00
Extra bushings..... 1 00
Extra die frames..... 1 00

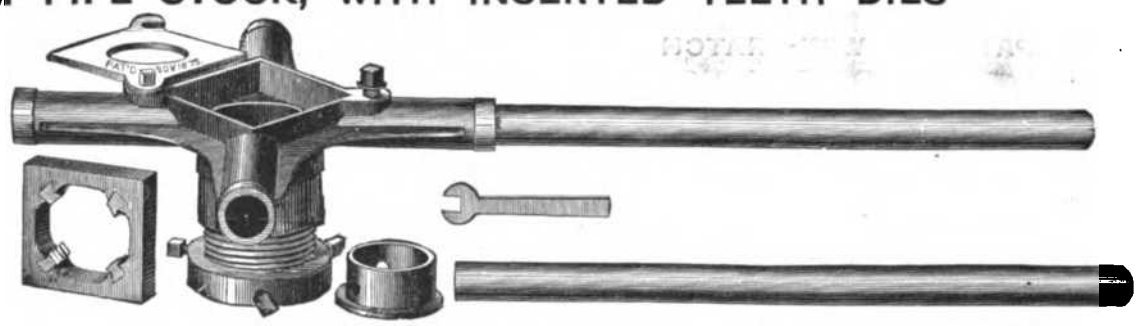


FIG. 1223

FOUR ARM PIPE STOCKS, WITH OCTAGON INSERTED TEETH DIES AND CUTTING OFF ATTACHMENT

PRICES, EXTRAS FIG. 1224

	Each.
Size of die, 4½ and 4 in., 7½ x 1½ in.....	$18 00
Size of die, 3½, 5 and 6 in., 10 x 1½ in.....	28 00
Extra guides for No. 5...	1 50
Extra guides for No. 6...	2 00
Extra die holder for No. 5, outside size 7½ octagon by 1½ in., to hold dies 5 x 1¼ inches.....	1 50
Extra die holder for No. 6, outside size 10 octagon by 1½ in., to hold dies 7½ x 1½ inches...	2 00

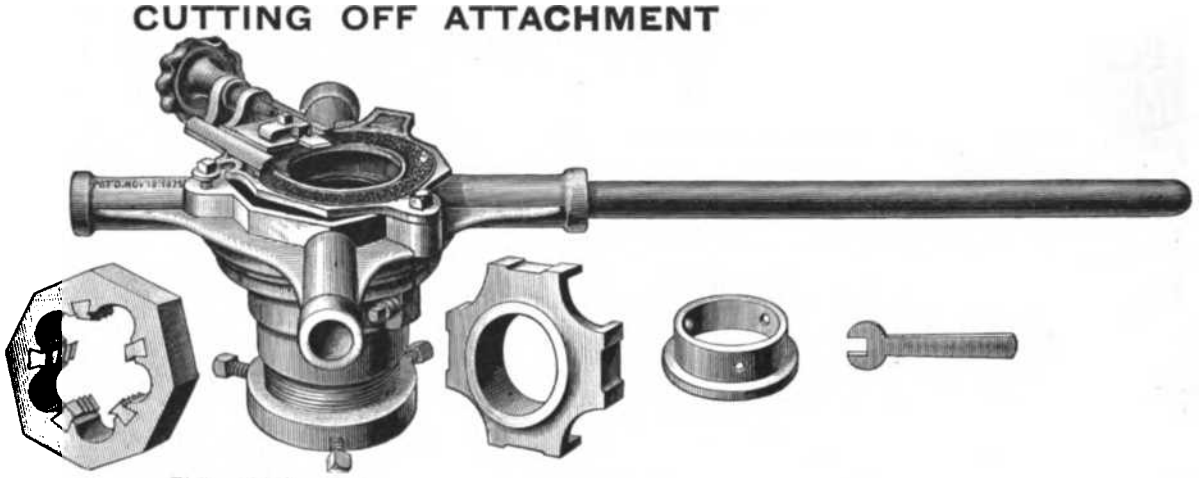


FIG. 1224

PRICES, FIG. 1224

No. 5. Stock, without cutting off attachment, with dies 7½ in. octagon by 1½ in., with leader screw to thread 2½, 3, 3½ and 4 inches..... $85 00
2½ and 3 inch dies have malleable frames 5 x 1¼ inches.
No. 5. Arranged to cut off and thread pipe, with dies 7½ in. octagon by 1½ in., with leader screw to thread 2½, 3, 3½ and 4 inches..... 110 00
2½ and 3 inch dies have malleable frames 5 x 1¼ inches.
No. 6. Arranged to cut off and thread pipe, with dies 10 in. octagon by 1½ in., with leader screw to thread 2½, 3, 3½, 4, 5 and 6 inches.... 200 00

COMBINATION LOOSE DIE STOCKS



NO. 0. FIG. 1225



NO. 00. FIG. 1226.

PRICES, FIGS. 1225 AND 1226

No. 0 cuts ⅛, ¼, ⅜ and ½ inch.....$8 00
No. 00 cuts ½, ¾, and 1 inch..... 9 00
No. 0 extra dies, right or left, 1⅝ in. square by ½ in. thick, each 1 00
No. 00 extra dies, right or left, 2¼ in. square by ¾ in. thick, each 1 50

IMPROVED RATCHET STOCKS WITH LEAD SCREW

With patent arrangement to prevent chips and grit from getting between the leader screw and its threaded socket.

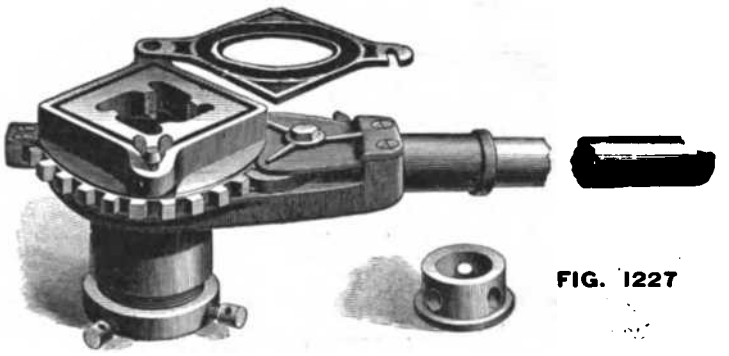


FIG. 1227

	With Dies and Bushings.	With Bushings without Dies.
No. 1. For ½, ¾, 1, 1¼ and 1½ inch pipe.....	$24 00	12 00
No. 2. For 1, 1¼, 1½ and 2 inch pipe.....	30 00	15 00

Extra dies for No. 1, 3 in. square by ⅞ thick, $2 25. Extra bushings, 40c.
Extra dies for No. 2, 4 in. square by 1 in. thick, $3 25. Extra bushings, 50c.

REVERSIBLE RATCHET DIE STOCK

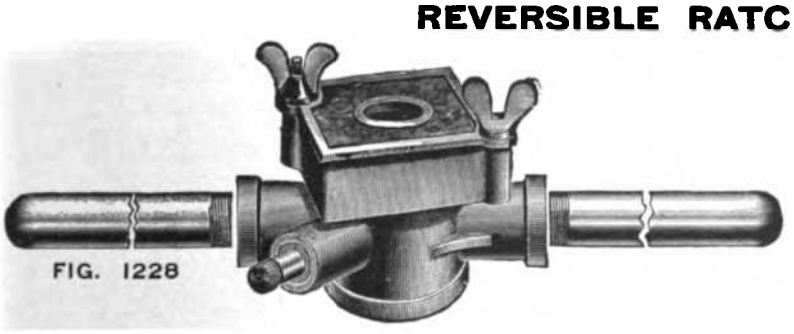


FIG. 1228

PRICES, FIG. 1228

Nos.	Pipe Sizes of Dies.	Dimensions of Dies.	Stock only. Without Dies.	Complete with Right Hand Dies.	Extra Dies, Right or Left.	Extra Guides.	Die Frames.
1.	¼, ⅜, ½, ¾, 1	2⅜ x ¾ in.	$5 00	$15 00	$2 00	$0 35	$0 30
2.	1, 1¼, 1½, 2	4 x 1 "	10 00	24 00	3 50	60	50

The No. 2 stock has lead screw.
Weight—No. 1, 9 lbs. No. 2, 27 lbs.

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ADJUSTABLE SCREWING STOCKS

NEW PATTERN, WITH RATCHET ATTACHMENT AND LEADER SCREW

NO. 3

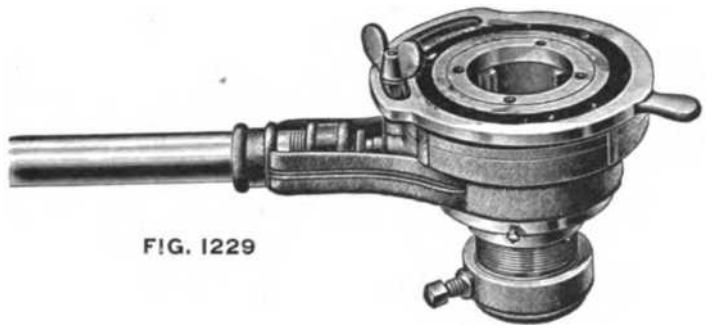


FIG. 1229

No. 3. Threads 1 to 2 inch pipe, inclusive.....Each, $20 00
Extra dies, per set of four, cutting two sizes..... 2 00

MALLEABLE RATCHET STOCKS, WITH SOLID DIES, AND WITH LEADER SCREW

NO. 4

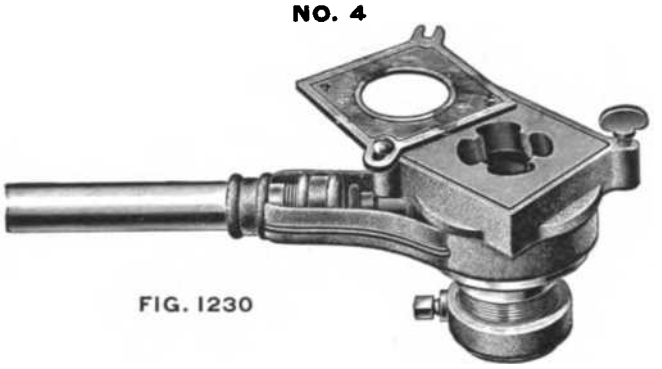


FIG. 1230

No. 4. Threads 1¼ to 2 inch pipe, inclusive.....Each, $15 00
Extra dies, 4 x ⅞, solid ..... " 3 50

RUFF AND TUFF DIE



FIG. 1231

MILLER'S REVERSIBLE RATCHET DIE PLATES

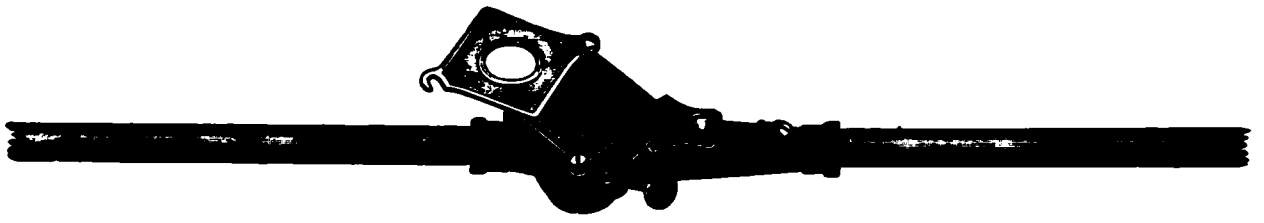


FIG. 1232, NOS. A AND B

PRICES, FIGS. 1231 AND 1232

Nos.	A	B	C	D	E
Threads, inches	⅛, ¼, ⅜, ½, ¾	¼, ⅜, ½, ¾, 1	1, 1¼, 1½	1¼, 1½, 2	2½, 3
Sizes dies	2 x ½	2½ x ¾	3 x ¾	4 x ⅞	5 x 1¼
Die plates only	$7 50	7 50	13 00	12 50	29 00
Die plates complete with "Ruff and Tuff" dies	14 40	17 00	19 75	22 00	46 50
Extra "Ruff and Tuff" dies	1 40	1 90	2 25	3 10	8 75
Extra bushings	20	25	35	45	75
Extra die frames	..	22	30	38	45
Space required around pipe to thread, inches	2½	3	3½	4	5

Nos. C, D, and E have leader screws.

SINGLE HANDLE RATCHET DIE STOCK

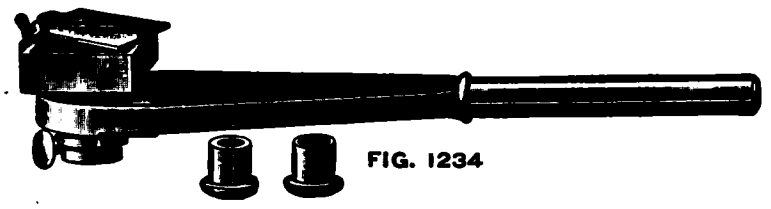


FIG. 1234

	Pipe Sizes.	Sizes Die.	Without Die or Bushing.	Die, Each.	Bushings, Each.
Nos. 1	¼ to 1	2½ x ¾	$10 00	$2 00	$0 25
" 2	¾ " 1¼	3 ¾	12 00	2 50	0 35
" 3	1¼ " 2	4 ⅞	14 00	3 50	0 45

Each has a leader screw. Price No. 1, no leader, $8 00.

CLIMAX RATCHET STOCK

Combining the utilities of pipe vise and pipe stock.

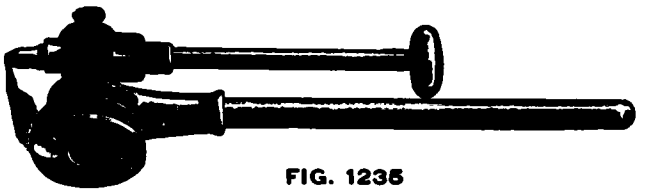


FIG. 1235

No. 1. Threads ¼ to 1 in. pipe, takes die 2, 2⅜ and 2½ in. sq... $10 00
" 2. " 1 to 2 in. pipe, takes die 2⅜, 2½, 3, 3⅛ and 4 in. sq., 17 00

Pipe dies 2⅜ inches square, $2 00. 3⅛ inches square, $3 50.

This stock is attractively finished in nickel and japan, and every one is shipped in a strong wooden box.

JARECKI RATCHET SCREW PLATE

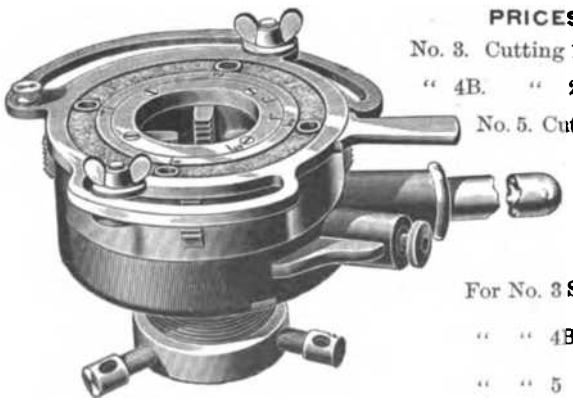


FIG. 1236

PRICES, FIG. 1236

No. 3. Cutting 1, 1¼, 1½, 2 in., $20 00
" 4B. " 2½, 3, 3½, 4 " 60 00
No. 5. Cutting 4½, 5, 6 " 90 00

EXTRA DIES

For No. 3 Set.....per set, $2 00
" " 4B " ..... " " 3 00
" " 5 " ..... " " 6 00

ARMSTRONG'S ADJUSTABLE STOCK

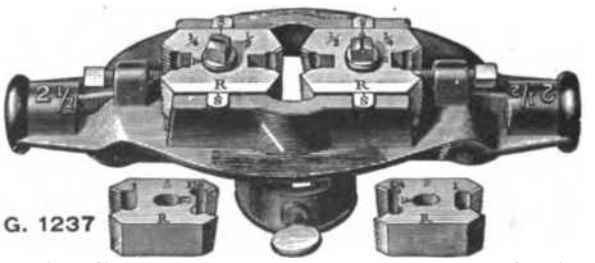


FIG. 1237

No. 2½ stock, 4 dies, cutting ½, ¾, 1 and 1¼ inch, right hand.. $12 00
" 2½ " and dies, cutting right and left ½ to 1¼ inches. 18 00
Stocks only..... $4 50 Bushings... ..... 0 40
Dies, right or left, double ends, ½ x ¾, or 1 x 1¼..... 3 25
" " " " single end, ¼ or ⅜..... 3 00

MANNING, MAXWELL & MOORE, 85, 87 AND 89 LIBERTY STREETS, NEW YORK

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ARMSTRONG'S PIPE STOCKS, WITH ADJUSTABLE DIES

NO. 7. THREADS 2½ 3, 3½ AND 4 INCH PIPE

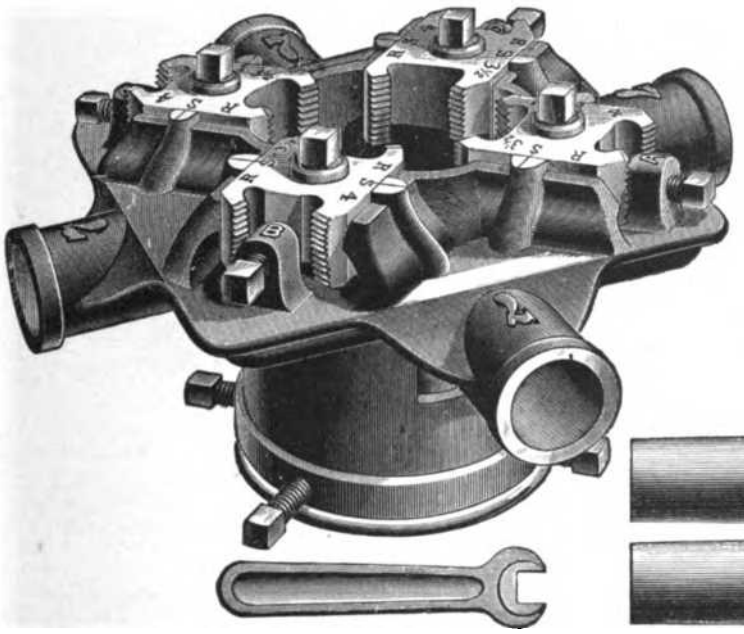


FIG. 1238

No.		Prices.
7	Stock, cutting 2½, 3, 3½, 4 right	$60 00
7	" " 2½ and 3 "	45 00
7	" " 3½ " 4 "	45 00
7	" " 2½ to 4 right and left	92 00
7	" " 2½ and 3 or 3½ and 4, right and left	60 00

NO. 6. THREADS 2½ AND 3 INCH PIPE

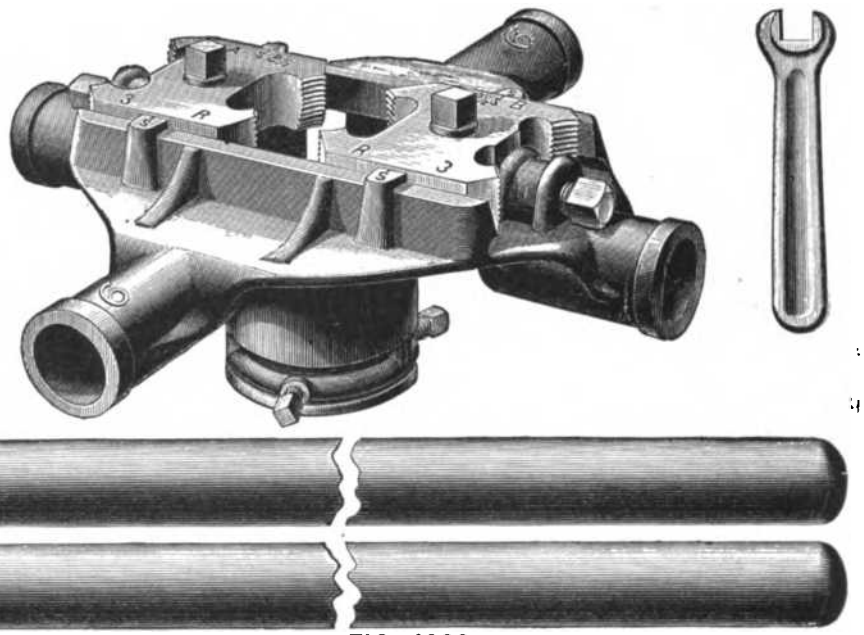


FIG. 1239

No.		Prices.
6	Stock and die, cutting 2½ x 3, right hand	$40 00
6	" " " " 2½ 3 right and left hand	55 00

The change from 2½ to 3 inch is made by simply reversing the dies end for end, when they will cut two standard sizes without further adjustment.

NO. 3, THREADS 3/4 TO 2 INCH PIPE

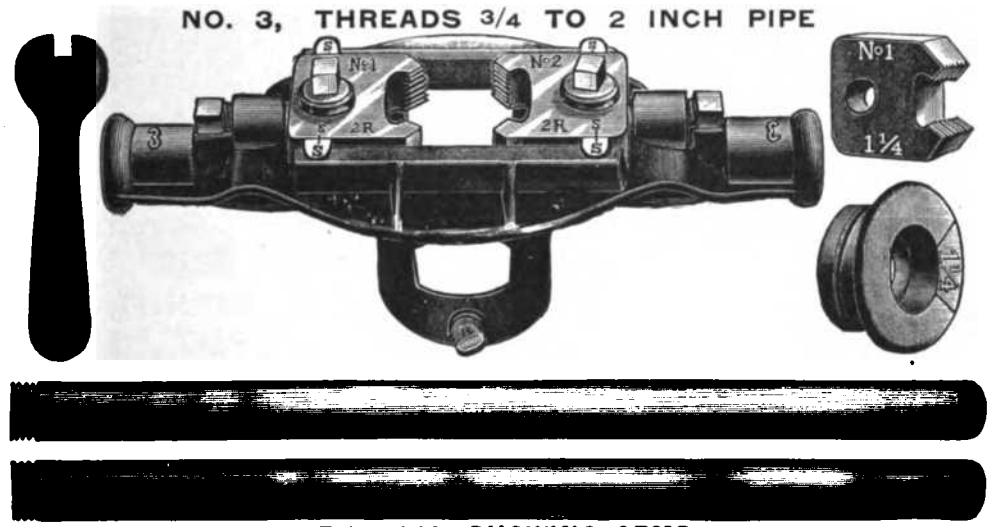


FIG. 1240, SHOWING ARMS

PRICES, FIG. 1240

No.		Prices.
3	Stock, 3 sizes pipe dies, 1¼ to 2 right	$20 00
3	" 4 " " " 1 2 "	24 00
3	" 5 " " " ¾ 2 "	28 50
3	" 3 " " " 1¼ 2 right and left	32 00
3	" 4 " " " 1 2 " " "	40 00
3	" 5 " " " ¾ 2 " " "	48 50

PRICES, PARTS, FIGS. 1228 TO 1230

STOCKS

With screws, handles and wrench.

No.		Prices, each.
3	Stock	$7 00
6	"	25 00
7	"	30 00

DIES

For No.		Per set, 2 pieces.
3	Stock, right or left	$4 00
6	" " " " double ends	15 00
7	" 2½ x 3, right or left, double ends	16 00
7	" 3½ 4, " " " " "	16 00

BUSHINGS

For No.		Each.
3	Stock	$0 50
6	"	1 00
7	"	1 50

NO. 1



FIG. 1241

PRICES, FIGS. 1241 AND 1242

STOCKS

With screws, handles and wrench.

No.		Each.
1	Stock	$3 25
2	"	4 00

DIES

For No.		Per set, 2 pieces.
1	Stock, right or left	$1 25
2	" " " "	1 50
2	Stock, brass pipe, ⅝, ¾, ⅞, 1 or 1¼, right or left	2 00

BUSHINGS

For No.		Each.
1	Stock	$0 20
2	" pipe or brass	25

NO. 2

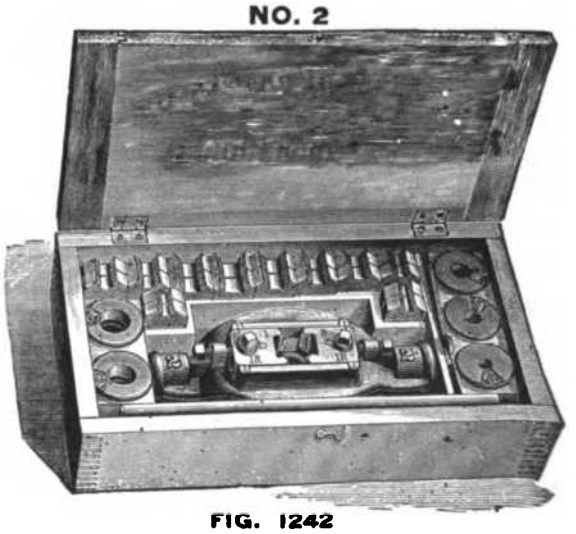


FIG. 1242

No.		Each.
1	Stock, 4 right hand pipe dies, ⅛ to ½	$9 00
1	" 4 each right and left pipe dies, ⅛ to ½	14 00
2	" 5 pipe dies, right, ¼ to 1	12 00
2	Stock, 6 pipe dies, right, ⅛ to 1	$14 00
2	" 5 " " " and left, ¼ to 1	20 00
2	" 6 " " " " " ⅛ 1	23 00

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LIGHTNING SCREW PLATES FOR PIPE

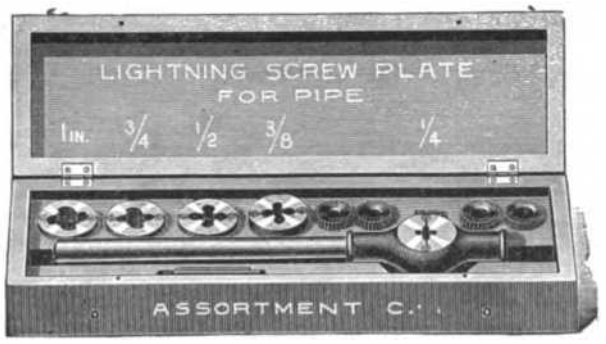


FIG. 1243

Nos.	Stock Length, Inches.	Cutting.	Prices, Complete, in Case.	Stocks, Each.	Dies, Each.	Guides, Each.
C	35	¼, ⅜, ½, ¾, 1	$12 00	$8 50	$1 50	$0 25
D	53	1¼, 1½, 2	20 00	7 00	4 00	50
C & D	35 / 53	¼, ⅜, ½, ¾, 1, 1¼, 1½, 2	32 00			
E		2½, 3	40 00	20 00	7 50	1 00

Collets for E set, each $2.50.

LITTLE GIANT SCREW PLATES FOR PIPE

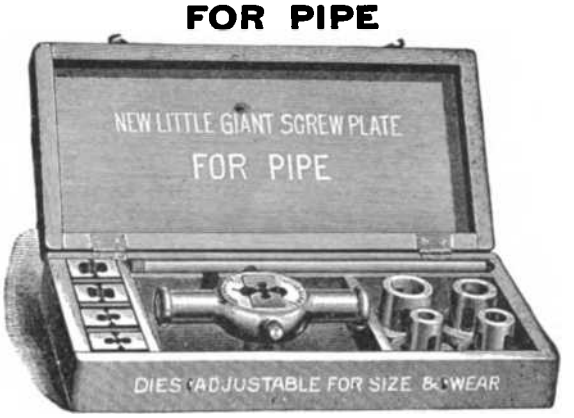


FIG. 1244

A SOLID DIE, YET ADJUSTABLE

The guides are interchangeable throughout the set, for convenience in cutting nipples.

NO. 1 PLATE

	Prices.
Cutting ¼, ⅜, ½, ¾, 1 inch	$9 00
Price of stock, when sold alone	2 00
" " dies, " " " each	1 25
" " guides, " " " "	50

NO. 2 PLATE

	Prices.
Cutting 1¼, 1½, 2 inches	$15 00
Price of stock, when sold alone	5 25
" " dies, " " "	3 00
" " guides, " " "	75

This plate is packed same as shown above. L. H. Dies furnished at same prices. Plates cutting English pipe threads furnished at same list prices.

DUPLEX DIE STOCKS



FIG. 1245

Both guides and dies instantly adjustable.

PRICES

Nos.	For Threading.	Without Cut-off.	With Cut-off.
1	⅛, ¼, ⅜, ½, ¾, pipe	$13 00	$16 00
2	¼, ⅜, ½, ¾, 1, 1¼ "	17 00	20 00
3	1, 1¼, 1½, 2 "	22 00	25 00
3½	½, ¾, 1, 1¼, 1½, 2 "	25 00	28 00
4	1½, 2, 2½, 3 "	40 00	45 00
5	2½, 3, 3½, 4 "	55 00	60 00

PRICES OF EXTRA DIES

Nos.		
1	per single set, 4 pcs., right or left hand	$1 50
2	" " " " " " "	1 75
3	" " " " " " "	2 00
3½	" " " " " " "	2 00
4	" " " " " " "	3 50
5	" " " " " " "	4 00

Stocks with cut-off will be sent unless otherwise ordered.

Pipe dies are fitted to cut American or English pipe threads; in ordering always state which is wanted.

THE OSTER PATENT ADJUSTABLE STOCKS AND DIES

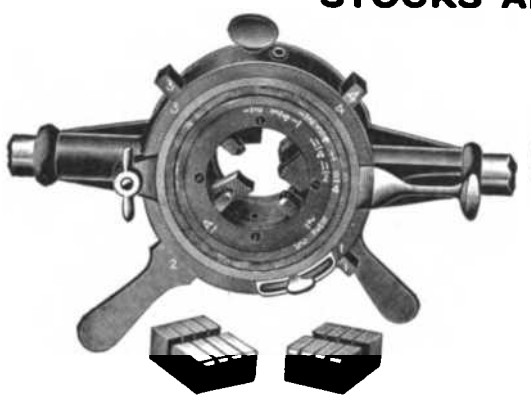


FIG. 1246

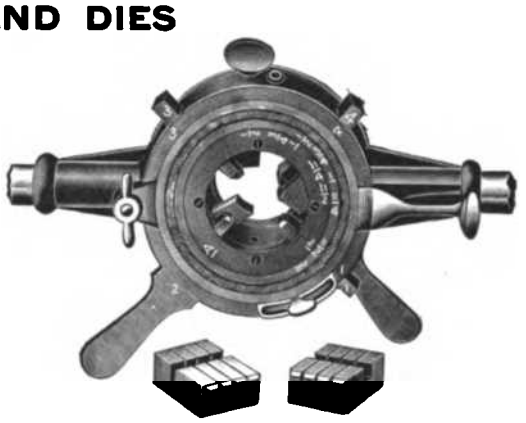


FIG. 1247

WITH QUICK OPENING AND SELF-CENTERING DIES AND GUIDES.

No. of Tool.	Wt. Lbs.	Sizes of Pipe each Tool will Thread and Cut.	Without Cut-off.	With Cut-off.
0	4½	⅛, ¼, ⅜, ½	$12 00	$15 00
1	7	⅛, ¼, ⅜, ½, ¾	13 00	16 00
1½	9	¼, ⅜, ½, ¾, 1	14 00	17 00
2	12	¼, ⅜, ½, ¾, 1, 1¼	17 00	20 00
3	22	1, 1¼, 1½, 2	22 00	25 00
4	22	½, ¾, 1, 1¼, 1½, 2	25 00	28 00
4½	23	⅜, ½, ¾, 1, 1¼, 1½, 2	28 00	31 00

Nos. 0, 1, 1½ and 2 have extra heavy pipe handles. Nos. 3, 4 and 4½ have solid steel handles.

WITH QUICK OPENING AND SELF-CENTERING DIES AND GUIDES.

No. of Tool.	Wt. Lbs.	Sizes of Pipe each Tool will Thread and Cut.	Without Cut-off.	With Cut-off.
5	64	1½, 2, 2½, 3	$40 00	$45 00
6	70	2½, 3, 3½, 4	55 00	60 00

Nos. 5 and 6 have four solid steel handles.

PRICES OF EXTRA DIES FOR FIGS. 1246 AND 1247

Per set, 4 pieces, right or left hand.

Nos.		Nos.		Nos.	
0	$1 25	2	$1 75	4½	$2 50
1	1 50	3	2 00	5	3 00
1½	1 50	4	2 00	6	3 50

Can furnish English or Whitworth thread when desired.

ERIE SCREW PLATE AND PIPE CUTTER



FIG. 1248

DESCRIPTION, FIG. 1248

Has adjustable, self-centering dies and guides. The dies are adjusted to the different sizes of pipe by the aid of the thumb screws on side of the plate. One is used to open and the other to close the dies.

The operator can detach the plate from the finished work without turning back on the thread.

Threads can be cut over or under size.

Each set of dies threads two sizes pipe.

Large pipe can be threaded by taking two or more cuts.

PRICES, FIG. 1248

No.	Threads and Cuts, Inches.	Each.	Extra Dies, Right or Left.
40	⅜ to ¾	$14 00	Per set of 4 pieces, $2 00
41	½ " 1¼	16 00	" 4 " 2 00
42	¼ " 1¼	18 50	" 4 " 2 00
43	1 " 2	20 00	" 4 " 2 00
44	½ " 2	22 50	" 4 " 2 00
45	1½ " 3	35 00	" 4 " 3 00
46	1 " 3	39 00	" 4 " 3 00
47	2½ " 4	50 00	" 4 " 3 00
48	1½ " 4	54 00	" 4 " 3 00
49	4½ " 6	75 00	" 6 " 7 00
50	6 " 8	125 00	" 6 " 7 00

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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ARMSTRONG'S HAND MACHINES FOR CUTTING OFF AND THREADING PIPE

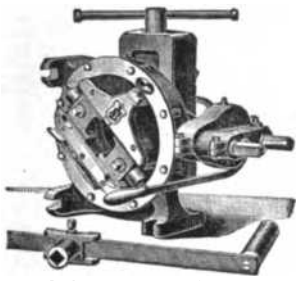


FIG. 1249. NO. 0



FIG. 1250. SHOWING STAND



FIG. 1251. NO. 00

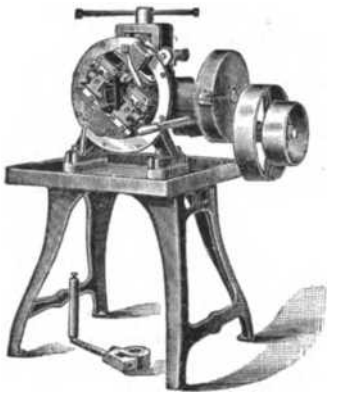


FIG. 1252. SHOWING STAND

Hand Machine, ¼ to 2 inches.	Without Stand.	With Stand.
No. 0 Hand Machine, without dies	$50 00	$60 00
" 0 " " with pipe dies, ¼ to 2 ins. R. H.	60 00	70 00
" 0 " " " bolt " ½ "1½" R. H.	60 00	70 00

Hand Machine, 1 to 4 inches.	Without Stand.	With Stand.
No. 00 Hand Machine, without dies	$105 00	$125 00
" 00 " " with pipe dies, 1 to 4 ins. R. H.,	125 00	145 00

We can furnish these machines for power. Prices and special lists on application.

FORBES' HAND PIPE CUTTING AND THREADING MACHINES

NO 30. HAND MACHINE

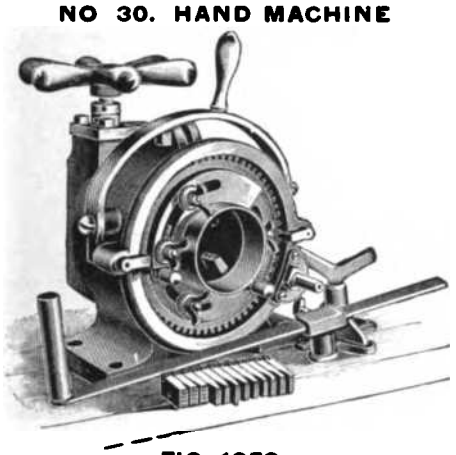


FIG. 1253

PRICES, FIGS. 1253 AND 1254

Nos.	Ranges.	Weight, Net. Lbs.	Weight, Gross. Lbs.	Each.
*30	¼ to 2 ins., both right and left	138	178	$50 00
*32	¼ " 2 " for solid dies (without dies).	130	170	45 00
*34	1 " 3 " R. H., 1 to 2 ins. L. H.	155	195	75 00
*36	¾ " 3 " R. H., ¾ to 2 ins. L. H.	160	200	85 00
*37	¼ " 3 " R. and L.	160	200	105 00
†46	2½ " 4 " R. H.	220	270	85 00
*38	1½ " 4 " R. H.	222	272	100 00
*40	1½ " 4 " R. and L.	225	275	115 00
*42	1 " 4 " R. H.	223	273	110 00
*44	1 " 4 " R. and L.	235	285	130 00
†50	4 " 6 " R. H.	298	376	115 00
†52	3½ " 6 " R. H.	298	376	130 00
†54	2½ " 5 " R. H.	300	378	150 00
†56	2½ " 6 " R. H.	303	381	175 00
†62	2½ " 6 " R. H. (extra heavy)	750	885	300 00
*58	1 " 6 " R. H.	330	408	190 00
*60	1 " 6 " R. and L.	348	426	235 00
*63	2½ " 8 " R. and L.	625	750	360 00
†64	2½ " 8 " R. H.	600	725	325 00
†66	2½ " 10 " R. H.	750	880	500 00
*67	2½ " 10 " R. H.	760	890	500 00
*68	2½ " 10 " R. and L.	800	950	550 00
†69	2½ " 12 " R. H.	1000	1200	650 00

Nos. 30 to 37 have no cut-off attachment unless especially ordered.

* Pressure feed machine. † Lead screw machine.

NO. 56 HAND MACHINE

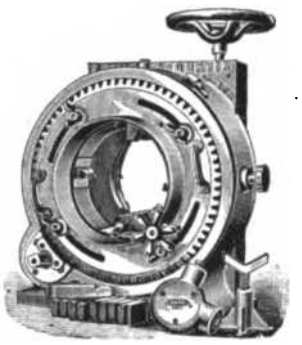


FIG. 1254

We can furnish these machines for power. Prices and special lists on application.

PIPE NIPPLE CUTTER AND THREADER



FIG. 1257

DESCRIPTION

It is a hand machine that can be carried to the work in any location.

Can be operated by one person and will cut a thread on any size pipe from 2½ ins. to 6 ins. diameter inclusive, as quickly as can be cut in power machine.

It cuts a standard taper or a straight thread, if so desired, and it can be worked backward or forward without danger of breaking the tool or injuring cutting edge.

Cuts a right or left-hand thread by changing the lead sleeve, which can be done in a few moments.

It cuts a nipple of any length without a nipple holder, and does it without removing the pipe from the machine.

PRICE, $150.00

THE CURTIS NIPPLE HOLDER

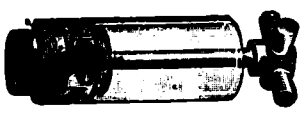


FIG. 1255

PRICES, FIG. 1255

Nos.	Ranges.	Weights. Lbs.	Each.
1	¼ to 2 ins., R. and L.	35	$14 00
1½	1 " 3 " R. and L.	65	18 00
2	1 " 4 " R. and L.	150	40 00
3	1 " 6 " R. and L.	190	60 00

A single revolution of the hand wheel allows the nipple to be unscrewed by the fingers.

ASHLEY PATENT NIPPLE HOLDERS FOR BENCH AND MACHINE USE

For holding right and left nipples.

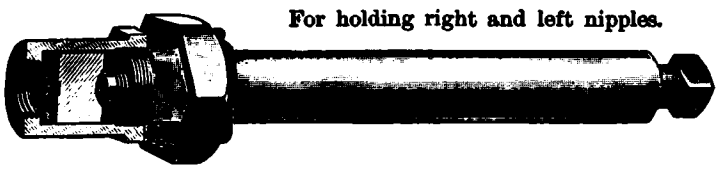


FIG. 1256 FOR MACHINE USE

FOR BENCH USE

No. 1.	6 sleeves for ⅛, ¼, ⅜, ½, ¾, and 1 inch nipples	$15 00
	Sleeves only	1 50
No. 2.	3 sleeves for 1, 1¼, and 1½ inch nipples	15 00
	Sleeves only	2 50

FOR MACHINE USE

No. 1.	6 sleeves for ⅛, ¼, ⅜, ½, ¾, and 1 inch nipples	$25 00
	Sleeves only	1 50
No. 2.	4 sleeves for 1, 1¼, 1½, and 2 inches nipples	30 00
	Sleeves only, 1, 1¼, and 1½ inches	2 50
	Sleeves only, 2 inches	5 00

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NIPPLE HOLDERS FOR THREADING CLOSE AND SHORT NIPPLES

A complete Nipple Holder consists of one shank only and separate collars for each size of Nipple, the collars all being threaded to fit the same size shank.

Nos.	Takes Inches.	Prices, Complete.	Prices, Collars, Each.	Prices, Shanks, Each.	Prices, Plungers or Wedges, Each.
1	¼ to 1¼	$12 00	$1 25	$4 00	$0 40
2	1½ to 2	9 00	1 50	6 00	50
3	¼ to 2	16 00	1 50	6 00	50
4	¼ to 3	25 00	2 00	8 00	75
5	2½ to 4	26 00	3 00	15 00	1 00
6	1 to 4	35 00	3 00	15 00	1 00
7	4½ to 6	36 00	4 00	20 00	1 25
8	2½ to 6	45 00	4 00	20 00	1 25
9	4½ to 8	60 00	7 00	30 00	2 00
10	7 to 10	75 00	10 00	35 00	2 50
11	7 to 12	100 00	12 00	40 00	3 00

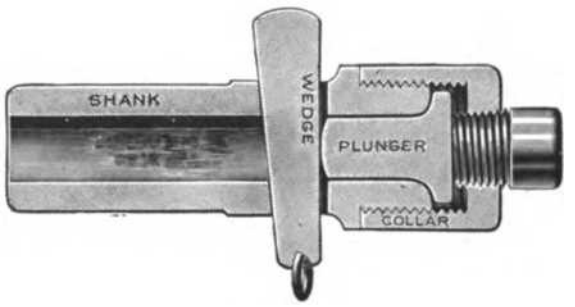


FIG. 1258

NIPPLE HOLDERS FOR STOCKS

DESCRIPTION, FIG. 1259

These Nipple Holders are so arranged that when the thread is cut the nipple can be removed by simply starting back the wedge which loosens the inner part of the holder and allows the nipple to be easily taken out with the fingers. Holds right hand nipples only.

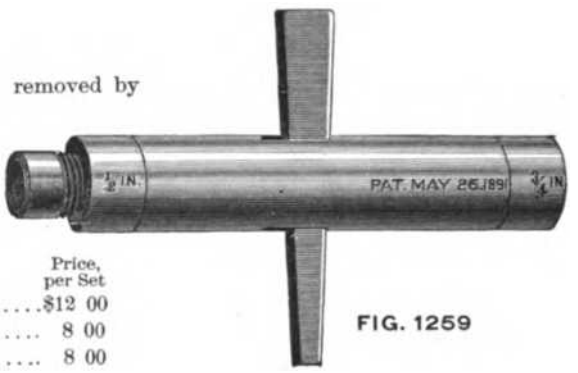


FIG. 1259

PRICES, FIG. 1259

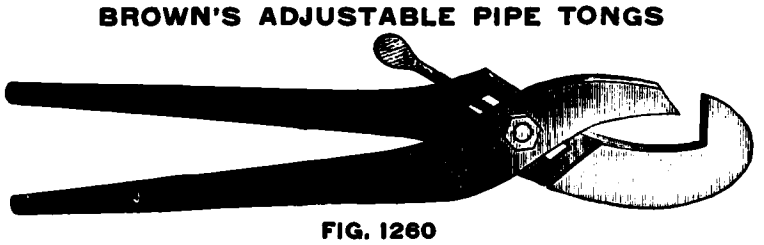
As will be seen in cut this holder is double ended and holds two sizes of nipples as follows:

	Each.
⅜ inch and ½ inch	$3 00
¾ " 1 "	3 00
½ " ¾ "	3 00
1 " 1¼ "	3 00
1 " 1¼ "	3 50
1½ " 2 "	3 50

	Price, per Set
From ⅜ to 2 inch inclusive	$12 00
2½ inch and 3 inch	8 00
2½ 3	8 00
3½ 4	8 00

When ordering, be particular to state the make and number of stock intended for.

BROWN'S ADJUSTABLE PIPE TONGS


FIG. 1260

No. 1.	For ⅛ to ¾	inch	pipe		$0 60
" 1½.	" ⅜ " 1	"			75
" 2.	" ½ " 1¼	"			85
" 3.	" 1 " 2	"			1 20
" 4.	" 1½ " 3	"			2 70
" 5.	" 2½ " 4	"			6 00
" 6.	" 3 " 5	"			10 00
" 7.	" 4 " 7	"			11 00

COMMON PIPE TONGS


FIG. 1261

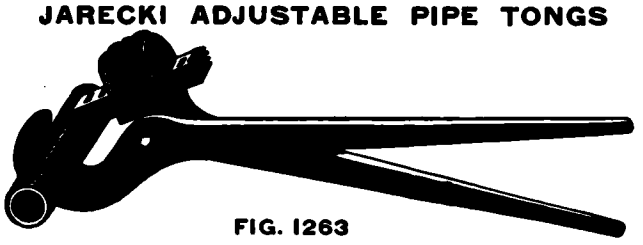
Sizes, Inches.	Prices, Each.
⅛	$0 60
¼	65
⅜	70
½	75
¾	90
1	1 10
1¼	1 30
1½	1 50
2	1 90
2½	2 50
3	4 00

ACME PIPE TONGS


FIG. 1262

Nos.	1	1½	2	3	4
Takes from	⅛ to ¾	¼ to 1¼	¼ to 1½	½ to 2½	¾ to 4
Tongs Complete	$3 00	$3 50	$4 00	$5 30	$9 00
Cubes	05	09	15	35	50
Jaw	1 25	1 50	1 75	2 25	4 00
Hooks	1 25	1 50	1 75	2 25	4 00

JARECKI ADJUSTABLE PIPE TONGS


FIG. 1263

Nos	0	1	2	3	4	5
Takes pipe from	⅛ to ¾	⅛ to 1	¼ to 1½	½ to 2½	¾ to 3½	2½ to 6
Price	$3 00	$3 50	$4 00	$5 00	$9 00	$16 00
" Tong bits	30	30	50	75	1 00	2 50
" Worm wheels	30	30	50	60	75	1 50
" Handles, jaw part or hook part, each	1 00	1 00	1 25	1 50	1 75	3 00

BARNES' SPECIAL TONGS

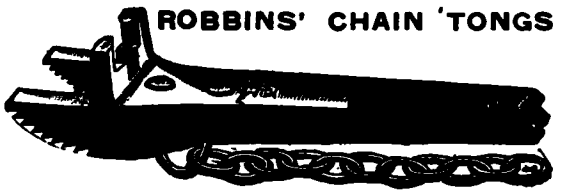
With reversible jaw or slide, for machinists', plumbers' and gas fitters' use.


FIG 1264

By reversing the jaw it can be used as a wrench. It is readily adjustable to any size within its range, and its action is instantaneous.

Price for No. 1 Tongs, 1¼ inch or smaller.....$1 50

ROBBINS' CHAIN TONGS


FIG. 1265

	Length.	Capacity.	Prices.
No. 2.	27 inches	1 to 3 inch	$5 50
" 3.	3 feet	1¼ " 5 "	6 25
" 4.	4 "	2 " 7 "	9 00
" 5.	5 "	2½ " 10 "	12 50
" 6.	6 "	4 " 16 "	16 00

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PIPE WRENCHES

VULCAN PATENT DROP FORGED CHAIN PIPE WRENCHES

For turning or holding pipe, pipe fittings, bolts, bars, shafts, etc., from ⅛ to 18 inches diameter.

WITH CABLE CHAIN

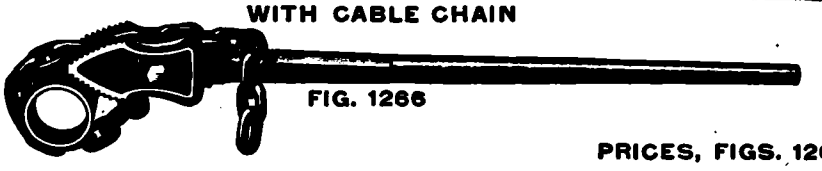


FIG. 1266

WITH FLAT LINK CHAIN

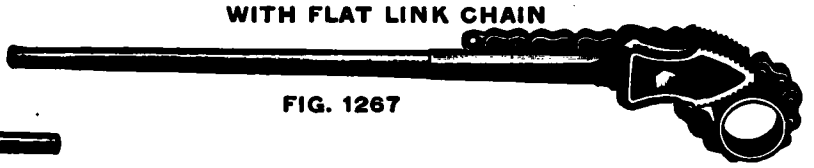


FIG. 1267

PRICES, FIGS. 1266 AND 1267

Sizes	No. 10	No. 11	No. 12	No. 13	No. 13½	No. 14	No. 15	No. 16
Prices, with flat link chain, each	$2 50	$3 50	$5 00	$7 00	$9 00	$11 00	$18 00	$40 00
Prices, with cable chain, each	2 25	3 25	4 50	6 25	7 75	9 50	16 00	40 00
Capacity, size pipe	⅛ to ¾ in.	⅛ to 1½ in.	¼ to 2½ in.	¾ to 4 in.	1 to 6 in.	1½ to 8 in.	2 to 12 in.	4 to 18 in.
Length over all	13¾ in.	20 in.	27 in.	37 in.	44½ in.	50½ in.	64½ in.	87 in.
Weight	1¾ lbs.	4¾ lbs.	8¾ lbs.	16 lbs.	21 lbs.	29 lbs.	49 lbs.	137 lbs.
Extra flat link chain, each	$0 75	1 00	1 50	2 50	3 25	4 00	6 00	13 00
Extra cable chain, each	50	75	1 00	1 75	2 00	2 50	4 00	13 00
Extra jaws, pair	1 00	1 75	2 75	4 00	4 75	5 50	7 50	16 00
Length, flat link chain	9½ in.	13½ in.	17½ in.	22½ in.	31 in.	39 in.	54½ in.	74½ in.
Length, cable chain	9¾ "	14½ "	18 in.	27 in.	33½ in.	42 "	57 in.	76 in.
Breaking strain, flat link chain	3,500 lbs.	6,500 lbs.	9,500 lbs.	12,500 lbs.	14,000 lbs.	15,500 lbs.	21,500 lbs.	40,000 lbs.
Breaking strain, cable chain	1,200 "	4,000 "	6,000 "	10,500 "	12,500 "	15,000 "	19,000 "	40,000 "
Size, iron in cable chain	5/16 in.	9/32 in.	11/32 in.	7/16 in.	15/32 in.	33/64 in.	37/64 in.	13/16 in.

All parts are interchangeable; repairs can always be had. No. 16 has eye on end of handle for use with tackle. When ordering state which chain is desired; flat link chain will be sent unless otherwise specified.

CHAMPION CHAIN PIPE WRENCHES

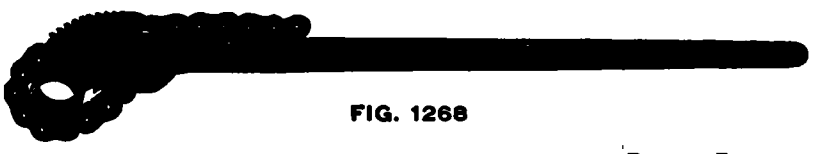


FIG. 1268

Nos.	Prices.	Capacity, Inches.	Length, Inches.	Weight, Lbs.	Extra Chain, Each.	Extra Jaws, per Pair.
0	$2 50	⅛ to ¾	12½	1¾	$0 75	$1 00
1	3 50	¼ " 1½	19½	4¼	1 00	1 75
2	5 50	¼ " 2½	28	9	1 50	2 75
3	7 50	¾ " 6	38¼	17½	2 50	4 00
4	11 00	1½ " 8	50½	32	4 00	5 50
5	18 00	2 " 12	65	57	6 00	7 50

TRIMO GIANT CHAIN TONGS



FIG. 1269

Nos.	Length of Lever, Inches.	Takes Pipe, Inches.	Each.	Extra Jaws, per Pair.
2	27	¾ to 3	$6 00	$1 75
3	37	1 " 4	8 00	2 25
4	50	2 " 6	10 00	2 75
5	60	2½ " 10	15 00	3 50
6	72	3 " 12	18 00	4 00
7	84	4 " 16	32 00	5 00

ADJUSTABLE CHAIN PIPE WRENCHES

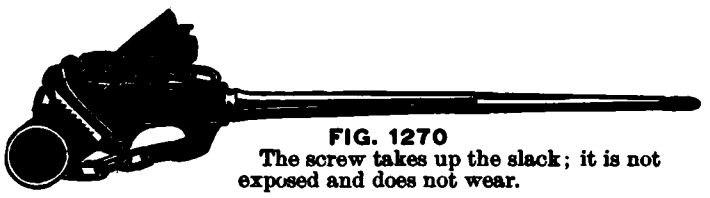


FIG. 1270

The screw takes up the slack; it is not exposed and does not wear.

Nos.	Prices.	Capacity, Inches.	Length of Lever, Inches.	Weight, Lbs.	Extra Chain.	Bodies.	Extra Jaws.
1	$3 50	½ to 1½	18	5	$0 75	$0 80	$0 60
2	5 50	1 " 3	26	9	1 25	1 00	90
3	7 50	1 " 4	36	15	1 50	1 50	1 00
4	9 50	1½ " 6	46	25	2 00	2 00	1 25
5	11 00	2 " 10	58	36	3 25	2 50	1 50
6	18 00	2½ " 12	70	50	5 00	3 75	1 75
7	30 00	4 " 16	80	85	6 00	5 00	2 75

"ALWAYS READY" WRENCHES

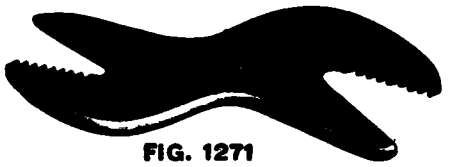


FIG. 1271

Manufactured from special steel, forged and tempered in oil. Polished and nickel plated.

Nos.	Inches.	Holds square or round Iron, Inches.	Per Dozen.
1	5	¼ to ¾	$5 00
2	7	¼ " 1¼	6 75
2½	9½	¼ " 1¾	10 50
3	11½	¾ " 2	16 00

BULL DOG OR ALLIGATOR WRENCHES

NOS. 0, 1 AND 1½

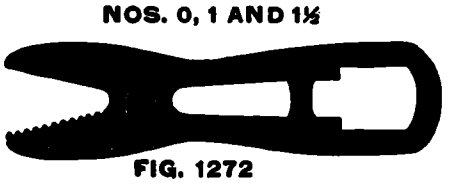


FIG. 1272

NOS. 2, 3, 4 AND 5



FIG. 1273

TWIN



FIG. 1274

These wrenches are forged solid in one piece, from a special grade of steel selected for that purpose.

Nos.	Lengths, Inches.	Holds Pipe, Inches.	Holds Round Iron, Inches.	Prices, per Dozen.
0 Pocket.	4	⅛ to ¼	¼ to 9/16	$3 00
1	5¾	⅛ " ⅜	¼ " ¾	4 00
1½	5¾	⅛ " ⅜	¼ " ¾	5 00
2	9	⅜ " ¾	½ " 1	12 00

Nos.	Lengths, Inches.	Holds Pipe, Inches.	Holds Round Iron, Inches.	Prices, per Dozen.
Twin	10	⅛ to ¾	¼ to 1	$18 00
3	16	½ " 1¼	¾ " 1⅜	24 00
4	22	1¼ " 2	1½ " 2½	36 00
5	27	2 " 3	2¼ " 3½	54 00

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PIPE WRENCHES

BOYNTON'S ADJUSTABLE ALLIGATOR WRENCH



FIG. 1275

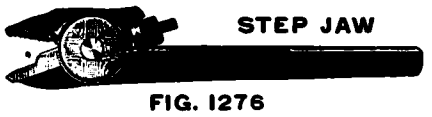


FIG. 1276

Constructed of dropped forged steel. Most excellent for radiators, close coils, short nipples, couplings, body nipples, stud bolts, water backs, nuts, flues, pipe and pump rods.

Nos.	Purpose Intended.	Sizes Pipe.	Prices.
7.	Light, for plier work	⅛ to ⅜	$1 50
9.	Heavy, for general work	⅛ ¾	1 75
13.	" " "	¼ 1	2 50
15.	" " "	⅜ 1¼	3 00

CURTIS PIPE WRENCH

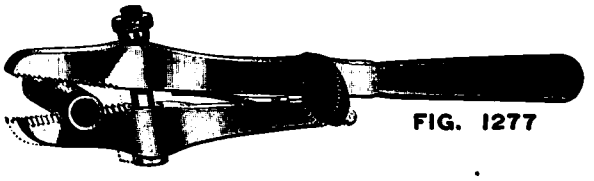


FIG. 1277

Lengths, Inches.	Will Take Pipe, Inches.	Will Take Round Iron, Inches.	Prices, Each.
9	⅛ to ¾	3/16 to 1⅛	$2 25
12	⅛ 1¼	3/16 1⅝	2 75
15	⅛ 1½	¼ 2	3 00
18	⅛ 2½	¼ 3	3 50
22	¼ 3½	⅜ 4	5 00

WESTCOTT ADJUSTABLE "S" PIPE WRENCH



FIG. 1278

							Prices, Each.
6 inch takes pipe from	⅛	to	⅜	inch			$1 00
8 " " " "	⅛		¾	"			1 25
10 " " " "	⅛		1	"			1 50
12 " " " "	⅛		1¼	"			2 00
14 " " " "	⅛		1½	"			2 50

BARWICK WRENCH



FIG. 1279

No. 0. Nickel-plated, takes from No. 7 wire to ½ inch pipe, $1.50.

No. 1. Finished and polished, takes from gas burner to ¾ inch pipe, $2.00.

BILLINGS PIPE WRENCH

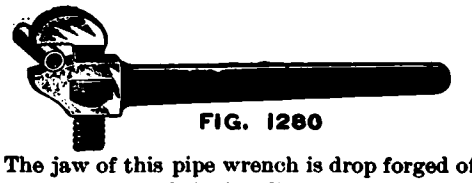


FIG. 1280

The jaw of this pipe wrench is drop forged of best tool steel, and the handle of the best grade of machinery steel.

The total length of wrench is 14 inches. Made to take from ¼ inch to 1½ inch pipe Price, $2 50.

PHILLIPS' PIPE WRENCH

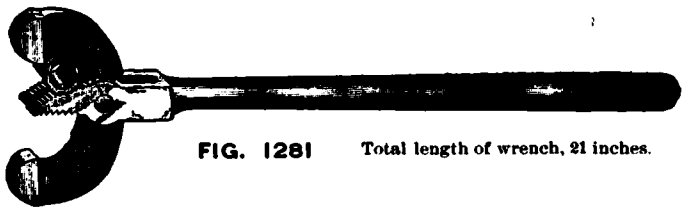
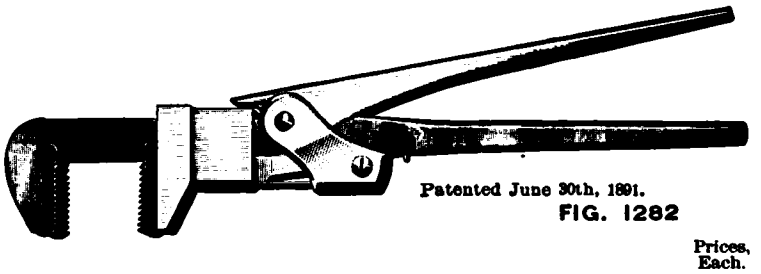


FIG. 1281 Total length of wrench, 21 inches.

This wrench is drop forged from Norway iron and tool steel, and is finished in a thorough manner. A useful tool for plumbers, gas fitters, bridge builders, railroad repair shops, etc. Will take round, square or hexagon shapes, taking pipe from ⅜ to 2 inches. Each, $3.00.

LIBERTY PIPE WRENCH



Patented June 30th, 1891.

FIG. 1282

					Prices, Each.
No. 1.	Opens 1⅛ inch—	9	inches long		$2 50
2.	" 1½ "	11	"		3 00
3.	" 2⅛ "	15	"		4 00
4.	" 2½ "	19	"		5 00
5.	" 3¼ "	25	"		7 50

RAPID TRANSIT WRENCH

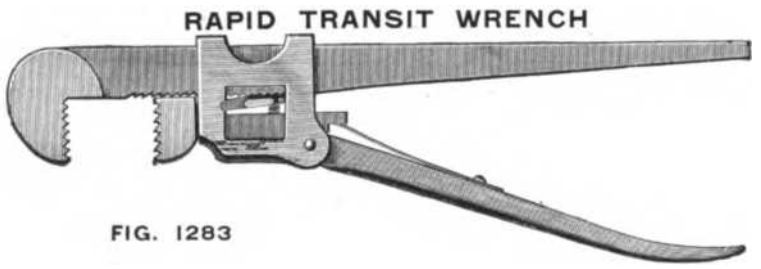


FIG. 1283

		Prices, Each.
No. 1.	Takes from 0 to ½ inch	$2 50
2.	" " 0 1 "	2 75

Nickel-plated, 25 cents extra.

GILES' PIPE WRENCH

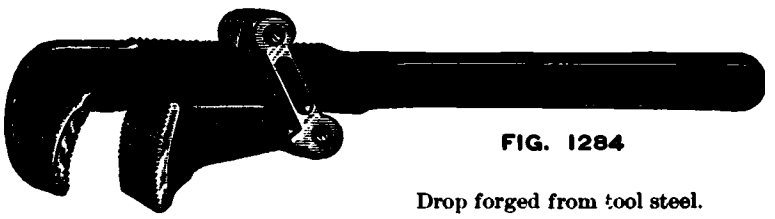


FIG. 1284

Drop forged from tool steel.

Lengths.	10	14	18	24
Takes from	⅛ to 1 in.	⅛ to 1½ in.	¼ to 2 in.	¼ to 2½ in.
Prices,	$2 25	$3 00	$4 00	$6 00

SHEFFY PIPE WRENCH

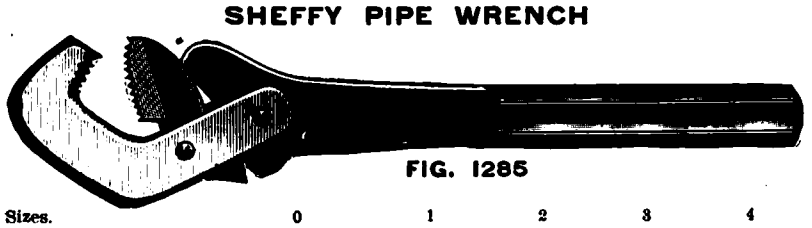


FIG. 1285

Sizes.	0	1	2	3	4
Lengths, inches,	7	9	12	15	18
Takes pipe, inches,	⅛ to ½	⅛ to ¾	⅛ to 1	¼ to 1½	¼ to 2
Each,	$2 00	$2 00	$2 25	$3 00	$4 00

WRIGHT'S PIPE WRENCH



FIG. 1286
18 inch and larger.



14 inch and smaller.

FIG. 1287

Lengths, inches.	6	8	10	14	18	24
Will open, inches,	1⅛	1½	1¾	2½	3½	4
Per dozen,	$24 00	$24 00	$27 00	$36 00	$48 00	$72 00

MANNING, MAXWELL, & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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PIPE WRENCHES

STANDARD PIPE WRENCH



FIG. 1288

Take without adjustment any size of pipe within their capacity. All parts are interchangeable. Facings are of best tool steel. Jaws are of crucible steel, both drop forged.

Numbers show length in inches	No. 8	No. 11	No. 16	No. 20	No. 30	No. 40
Takes pipe from	⅛ in. wire to ¾ in. pipe	⅛ in. to 1 in.	⅜ in. to 1½ in.	1 in. to 2 in.	1¼ in. to 3 in.	2 in. to 4 in.
Prices, each	$2 00	$2 25	$3 00	$4 00	$9 00	$12 00
Extra jaw, including rod.	67	75	1 00	1 35	3 00	4 00
Facing, including screws and dowel pin	40	45	60	80	1 50	2 00
Spring	10	10	15	20	40	50
Prices, nickel-plated	2 50	3 00	4 00	5 00	12 00	15 00

No. 20 R. R. for railroad and car shop use.

Length, 20 inches, capacity ⅜ inch pipe to 1½ inch pipe. Price, $4 00

Price of parts same as No. 20 standard.

JOHNSTON PIPE WRENCH

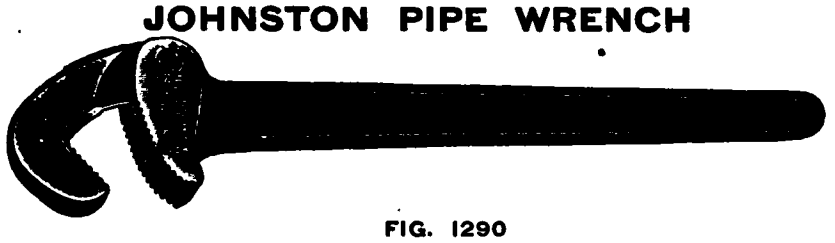


FIG. 1290

10 inch pipe,	⅛ to 1 inch	Price,	$2 25
16 "	¼ " 1½ "		3 00
24 "	½ " 2½ "		6 00

FRANKLIN PIPE WRENCH

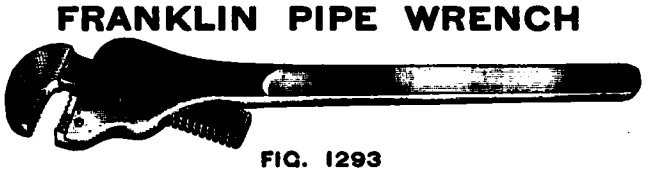


FIG. 1293

Lengths open, inches.	6	8	10	14	18	24	36	48
Takes pipe sizes	⅛-½	⅛-¾	⅛-1	¼-1½	¼-2	¼-2½	½-3½	1-5
Each	$2 00	2 00	2 25	3 00	4 00	6 00	12 00	18 00
Jaws, each	67	67	75	1 00	1 33	2 00	4 00	6 00
Nuts, "	20	20	27	35	42	50	65	80
Bits, "	25	25	35	50	55	65	1 00	1 75

ARMSTRONG PIPE WRENCH

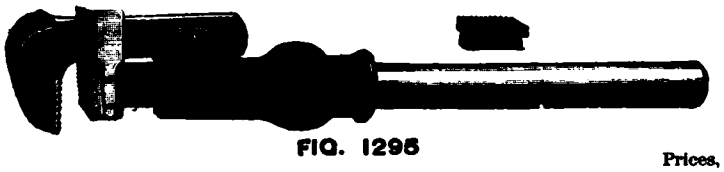


FIG. 1295

		Prices, each.
No. 3, takes from 0 to 1	inch	$ 2 00
" 4, " " 0 1½	"	2 75
" 5, " " ⅜ 2½	"	4 50
" 6, " " 1 4	"	12 00

EXTRA JAWS, EACH

No. 3.....40c. No. 4.....50c. No. 5.....70c. No. 6.....$1 00

EAGLE WRENCH

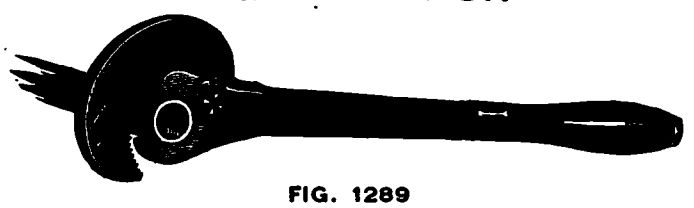


FIG. 1289

Will adjust instantly on any size pipe. Made of drop forged steel and malleable iron, with wood handles. No spring or small parts to give out.

	Prices, each.
No. 1, 16 inch, takes from ⅛ to 1 inch pipe	$3 50
2, 22 " " " ¾ 2	6 50

Extra Parts.	No. 1.	No. 2.
Jaw	$2 25	$4 50
Handle	1 00	1 60
Steel Pin	25	40

STILLSON PIPE WRENCH

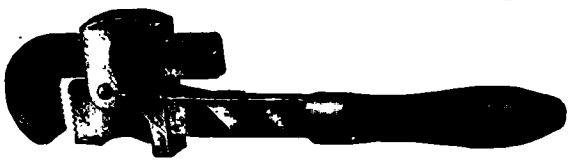


FIG. 1291

6 to 18 inches.

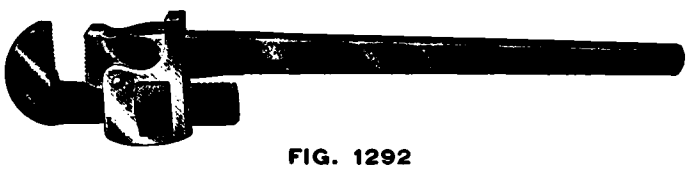


FIG. 1292

18 to 48 inches.

PRICES, FIGS. 1291 AND 1292

Lengths, open, in inches.	6	8	10	14	18	24	36	48
	Inches							
Takes from	⅛ to ½,	⅛ to ¾,	⅛ to 1,	¼ to 1½,	¼ to 2,	¼ to 2½,	½ to 3½,	1 to 5
Prices	$2 00	2 00	2 25	3 00	4 00	6 00	12 00	18 00
Jaws	67	67	75	1 00	1 33	2 00	4 00	6 00
Frames	25	25	33	45	55	65	75	1 00
Nuts	20	20	27	35	42	50	65	80

TRIMO PIPE WRENCH

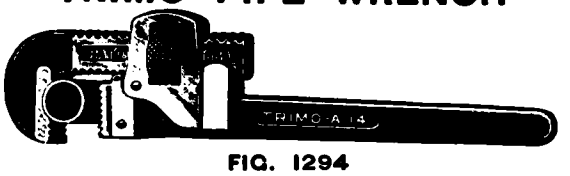


FIG. 1294

Lengths open, in inches.	6	8	10	14	18	24	36	48
Takes pipe from (in inches)	⅛ wire to ½ pipe	⅛ wire to ¾ pipe	⅛ wire to 1 pipe	¼ wire to 1½ pipe	¼ wire to 2 pipe	¼ wire to 2½ pipe	½ pipe to 3½ pipe	1 pipe to 5 pipe
Prices	$2 00	2 00	2 25	3 00	4 00	6 00	12 00	18 00
Jaws	67	67	75	1 00	1 33	2 00	4 00	6 00
Nuts	20	20	27	35	42	50	65	80
Inserted jaw,	25	25	33	50	55	65	1 00	1 25
Frames	25	25	33	45	55	65	75	1 00

KNIFE HANDLE PIPE WRENCH

PRICES, FIG. 1296

Lengths	6	8	10
Takes pipe from	⅛ in. wire to ½ in. pipe.	⅛ in. to ¾ in.	⅛ in. to 1
Prices	$2 00	$2 00	$2 25
Lengths	14	18	24
Takes pipe from	¼ in. wire to 1½ in. pipe.	¼ in. to 2 in.	1¼ in. to 2½ in.
Prices	$3 00	$4 00	$6 00

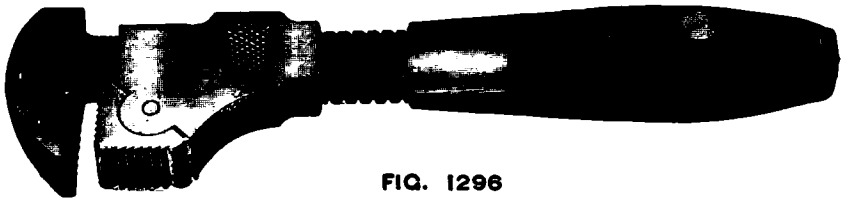


FIG. 1296

MOVABLE AND REVERSIBLE JAW

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PIPE WRENCHES

TRIUMPH PIPE WRENCH—WOOD HANDLE

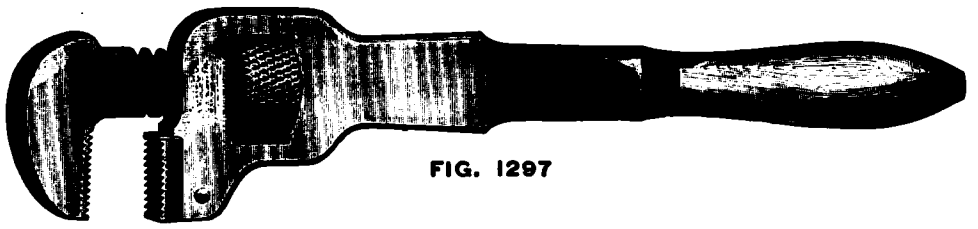


FIG. 1297

Length open in inches.....	6	8	10	14	18	24	36	48
Takes from "	⅛ to ½	⅛ to ¾	⅛ to 1	¼ to 1½	¼ to 2	¼ to 2½	½ to 3½	1 to 5
With inserted lower jaw.....	$2 00	$2 00	$2 25	$3 00	$4 00	$6 00	$12 00	$18 00
With plain lower jaw.....	1 80	1 80	2 00	2 75	3 75	5 50	11 00	16 50
Jaws.....	67	67	75	1 00	1 33	2 00	4 00	6 00
Nuts.....	20	20	27	35	42	50	65	80
Nickel plated, extra.....	20	20	30	40	60	1 00		

BARNES' PIPE WRENCH

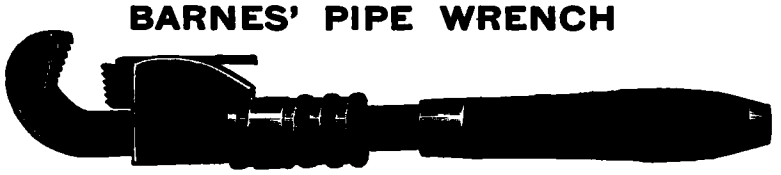


FIG. 1298

10 inch wrench, takes	⅛	to 1	inch pipe.....	$2 25
14 " "	¼	" 1½ "		3 00
18 " "	½	" 2 "		4 00

PRICES OF PARTS

	10 inches.	14 inches.	18 inches.
Knuckle jaw and spring.....	$0 50	$0 65	$0 80
Slide.....	30	45	60
Hand nut.....	45	50	70
Handle and end nut.....	10	10	16
Hook.....	1 00	1 00	2 00

COMBINATION WRENCH

WITH SHORT NUT



FIG. 1301

BRIGHT OR BLACK

Inches.			Inches.			Prices. per doz.	Weight. per doz.
10, adjustable	to	pipe from	¼	to 1	in diameter,	$23 00	24 lbs.
12, "		"	½	" 1¾	"	26 00	36 "
15, "		"	½	" 2¼	"	37 00	52 "
18, "		"	½	" 3	"	66 00	85 "

WITH LONG NUT



FIG. 1302

BRIGHT OR BLACK.

Inches.			Inches.			Prices. per doz.	Weight. per doz.
10, adjustable	to	pipe from	¼	to 1	in diameter,	$25 25	26 lbs.
12, "		"	½	" 1¾	"	28 50	40 "
15, "		"	½	" 2¼	"	40 50	55 "
18, "		"	½	" 3	"	72 00	87 "

TRIMO COMBINATION WRENCH

FOR NUTS AND PIPES

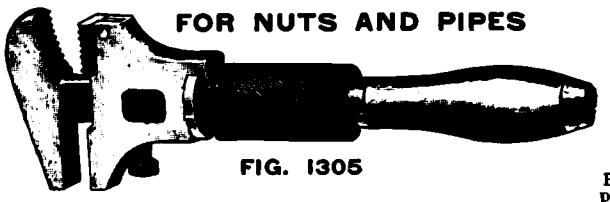


FIG. 1305

Nos.						Prices per doz.
1, 10 inch	takes from	⅛	inch to 1	inch	pipe.....	$25 50
2, 12 "	"	⅛	" 1½	"	.....	28 50
3, 15 "	"	⅛	" 2	"	.....	40 50

BEMIS BRIGHT WRENCHES

SHORT NUT



FIG. 1299

Inches.			Inches.			Prices per doz.
10, adjustable	to	pipe from	¼	to 1	in diameter.....	$19 00
12, "		"	½	" 1¾	"	22 00
18, "		"	½	" 2½	"	48 00

LONG NUT

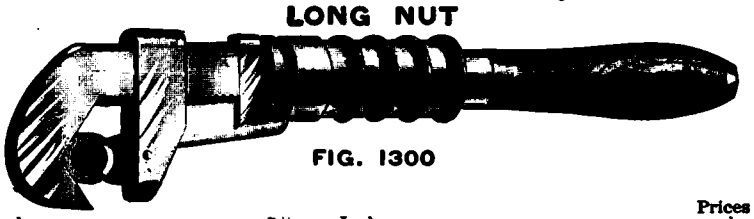


FIG. 1300

Inches.			Inches.			Prices per doz.
10, adjustable	to	pipe from	¼	to 1	in diameter.....	$20 75
12, "		"	½	" 1¾	"	24 00
18, "		"	½	" 2½	"	50 00

COMBINATION ENGINEERS' WRENCHES

SHORT NUT



FIG. 1303

Inches.			Prices Per doz.				
10, bright	finish.....		$23 00	10 inch takes pipe	½	to 1	inch.
12, "	"		26 00	12 " "	½	" 1¾	"
15, "	"		37 00	15 " "	½	" 2¼	"

LONG NUT

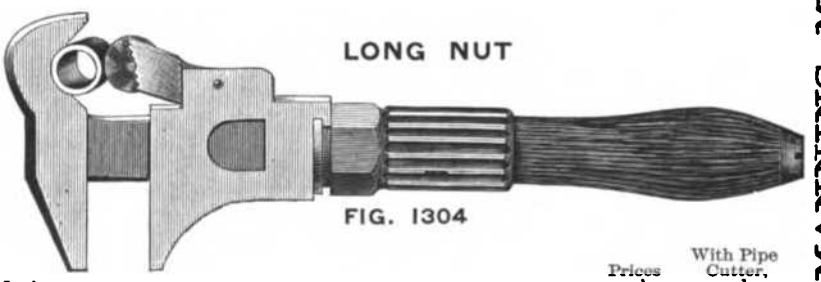


FIG. 1304

Inches.		Prices per doz.	With Pipe Cutter, per doz.
10, bright	finish.....	$25 25	.....
12, "	"	28 50	$34 50
15, "	"	40 50	48 00
18, "	"	72 00	79 50
21, "	"	84 00	93 00

10, 12 and 15 inches will take same as Fig. 1303. 18 and 21 inches take to 3 inches.

Agricultural black wrench, same as above, to order only.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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KELLAM FLANGE WRENCH

PRICES, FIG. 1306

Numbers	1	2	3
Length of levers, inches	48	72	84
Weight in pounds	20	65	85
Takes flanges of diameters, inches	4–10	8–16	14–26
Each	$15 00	$25 00	$40 00

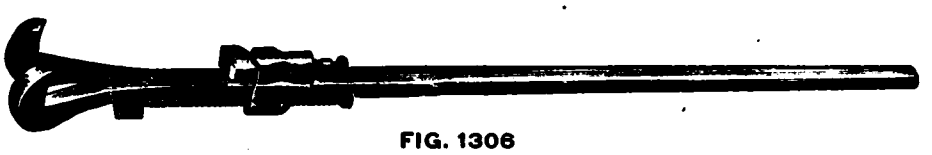


FIG. 1306

MONKEY WRENCH PIPE JAW

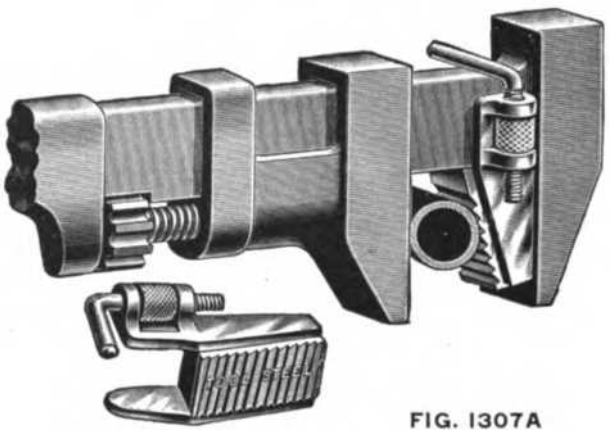


FIG. 1307A

DESCRIPTION, FIG. 1307A

Hardened steel teeth. Any ordinary monkey wrench can be fitted with this device in a second or detached in same length of time. Saves carrying an extra wrench for pipe work.

Price, $3.00 per dozen

ELGIN ADJUSTABLE WRENCH

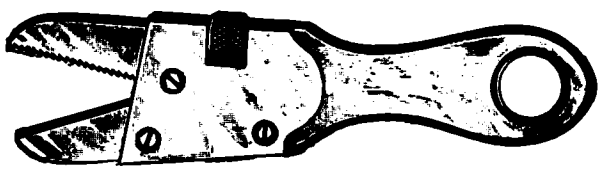


FIG. 1307

Will hold pipe, nipples, collars, rods, square, hexagon or round nuts. Designed for blacksmiths, plumbers, gas fitters, engineers, electricians and machinists.

Both jaws hardened. Wrench is all steel, fully nickel plated. Length, 7 inches. Weight, 10 ounces. Price, $12.00 per dozen. Extra jaws, $3.00 per dozen.

COMBINATION PIPE WRENCH AND CUTTER

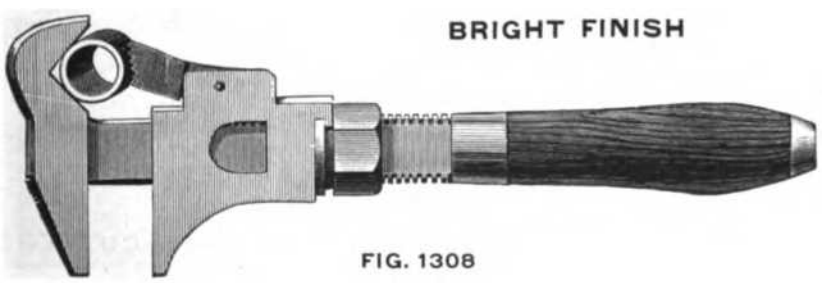


FIG. 1308

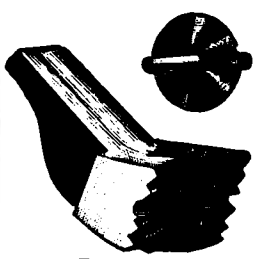


FIG. 1309

PRICES, FIG. 1308

Inches.		Per Dozen.
12	Takes pipe ½ to 1¾ inches	$84 50
15	" ½ " 2¼ "	48 00
18	" 1 " 3 "	79 50
21	" 1 " 3 "	93 00

PRICES, FIG. 1309

EXTRA PAWLS		EXTRA CUTTER WHEELS	
Inches.	Each.	Inches.	Each.
12	$0 42	12	$0 21
15	50	15	25
18	58	18	29
21	58	21	29

STANWOOD'S PIPE CUTTER

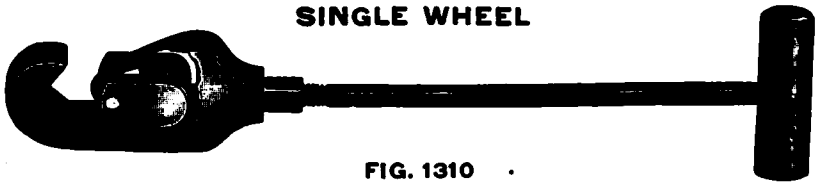


FIG. 1310

Sizes, Nos.	Cuts, Inches.	Complete Cutters.	Cutter Blocks with Wheels	Wheels.	Pins.
1	⅛ to 1	$1 50	$0 45	$0 12	$0 05
2	1 " 2	2 25	60	18	05
3	2 " 3	7 00	1 25	25	10



FIG. 1311

Sizes, Nos	Cuts, Inches.	Complete Cutters.	Cutter Blocks.	Wheels.
1	⅛ to 1	$4 50	$0 60	$0 12
2	½ " 2	6 00	90	18
3	1¼ " 3	10 00	1 50	35

WALWORTH'S IMPROVED PIPE CUTTER

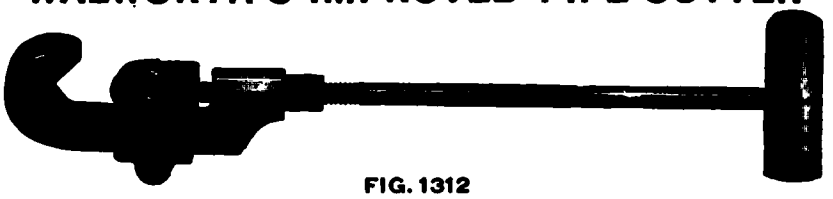


FIG. 1312

Numbers	1	2	3
Cuts pipe	⅛ to 1	¾ to 2	2 to 3
Each	$1 50	$2 25	$7 00
Extra blocks and wheels, each	60	90	1 50
Extra wheels, each	12	18	25

EUREKA PIPE CUTTER

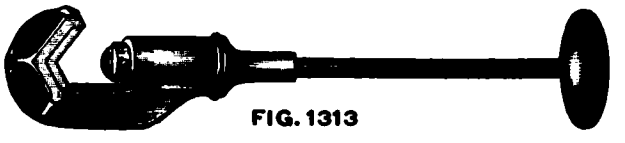


FIG. 1313

EXTRA PARTS



PRICES, FIG. 1313

	No. 1 cuts ⅛, ¼, ⅜, ½, ¾, 1 inch pipe.	No. 2 cuts ¾, 1, 1¼, 1½, 2 inch pipe.	No. 3 cuts 1, 1¼, 1½, 2, 2½, 3 inch pipe.
Cutter	$2 00	$3 00	$9 30
Cutter blocks and wheels	60	90	1 75
Extra jaws	20	30	50
Cutter wheels	17	24	35
Wheel pins	10	10	15

MILLER'S REVERSIBLE RATCHET PIPE CUTTER

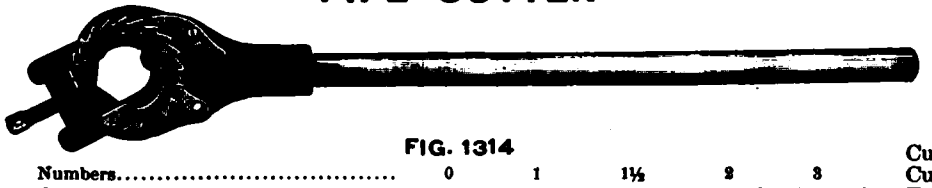


FIG. 1314

Numbers	0	1	1½	2	3
Cuts pipe	⅛ to ¾	½ to 1	1 to 1½	1¼ to 2	2½ to 3
Each	$6 75	8 50	10 00	11 00	16 00
Extra wheels	12	18	18	25	40

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PIPE CUTTERS

BARNES' THREE WHEEL PIPE CUTTER

NOS. 3, 4, 5, 6, 6 1-2, 7

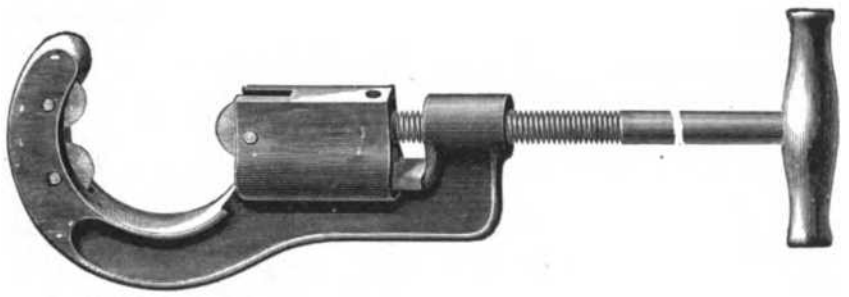


FIG. 1315

NOS. 1, 2.

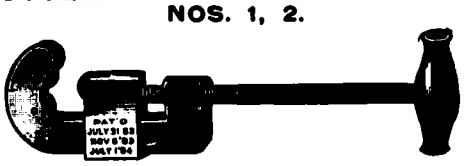


FIG. 1314 1-2

PRICES, FIGS. 1314 1-2 AND 1315

Size. No.	Cuts, Inches.	Cutters Complete.	Wheels.	Pins, per Dozen.
1	⅛ to 1	$4 50	$0 25	$1 00
2	½ " 2	6 00	30	1 00
3	1½ " 3	10 00	40	1 00
4	2½ " 4	20 00	50	2 00
5	4 " 6	30 00	75	2 00
6	6 " 8	40 00	75	2 00
6½	8 " 10	45 00	75	2 00
7	9 " 12	50 00	75	2 00

CURTIS' PIPE CUTTER

Quick adjustment.

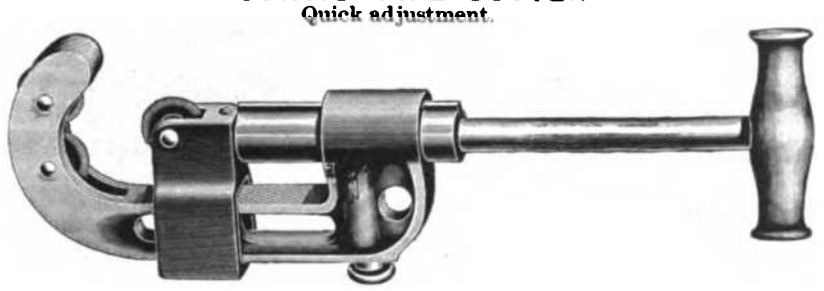


FIG. 1317

No. 2. Range ⅛ to 2 inches. Weight, 7 lbs..... Price, $6 00
Cutter wheels, each..... " 30

ARMSTRONG THREE WHEEL

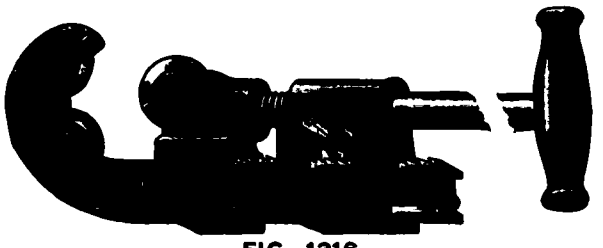


FIG. 1316

No.		Inches.	Complete.	Cutter wheels, or rollers, each
1.	Cutting from	⅛ to 1¼	$4 50	$0 25
2.	" "	½ " 2½	6 00	30
3.	" "	1½ " 4	15 00	50

SAUNDERS' ROLLER PIPE CUTTER

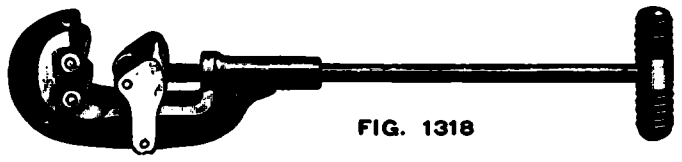


FIG. 1318

Sizes. No.	Cuts, Inches.	Complete Cutters.	Blocks and Wheels.	Wheels.	Rollers.	Pins.
1	⅛ to 1	$3 00	$1 25	$0 24	$0 24	$0 10
2	1 " 2	4 50	1 75	32	32	10
3	2 " 3	11 00	2 75	60	50	15
4	2½ " 4	18 00	3 50	60	50	15
5	4 " 6	28 00	4 00	60	60	15

SAUNDERS' THREE WHEEL PIPE CUTTERS



FIG. 1319

Size. No.	Cuts. Inches.	Complete Cutters.	Blocks and Wheels.	Wheels.	Pins.
1	⅛ to 1	$3 00	$1 25	$0 24	$0 10
2	1 " 2	4 50	1 75	32	10
3	2 " 3	11 00	2 75	60	15
4	2½ " 4	18 00	3 50	60	15

TRIMO PIPE CUTTER

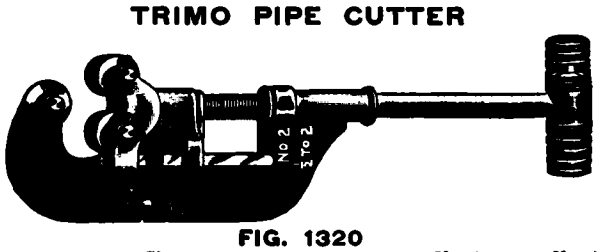


FIG. 1320

Size.	No. 1.	No. 2.	No. 3.
Cuts pipe.....	⅛ to 1¼	½ to 2	1¼ to 3
Price, each, with two extra wheels, interchangeable nut and special handle.....	$4 25	$6 25	$12 25
Extra nuts, each.....	35	35	40
Extra wheels, each.....	30	30	40
Extra rolls, each.....	25	30	50

HALL PATENT PIPE CUTTER

For Cutting Cast Iron Pipe in the Trench.

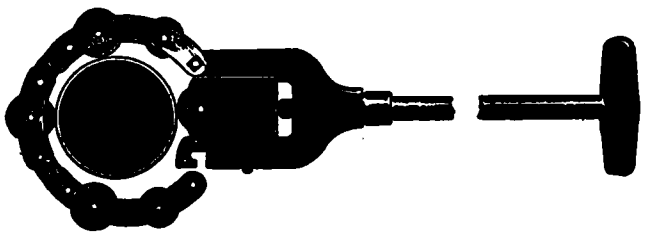


FIG. 1321

No.		Price, each.
1.	Cutter, with 3 loops for cutting 4, 6, and 8 in. pipe	$25 00
2.	" " 3 " " 10, 12, " 14 "	30 00
3.	" " 4 " " 16, 18, 20, and 24 "	40 00

ANDERSON PIPE CUTTER

For Cast Iron Pipe.

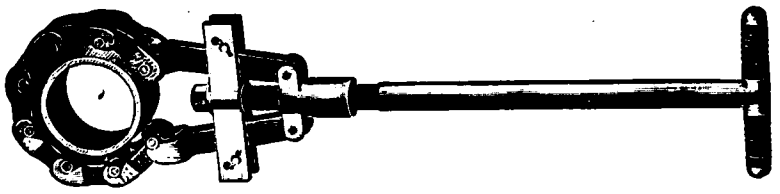


FIG. 1322

No. 0.	Cuts from 1½ to 4 inch pipe inclusive.....	$40 00
No. 1.	Cuts from 2 to 8 inch pipe inclusive.....	50 00
No. 2.	Cuts from 8 to 16 inch pipe inclusive.....	65 00
No. 3.	Cuts from 14 to 24 inch pipe inclusive.....	80 00

FOUR WHEEL PIPE CUTTER

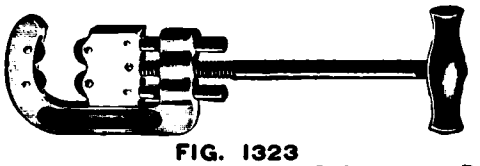


FIG. 1323

No.		Inches.	Price, each.
1.	Four Wheel Cutter, cuts from	2 to 4½	$10 00
2.	" " "	2 " 6	15 00
3.	" " "	4 " 10	20 00

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PIPE VISES

20TH CENTURY PIPE VISE

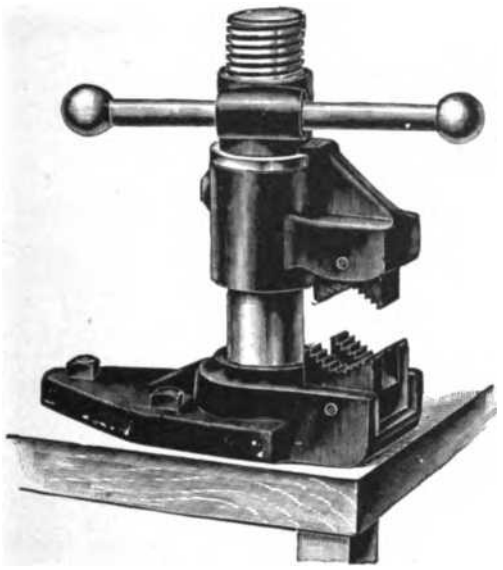


FIG. 1324

					Prices, Each.
No. 285.	Holds ⅛ to 2 in.	pipe.	Weight, 8 lbs.		$5 00
" 286.	" ⅛ " 3	"	" 18 "		7 50
" 288.	" ⅛ " 4	"	" 40 "		14 00

MALLEABLE

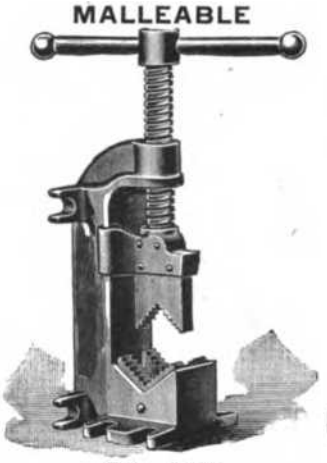


FIG. 1325

Can be bolted to any position.

No. 1. Holding ⅛ to 2 in. pipe, 15 lbs. $6 00

No. 2. Holding ½ to 6 in. pipe, 90 lbs. $27 00

KLINGFAST

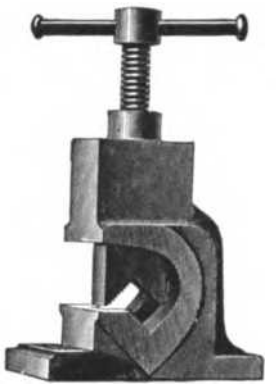


FIG. 1326

No. 1. Holds pipe ¼ to 2 inch.

Each $3 00

INDISPENSABLE

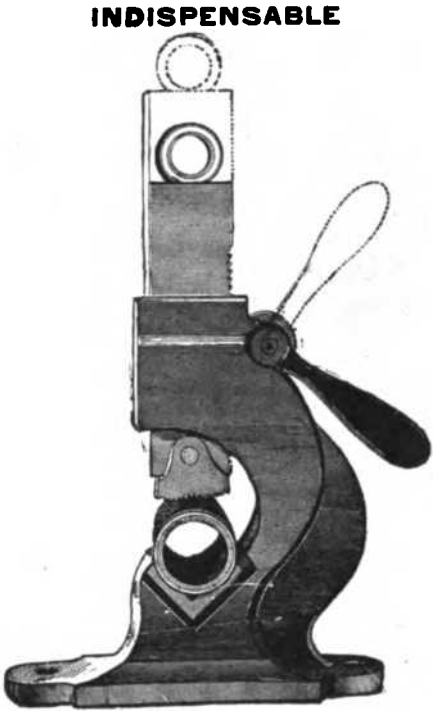


FIG. 1327

PRICES, FIG. 1327

Will grip and hold any size pipe or rod up to 2½ in.

No. 1. Without clamp, each $10 00

" 2. With " " 11 00

MALLEABLE FRAME PIPE VISES

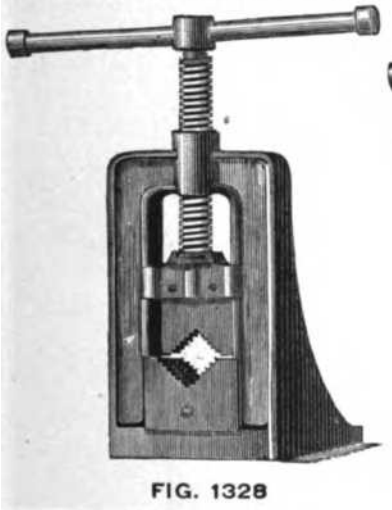


FIG. 1328

No. OA. ⅛ to 2 in. pipe, weight 14 lbs., $7 50

" 15, ⅛ " 2 " " 8½ " 5 00

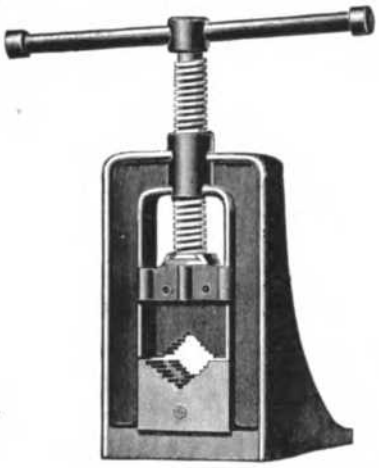


FIG. 1329

Holds ⅛ to 2 in. Price, $8 00

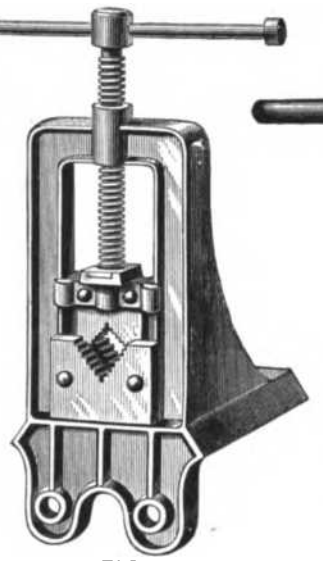


FIG. 1330

Holds ¼ to 3 in. Price, $12 00



FIG. 1331

No. 1. Range ⅛ to ¾ inch, inclusive. Weight, 2½ lbs. Price, each, $3 00

No. 2. Range ⅛ to 2 inch, inclusive. Weight, 12 lbs. Price, each, $6 00

CAST STEEL

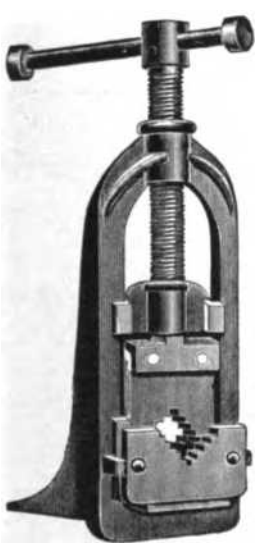


FIG. 1332

Takes from ⅛ to 2½ inch pipe.

Price, each..... $3 50

PIPE VISES WITH ANGLE PLATES

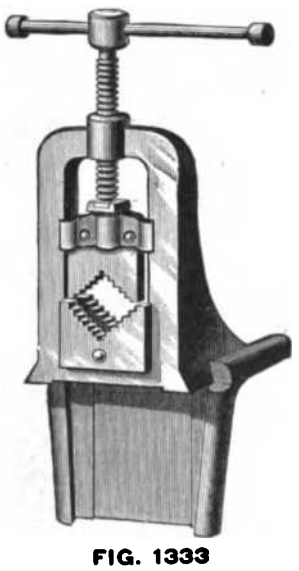


FIG. 1333

No. 1. Holds ⅛ to 2 in. Price, each, $10 00

" 2. " ¼ " 3 " " " 16 00

EXTRA HEAVY

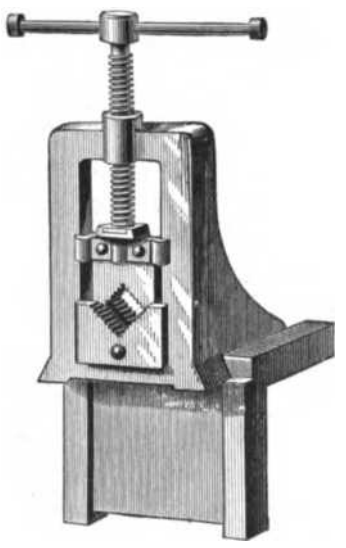


FIG. 1334

No. 1. Holds ⅛ to 2 in. Price, each, $11 00

" 2. " ¼ " 3 " " " 17 00

" 3. " ½ " 4 " " " 28 00

IMPROVED SWIVEL

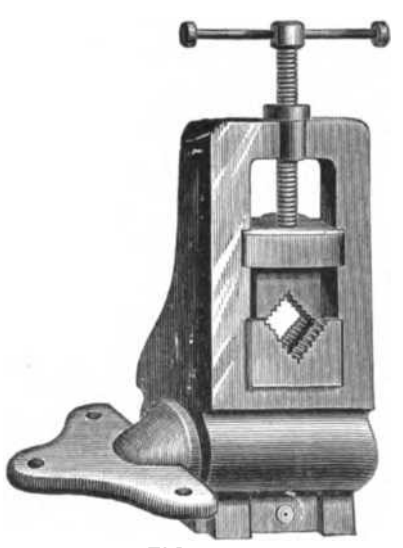


FIG. 1335

No. 1. Holds ⅛ to 2 in. Price, each, $14 00

" 2. " ⅛ " " " " 18 00

" 3. " ¼ " 4" " " 30 00

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PIPE VISES

SWIVEL, WITH STAND



FIG. 1336

	Complete.	Stands and Bolts.
No. 1, holds ⅛ to 2 inches	$19 00	$5 00
" 2, " ⅛ " 3 "	26 00	8 00
" 3, " ¼ " 4 "	40 00	10 00

SWIVEL



FIG. 1337

No. 1, holds 1⅛ to 1¼ inches	$15 00
" 2, " ¼ " 2 "	18 00
" 3, " ¼ " 3 "	30 00

HANDY COMBINATION STEEL VISE

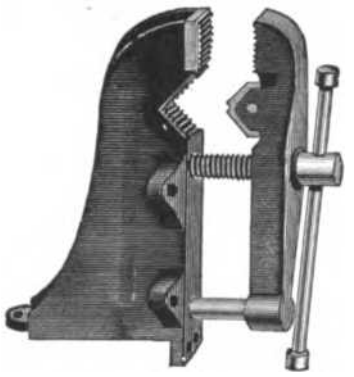


FIG. 1338

Price.
Holds ⅛ to 1½ inch pipe....$6 00

SOLID FRAME MALLEABLE IRON WITH BENDING FORMS



FIG. 1339

A and B, removable brass pipe jaws, made to fit the three sizes of vises.

	Prices.
No. 1, takes pipe from ⅛ to 1¼ inches. Weight, 5 lbs.	$6 00
" 2, takes pipe from ⅛ to 2 inches. Weight, 9 lbs.	7 00
" 3, takes pipe from ⅛ to 2½ inches. Weight, 16 lbs.	8 00

Special jaws for holding brass pipe for either size, $2.00 net.

MALLEABLE HINGED

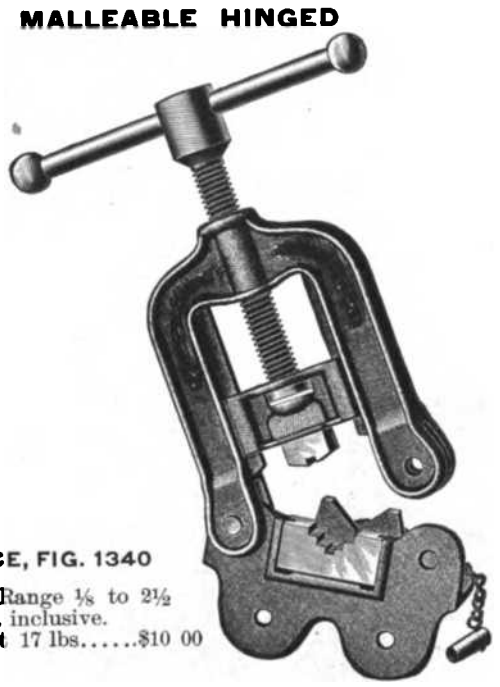


FIG. 1341

No. 1. takes ⅛ to 2 inch pipe, inclusive, each	$10 00
" 2, " ⅛ " 3 " " " "	14 00
Extra jaws for No. 1, per set	2 50
" " " " 2, "	3 00

MALLEABLE HINGED

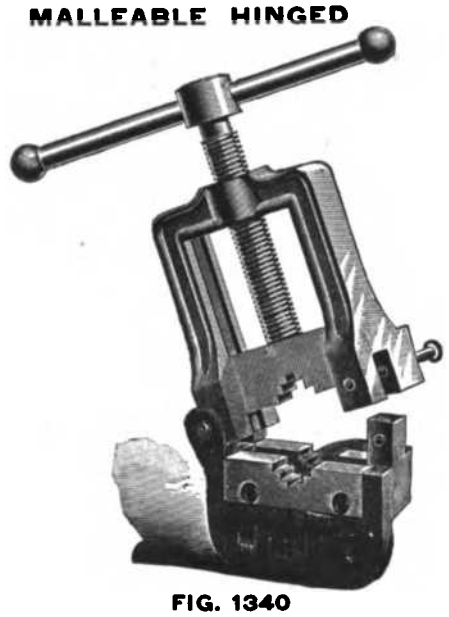


FIG. 1340

PRICE, FIG. 1340

No. 1. Range ⅛ to 2½ inch, inclusive.
Weight 17 lbs.....$10 00

MALLEABLE HINGED

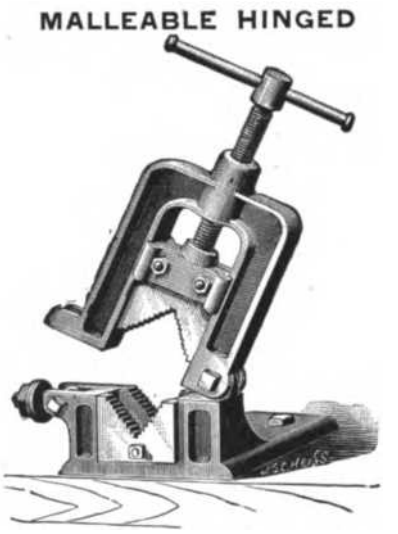


FIG. 1342

No. 5, for ⅛ to 2½ inch pipe	each, $5.00
"10, " ¼ " 4½ " "	" 9 00

MALLEABLE HINGED



FIG. 1343

No. 15 takes from ⅛ to 3 inch pipe.
Weight, 25 lbs.....$6 50
No. 20 takes from ⅛ to 4 inch pipe.
Weight, 35 lbs..... 9 00
No. 25 takes from ½ to 6 inch pipe.
Weight, 80 lbs.....15 00

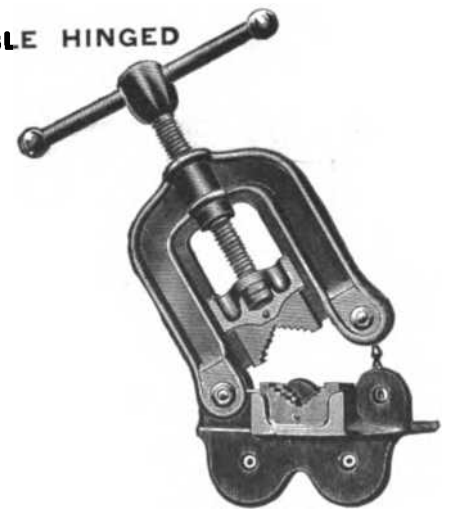


FIG. 1344

No. 1 D takes from ⅛ to 2½ inch pipe.
Weight, 19 lbs.....$10 00
No. 2 D takes from ¼ to 3½ inch pipe.
Weight, 30 lbs.....14 00

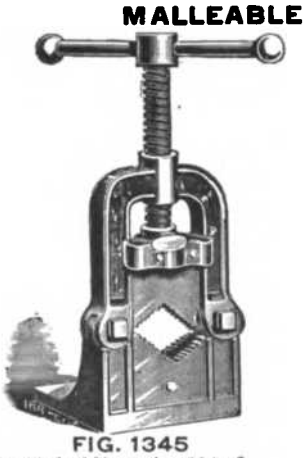


FIG. 1345

No. 00, holding pipe ⅛ to 2.
Weight, 16 lbs. $9 00
No. 000, holding pipe ⅜ to 4.
Weight, 35 lbs. 15 00



FIG. 1346

No. X, holding pipe ⅛ to 2.
Weight, 17 lbs. $10 00
No. XX, holding pipe ⅜ to 4.
Weight, 37 lbs. 19 00

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MALLEABLE HINGED PIPE VISES

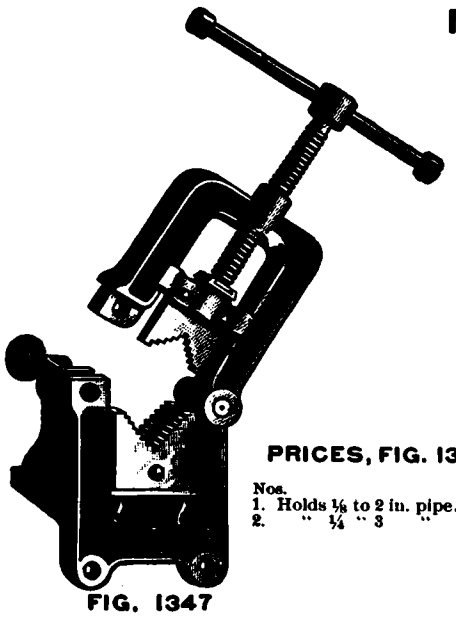


FIG. 1347

PRICES, FIG. 1347

Nos.		Each.
1.	Holds ⅛ to 2 in. pipe.	$10 00
2.	" ¼ " 3 "	13 00

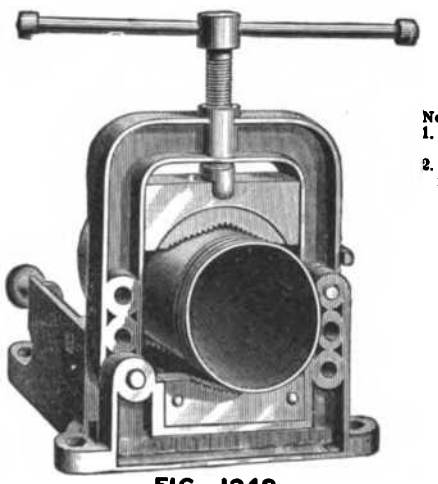


FIG. 1348

Nos.		Prices, each.
3.	Holds ½ to 4 inch pipe	$24 00
4.	" 2 6 "	30 00
5.	" 2½ 8 "	45 00
6.	" 4 12 "	70 00

PRICES, FIG. 1349

Nos.		
1.	Will hold from 0 to 2½ inch pipe	$10 00
2.	Will hold from ½ to 4½ inch pipe	20 00

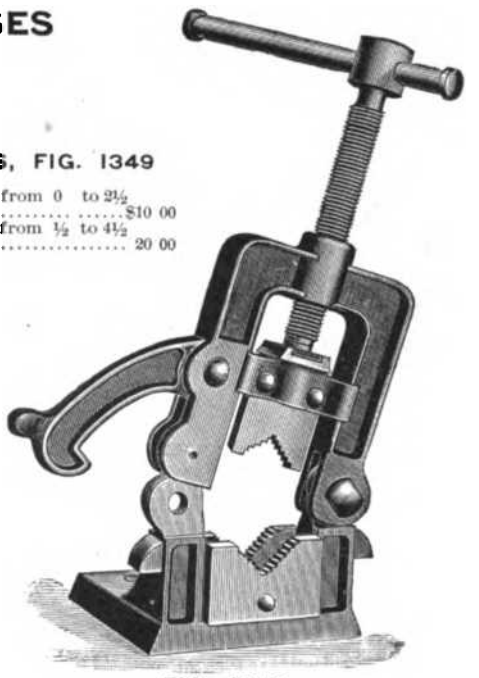


FIG. 1349

MALLEABLE HINGED WITH BENDING FORM

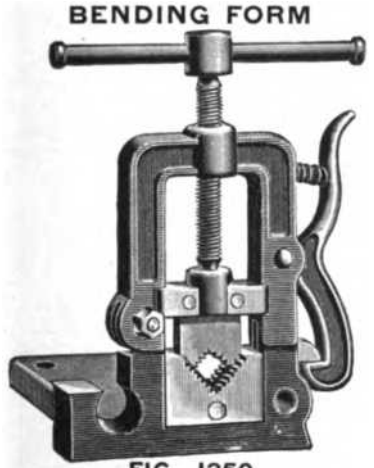


FIG. 1350

Nos.					Prices, each.
1.	Takes ⅛ to 1¼ inch pipe,		weight 6 lbs		$8 00
2.	" ⅛	2	"	10	9 00
3.	" ⅛	2½	"	18	10 00

Special jaws (Fig. 1351) for holding brass pipe for either size, extra, $2.00 net.

REMOVABLE BRASS PIPE JAWS

For Fig. 1350.

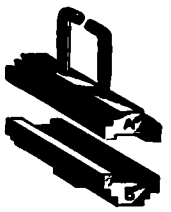


FIG. 1351

MALLEABLE HINGED

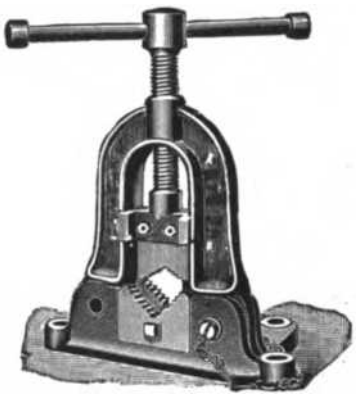


FIG. 1352

Nos.		Prices, each.
1.	Holds ⅛ to 2 inches	$10 00
2.	" ⅛ 3 "	14 00

MALLEABLE HINGED

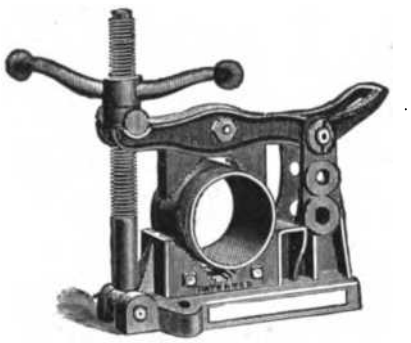


FIG. 1353

Nos.				Prices, each.
1A.	Holds ⅛ to	2	inches	$12 00
2A.	" ⅛	4	"	16 00
3A.	" 1½	6	"	24 00
4A.	" 6	12	"	60 00

SHEPARD PIPE VISE



FIG. 1355

Nos.					Prices, each.
201.	Holds ⅛ to 2½	inch pipe,	weight 18	lbs	$5 00
202.	" ¼	4	"	35 "	9 00
203.	" 1	6	"	75 "	16 00

KITT PIPE VISE

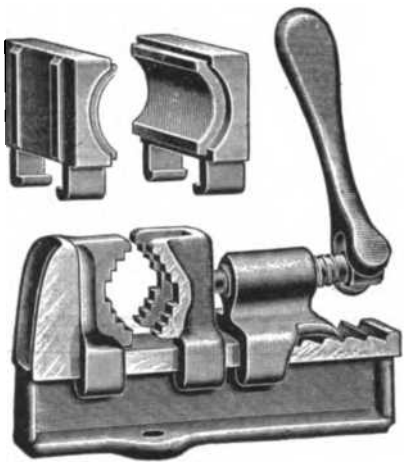


FIG. 1354

Will take outside diameters ¼ to 2 inches, length 7 inches, weight 5 lbs. $4 00

HEAVY JAW PIPE VISE

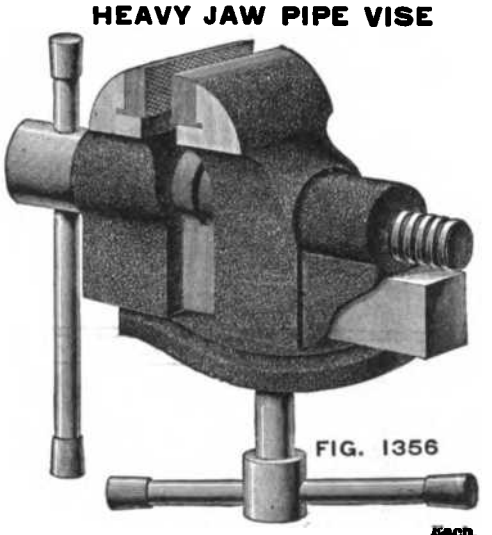


FIG. 1356

Each.
5 inch jaw, for pipe ⅛ to 6 inches $18 00

BLAKE PIPE VISE

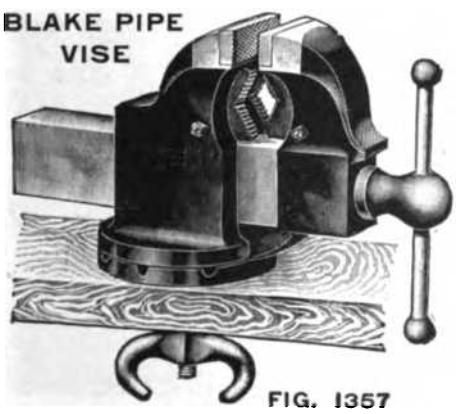


FIG. 1357

PRICES, FIG. 1357

Nos.	Width Jaws, Inches.	Weight, Lbs.	Holding Pipe, Inches.	Each.
181	3½	57	⅛ to 2½	$16 00
182	4¼	84	⅛ to 3	20 00
182½	5	115	⅛ to 4	28 00
		STEEL BAR		
183	6	155	¼ to 6	35 00
185	7	240	⅛ to 8	60 00

PRICES, FIG. 1358

Nos.	Width Jaws, Inches.	Weight, Lbs.	Holding Pipe, Inches.	Base.	Each.
113	4	63	⅛ to 2	Swivel	$16 00
115	4¼	85	¼ 3	"	20 00

No. 113. Fitted with reversible pipe jaws; practically two set of jaws.

EXTRA HEAVY COMBINATION PIPE VISE, SWIVEL BOTTOM

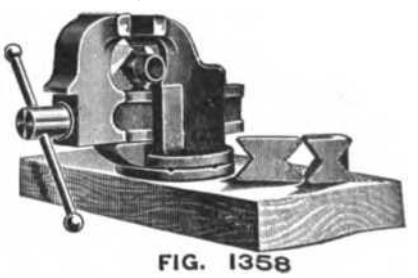


FIG. 1358

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COMBINATION PIPE VISES

STATIONARY BASE

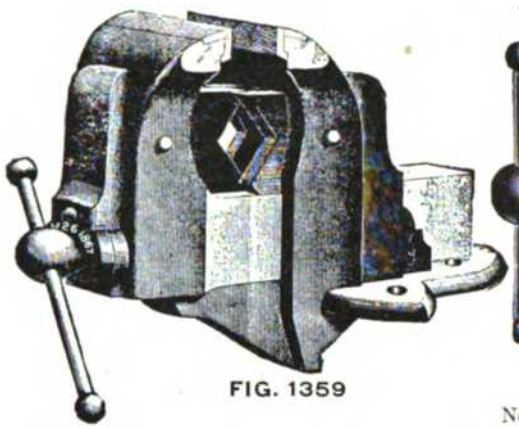


FIG. 1359

No. 88½. Weight, 94 pounds, each.....$28 00
For holding 4 inch pipe and under. Length of jaws, 4¾ inches.
No. 89½. Weight, 141 pounds, each.....$35 00
For holding 6 inch pipe and under. Length of jaws, 5⅜ inches.

STATIONARY BASE

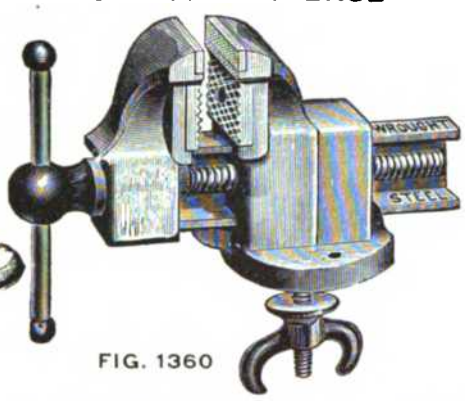


FIG. 1360

No. 81. Jaws, 3½ inches.....$14 00
Holds ⅛ to 2½ inch pipe. Weight, 35 lbs.
No. 82. Jaws, 4¼ inches.....$20 00
Holds ⅛ to 4 inch pipe. Weight, 55 lbs.
No. 83. Jaws, 5 inches.....$30 00
Holds ⅛ to 6 inch pipe. Weight, 100 lbs.

STATIONARY BASE

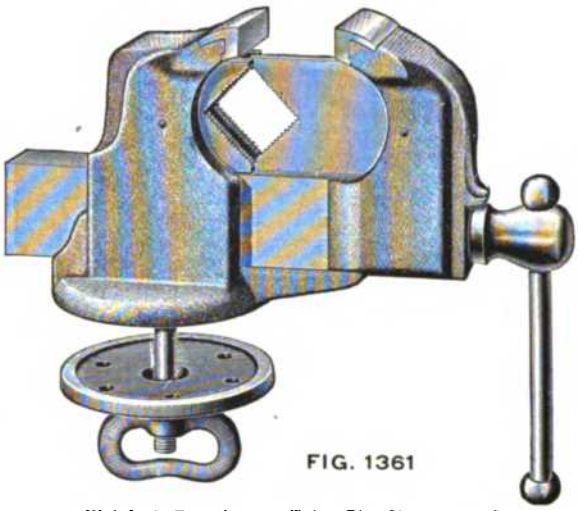


FIG. 1361

Nos.	Weight in Pounds. Each.	Takes Pipe Sizes. Inches.	Complete, Each.
1	47	⅛-2	$16 00
2	70	¼-3	20 00
3	100	¼-4	25 00

STATIONARY BASE

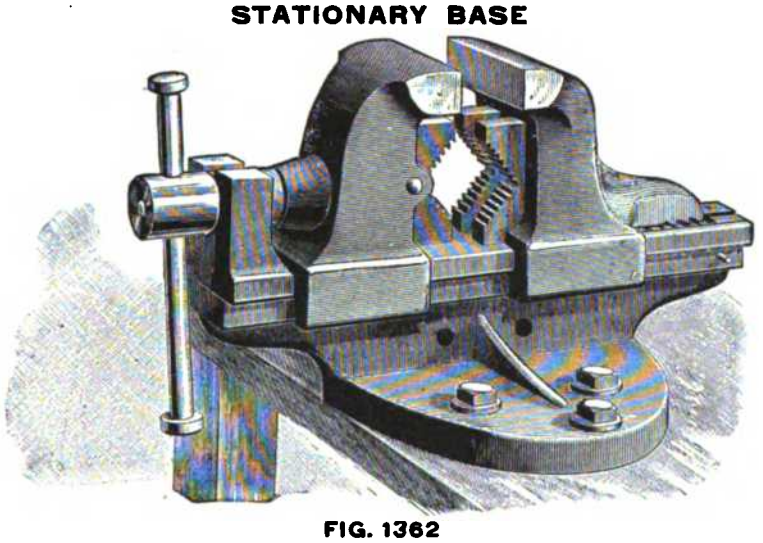


FIG. 1362

Takes pipe from 0 to 3 inches.
Vise without socket for legs.....$12 00

STATIONARY BASE

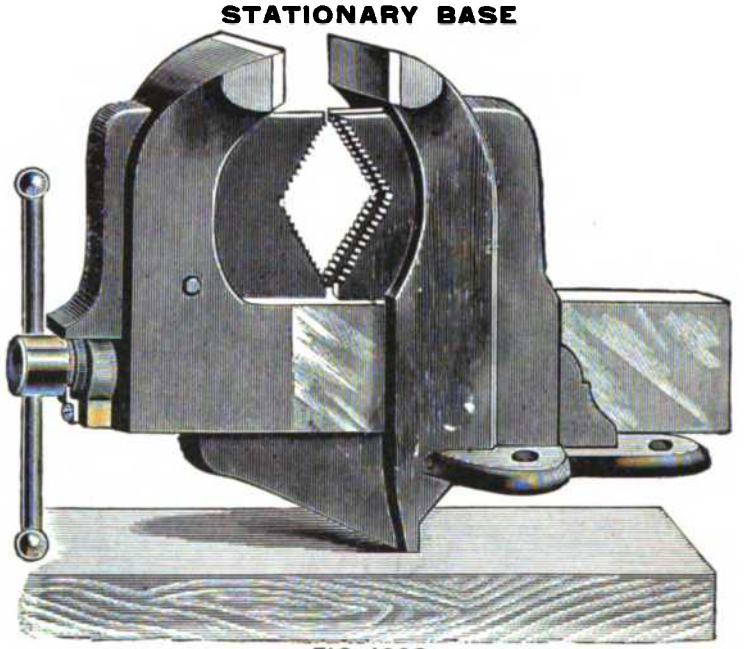


FIG. 1363

No. 27. Jaws, 5 inches.....$28 00
Holds ¼ to 4 inch pipe. Weight, 95 lbs.
No. 28. Jaws, 6 inches.....$35 00
Holds ⅜ to 6 inch pipe. Weight, 157 lbs.

SWIVEL BASE

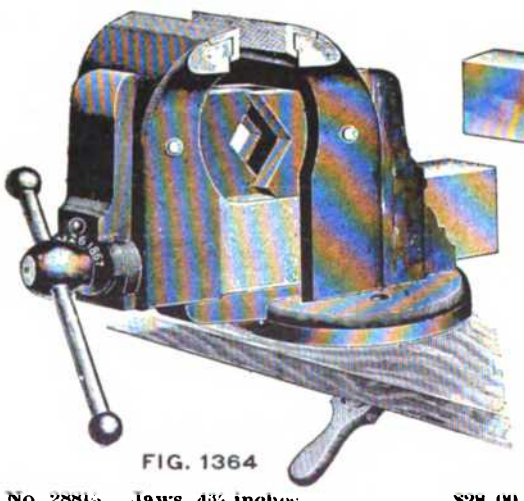


FIG. 1364

No. 288½. Jaws, 4¼ inches.....$28 00
Holds pipe 4 inches and under. Weight, 105 lbs.
No. 289½. Jaws, 5⅜ inches.....$35 00
Holds pipe 6 inches and under. Weight, 155 lbs.

SWIVEL BASE, REVERSIBLE JAWS

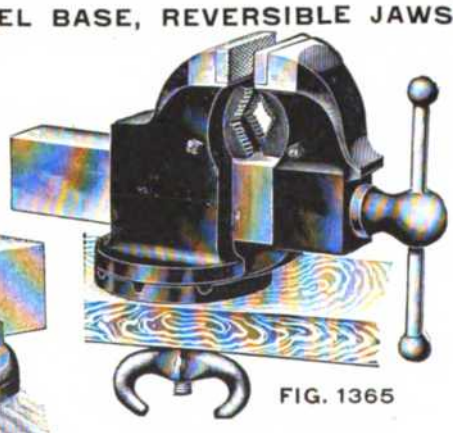


FIG. 1365

No. 181. Jaws, 3½ inches...$16 00
Holds ⅛ to 2½ inch pipe. Weight, 57 lbs.
No. 182. Jaws, 4¼ inches...$20 00
Holds ⅛ to 3 inch pipe. Weight, 84 lbs.

SWIVEL BASE, REVERSIBLE JAWS

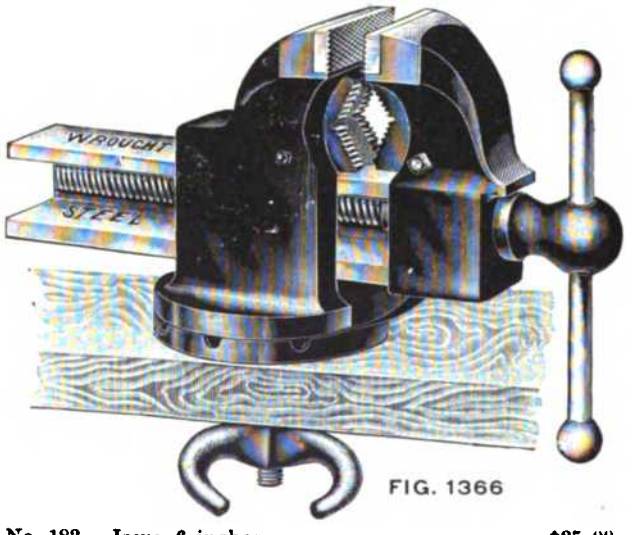


FIG. 1366

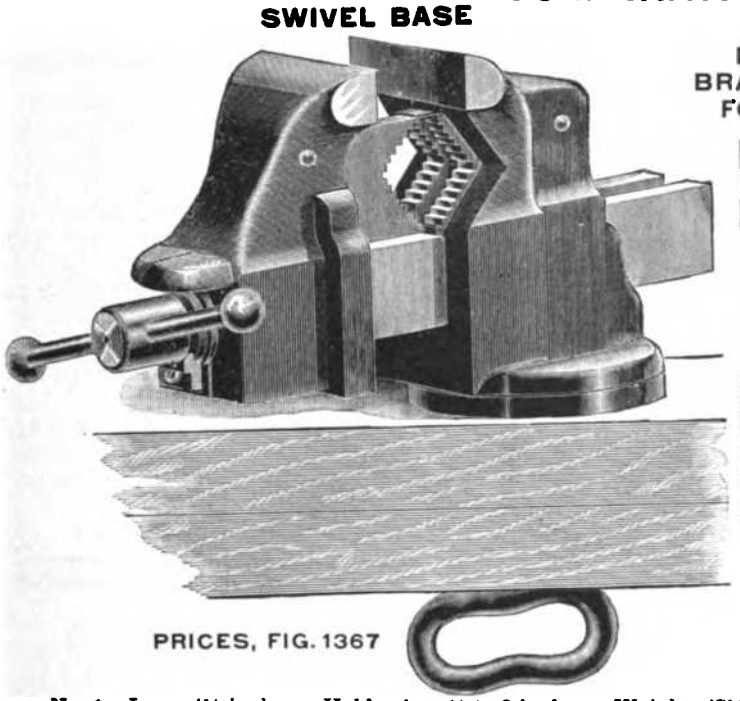
No. 183. Jaws, 6 inches.....$35 00
Holds ⅛ to 6 inch pipe. Weight, 155 lbs.
No. 185. Jaws, 7 inches.....$60 00
Holds ⅛ to 8 inch pipe. Weight, 240 lbs.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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COMBINATION PIPE VISES

SWIVEL BASE



PRICES, FIG. 1367

No. 1—Jaws, 4⅛ inches. Holds pipe ⅛ to 2 inches. Weight, 47½ pounds. Price, $16.00.

No. 2—Jaws, 4⅛ inches. Holds pipe ¼ to 3 inches. Weight, 56 pounds. Price, $20.00.

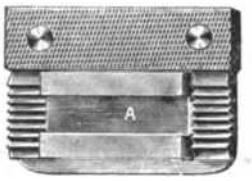
WITH BENDING FORMS

DETACHED BRASS PIPE JAW FOR FIG. 1369



FIG. 1368

BRASS PIPE JAW IN PLACE



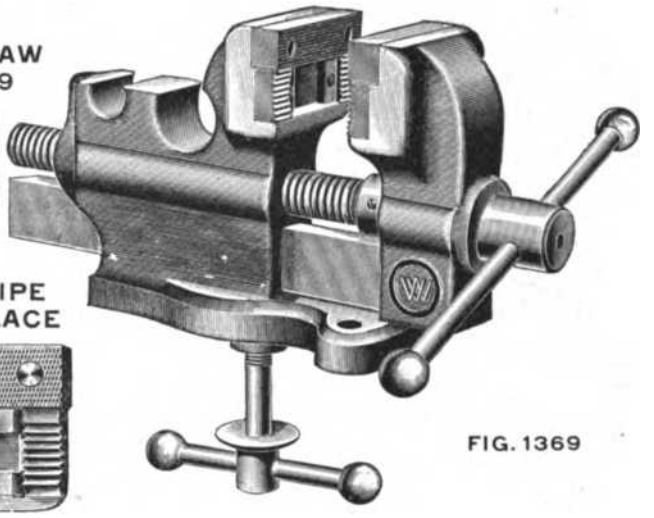


FIG. 1369

No. 0—Holds pipe from ⅛ to 2½ inches, with bending form for bending pipe up to 1 inch.

No. 1—Holds pipe from ⅛ to 7 inches, with bending form for bending pipe up to 1¼ inches.

No. 3—Holds pipe from ⅛ to 10 inches, with bending form for bending pipe up to 2 inches.

PRICES, FIG. 1369

No. 0—Combination bench vise, weight 40 pounds	$15 00
No. 1— " " " " 90 "	20 00
No. 3— " " " " 160 "	30 00

PRICES, BRASS JAWS, FIG. 1368

For a set of two jaws, to take brass pipe from ½ to 2 inches, for No. 0 or No. 1 vise	$2 00
For a set of two jaws, to take brass pipe from ½ to 2 inches, for No. 3	2 50

COMBINATION PIPE VISE

WITH SECTIONAL JAWS

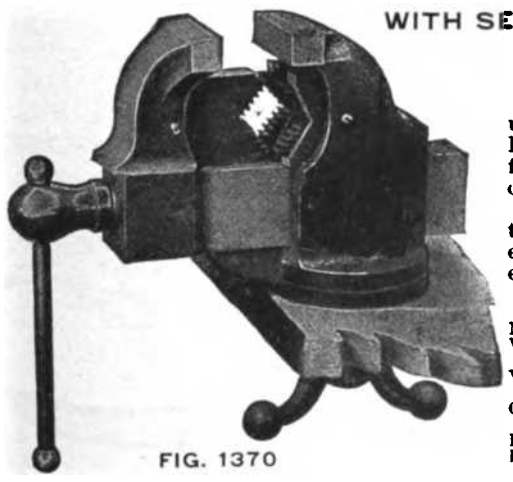


FIG. 1370

DESCRIPTION, FIG. 1370

The pipe jaws are made up of sections of steel. Each section is reversible four times before it requires sharpening.

To sharpen the jaws, take out and square the ends on grindstone or emery wheel.

PRICES, FIG. 1370

Nos.	1	2	3
Width jaws, in.	3¾	4½	5½
Weight, lbs.	50	66	84
Capacity pipe, in.	¼ to 2	⅛ to 3	½ to 4
Base	Swivel	Swivel	Sta'y
Price	$16 00	$20 00	$28 00

IMPROVED STEEL SWIVEL JAW PIPE GRIP



FIG. 1372

	Prices.
No. 1—Fits any 3 to 4½ in. vise; will hold ¼ to 2½ in. pipe,	$2 50
No. 2—Fits any 4¾ to 5½ in. vise; will hold ¼ to 5 in. pipe,	2 75
No. 3—Fits any 6 to 8½ inch vise; will hold ¼ to 6 inch pipe,	3 00

PIPE BENDING MACHINE

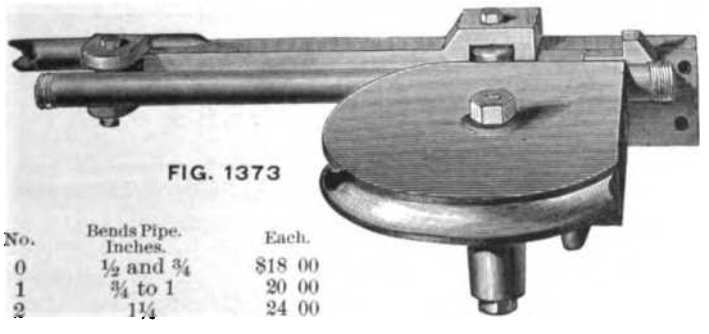


FIG. 1373

No.	Bends Pipe. Inches.	Each.
0	½ and ¾	$18 00
1	¾ to 1	20 00
2	1¼	24 00

STANCHION PIPE BENDERS

PIPE BENDING FORM

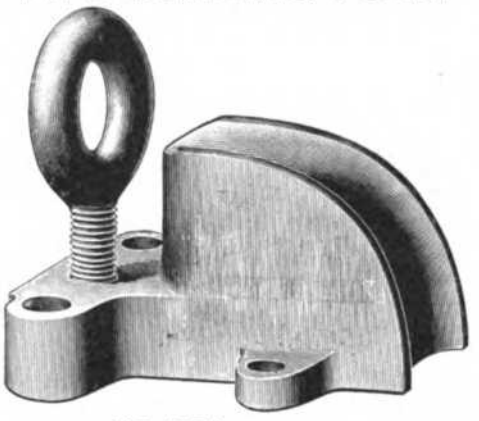


FIG. 1374

	Prices.
No. 1 takes from ⅛ to 1¼ inch pipe	$3 50
No. 2 takes from 1 to 2 inch pipe	4 50

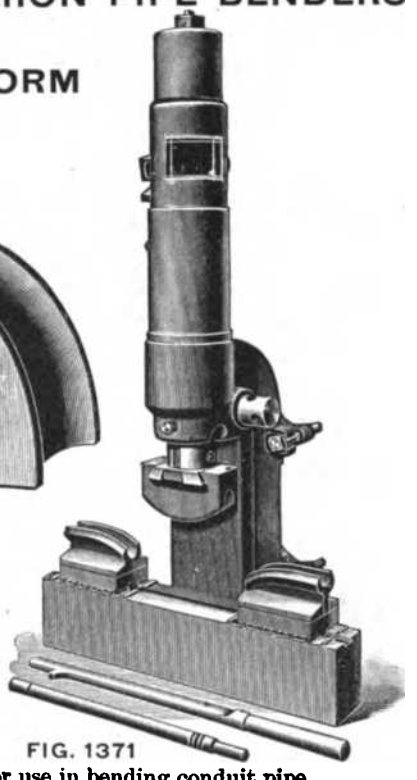


FIG. 1371

This type of bender is designed for use in bending conduit pipe.

The body frame has V straps and clamps at the rear for holding firmly on stanchions of from three to five inches in diameter. The base is ribbed so that the lower bending blocks may be placed wherever desired to bend a desired curvature. The upper block is held on the ram by a dovetail joint.

The ram has a motion of nine inches, which can be given both up and down by the rack and pinions when not under strain, without the delay of pumping.

The head and pump have all of the general features of hydraulic punches, easy accessibility for repairs, bronze pumps, metal valves, etc.

One set of three bending blocks is sent with each machine. One set of three is required for each size of pipe.

Power. Tons.	Base. Inches Long.	Capacity. Inches.	Total Height. Inches.	Weight. Pounds.	Prices.
30	27	4	48	450	$200 00
40	36	6	60	700	300 00
Extra bending blocks, 1 to 2 inches, per set of three					10 00
" " " 2¼ " 3 " " " "					12 00
" " " 3½ " 6 " " " "					15 00

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IMPROVED COMBINATION PLIERS

GAS PLIERS, WIRE CUTTERS, WRENCH AND SCREWDRIVER COMBINED



FIG. 1375

Cut represents 6 inch pliers, one-half size.

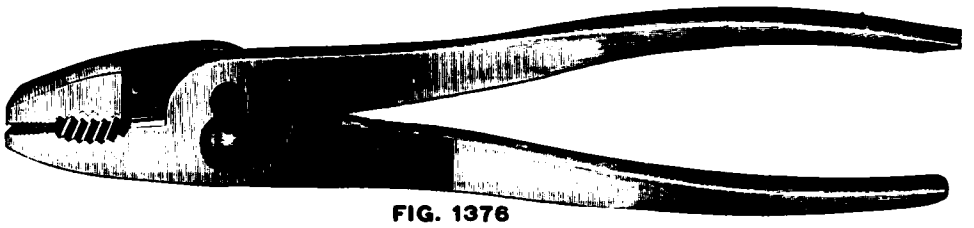


FIG. 1376

Cut represents 10 inch and 14 inch pliers.

DESCRIPTION, FIGS. 1375 AND 1376

Drop forged from best tool steel.

The 6 inch, by a quarter turn of the handle and sliding from one hole to the other, changes from size of gas burner to ¾ inch pipe, and from 5/16 inch round to 1 inch round or square.

The 10 and 14 inch are provided with wire cutter in the jaws. There is a groove running lengthwise of the jaws for wire. These tools are capable of a large range of adjustment. The capacity of the 10 inch is from ¼ to 1¼ inches, and the 14 inch from ¼ to 1½ inches. The jaws are serrated, and there is a handy screwdriver in the end of one of the handles of the 10 inch.

PRICES, FIGS. 1375 AND 1376

		Black Finish.	Nickel-plated.
6 inch	per dozen,	$13 50	$15 00
10 "	" "	18 00	21 00
14 "	" "	24 00	30 00

GAS PLIERS

PRICES, FIG. 1377

Solid cast steel, either full polished or black, warranted.

Sizes, inches	7	8	9	10	11
Per dozen	$7 40	$8 25	$9 25	$10 70	$12 00
Sizes, inches	**12**	**13**	**14**	**15**	**16**
Per dozen	$13 00	$15 00	$17 00	$19 00	$21 00

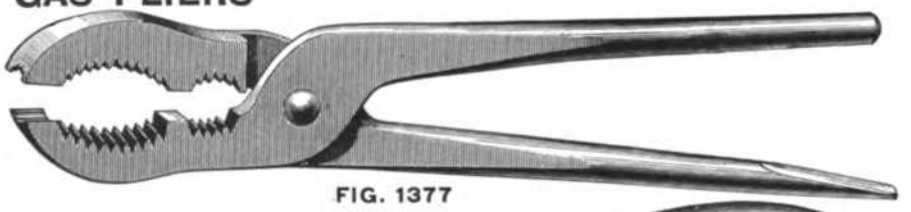


FIG. 1377

GAS BURNER PLIERS

PRICES, FIG. 1378

Single joint, full polished.

Sizes, inches	4	5	6
No. 1. Solid cast steel, per dozen.	$4 80	$4 80	$6 50
" 2. Second quality, " "	4 80	4 80	6 50

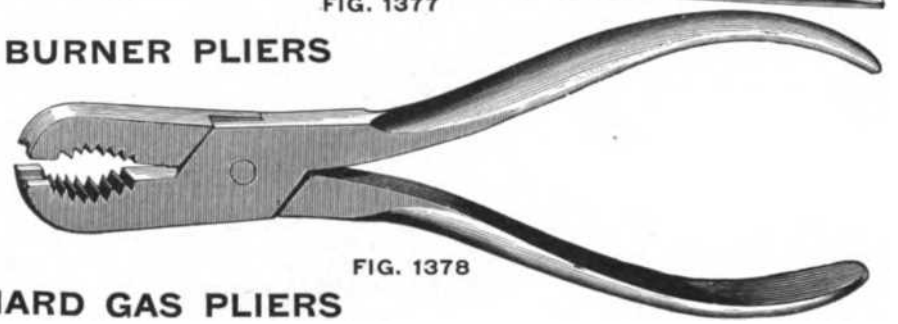


FIG. 1378

BERNARD GAS PLIERS

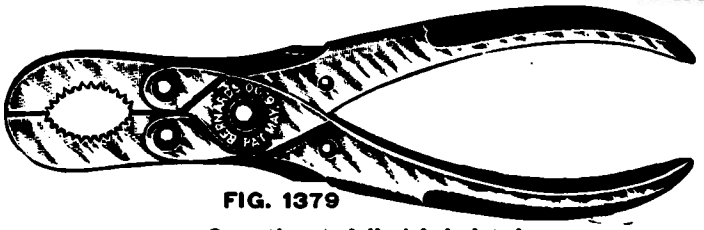


FIG. 1379

Open throat, full nickel-plated.

Sizes, inches 5 6

Per dozen $8 00 $10 00

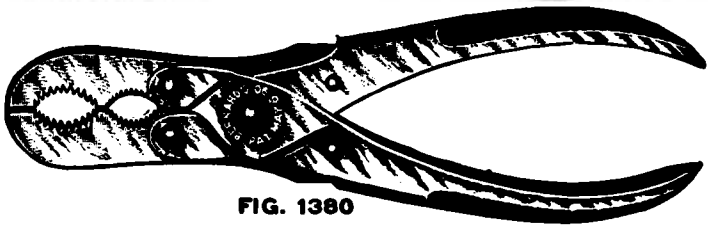


FIG. 1380

Open throat, full nickel-plated.

7 inches ..... Per dozen, $12 00

BURNER AND FLAT NOSE PLIERS COMBINED

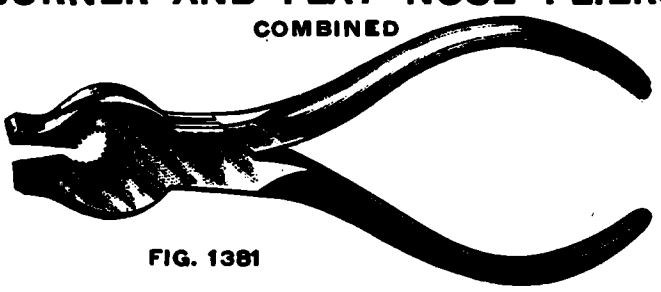


FIG. 1381

5 inches long, full polished ..... Per dozen, $7 00

7 " " " " ..... " " 8 00

BURNER PLIERS, CAST STEEL, FORGED

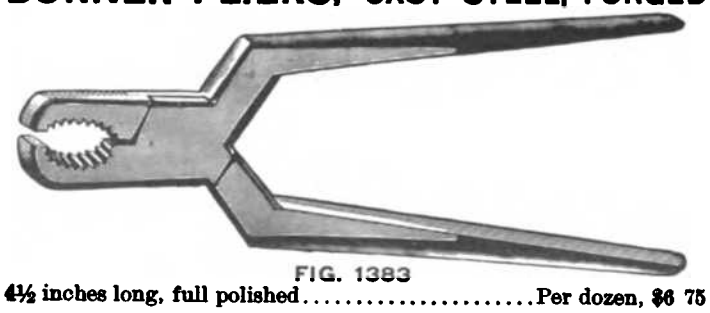


FIG. 1383

4½ inches long, full polished ..... Per dozen, $6 75

COMBINATION PLIERS

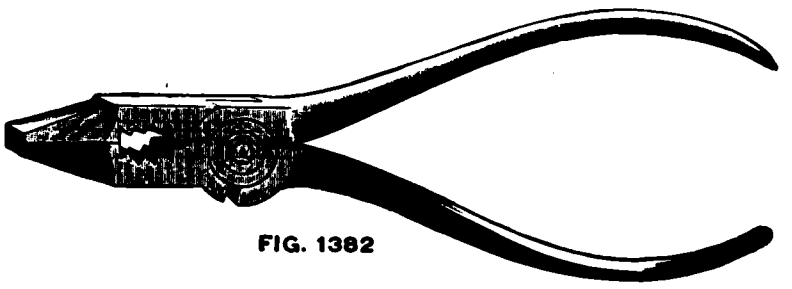


FIG. 1382

Combining Button's Wire Cutter, Gas and Flat Nose Plier in one tool.

No. 1399½, full polished, 5½ inches ..... Per dozen, $3 15

GAS FITTERS' AUGERS



FIG. 1384

Gas Pipe Sizes, Inches,	¼	⅜	½	¾	1	1¼	1½	2	2½
Each	$0 80	$1 00	$1 12	$1 60	$1 92	$2 25	$2 50	$3 25	$4 00

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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GAS FITTERS', PLUMBERS' AND ELECTRICIANS' BLOW PIPES AND TORCHES

BRASS BLOW PIPES

WITH BALL

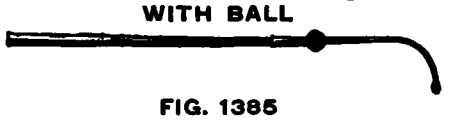


FIG. 1385

PRICES

Inches.	Per Dozen.
9	$4 75
10	5 00
11	5 25
12	5 50

PLAIN



FIG. 1386

PRICES

Inches.	Per Dozen.
9	$2 25
10	2 55
11	2 85
12	3 00

BRAZING BLOW PIPES

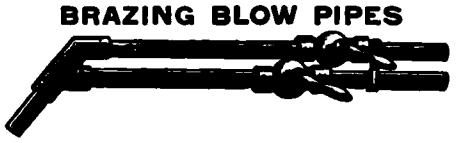


FIG. 1387

Brass, nicely finished and lacquered, heavy.

PRICES

	Each.
No. 8 C, 1/8-inch bore	$2 50
" 8 E, 1/4 " "	3 00
" 8 F, 5/16 " "	4 00

GAS-FITTERS' ALCOHOL TORCHES

PLAIN

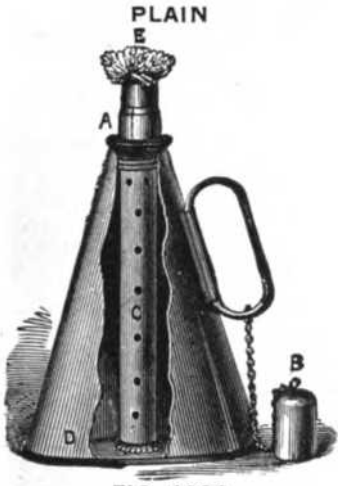


FIG. 1388

Tin.....per doz., $12 00
Brass..... " 18 00

WITH BLOW PIPE

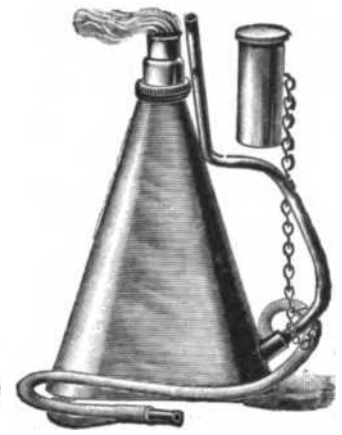


FIG. 1389

Tin.....per doz., $24 00

SELF-ACTING ALCOHOL BLOW LAMP



FIG. 1390

	Per Dozen.
No. 1, small	$18 00
" 2, medium	24 00
" 3, large	30 00
" 4, extra large	40 00

GASOLINE BLOW TORCH



FIG. 1391

Seamless brass.....each, $5 00

GASOLINE BLOW TORCH

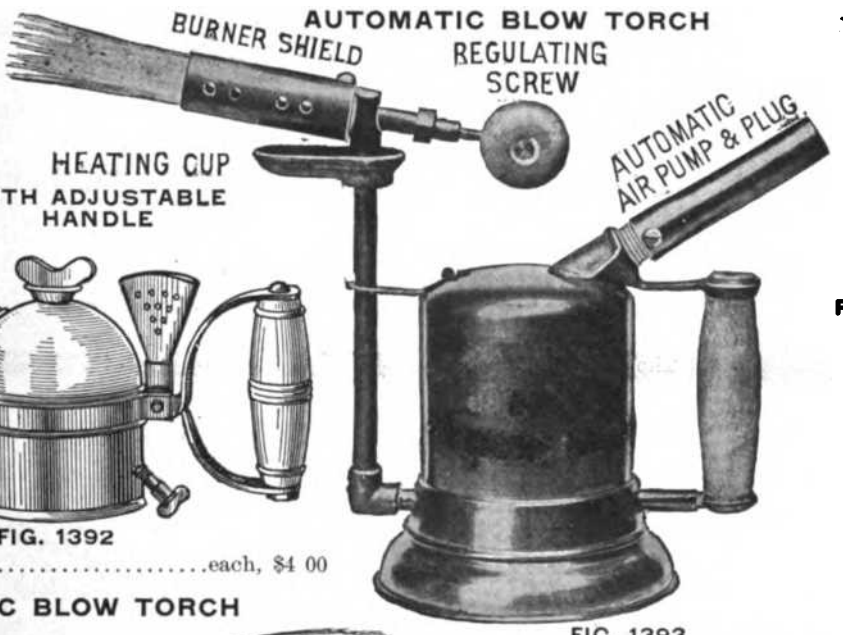


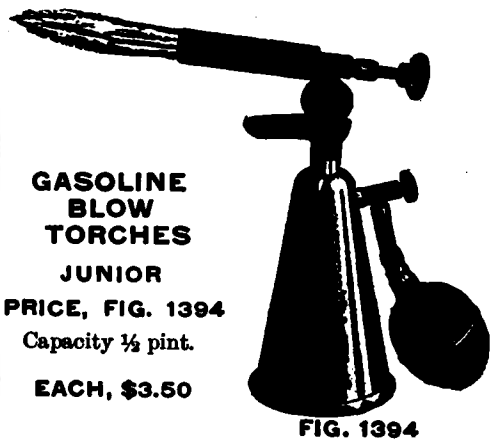
FIG. 1392

Seamless brass.....each, $4 00

FIG. 1393

Seamless brass for gasoline, each, $4 50

GASOLINE BLOW TORCHES



JUNIOR

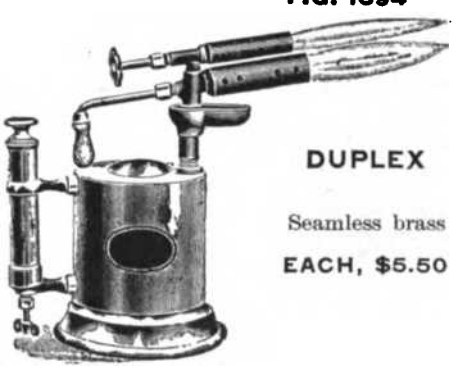
PRICE, FIG. 1394

Capacity 1/2 pint.

EACH, $3.50

FIG. 1394

DUPLEX

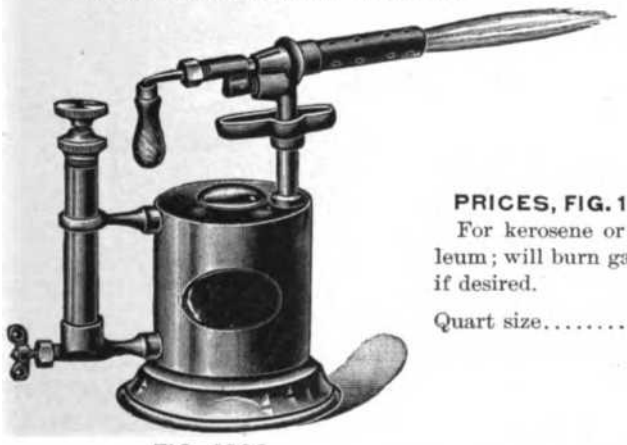


Seamless brass

EACH, $5.50

FIG. 1395

ELECTRIC BLOW TORCH



PRICES, FIG. 1397

For kerosene or petroleum; will burn gasoline if desired.

Quart size.....$5 50

FIG. 1396

Seamless brass.....each, $4 50

ADJUSTABLE BLOW TORCH

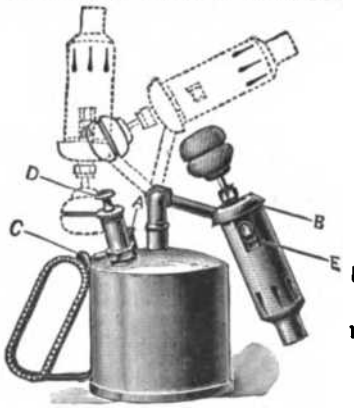


FIG. 1397

HANDY ANDY



PRICES, FIG. 1398

Needle flame, seamless brass. Capacity 3/4 pint.

EACH, $4.00

FIG. 1398

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GAS AND WATER MAIN TAPPING MACHINES

NEW ECLIPSE

FOR TAPPING WATER OR GAS MAINS UNDER PRESSURE

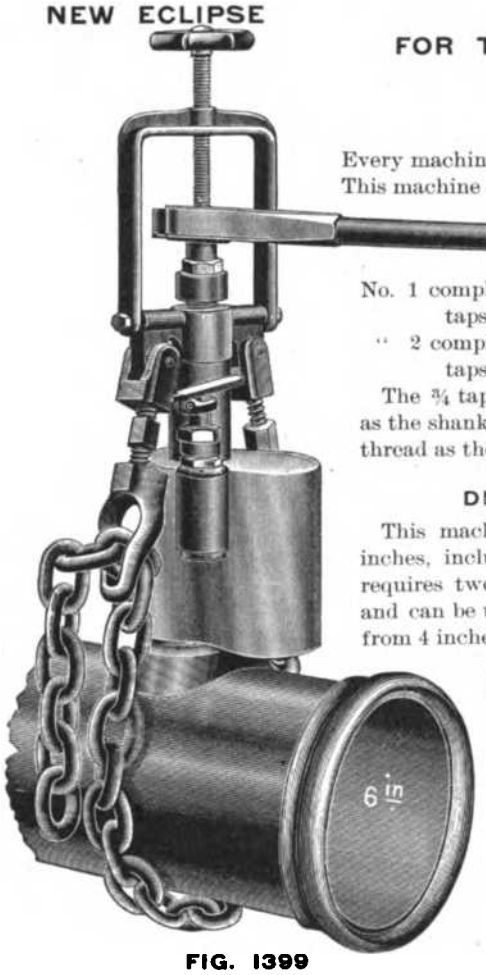


FIG. 1399

DESCRIPTION FIG. 1399

Every machine tested to 600 lbs. to the square inch and guaranteed. This machine taps on the top or side or at any angle desired.

PRICES

No. 1 complete with ⅜, ½, ¾ and 1 inch taps and four saddles, weight 24 lbs. $100 00

" 2 complete with 1, 1¼, 1½ and 2 inch taps and four saddles, weight 35 lbs. 150 00

The ¾ tap puts in the ⅝ inch corporation cocks, as the shanks of these are of the same size and same thread as the ¾.

DESCRIPTION, FIG. 1400

This machine, which taps sizes from ½ to 1¼ inches, inclusive, will do the work which usually requires two or three machines of different sizes, and can be used equally well on mains of any size from 4 inches to 24 inches by simply changing the rubber form which is placed between the machine and main.

HALL'S TAPPER

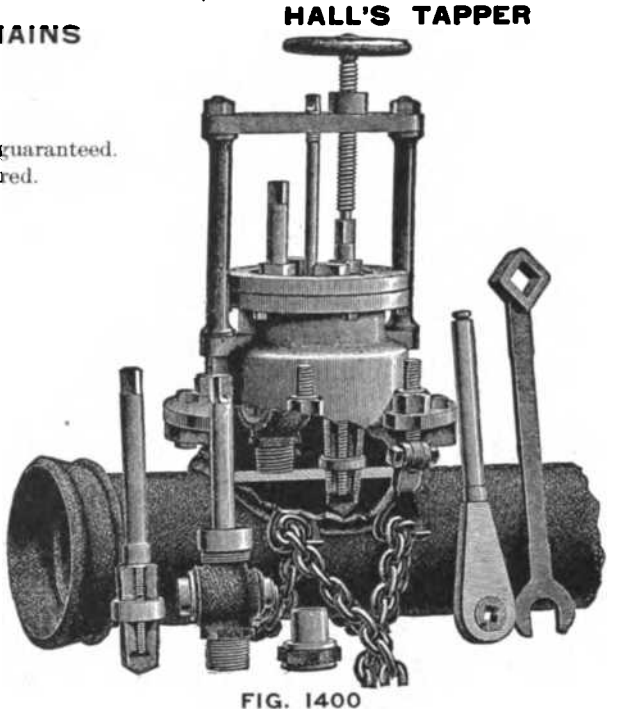


FIG. 1400

Machine for ½, ⅝, ¾ and 1 inch cocks, with drill taps, mandrels, wrenches, ratchet and rubbers, for 4 to 16 inch mains..... $80 00

PREMIER WATER PIPE TAPPING MACHINE

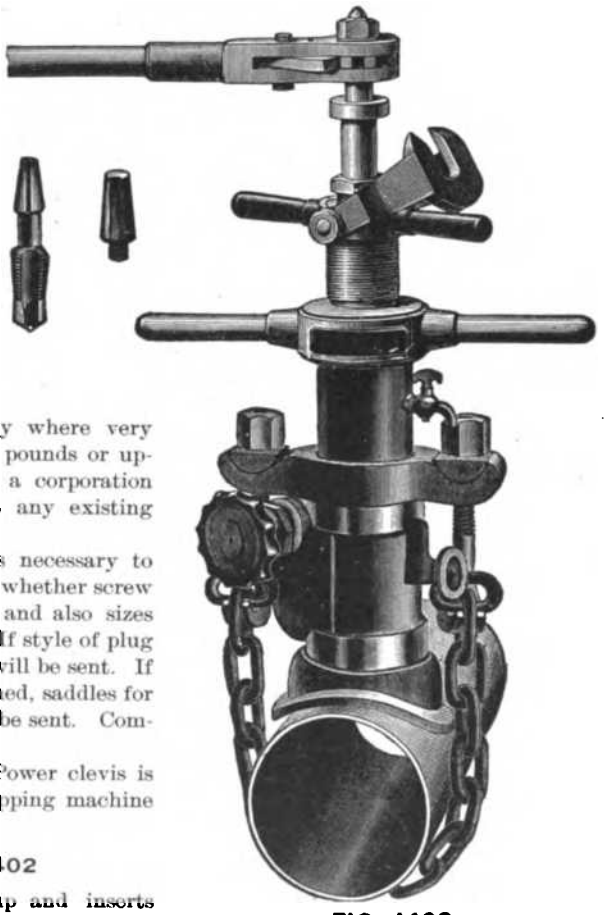


FIG. 1402

PRICES, FIG. 1401

Taps mains and inserts corporation cocks from ⅜ to 1 inch inclusive.

Water tapping machine complete, includes :

1 each, combined drill and tap—½, ⅝, ¾, 1 inch.

4 malleable iron saddles, any size.

1 each, screw or hexagon plug—½, ⅝, ¾, 1 inch.

1 chain for any size pipe.

The power clevis is an extra attachment, and is needed only where very heavy pressure exists, say 90 pounds or upward. With this attachment a corporation cock can be inserted against any existing high pressure.

In ordering a machine it is necessary to state the size of tools required, whether screw or hexagon plugs are wanted, and also sizes of water mains to be tapped. If style of plug is not mentioned, screw plugs will be sent. If sizes of mains are not mentioned, saddles for 4, 6, 8 and 10 inch mains will be sent. Complete, $100.00.

Power clevis extra, $5.35. Power clevis is never sent with a complete tapping machine unless specially ordered.

IMPROVED COLUMBIA WATER PIPE TAPPING MACHINE

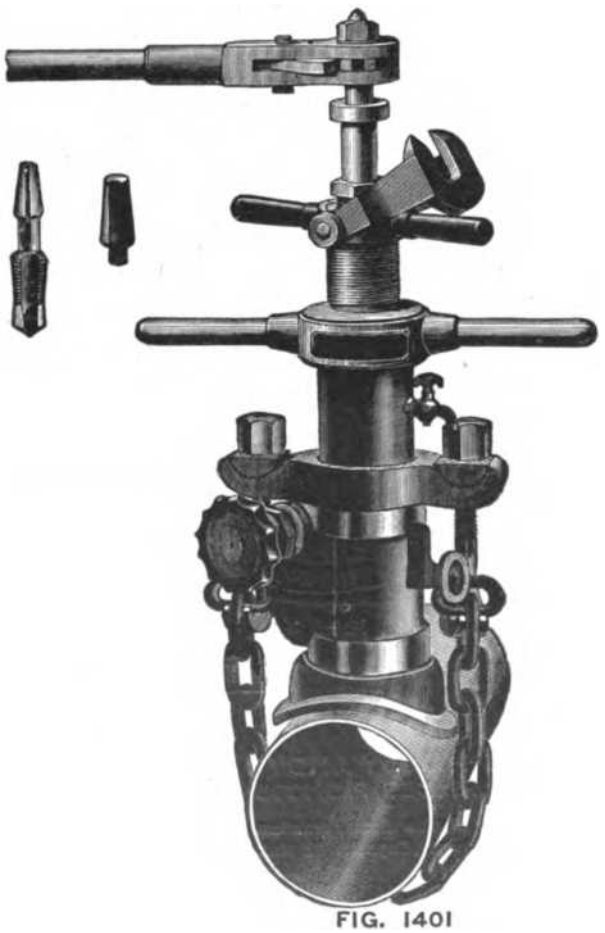


FIG. 1401

PRICES, FIG. 1402

Taps mains 4 inches and up and inserts corporation cocks from 1 to 2 inches inclusive.

The Premier Tapping Machine is designed for heavy work where large taps are made up to 2 inch. This machine will drill and tap all the smaller sizes by ordering the small size of combined drills and taps, but is designed more especially for the large sizes.

Water tapping machine, complete, includes :

1 each, combined drill and tap—1, 1¼, 1½, 2 inch.

1 each, screw plug—1, 1¼, 1½, 2 inch.

4 malleable iron saddles, any size.

1 chain for any size pipe.

Complete, $150 00

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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DRY PIPE AND GAS TAPPING MACHINES

FOR HIGH OR LOW PRESSURE GAS MAINS

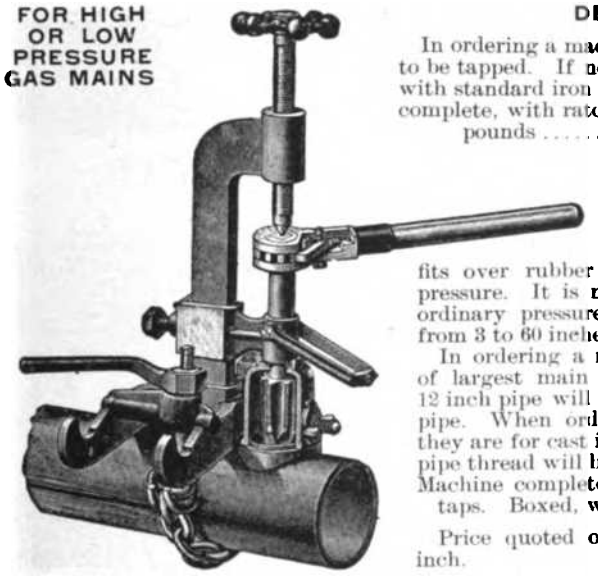


FIG. 1404

DESCRIPTION AND PRICE, FIG. 1403

In ordering a machine state size of tools desired and size of the largest main to be tapped. If not specified, chain for a 12 inch pipe will be sent. Tools with standard iron pipe thread will be sent unless otherwise ordered. Machine complete, with ratchet handle, less drills, and taps. Boxed, weight 54 pounds $17 25

DESCRIPTION AND PRICE, FIG. 1404

A complete machine includes ratchet, wrench, special attachment with four rubber saddles, one saddle ring and chain for any size pipe. Saddle ring fits over rubber saddle to prevent its blowing out under very high pressure. It is not necessary to use saddle ring when tapping under ordinary pressure, or below 25 pounds. With seven saddles, pipes from 3 to 60 inches can be tapped.

In ordering a machine state size of tools desired, and size of largest main to be tapped. If not specified, chain for a 12 inch pipe will be sent, and saddles for 3, 4, 6 and 8 inch pipe. When ordering 2 and 3 inch saddles state whether they are for cast iron or wrought iron pipe. Tools with iron pipe thread will be sent unless otherwise ordered.

Machine complete with ratchet handle, less drills and taps. Boxed, weight 54 pounds..... $31 00

Price quoted on application for machine to tap up to 8 inch.

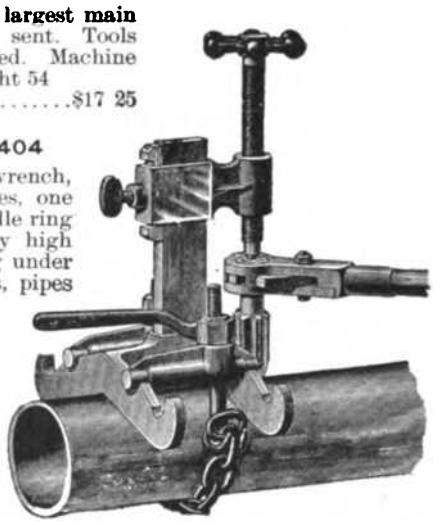


FIG. 1403

DRY PIPE TAPPING MACHINES

IDEAL

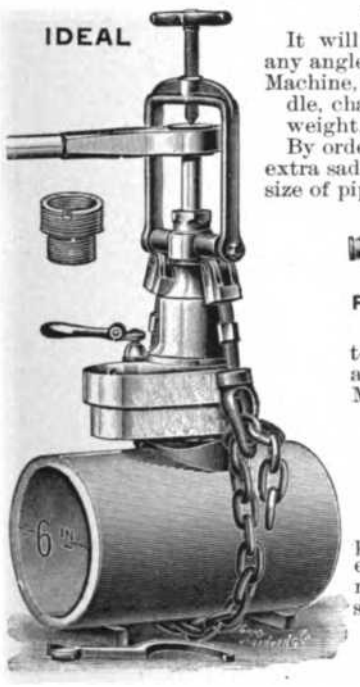


FIG. 1405

PRICE, FIG. 1405

It will tap on top, side, or at any angle desired.

Machine, complete with one saddle, chain, feeder, and ratchet, weight, 18 pounds $30 00

By ordering chain proper length and extra saddles this machine will tap any size of pipe.

DAISY

FOR LOW PRESSURE GAS MAINS



FIG. 1406

PRICE, FIG. 1406

It will tap on the top or side, or at any angle desired.

Machine, complete with one saddle, chain feeder yoke and ratchet, weight 15 lbs. $20 00

By ordering chain proper length, and extra saddles, this machine will tap any size of pipe.

AUTOMATIC DRILLING ATTACHMENT

SELF FEEDING



FIG. 1407. NO. 1

For drills with ½ inch round shank.



FIG. 1408. NO. 2

Has Universal Chuck fitting any drill.

No. 1, without drills	$5 00
No. 2, " "	6 25
Universal Chuck for round and square shank drills for No. 1	1 25
Solid Chuck for square shank drills for No. 1	60
Reducers for No. 1, four sizes, ⅜, 5/16, ¼ and 3/16	80
Extra chain, per foot	12

PIPE DRILLING CROW

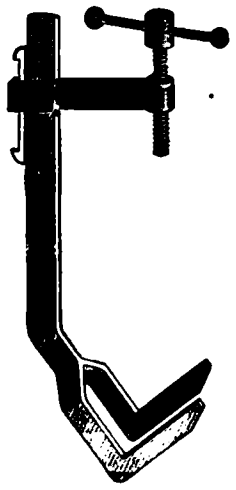


FIG. 1409.

Nos.	For Pipe.	Each.
1.	1½ to 3	$10 00
2.	1½ 6	13 00
3.	1½ 12	16 00

DOUBLE STRAP PIPE SADDLES



FIG. 1410

For pipe..	2 inch.	2½ inch.	3 inch.	4 inch.	5 inch.	6 inch.	7 inch.	8 inch.	10 inch.	12 inch
Tapped...	½ to 1	¾ to 1½	¾ to 2	¾ to 2	1 to 2	1 to 2	1 to 2	2 to 3	2 to 4	3 to 4
Prices....	$1 50	$1 75	$2 00	$2 50	$3 00	$3 50	$4 00	$4 50	$7 00	$10 00

PIPE DRILLS FOR RATCHET BRACES

FIG. 1411



Made of extra quality tool steel.

For pipe size	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½ ins.
Price each	$0 90	90	95	98	1 04	1 14	1 23	1 35	1 56	1 80

FLAT DRILLS FOR RATCHET BRACES

FIG. 1412.



Made of extra quality tool steel.

Sizes, inch	⅛	¼	⅜	½	5/8	¾	⅞	1	1¼	1⅜	1½	2	2½
Prices, each	$0 40	40	40	40	40	45	45	45	50	55	00	65	90	1 00

CAST IRON

MALLEABLE AND WROUGHT IRON

For pipe,	2 in.	2½ in.	3 in.	4 in.	4½ in.	5⅝ in.	5⅝ in.	6 in.	6 in.	8 in.	8 in.	10 in	10 in.	12 in.	12 in.
Tapped.	1 to 1½	1 to 1½	1 to 2	1 to 2	1 to 2	1 to 2	3 to 4	1 to 2	3 to 4	1 to 2	3 to 4	1 to 2	3 to 4	1 to 2	3 to 4
Prices..	$1 00	$1 50	$2 00	$2 25	$2 50	$2 75	$5 50	$2 50	$5 75	$4 50	$6 50	$5 50	$6 75	$6 25	$8 75

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BRAZED BRASS, BRONZE, COPPER, AND ZINC TUBING

PLAIN ROUND

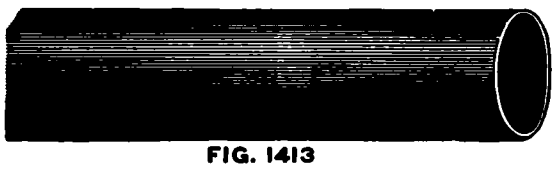


FIG. 1413

Sizes, ⅛ inch to 6 inch, inclusive.

PLAIN HEXAGON

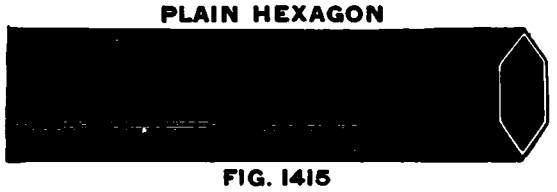


FIG. 1415

Sizes, ½ inch to 1 inch.

Other sizes of above patterns to order at extra price.
All tubes between gauges take price of next thinner gauge.
All mandrel drawn tubes, ⅜ inch and over, advance on above..... $0 05
All mandrel drawn tubes, under ⅜ inch, advance on above..... 25
Square and fancy tubes, advance on above.... 08
Extra fancy patterns..... 16
Open seam tubes, 4c. less than above prices of corresponding diameter and thickness.

BRAZED BRASS TUBING

Brown & Sharpe's gauge the standard.

PLAIN ROUND TUBE — INCH							Per Lb.
¾	up to	2,	to No.	19,	inclusive..		$0 35
⅝	"	¾,	"	19,	"	..	36
½	"	⅝,	"	19,	"	..	38
⅜	"	½,	"	19,	"	..	41
5/16	"	⅜,	"	19,	"	..	48
¼	"	5/16,	"	19,	"	..	65
3/16	"	¼,	"	19,	"	..	1 00
⅛	"	3/16,	"	19,	"	..	1 50

Smaller than ⅛ inch, special.

2 in. to 3 in., to No. 19, inclusive .	38
3 inch.....	40
Over 3 inch to 3½ inch.....	45
" 3½ inch.....	50

Bronze and copper, advance on brass list, 3c.

For No. 20, add	2c.	extra.	
" 21,	" 4	"	
" 22,	" 6	"	
" 23,	" 8	"	
" 24,	" 12	"	
" 25,	" 16	"	
" 26,	" 20	"	

Thinner than No. 26, special.

PLAIN SQUARE



FIG. 1414

Sizes, 3/16 inch to 1½ inch.

PLAIN FLAT



FIG. 1416

Sizes in great variety.

Tubing cut to any specific length, add: longer than 12 inch, 1c.; over 6 inch to 12 inch, 2c.; over 4 inch to 6 inch, 3c.; over 2 inch to 4 inch, 4c.; over 1 inch to 2 inch, 6c. per pound. Shorter than 1 inch, special.

ZINC TUBING

	Per Lb.
Plain, No. 18, inclusive	$0 32
Fancy, " "	38
Scotch and extra patterns.....	40

For open seam tubing, 4c. less than above, for corresponding size and numbers.
Add the brass tubing list advance for numbers, sizes and cutting to length.

SEAMLESS DRAWN BRASS TUBING

OUTSIDE DIAMETERS. STUBBS' WIRE GAUGE STANDARD. PRICES, PER POUND

Stubbs	B.&S.	3/16	¼	5/16	⅜	7/16	½	9/16	⅝	¾	⅞	1	1¼	1½	1¾	2	2¼	2½	2¾	3	3¼	3½	3¾	4	4¼	4½	4¾	5	5¼	5½	5¾	6	6¼	6½	6¾	7	7¼	7½	7¾
4-11	3-9	$	..	..	..	..	33	31	30	29	28	27	25	24	23	22	22	22	22	22	22	22	22	23	23	24	25	26	27	28	28	28	28	28	28	28	28	28	28
12	10	..	..	..	37	35	33	31	30	29	28	27	25	24	23	22	22	22	22	22	22	22	22	24	24	25	26	27	28	29	29	29	29	29	29	29	29	29	29
13	11	..	..	..	37	35	33	31	30	29	28	27	25	24	23	23	23	23	23	23	23	23	24	25	25	26	27	28	29	30	30	30	30	30	30	30	30	30	30
14	12	..	..	41	37	35	33	31	30	29	28	27	25	24	23	23	23	23	23	23	24	25	26	26	27	28	29	30	31	31	31	31	31	31	31	31	31	31	31
15	13	..	..	42	38	36	33	32	31	30	29	28	26	25	24	24	24	24	24	24	24	25	26	27	27	28	29	30	31	32	32	32	32	32	32	32	32	32	32
16	14	..	..	43	39	37	34	33	32	31	30	29	26	25	25	25	25	25	25	25	25	26	27	28	29	30	31	32	33	34	34	34	34	34	34	34	34	34	34
17	15	..	..	44	40	38	35	34	33	32	31	30	27	26	26	26	26	26	26	26	27	28	29	30	31	32	33	34	35	36	36	36	36	36	36	36	36	36	36
18	16	81	61	46	42	39	36	35	34	32	31	30	28	27	27	27	27	27	28	28	29	30	31	32	33	34	35	36	37	38	38	38	38	38	38	38	38	38	38
19	17	86	62	47	43	40	37	36	35	34	33	32	30	29	28	28	28	28	28	29	30	31	32	33	34	35	36	37	38	39	40	40	40	40	40	40	40	40	40
20	18-19	91	64	49	44	41	39	38	37	36	35	34	32	31	30	30	30	30	31	32	33	34	35	36	37	38	39	40	41	42	42	42	42	42	42	42	42	42	42
21	20	96	66	51	46	43	41	40	39	38	37	36	35	34	32	32	32	32	33	34	35	36	37	38	39	40	41	42	..	..	..	..	..	..	..	..	..	..	..
22	21	1 01	71	56	48	44	42	41	40	39	38	37	37	36	34	34	35	36	36	37	38	39	40	41	42	43	..	..	..	..	..	..	..	..	..	..	..	..	..
23	22	1 06	76	61	50	46	44	43	42	41	40	39	39	39	37	37	38	39	39	40	41	42	43	44	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
24	23	1 16	81	66	53	48	46	45	44	43	41	40	40	41	41	41	42	42	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..
25	24	1 31	86	71	56	51	49	47	46	45	44	43	44	45	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..

Copper, bronze, and gilding tubes, 3c. per lb. additional. Note—For diameters of the fractional parts of an inch where no price is given take the column to the left of where such size would appear if designated.—Thus: 1 15/16 would go at price of 1¾ inches; 1⅛ at the price of 1 inch; 5⅛ at the price of 5 inches. No. 20, S. G., 1 inch, 34c.; No. 20, S. G., 1¼ inch, is 32c.; No. 20, S. G., 1⅛ inch, would be 34c. and not 32c. Orders on which gauge is not stated will be sent Stubbs' gauge. Orders for S. G. or O. G. will be understood Stubbs' gauge.

IRON PIPE SIZES, SEAMLESS BRASS

Made to correspond with iron tube and to fit iron pipe fittings. Nominal inside diameter.

⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6
36	32	29	27	21	21	21	21	21	21	21	28	23	25	27	28

Cents Per Pound.

Copper, bronze, or gilding tubes, 3c. per lb. additional. These tubes are kept in stock in 12 feet lengths. Special sizes and lengths to order.

SEAMLESS DRAWN BRASS TUBING

Outside diameters. For plumbing.

Size, outside diameter, Stubbs' gauge.

⅝	¾	⅞	1	1¼	1½	1¾	2	
15	15	15	14	13	13	13	13	18c.

Plain tubes, per pound.

31	30	29	27	25	24	23	23c.

Tinned tubes, 3c. per pound extra.

The above tubes are made in 11 feet lengths, with couplings on one end if desired.

BRASS, COPPER AND TINNED CONDENSER TUBES

Brass condenser tubes, ⅝ to 1¼ inch, both inclusive, No. 18 and thicker, 26c. per lb. No charge for tinning.

Copper condenser tubes, ⅝ to 1¼ inch, both inclusive, No. 18 and thicker, 29c. per lb. No charge for tinning.

Condenser tubes, thinner than No. 18, Stubbs' gauge, 2c. per lb. additional for each number.

Tinning tubes, one side only, 5c. per lb. Tinning both sides, 3c. per lb. extra.

All seamless tubing of any shape other than round shall be charged at an advance of not less than 5c. per lb. above price of regular round tubing of corresponding size.

For cutting pump chambers, whistle bells, cylinders, and all tubing cut to short lengths as follows:

Tubing cut over 1 to 2 ft. inc., 1c. extra advance on list.
" " 9 in. and up to 12 in., 1½c. " " " " " 1 " " 2 " 3½c. " "
" " 6 " " 9 " 2c. " " " " ¾ " " 1 " 4c. " "
" " 4 " " 6 " 2½c. " "

Tubing cut over 2 in. and up to 4 in. 3c. extra advance on list.

SEAMLESS COLD DRAWN STEEL TUBING

PRICES, PER FOOT

Thickness, B.W.G.	Equivalent in fraction of inch.	OUTSIDE DIAMETERS IN INCHES																				
		⅜	½	⅝	¾	⅞	1	1⅛	1¼	1⅜	1½	1¾	2	2¼	2½	2¾	3	3¼	3½	3¾	4
20	.035	$0.28	.31	.34	.38	.39	.41	.43	.46	.49	.52											
19	.042	.29	.31	.35	.38	.40	.42	.45	.48	.52	.55											
18	.049	.30	.32	.36	.39	.42	.44	.48	.51	.55	.60											
17	.058	.31	.33	.37	.41	.44	.47	.51	.55	.60	.65											
16	.065	.31	.35	.39	.43	.47	.50	.55	.60	.65	.70	.94	1.04	1.16	1.30							
15	.072	.32	.37	.41	.45	.49	.54	.59	.64	.70	.75	.97	1.07	1.19	1.33							
14	.083	.34	.38	.43	.48	.52	.57	.63	.69	.75	.81	1.00	1.10	1.22	1.36							
13	.095	.36	.40	.45	.50	.55	.62	.68	.75	.81	.88	1.08	1.18	1.30	1.42	1.54	1.66	1.86	2.02			
12	.109	.38	.42	.48	.54	.59	.66	.73	.81	.88	.95	1.14	1.26	1.38	1.50	1.64	1.76	1.98	2.14			
11	.120		.45	.51	.57	.63	.70	.78	.87	.94	1.02	1.28	1.40	1.54	1.70	1.84	2.02	2.20	2.38	2.58	2.82	
10	.134			.54	.60	.67	.74	.84	.94	1.02	1.10	1.34	1.47	1.63	1.79	1.94	2.14	2.33	2.52	2.73	2.97	
	5/32				.70	.78	.86	.96	1.04	1.12	1.24	1.40	1.54	1.72	1.88	2.04	2.26	2.46	2.66	2.88	3.12	
	3/16				.74	.86	.98	1.10	1.22	1.34	1.46	1.70	1.86	2.08	2.26	2.52	2.76	3.00	3.24	3.50	3.78	
	7/32					.94	1.06	1.20	1.34	1.48	1.62	1.90	2.10	2.34	2.58	2.84	3.08	3.34	3.58	3.86	4.16	
	¼						1.14	1.30	1.46	1.62	1.78	2.08	2.32	2.60	2.92	3.16	3.42	3.66	3.90	4.22	4.54	
	9/32							1.38	1.54	1.70	1.88	2.20	2.48	2.82	3.18	3.46	3.74	4.02	4.30	4.68	5.04	
	5/16								1.62	1.78	1.98	2.32	2.64	3.04	3.42	3.74	4.06	4.38	4.70	5.12	5.52	

Tubes of intermediate diameters and gauges will be charged at next higher price. Tubes of lighter gauges than twenty take the twenty gauge list. Unless otherwise ordered, mill lengths will be shipped. For cut lengths an extra charge will be made above mill lengths.

MANNING, MAXWELL & MOORE, 85, 87, 89 LIBERTY STREET, NEW YORK

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SEAMLESS COLD DRAWN STEEL BOILER TUBES FOR LOCOMOTIVE, MARINE, AND STATIONARY BOILERS

SEAMLESS COLD DRAWN STEEL BOILER TUBES

Outside Diameters, Inches.	Prices, per Foot.	Thickness, Inches.	Thickness nearest Bgm. W. G.	Nominal Weight, per Foot.
1	$0 30	.095	13	.92
1¼	28	.095	13	1.18
1½	27	.095	13	1.43
1¾	22	.095	13	1.69
2	20	.095	13	1.92
2¼	24	.095	13	2.17
2½	28	.109	12	2.73
2¾	34	.109	12	3.08
3	35	.109	12	3.35
3¼	40	.120	11	4.03
3½	44	.120	11	4.32
3¾	50	.120	11	4.63
4	55	.134	10	5.62

These prices are for tubes up to 18 feet long. For tubes in excess of that length extra charge will be made. Extra thickness of tubes will be charged as per list of extra gauges.

STANDARD LAP WELDED BOILER TUBES

Outside Diameters, Inches.	Prices, per Foot.	Thickness, Inches.	Thickness nearest Bgm. W. G.	Nominal Weight, per Foot.
1	$0 30	.095	13	.90
1¼	28	.095	13	1.15
1½	27	.095	13	1.40
1¾	22	.095	13	1.66
2	20	.095	13	1.91
2¼	24	.095	13	2.16
2½	28	.109	12	2.75
2¾	34	.109	12	3.04
3	35	.109	12	3.33
3¼	40	.120	11	3.96
3½	44	.120	11	4.28
3¾	50	.120	11	4.60
4	55	.134	10	5.47
4½	62	.134	10	6.17
5	75	.148	9	7.58
6	1 00	.165	8	10.16
7	1 20	.165	8	11.90
8	1 50	.165	8	13.65
9	1 70	.180	7	16.76
10	2 10	.203	6	21.00
11	2 50	.220	5	25.00
12	2 90	.229	4½	28.50
13	3 20	.238	4	32.06
14	3 65	.248	3½	36.00
15	4 10	.259	3	40.60
16	4 60	.270	2½	45.20

The above prices are for tubes up to 22 feet long; for tubes in excess of that length, 10 per cent. will be added to net of invoice.

EXTRA WIRE GAUGE BOILER TUBES

For extra wire gauge boiler tubes, away from standard not exceeding four wire guages, add 1 cent for each inch in diameter of tube for each additional guage to the net price per foot for standard guage. Beyond four numbers, price is per pound.

Prices for swaging ends of tubes will be furnished on application.

EXTRA HEAVY OR HYDRAULIC TUBES

Special prices given on application.

PRICE LIST FOR SWELLING ENDS OF BOILER TUBES UP TO ¼ INCH LARGER IN DIAMETER

Inches	2	2¼	2½	2¾	3	3¼	3½	3¾	4
Per end	5c.	5c.	8c.	8c.	8c.	10c.	10c.	10c.	10c.

Prices for any quantity.

PRICES FOR UPSETTING ENDS OF BOILER STAY TUBES

External diameter in inches	1½	1¾	1⅞	2	2⅛	2¼	2⅜	2½	2¾	2⅞	3	3¼	3½	3¾	4
Price per end 5/16 inch thick	$0 52	54	58	60	66	75	80	90	96	1 05	1 15				
" " " ¼ " "	36	40	40	45	48	51	60	69	75	78	81	90	96	1 05	1 05
" " " 5/16 " "	34	36	36	40	44	47	56	65	70	73	76	85	90	98	1 05

Upsetting Tubes over 5/16 inch thick will be charged same price as 5/16 inch thick.
When the length of the upset exceeds 2½ inches, 20 cents shall be added to the list for every ½ inch of extra length.

SAFE ENDS

Prices for each Safe End.

Outside Diam., Inches.	Thickness B'g'm W. G.	Length in inches: 6 and Under	7	8	9	10	11	12
		cts.	cts.	cts.	cts.	cts.	cts.	cts.
1 to 1¾ inclusive	12	14	16¼	18½	20¾	23	25¼	27½
	11	15¼	17½	19¾	22	24¼	26½	28¾
	10	16½	18¾	21	23¼	25½	27¾	30
2	12	13	15	17	19	21	23	25
	11	14	16	18	20	22	24	26
	10	15	17	19	21	23	25	27
2¼	12	14	16½	18½	20¾	23	25¼	27½
	11	15¼	17½	19¾	22	24¼	26½	28¾
	10	16½	18¾	21	23¼	25½	27¾	30
2½	11	16	18½	21	23½	26	28½	31
	10	18	20½	23	25½	28	30½	33
2¾ & 3	11	20	23	26	29	32	35	38
	10	23	26	29	32	35	38	41
3¼	10	22	25¼	28½	31¾	35	38¼	41½
	9	25¼	28½	31¾	35	38¼	41½	44¾
3½	10	25	28½	32	35½	39	42½	46
	9	28½	32	35½	39	42½	46	49½
3¾	10	27	30¾	34½	38¼	42	45¾	49½
	9	30¾	34½	38¼	42	45¾	49½	53¼
4	9	29	33	37	41	45	49	53
	8	33	37	41	45	49	53	57
4½	9	32	36½	41	45½	50	54½	59
	8	36½	41	45½	50	54½	59	63½
5	8	37	42	47	52	57	62	67
	7	42	47	52	57	62	67	72
6	7	45	51	57	63	69	75	81
	6	51	57	63	69	75	81	87

THREADING STAY TUBES

For threading 2¾ inches and smaller tubes, for a length up to 3 inches, 12 cents per end.

For threading 3 inches to 5 inches, inclusive, tubes for a length up to 3 inches, 20 cents per end.

Longer threads in same proportion.

SWELLING ENDS OF BOILER TUBES UP TO 1/4 INCH LARGER IN DIAMETER

PRICES FOR ANY QUANTITY

Inches	2	2¼	2½	2¾	3	3¼	3½	3¾	4
Per end	5c.	5c.	8c.	8c.	8c.	10c.	10c.	10c.	10c.

UPSETTING ENDS OF BOILER STAY TUBES

External Diam. in Inches.	Price per End, 5/16 Inch Thick.	Price per End, ¼ Inch Thick.	Price per End, 5/16 Inch Thick.
1½	$0 52	$0 36	$0 34
1¾	54	40	36
1⅞	58	40	36
2	60	45	40
2⅛	66	48	44
2¼	75	51	47
2⅜	80	60	56
2½	90	69	65
2¾	96	75	70
2⅞	1 05	78	73
3	1 15	81	76
3¼	....	90	85
3½	....	96	90
3¾	....	1 05	98
4	....	1 05	1 05
4¼	....	1 11	1 11
4½	....	1 20	1 20
4¾	....	1 35	1 35
5	....	1 50	1 50

Upsetting tubes over 5/16 inch thick, same price as 5/16 inch thick.

When the length of the upset exceeds 2½ inches add 20 cents to the list for every ½ inch of extra length.

STEAM, GAS, AND WATER PIPE

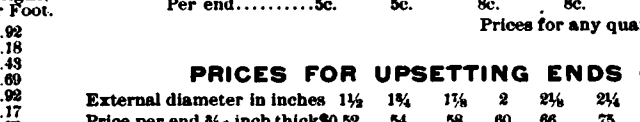


FIG. 1417

STANDARD, BLACK AND GALVANIZED

Nominal Inside Diameters.	Prices, per Foot.	Thickness.	Nominal Weight, per Foot.	Number of Threads, per Inch of Screw.
⅛	$0 05½	.068	0.24	27
¼	05½	.088	0.42	18
⅜	05½	.091	0.56	18
½	06½	.109	0.84	14
¾	11½	.113	1.12	14
1	16½	.134	1.67	11½
1¼	22½	.140	2.24	11½
1½	27	.145	2.68	11½
2	36	.154	3.61	11½
2½	57½	.204	5.74	8
3	75½	.217	7.54	8
3½	95	.226	9.00	8
4	1 08	.237	10.66	8
4½	1 30	.246	12.49	8
5	1 45	.259	14.50	8
6	1 88	.280	18.76	8
7	2 35	.301	23.27	8
8	2 82	.322	28.18	8
9	3 40	.344	33.70	8
10	4 25	.366	40.00	8
11	4 75	.375	45.00	8
12	5 20	.375	49.00	8

Unless otherwise ordered, black pipe, random lengths, with threads and couplings, will be shipped.

For cut lengths an extra charge will be made above random lengths.

For pipe smoothed on the inside, known as plugged and reamed, an extra charge will be made above regular pipe.

For galvanized pipe an extra charge will be made above black.

For asphalted pipe an extra charge will be made above black.

EXTRA STRONG

Sizes, Inches.	Actual Outside Diam.	Nominal Inside Diam.	Thickness.	Nominal Weight, per Foot.	Prices, per Foot.
⅛	.405	.205	.100	.29	$0 11
¼	.540	.294	.123	.54	11
⅜	.675	.421	.127	.74	11
½	.840	.542	.149	1.09	12
¾	1.05	.736	.157	1.39	15
1	1.315	.951	.182	2.17	22
1¼	1.66	1.272	.194	3.00	30
1½	1.90	1.494	.203	3.63	36
2	2.375	1.933	.221	5.02	50
2½	2.875	2.315	.280	7 67	81
3	3.500	2.892	.304	10.25	1 05
3½	4.000	3.358	.321	12.47	1 33
4	4.500	3.818	.341	14.97	1 50
4½	5.000	4.280	.360	18.22	1 95
5	5.563	4.813	.375	20.54	2 16
6	6.625	5.750	.437	28.58	2 90
7	7.625	6.625	.500	37.67	3 80
8	8.625	7.625	.500	43.00	4 30

Extra strong and double extra strong will be shipped in random lengths and plain ends unless otherwise ordered.

For pipe fitted with threads and couplings an extra charge will be made above regular.

For cut lengths an extra charge will be made above random.

For galvanized or asphalted an extra charge will be made above black.

DOUBLE EXTRA STRONG

Sizes, Inches.	Actual Outside Diam.	Nominal Inside Diam.	Thickness.	Nominal Weight, per Foot.	Prices, per Foot.
½	.84	.244	.298	1.70	$0 25
¾	1.05	.422	.314	2.44	30
1	1.315	.587	.364	3.65	37
1¼	1.66	.885	.388	5.20	52
1½	1.90	1.088	.406	6.40	65
2	2.375	1.491	.442	9.02	95
2½	2.875	1.755	.560	13.68	1 37
3	3.50	2.284	.608	18.56	1 92
3½	4.00	2.716	.642	22.75	2 45
4	4.50	3.136	.682	27.48	2 85
4½	5.00	3.564	.718	32.53	3 30
5	5.563	4.063	.75	38.12	3 80
6	6.625	4.875	.875	53.11	5 30
7	7.625	5.875	.875	62.38	6 25
8	8.625	6.875	.875	71.62	7 20

Extra strong and double extra strong will be shipped in random lengths and plain ends unless otherwise ordered.

For pipe fitted with threads and couplings an extra charge will be made above regular.

For cut lengths an extra charge will be made above random.

For galvanized or asphalted an extra charge will be made above black.

Extra heavy or hydraulic tubes away from standard. Special prices given on application.

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CAST IRON FITTINGS FOR WROUGHT IRON PIPE

ELBOW, BLACK



FIG. 1418

ELBOW, REDUCING

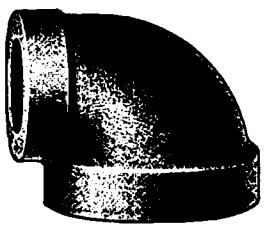


FIG. 1419

ELBOW, RIGHT AND LEFT



FIG. 1420

SIDE OUTLET ELBOW

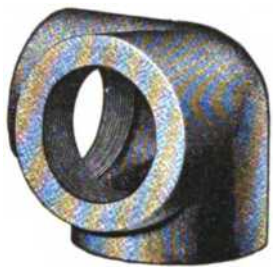


FIG. 1421

45° ELBOW

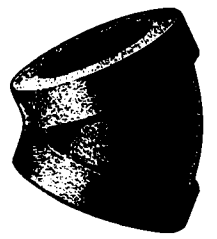


FIG. 1422

The ribs in the band denote the left hand end

TEE



FIG. 1423

TEE, REDUCING



FIG. 1424

SIDE OUTLET TEES



FIG. 1425



FIG. 1426

Y



FIG. 1427

CROSS



FIG. 1428

CROSS, REDUCING



FIG. 1429

OFFSET



FIG. 1430

COUPLING, REDUCING

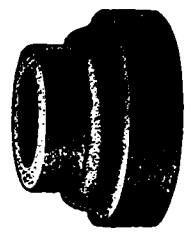


FIG. 1431

COUPLING, ECCENTRIC REDUCING

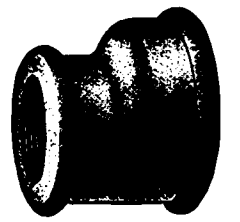


FIG. 1432

COUPLING, RIGHT AND LEFT

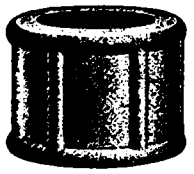


FIG. 1433

CAP



FIG. 1434

LOCK NUT



FIG. 1435

BUSHING



FIG. 1436

FACED BUSHING

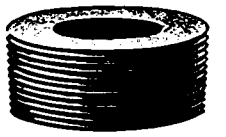


FIG. 1437

PLUG



FIG. 1438

SOCKET PLUG

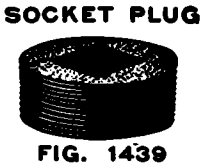


FIG. 1439

BLACK CAST IRON FITTINGS

Sizes, inches	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6	7	8	9	10	12	14	15
Elbows, R. H. $	05	05	06	08	10½	16	20	28	50	75	1 05	1 20	1 75	2 00	2 75	4 70	6 75	9 00	13 50	20 00	57 00	70 00
" reducing	...	06	07	09	12	18	23	32	60	85	1 20	1 40	2 00	2 30	3 15	5 40	7 75	10 50	15 50	23 00	63 00	77 00
" R. & L. & L. H.	06	06	07	09	12	18	23	32	60	85	1 20	1 50	2 25	2 40	3 40	....	....	....	....	....	....	....
" 45°	06	06	07	10	12	19	24	34	60	90	1 25	1 45	2 20	2 50	3 45	5 90	8 50	11 25	17 00	25 00	55 00	68 00
" side outlet	...	...	18	24	30	48	60	84	1 50	2 25	3 15	3 60	5 25	6 00	8 25	14 00	20 00	26 00	40 00	60 00	....	....
Tees	08	08	09	12	15	23	29	41	73	1 10	1 50	1 75	2 55	3 00	4 00	6 80	9 75	13 00	19 50	29 00	75 00	90 00
" reducing	...	09	10	14	17	27	33	47	83	1 25	1 75	2 00	2 95	3 50	4 60	7 80	11 25	15 00	22 50	33 50	83 00	100 00
" side outlet	...	...	27	36	45	70	90	1 25	2 25	3 25	4 50	5 25	7 65	9 00	12 00	20 00	30 00	40 00	50 00	90 00	....	....
Offsets, to set off 4 inches	...	...	...	45	70	1 00	1 20	1 80	3 00	4 00	5 00	6 00	....	8 00	10 00	...	....	....	....	....	....	....
" " 6 "	...	...	...	67	1 05	1 50	1 80	2 70	4 50	6 00	7 50	9 00	....	12 00	15 00	....	....	....	....	....	....	....
" " 8 "	...	...	...	90	1 40	2 00	2 40	3 60	6 00	8 00	10 00	12 00	....	16 00	20 00	....	....	....	....	....	....	....
Crosses	...	15	16	22	27	42	53	75	1 30	2 00	2 70	3 15	4 60	5 50	7 25	12 25	17 50	23 50	35 00	52 50	110 00	130 00
" reducing	...	18	18	25	30	46	60	83	1 45	2 20	3 00	3 50	5 10	6 00	8 00	13 50	19 25	26 00	38 50	58 00	120 00	143 00
Reducers	...	...	...	...	...	...	...	...	60	85	1 00	1 35	1 85	2 00	2 70	5 35	6 75	8 35	10 00	15 00	30 00	40 00
*Bushings	...	04	04	05	06	07	09	14	21	30	40	50	75	93	1 25	1 87	2 75	3 25	3 75	5 00	12 50	15 00
Bushing, faced	...	08	09	11	13	17	22	32	48	70	1 20	1 50	....	....	....	....	....	....	....	....	....	....
Plugs	02	02	02	03	04	05	07	10	18	25	38	42	65	88	1 20	1 85	2 75	3 25	3 75	5 00	12 50	15 00
" socket	...	...	04	06	08	09	11	15	....	....	....	....	....	....	....	....	....	....	....	....	....	....
" solid	04	04	04	06	08	09	11	15	27	38	57	63	1 00	1 35	1 80	2 80	4 15	5 00	5 75	7 50	....	....
" L. H.	...	...	...	06	08	09	11	15	....	....	....	....	....	....	....	....	....	....	....	....	....	....
Caps	...	...	...	...	...	....	....	26	40	54	75	87	1 05	1 20	1 55	2 50	2 85	4 75	5 50	7 00	19 00	22 00
Couplings, R. & L.	...	...	18	20	30	40	50	70	75	1 20	1 50	2 00	2 75	3 00	4 00	....	....	....	....	....	....	....
" eccentric red'g	...	...	...	...	36	50	72	1 00	1 50	2 40	3 00	4 00	....	6 00	8 00	....	20 00	....	....	....	....	....
Y's	...	...	20	28	34	54	66	94	1 66	2 50	3 50	4 00	5 90	7 00	9 20	15 60	22 50	30 00	45 00	67 00	....	....
" reducing	...	...	23	33	40	62	76	1 08	1 90	2 90	4 00	4 60	6 80	8 00	10 60	18 00	26 00	35 00	51 75	77 00	....	....
Lock nuts	...	...	...	...	....	....	....	25	27	34	47	64	85	90	1 30	1 70	2 35	2 70	3 00	4 00	7 00	9 00

*Bushings reducing but one size, 2½ inches and smaller, are malleable.
For galvanized fitting, double the above list.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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CAST IRON FITTINGS FOR WROUGHT IRON PIPE

RETURN BEND, CLOSE PATTERN

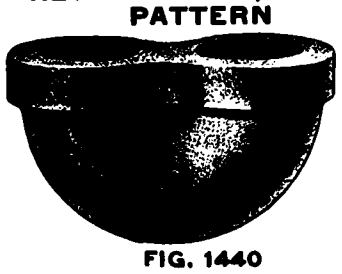


FIG. 1440

RETURN BENDS, CLOSE PATTERN

Sizes.	Center to Center, Inches.	Black, Each.	Galvanized, Each.	Black, R. & L. or L. H. Each.	Pitched, Right Hand, Each.	Pitched, R. & L. or L. H. Each.
½	1⅛	$0 18	$0 36	$0 21	....	....
¾	1⅜	20	40	23	$0 23	$0 23
1	1¾	22	44	26	26	26
1¼	2⅛	28	56	33	33	33
1½	2½	40	80	46	....	....
2	3⅜	57	1 14	66	....	....
2½	3½	1 20	2 40	1 40	....	....
3	4¼	1 70	3 40	1 95	....	....
3½	4¾	4 00	8 00	....	....	....
4	5⅞	5 00	10 00	....	....	....

RETURN BEND, OPEN PATTERN

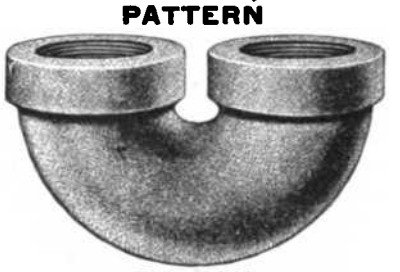


FIG. 1441

RETURN BENDS, OPEN PATTERN

Sizes.	Center to Center, Inches.	Black, Each.	Galvanized, Each.	Black, R. & L. or L. H. Each.
½	1¾	$0 25	$0 50	$0 30
¾	2	26	52	30
1	2½	30	60	35
1¼	3	40	80	46
1½	3½	55	1 10	64
2	4	80	1 60	92
2½	5½	1 35	2 70	1 55
3	6½	2 20	4 40	2 50
3½	7⅜	4 50	9 00	....
4	8½	5 75	11 50	....

RETURN BEND, BACK OUTLET

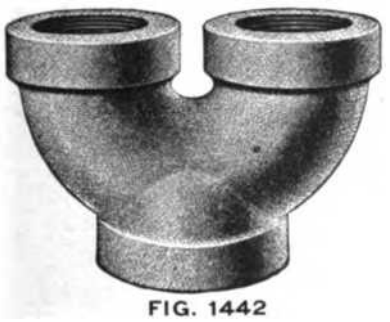


FIG. 1442

RETURN BENDS, BACK OUTLET

Center to center, same as above, according to pattern furnished.

Sizes.	Black, Each.	Galvanized, Each.	Black, R. & L. or L. H. Each.
¾	$0 38	$0 76	$0 44
1	42	84	48
1¼	60	1 20	69
1½	80	1 60	92
2	1 15	2 30	1 35
2½	2 00	4 00	2 30
3	3 00	6 00	3 45
3½	6 60	13 20	....
4	8 50	17 00	....

RETURN BEND, WIDE PATTERN

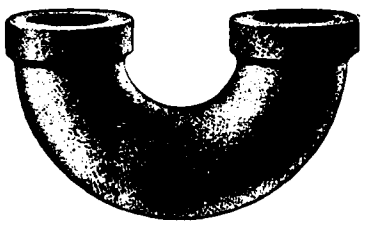


FIG. 1443

Made to order specially. Prices upon application.

FLANGE UNION

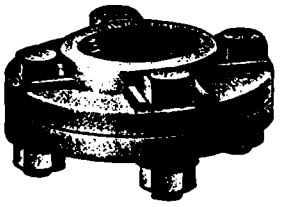


FIG. 1444

FLANGE UNION, WITH LIP

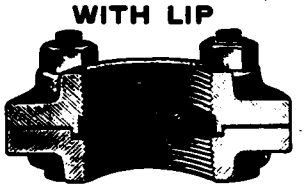


FIG. 1445

FLANGE



FIG. 1446

SOLID, OR BLANK, FLANGE

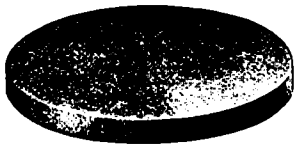


FIG. 1447

CURVED FLANGE



FIG. 1448

Figs. 1447 and 1448 to order. Prices upon application.

FLANGE UNION, FIG. 1444

Sizes.	Diameters of Flanges, Inches.	Number of Bolts in Each.	Black, Each.	Galvanized, Each.	Sizes.	Diameters of Flanges, Inches.	Number of Bolts in Each.	Black, Each.	Galvanized, Each.
½	2 11/16	3	$0 40	$0 80	4	7 13/16	4	$2 10	$4 20
¾	3 1/16	3	46	92	4½	8¼	5	2 70	5 40
1	3 15/32	3	52	1 04	5	9 1/16	5	3 15	6 30
1¼	3 13/16	4	64	1 28	6	10	6	3 95	7 90
1½	4 11/32	4	78	1 56	7	11 1/16	7	5 50	11 00
2	5⅛	4	1 00	2 00	8	12⅛	8	7 00	14 00
2½	6 1/16	4	1 25	2 50	9	13¼	9	10 00	20 00
3	6¾	4	1 50	3 00	10	15 1/16	10	11 50	23 00
3½	7¼	4	1 80	3 60	12	17¼	12	16 00	32 00

FLANGE UNION, WITH LIP, FIG. 1445

Sizes.	Diameters of Flanges, Inches.	Number of Bolts in Each.	Black, Each.	Galvanized, Each.	Sizes.	Diameters of Flanges, Inches.	Number of Bolts in Each.	Black, Each.	Galvanized, Each.
½	3⅛	4	$0 60	$1 00	4	8⅛	4	$3 00	$5 00
¾	3⅜	4	75	1 25	4½	8 7/16	5	3 50	5 85
1	3¾	4	90	1 50	5	9⅜	5	4 00	6 65
1¼	4	4	1 00	1 65	6	10¾	6	5 00	8 35
1½	4⅝	4	1 20	2 00	7	11⅞	7	7 00	11 65
2	5⅝	4	1 50	2 50	8	13 3/16	8	10 00	16 65
2½	6	4	1 75	2 90	9	14⅞	9	15 00	25 00
3	6¾	4	2 00	3 35	10	15¾	10	17 50	29 00
3½	7 9/16	4	2 75	4 55	12	18	12	20 00	34 00

PRICES, FIG. 1446

Outside Diameters in Inches	Sizes. ⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6	7	8	9	10	12	14
8	$0.10	.10																		
8½	.15	.15	.15	.15	.16															
4	.22	.22	.22	.16	.16															
4½	.25	.25	.25	.25	.25	.22														
5	.35	.35	.30	.30	.30	.30	.35													
5½	.45	.45	.45	.40	.40	.40	.35	.40												
6	.50	.50	.50	.42	.40	.40	.42	.42	.50											
6½	....	.65	.60	.60	.60	.55	.50	.50	.50	.65										
7	....	.75	.75	.75	.70	.70	.62	.62	.62	.75										
7½	....	.90	.90	.90	.85	.85	.80	.80	.75	.85	.90									
8	....	1.00	1.00	1.00	.95	.95	.90	.90	.90	.90	.90									
8½	....	1.25	1.25	1.25	1.15	1.15	1.10	1.10	1.10	1.00	1.00									
9	....	....	....	1.35	1.35	1.35	1.30	1.25	1.15	1.15	1.15	1.15	1.40							
9½	....	....	....	....	1.90	1.90	1.75	1.75	1.60	1.60	1.50	1.25	1.50	1.50						
10	....	....	....	....	2.25	2.25	2.15	2.00	1.80	1.50	1.50	1.50	1.50	1.50						
11	....	....	....	....	....	....	2.50	2.50	2.25	2.25	2.00	1.75	1.75	1.75	2.20					
12	....	....	....	....	....	....	....	3.00	3.00	2.75	2.50	2.50	2.20	2.20	2.20	2.80				
13	....	....	....	....	....	....	....	....	3.50	3.50	3.25	3.00	3.00	2.80	2.80	2.80				
14	....	....	....	....	....	....	....	....	4.00	4.00	3.75	3.75	3.50	3.25	3.25	3.25	3.75	4.00		
15	....	....	....	....	....	....	....	....	....	....	....	....	....	....	4.00	4.00	4.00	4.50		
16	....	....	....	....	....	....	....	....	....	....	....	....	....	....	5.00	5.00	5.00	5.00	6.00	
17	....	....	....	....	....	....	....	....	....	....	....	....	....	....	6.50	6.50	5.75	5.75	7.00	
18	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	8.00	8.00	7.00	7.00	
19	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	7.50	7.50	
20	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	8.50	8.50
21	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	9.50

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CAST IRON FITTINGS

BRANCH TEES

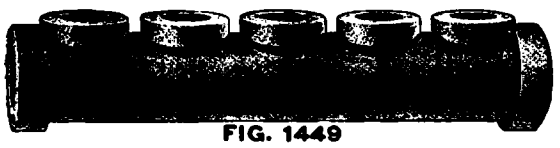


FIG. 1449

WITH BACK OUTLET

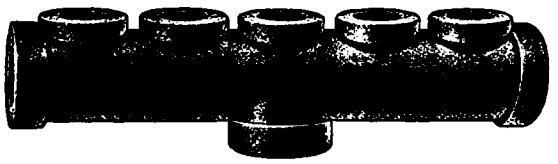


FIG. 1450

WITH SIDE OUTLET

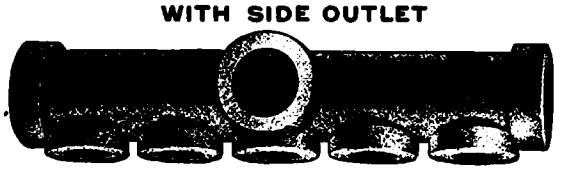


FIG. 1451

PRICES, FIGS. 1449 TO 1451

Number of Outlets.....			2	3	4	5	6	7	8	9	10	11	12
C to C, Inches.	Sizes, Inches.	Run, Inches.											
2	¾	1 or 1¼	$0 90	$1 05	$1 15	$1 35	$1 60	$1 90	$2 20	$2 65	$3 15	$3 75	$4 40
2	¾	1½	1 00	1 15	1 30	1 45	1 75	2 20	2 45	2 90	3 30	4 50	4 75
2½	1	1 or 1¼	90	1 05	1 15	1 35	1 60	1 90	2 20	2 65	3 15	3 75	4 40
2½	1	1½	1 00	1 15	1 30	1 45	1 75	2 20	2 45	2 90	3 30	4 50	4 75
2½	1	2	1 15	1 35	1 60	1 85	2 10	2.45	2 75	3 40	4 00	4 80	5 10
2½	1	2½	1 75	2 05	2 40	2 75	3 10	3 50	3 75	4 30	5 00	5 50	5 85
3	1¼	1¼ or 1½	1 30	1 65	2 00	2 40	2 80	3 20	3 60	4 30	4 80	5 00	5 25
3	1¼	2	1 50	1 90	2 40	2 90	3 30	3 90	4 50	5 25	5 85	6 25	6 50
3	1¼	2½	1 95	2 40	2 85	3 55	3 95	4 20	4 95	6 15	6 85	7 25	7 65
3½	1½	1½ or 2	2 10	2 70	3 35	4 00	4 65	5 25	5 85	6 50	7 60	8 00	8 50
3½	1½	2½	2 85	3 45	4 15	5 00	5 75	6 50	7 00	8 25	9 25	9 75	10 50
3½	1½	3	3 15	3 80	4 60	5 50	6 25	7 25	7 75	9 00	10 00	10 75	11 50
4	2	2	4 10	5 25	6 40	7 65	8 80	10 60	11 50	12 25	13 50	14 25	15 00
4	2	2½	4 50	5 75	7 00	8 50	9 75	11 75	12 75	13 50	15 00	15 75	16 50
4	2	3	4 50	5 75	7 00	8 50	9 75	11 75	12 75	13 50	15 00	15 75	16 50
4	2	3½	5 00	6 25	7 75	9 25	10 75	13 00	14 00	15 00	16 50		

Back or side outlets are charged as additional front outlets.

HOOK PLATES



FIG. 1452



FIG. 1453

No. of Pipes.	¾-inch, Each.	1-inch, Each.	1¼-inch, Each.	1½-inch, Each.	2-inch, Each.
1	$0 08	$0 09	$0 10	$0 15	$0 22
2	16	18	21	28	43
3	21	23	27	43	65
4	24	26	32	58	90
5	28	32	41	72	1 15
6	34	38	52	88	1 35
7	40	48	68	1 10	
8	45	59	80	1 25	
9	50	65	90	1 40	
10	56	70	1 20	1 55	
11	68	85	1 35	1 65	
12	72	1 00	1 40	1 90	

EXPANSION PLATES

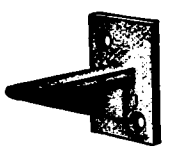


FIG. 1454



FIG. 1455

No. of Pipes.	¾-inch Each.	1-inch. Each.	1¼-inch, Each.	1½-inch, Each.
1	$0 12	$0 15	$0 17	$0 25
2	23	25	27	40
3	34	35	40	60
4	45	50	60	75
5	55	60	70	90
6	65	70	80	100
7	77	80	90	
8	90	95	1 15	
9	1 05	1 10	1 30	
10	1 25	1 35	1 50	
11	1 45	1 55	1 70	
12	1 65	1 70	2 00	

RING PLATES



FIG. 1456



FIG. 1457

No. of Pipes.....	1	2	3	4	5	6	7	8	9	10
1 inch, each....	$0 16	$0 28	$0 41	$0 50	$0 62	$0 72	$0 96	$1 00	$1 20	$1 30
1¼ " "	21	35	50	62	75	1 10	1 25	1 40		

FLOOR PLATES

NO. 1



FIG. 1458

NO. 2

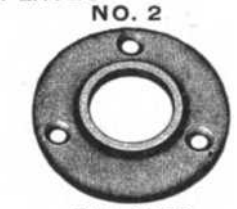


FIG. 1459

CEILING PLATES



FIG. 1460

FLOOR FLANGES

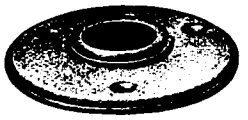


FIG. 1461

OVAL FLOOR FLANGES

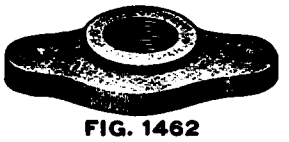


FIG. 1462

FLOOR PLATES NO. 1

Sizes.....	⅛	¼	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6
With groove to split, Prices each.....	$0.06	.06	.08	.11	.14	.16	.24	.30	.35	.42	.60	.75		

FLOOR PLATES NO. 2

Sizes.....	⅛	¼	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6
Prices each.....	$0.06	.06	.08	.11	.14	.16	.24	.30	.35	.42	.60	.75		

CEILING PLATES

Sizes.....	⅛	¼	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6
Prices each.....	$0.11	.13	.16	.18	.23	.27	.36	.50	.55	.68	.95	1.25		

FLOOR FLANGES

Sizes.....	⅜	½	½	¾	¾	1	1¼	1¼	1½	2	2
Black, prices each..	$0.14	.15	.17	.18	.21	.22	.25	.35	.36	.45	.55
Diameters, inches..	3	3	3½	3½	4	4	4	5	5	5	6

Oval floor flanges, to order.

FLOOR PLATES

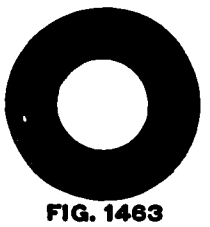


FIG. 1463

Size.	Iron.	Finished Brass.	Finished Brass, Nickel Plated.
½ in.	$0 08	$0 32	$0 44
¾ "	10	40	52
1 "	12	48	60
1¼ "	15	55	70
1½ "	20	60	75
2 "	25	65	80
2½ "	30	70	85

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PATENT ADJUSTABLE FLOOR AND CEILING PLATES

TOP

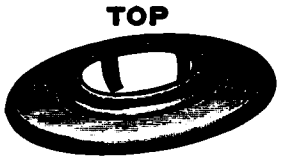


FIG. 1464

BOTTOM

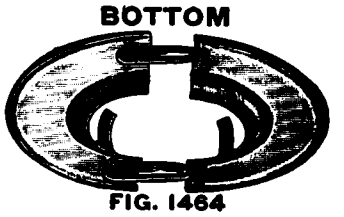


FIG. 1464

COLD ROLLED STEEL

Sizes.....Inches	½	¾	1	1¼	1½	2	2½	3
Polished steel..... $0	12	.12	.15	.18	.20	.24	.40	.60
Steel nickel plated.....	.25	.25	.28	.32	.35	.38	.52	.75

HEAVY PIPE HOOKS

WROUGHT IRON



FIG. 1465

Sizes	¼	⅜	½	¾	1	1¼	1½	2	2½	3	4	5	6
Each. $0	02	.02	.02	.03	.04	.05	.06	.08	.10	.12	.16	.20	.30

GAS PIPE HOOK

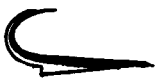


FIG. 1466

Sizes, Inches	¼	⅜	½	¾	1	1¼	1½	2
Prices, per 100 $	$0 45	.55	.65	.80	1.00	1.30	1.60	2.00

PIPE STRAP

TINNED



FIG. 1467

Sizes, Inches	¼	⅜	½	¾	1	1¼	1½	2
Prices, per lb. $	$0 12	.12	.12	.12	.12	.12	.12	.12

UNIVERSAL PIPE HANGERS

NO. 1. OPENED NO. 2



FIG. 1468 FIG. 1468 FIG 1469 FIG. 1470

Sizes... ¾	1	1¼	1½	2	2½	3	3½	4	5	6	7	8	10	12	14
No. 1 $0 18	.18	.20	.22	.25	.30	.35	.45	.50	.60	.75	1.15	1.25	1.50	1.75	2.00
" 2* .58	.58	.60	.62	.65	.70	.75	.85	.90	1.00	1.15	1.55	1.65	1.90	2.15	2.40

*In ordering No. 2 hangers state size of beam.

GIANT PIPE HANGERS

LOCK HINGE, BALL BEARING

NO. 1 CLOSED, FOR WOODEN BEAMS NO. 1 OPEN AND IN PARTS NO. 2 CLOSED, FOR IRON BEAMS

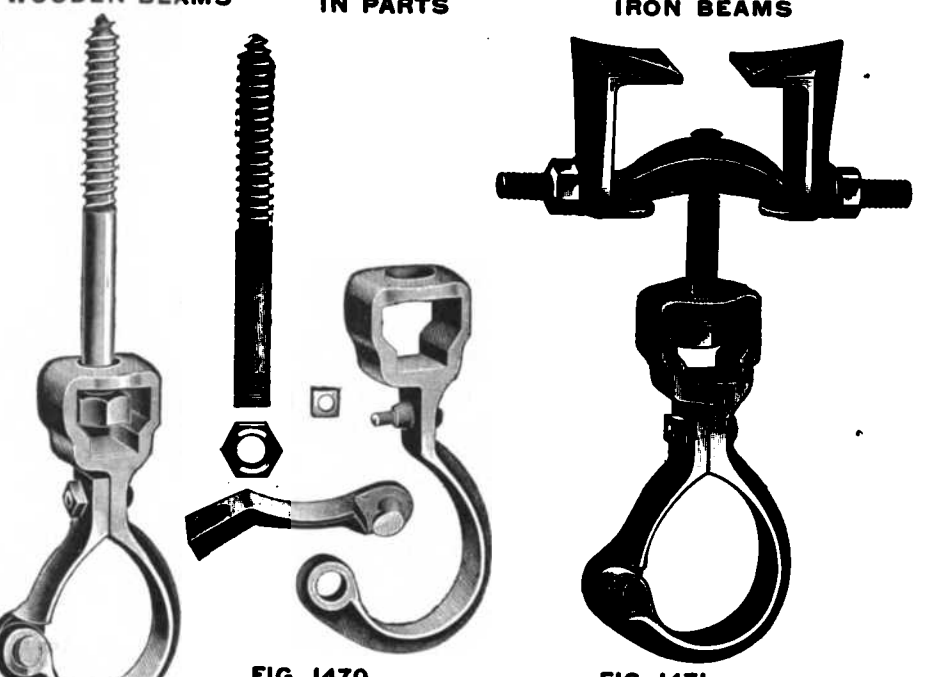


FIG. 1470 FIG. 1471

Allows for expansion and contraction in all directions, to the right or left, backward and forward, as well as diagonally.

Sizes, In. ⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6	7	8	9	10	11	12	14
No. 1 $0 15	.15	.18	.18	.20	.22	.25	.30	.35	.37	.45	.55	.65	.85	.95	1.05	1.20	1.35	1.55	1.75
No. 2 .55	.55	.58	.58	.60	.62	.65	.70	.75	.77	.85	.95	1.05	1.25	1.35	1.45	1.60	1.75	1.95	2.15

CAST IRON FITTINGS FOR WATER CONNECTIONS

LONG TURN ELBOW



FIG 1472

DOUBLE BRANCH ELBOW



1472A

TEE



FIG. 1473

CROSS



FIG. 1474

BASE FITTINGS



FIG. 1475

We can furnish special fittings as shown, for use at the bottom of pipe columns. Can be furnished either screwed or flanged.

Prices on application.

PRICES, STRAIGHT SIZES

Sizes.....Inches	1	1¼	1½	2	2½	3	3½	4	4½
Elbow.....	$0 32	$0 40	$0 55	$0 80	$1 20	$2 25	$3 25	$3 50	$5 50
Dbl. branch elbow	64	80	1 10	1 60	2 40	4 50	6 50	7 00	11 00
Tee.....	48	60	82	1 20	1 80	3 40	4 90	5 25	8 25
Cross.....	85	1 10	1 50	2 15	3 20	6 00	8 75	9 50	15 00

Sizes.....Inches	5	6	7	8	9	10	12	14
Elbow.....	$6 50	$8 75	$13 00	$17 00	$25 50	$30 00	$40 00	$60 00
Dbl. branch elbow	13 00	17 50	26 00	34 00	51 00	60 00	80 00	100 00
Tee.....	9 75	13 25	19 50	25 50	38 00	45 00	60 00	80 00
Cross.....	17 50	24 00	35 00	45 00	68 00	80 00	107 00	.....

For galvanized, double above list prices.

PRICES, REDUCING SIZES

Sizes.....Inches	1¼	1½	2	2½	3	3½	4	4½
Elbow.....	$0 60	$0 83	$1 20	$1 80	$3 38	$4 88	$5 25	$8 25
Dbl. branch elbow.	1 20	1 65	2 40	3 60	6 75	9 75	10 50	16 50
Tee.....	90	1 23	1 80	2 70	5 10	7 35	7 88	12 38
Cross.....	....	2 25	3 20	4 80	9 00	13 00	14 25	22 50

Sizes.....Inches	5	6	7	8	9	10	12
Elbow.....	$9 75	$13 13	$19 50	$25 50	$38 25	$45 00	$60 00
Dbl. branch elbow	19 50	26 25	39 00	51 00	76 50	90 00	120 00
Tee.....	14 63	19 88	29 25	38 25	57 00	67 50	90 00
Cross.....	26 25	36 00	52 00	67 00	102 00	120 00	160 00

Prices, galvanized, on application.

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STANDARD CAST IRON FLANGED FITTINGS

ELBOW



FIG. 1476

PRICES, FIG. 1476

Sizes, Inches.	Center to Face, Inches.	Diameters of Flanges, Inches.	ELBOWS, 45° With Flanges Faced, each.	With Flanges Faced and Drilled, each.
2	2½	6	$5 25	$6 25
2½	2¾	7	5 50	6 75
3	3	7½	6 25	7 50
3½	3¼	8½	7 25	8 50
4	3½	9	8 00	10 00
4½	3¾	9¼	10 00	12 00
5	3¾	10	10 75	12 75
6	4¼	11	13 00	15 00
7	5⅛	12½	16 00	19 75
8	5¼	13½	20 00	23 75
9	5⅝	15	26 00	30 00
10	5⅝	16	32 00	36 00
12	6½	19	44 00	50 00
14	7¼	21	58 00	65 00
15	7½	22¼	72 00	80 00
16	7⅝	23½	84 00	93 00
18	7¾	25	108 00	118 00
20	9	27½	135 00	148 00
22	10	29½	160 00	180 00
24	10¾	31½	200 00	220 00
			ELBOWS	
2	4½	6	$4 75	$5 75
2½	4¾	7	5 00	6 25
3	5½	7½	5 75	7 00
3½	5¾	8½	6 50	7 75
4	6	9	7 25	9 25
4½	6¼	9¼	9 00	11 00
5	7	10	9 75	11 75
6	7½	11	12 00	14 00
7	8½	12½	16 00	19 75
8	9½	13½	20 00	23 75
9	10¾	15	26 00	30 00
10	11½	16	32 00	36 00
12	12¾	19	44 00	50 00
14	13½	21	58 00	65 00
15	14½	22¼	72 00	80 00
16	15¼	23½	84 00	93 00
18	16½	25	108 00	118 00
20	18	27½	135 00	148 00
22	20	29½	160 00	180 00
24	22	31½	200 00	220 00

Flanged fittings furnished faced only, unless otherwise ordered.

TEE



FIG. 1477

PRICES, FIG. 1477

Sizes, Inches.	Center to Face, Inches.	Face to Face, Inches.	Diameters of Flanges, Inches.	TEES With Flanges, Faced, each.	With Flanges, Faced and Drilled, each.	Sizes, Inches.	REDUCING TEES. With Flanges Faced, each.	With Flanges Faced and Drilled, each.
2	4½	9	6	$7 00	$8 50			
2½	4¾	9½	7	7 25	9 00	2½	$8 25	$10 00
3	5½	11	7½	8 25	10 00	3	9 50	11 25
3½	5¾	11½	8½	9 50	11 25	3½	11 00	12 75
4	6	12	9	10 50	13 50	4	12 00	15 00
4½	6¼	12½	9¼	13 00	16 00	4½	15 00	18 00
5	7	14	10	14 25	17 25	5	16 25	19 25
6	7½	15	11	17 50	20 50	6	20 00	23 00
7	8½	17	12½	23 00	28 75	7	26 50	32 00
8	9½	19	13½	29 00	34 75	8	33 50	39 00
9	10¾	21½	15	38 00	44 00	9	43 50	50 00
10	11½	23	16	46 50	52 50	10	53 50	60 00
12	12¾	25½	19	64 00	78 00	12	74 00	88 00
14	13¼	26½	21	84 00	96 00	14	96 00	107 00
15	14½	29	22¼	105 00	117 00	15	120 00	132 00
16	15¼	30½	23½	122 00	135 00	16	140 00	153 00
18	16½	33	25	155 00	170 00	18	178 00	193 00
20	18	36	27½	195 00	215 00	20	225 00	245 00
22	20	40	29½	230 00	260 00	22	265 00	295 00
24	22	44	31½	290 00	320 00	24	335 00	365 00

Flanged fittings furnished faced only, unless otherwise ordered. Dimensions of straight and reducing sizes are the same.

CROSS

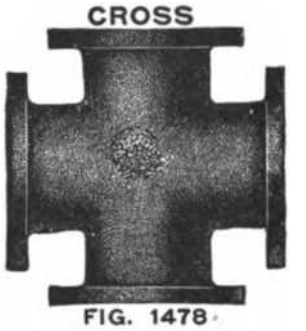


FIG. 1478

PRICES, FIG. 1478

Sizes, Inches.	Face to Face, Inches.	Diameter of Flanges, Inches.	CROSSES. With Flanges Faced, each.	With Flanges Faced and Drilled, each.	Sizes, Inches.	REDUCING CROSS. With Flanges Faced, each.	With Flanges Faced and Drilled, each.
2	9	6	$9 50	$11 50			
2½	9½	7	10 00	12 50	2½	$11 50	$14 00
3	11	7½	11 50	14 00	3	13 25	15 75
3½	11½	8½	13 00	15 50	3½	15 00	17 50
4	12	9	14 50	18 50	4	16 75	20 75
4½	12½	9¼	16 00	22 00	4½	20 75	25 00
5	14	10	19 50	23 50	5	22 50	26 50
6	15	11	24 00	28 00	6	27 50	31 50
7	17	12½	32 00	39 50	7	37 00	45 00
8	19	13½	40 00	47 50	8	46 00	53 50
9	21½	15	52 00	60 00	9	60 00	68 00
10	23	16	64 00	72 00	10	74 00	82 00
12	25½	19	88 00	100 00	12	100 00	112 00
14	26½	21	116 00	130 00	14	132 00	146 00
15	29	22¼	144 00	160 00	15	165 00	180 00
16	30½	23½	168 00	186 00	16	198 00	210 00
18	33	25	216 00	236 00	18	248 00	268 00
20	36	27½	270 00	296 00	20	310 00	335 00
22	40	29½	320 00	360 00	22	370 00	410 00
24	44	31½	400 00	440 00	24	460 00	500 00

Flanged fittings furnished faced only, unless otherwise ordered. Dimensions of straight and reducing sizes are the same.

CAST IRON LONG TURN FLANGED FITTINGS

DOUBLE SWEEP

TEE



FIG. 1479

PRICES, FIG. 1479

Sizes, inches.	Center to Face, Inches.	Face to Face, Inches.	Diameters of Flanges, Ins.	TEES, Fig. 1479 With Flanges Faced, Each.	With Flanges Faced and Drilled, Each.
2	4½	9	6	$8 00	$9 50
2½	4¾	9½	7	8 25	10 00
3	5½	11	7½	9 50	11 25
3½	5¾	11½	8½	11 00	12 75
4	6	12	9	12 00	15 00
5	7	14	10	16 25	19 25
6	7½	15	11	20 00	23 00
7	8½	17	12½	26 50	32 00
8	9½	19	13½	33 50	39 00
9	10¾	21½	15	43 50	50 00
10	11½	23	16	53 50	60 00
12	12¾	25½	19	74 00	88 00
14	13½	26½	21	96 00	107 00
15	14½	29	22¼	120 00	132 00
16	15¼	30½	23½	140 00	153 00
18	16½	33	25	178 00	193 00
20	18	36	27½	225 00	245 00
22	20	40	29½	265 00	295 00
24	22	44	31½	335 00	365 00

TEE, REDUCING

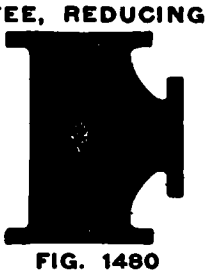


FIG. 1480

PRICES FIG. 1480

Sizes, inches.	REDUCING TEES, Fig. 1480 With Flanges Faced, Each.	With Flanges Faced and Drilled, Each.
2½	$9 50	$11 25
3	11 00	12 75
3½	12 50	14 25
4	13 75	16 75
5	18 75	21 75
6	23 00	26 00
7	30 00	35 50
8	38 50	44 00
9	50 00	56 50
10	61 50	68 00
12	85 00	94 00
14	110 00	121 00
15	138 00	150 00
16	160 00	173 00
18	205 00	220 00
20	258 00	278 00
22	305 00	335 00
24	385 00	415 00

SINGLE SWEEP

TEE



FIG. 1481

PRICES, FIG. 1481

Sizes, inches.	Center to Face, Inches.	Face to Face, Inches.	Diameters of Flanges, Ins.	TEES, Fig. 1481 With Flanges Faced, Each.	With Flanges Faced and Drilled, Each.
2	4½	9	6	$8 00	$9 50
2½	4¾	9½	7	8 25	10 00
3	5½	11	7½	9 50	11 25
3½	5¾	11½	8½	11 00	12 75
4	6	12	9	12 00	15 00
5	7	14	10	16 25	19 25
6	7½	15	11	20 00	23 00
7	8½	17	12½	26 50	32 00
8	9½	19	13½	33 50	39 00
9	10¾	21½	15	43 50	50 00
10	11½	23	16	53 50	60 00
12	12¾	25½	19	74 00	88 00
14	13¼	26½	21	96 00	107 00
15	14½	29	22¼	120 00	132 00
16	15¼	30½	23½	140 00	153 00
18	16½	33	25	178 00	193 00
20	18	36	27½	225 00	245 00
22	20	40	29½	265 00	295 00
24	22	44	31½	335 00	365 00

TEE, REDUCING IN RUN



FIG. 1482

PRICES FIGS. 1482-1483

Sizes, inches.	REDUCING TEES, Figs. 1482 and 1483 With Flanges Faced, Each.	With Flanges Faced and Drilled, Each.
2½	$9 50	$11 25
3	11 00	12 75
3½	12 50	14 25
4	13 75	16 75
4½	17 25	20 25
5	18 75	21 75
6	23 00	26 00
7	30 00	35 50
8	38 50	44 00
9	50 00	56 50
10	61 50	68 00
12	85 00	94 00
14	110 00	121 00
15	138 00	150 00
16	160 00	173 00
18	205 00	220 00
20	258 00	278 00
22	305 00	335 00
24	385 00	415 00

TEE, REDUCING IN BRANCH



FIG. 1483

CROSS



FIG. 1484

PRICES, FIG. 1484

Sizes, inches.	Face to Face, Inches.	Diameters of Flanges, ins.	CROSSES, Fig. 1484 With Flanges Faced, Each.	With Flanges Faced and Drilled, Each.
4	12	9	$18 00	$22 00
5	14	10	25 00	29 00
6	15	11	35 00	39 00
7	17	12½	45 00	52 50
8	19	13½	55 00	62 50
9	21½	15	70 00	78 00
10	23	16	85 00	93 00
12	25½	19	120 00	132 00
14	26½	21	160 00	174 00
15	29	22¼	190 00	206 00
16	30½	23½	225 00	243 00
18	33	25	280 00	300 00

Flanged fittings are furnished faced only, unless otherwise ordered. Dimensions of straight and reducing sizes are the same.

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HYDRAULIC CAST IRON FITTINGS

ELBOW

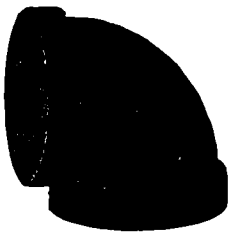


FIG. 1485

CROSS



FIG. 1486

TEE

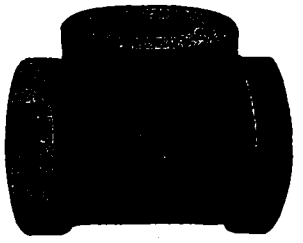


FIG. 1487

FLANGE UNION

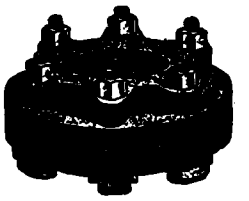


FIG. 1488

Sizes.	Hydraulic Elbows, Each.	Hydraulic Elbows, 45°, Each.	Hydraulic Tees, Each.	Hydraulic Crosses, Each.	Hydraulic Flange Unions, with Rubber Gaskets Each.
½	$0 30	$0 45	$0 45	$0 60	$1 20
¾	45	65	65	90	1 30
1	50	75	75	1 00	1 40
1¼	70	1 00	1 05	1 40	1 50
1½	80	1 25	1 30	1 60	2 00
2	1 25	1 75	1 90	2 50	2 25
2½	1 85	2 25	2 75	3 70	3 00
3	2 25	2 50	3 30	4 50	3 50
3½	2 75	3 00	4 00	5 50	4 00
4	3 00	3 50	4 50	6 00	4 50
4½	4 00	4 50	6 00	8 00	5 00
5	5 00	5 25	7 50	10 00	5 50
6	6 00	6 25	9 00	12 00	6 50

ELBOW



FIG. 1489

VALVE



FIG. 1490

HYDRAULIC BRASS FITTINGS AND VALVES

Sizes.	Elbows.	Tees.	Crosses.	Couplings.	Unions.	Flange Unions.	Valves.	Valves, Double Heavy.	Valves, Three Way.	Valves, Check Valves.
½	$1 00	$1 50	$2 00	$0 75	$1 25	$1 85	$5 50	$7 00	$9 00	$5 50
¾	2 00	3 00	4 00	1 00	1 50	2 30	10 00	15 00	....	10 00
1	3 00	4 50	6 00	1 25	2 25	4 25	15 00	20 00	....	15 00
1¼	4 00	6 00	8 00	1 50	3 00	5 00	22 50	25 00	....	22 50
1½	5 00	7 50	10 00	2 50	4 25	5 50	25 00	30 00	....	25 00

CLOSE NIPPLE

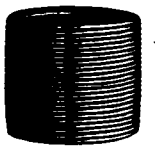


FIG. 1491

WROUGHT IRON NIPPLES, COUPLING AND LONG SCREW

NIPPLES THREADED RIGHT HAND, BLACK

Length in Inches. Close.	Short.	Long.			Sizes.	Close or Short.	Long.	Length and Prices. Extra Long Nipples. 4	5	6	7	8	9	10	11	12
¾	1½	2,	2½,	3, 3½,	⅛	$0 04	$0 06	$0 07	$0 08	$0 10	$0 12	$0 14	$0 15	$0 17	$0 18	$0 19
⅞	1½	2,	2½,	3, 3½,	¼	04	06	07	08	10	12	14	15	17	18	19
1	1½	2,	2½,	3, 3½,	⅜	04	06	07	08	10	12	14	15	17	18	19
1⅛	1½	2,	2½,	3, 3½,	½	05	07	08	10	12	14	16	18	20	22	23
1⅜	2	2½,	3	3½, 4	¾	06	09	....	11	13	17	18	20	22	24	26
1½	2	2½,	3,	3½, 4	1	08	13	....	15	18	23	25	28	31	34	36
1⅝	2½	3,	3½	4, 4½	1¼	11	17	....	20	24	29	33	36	40	44	47
1¾	2½	3,	3½,	4, 4½	1½	13	20	....	25	29	36	40	45	50	54	59
2	2½	3,	3½,	4, 4½	2	18	27	....	32	38	50	54	59	65	72	77
2½	3	3½,	4,	4½, 5	2½	39	59	....	....	68	90	97	1 06	1 17	1 26	1 35
2½	3	3½,	4,	4½, 5	3	48	72	....	....	85	1 08	1 20	1 33	1 45	1 58	1 70
2¾	4	4½,	5,	5½, 6	3½	75	1 05	....	....	....	1 30	1 45	1 60	1 75	1 90	2 05
3	4	4½,	5,	5½, 6	4	85	1 20	....	....	....	1 52	1 69	1 87	2 05	2 22	2 40
3	4	4½,	5,	5½, 6	4½	1 25	1 70	....	....	....	2 25	2 50	2 75	2 95	3 17	3 40
3½	4½	5,	5½,	6, 6½	5	1 55	2 45	....	....	....	2 58	2 83	3 10	3 35	3 60	3 85
3½	4½	5,	5½,	6, 6½	6	1 85	2 90	....	....	....	3 05	3 35	3 70	4 00	4 30	4 65
4	5	6			7	3 20	3 60	....	....	....	4 05	4 45	4 90	5 30	5 75	6 15
4	5	6			8	3 55	4 05	....	....	....	4 55	5 05	5 50	6 00	6 50	7 00
5	6	8			9	5 25	6 50	....	....	....	....	....	7 10	7 75	8 40	9 00
5	6	8			10	6 75	8 25	....	....	....	....	....	8 90	9 70	10 40	11 15
5	6	8			12	8 00	10 00	....	....	....	....	....	10 80	11 75	12 70	13 65

COUPLING

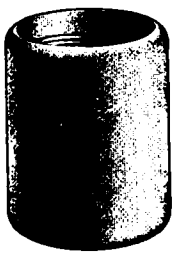


FIG. 1492

SHOULDER NIPPLE

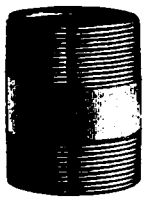


FIG. 1493

LONG SCREW

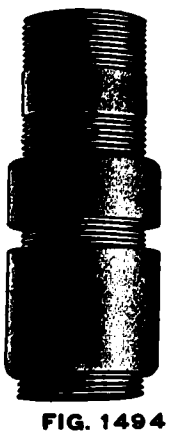


FIG. 1494

PRICES WROUGHT IRON NIPPLES, THREADED RIGHT HAND, GALVANIZED

Sizes, inches	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6	7	8
Close or short, each	$0 06	$0 06	$0 06	$0 06	$0 08	$0 11	$0 17	$0 21	$0 27	$0 36	$0 70	$1 20	$1 35	$1 85	$2 30	$2 80	$4 25	$5 00
Long, "	11	11	11	11	14	19	29	35	47	86	1 10	1 70	1 67	2 00	3 15	4 25	4 95	5 80

LONG NIPPLE

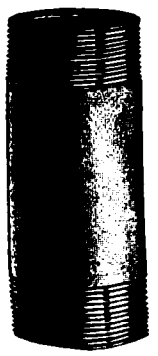


FIG. 1495

PRICES, WROUGHT IRON NIPPLES, THREADED RIGHT AND LEFT, BLACK

Sizes, inches	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4
Right and left, short, each	$0 05	$0 05	$0 05	$0 07	$0 08	$0 11	$0 15	$0 18	$0 24	$0 52	$0 65	$1 00	$1 15
" " long "	08	08	08	10	12	18	23	27	36	79	96	1 40	1 60

Add 60 per cent. to above prices for galvanized nipples threaded right and left.

PRICES, WROUGHT IRON COUPLINGS AND LONG SCREWS

Sizes, inches	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6	7	8	9	10	12	14
Couplings, black, Each.	$0.05	.05	.06	.07	.10	.13	.17	.21	.28	.40	.60	.80	1.00	1.50	1.65	2.40	3.25	4.25	5.50	7.50	10 00	13 00
" galvanized "	.06	.06	.08	.10	.13	.18	.25	.32	.40	.55	.80	1.05	1.40	2.00	2.25	3.25						
" black, R. and L. "	.07	.07	.08	.11	.15	.20	.25	.30	.50	.85	1.20	1.60	2.00									
Long screws	....	.30	.35	.40	.55	.75	1.00	1.30	1.70	2.70	3.70	5.40	6.60									
" " galvanized	....	.35	.40	.50	.66	1.00	1.25	1.60	2.10	3.10	4.70	6.75	8.25									

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MALLEABLE IRON, GAS, WATER AND STEAM FITTINGS

ELBOW PLAIN

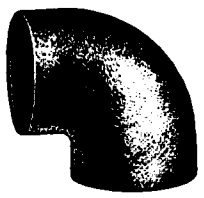


FIG. 1496

ELBOW BEADED



FIG. 1497

RETURN BEND CLOSE

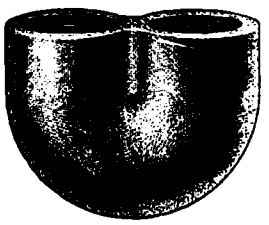


FIG. 1498

RETURN BEND OPEN

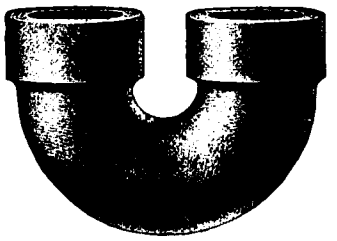


FIG. 1499

45° ELBOW

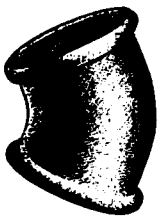


FIG. 1500

STREET ELBOW

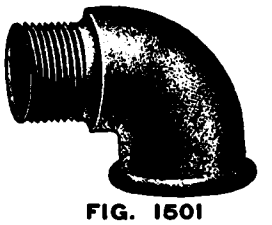


FIG. 1501

TEE

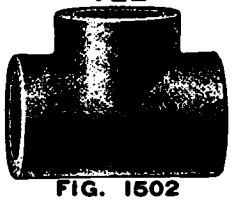


FIG. 1502

PLUG

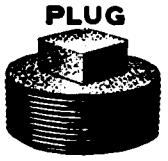


FIG. 1503

LOCKNUT



FIG. 1504

CAP



FIG. 1505

EXTENSION PIECE
MALE AND FEMALE

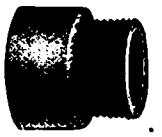


FIG. 1506

DROP ELBOW



FIG. 1507

CROSS

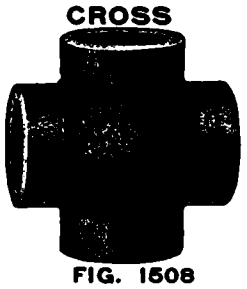


FIG. 1508

CLASSIFICATION

CLASS A

Elbows, ⅛, ¼ x ⅛ ⅜ x ½ inch.
Elbows, R. and L., ¼ and ⅜ inch.
Tees, ⅛, ⅛ x ¼, ¼ x ⅛, ⅜ x ⅛ inch.

Return Bends, R. and L., ⅜ and ½ inch.
Couplings, R. H., ⅛ inch.
Couplings, R. and L., ⅛ inch.

CLASS B

Elbows, ⅜, ¼, ⅜ x ¼, ½ x ¼ inch.
Elbows, R. and L., ½ inch.
45° Elbows, ½ inch and smaller.
Street Elbows, ¼ and ⅜ inch.
Tees, ¼, ⅜, ¼ x ⅜, ⅜ x ¼ x ¼, ⅜ x ¼, ⅜ x ¼ x ⅜ inch.
Crosses, ¼, ⅜ and ½ inch.
Crosses, Reducing, 1 inch and smaller.
Ys, ¾ and ½ inch.
Return Bends, ⅜ and ½ inch.
Return Bends, R. and L., ¾ and 1 inch.
Elbows, Side Outlet, ½ inch and smaller.
Four-way Tees, ½ inch and smaller.

Drop Elbows and Tees, ½ inch and smaller.
Plugs, ⅜ and ¼ inch.
Locknuts, ½, ⅜ and ¼ inch.
Caps, ⅜ and ¼ inch.
Extension Pieces, ⅜ and ½ inch.
Chandelier Hooks, all sizes.
Chandelier Loops, all sizes.
Couplings, R. H., ⅜ and ¼ inch.
Couplings, Reducing, ⅜ x ¼ to ¾ x ⅜ inch inclusive.
Couplings, R. and L., ⅜ and ¼ inch.
Waste Nuts, ¾ inch and smaller.
Wall Plates, all sizes.

CLASS C

Elbows, ½ and ½ x ⅝ inch.
Elbows, R. and L., ¾ and 1 inch.
45° Elbows, ¾ to 2 inch inclusive.
Street Elbows, ½, ¾, ¾ x ½ and 1 x ¾ inch.
Tees, ½ and ½ inch reducing.
Crosses, 1 inch and ¾ inch straight.
Ys, 1 inch and larger.
Return Bends, ¾ and 1 inch.
Return Bends, R. and L., 1¼ inch and larger.
Elbows, Side Outlet, ¾ inch and larger.
Four-way Tees, ¾ inch and larger.

Drop Elbows, ¾ inch and larger.
Drop Tees, ¾ inch and larger.
Plugs, ½, ¾ and 1 inch.
Locknuts, ¾, 1 and 1¼ inch.
Caps, ½, ¾ and 1 inch.
Extension Pieces, ¾ inch and larger.
Couplings, R. H. ½ and ¾ inch.
Couplings, Reducing, ¾ x ½ to 1 inch inclusive.
Couplings, R. and L., ½ and ¾ inch.
Waste Nuts, 1 inch and larger.

CLASS D

Elbows and Tees, ¾ and 1 inch.
45° Elbows, 2½ inch and larger.
Street Elbows, 1 inch and larger.
Crosses, 1¼ inch and larger.
Return Bends, 1¼ inch and larger.
Plugs, 1¼ inch and larger.

Locknuts, 1½ inch and larger.
Caps, 1¼ inch and larger.
Couplings, R. H., 1 and 1¼ inch.
Couplings, Reducing, 1¼ inch and larger.
Couplings, R. and L., 1 inch and larger.
Straps, all sizes.

Such fittings as have smaller outlets than ¾ inch to be classed as "C."

CLASS E

Elbows and Tees, 1¼ inch and larger.
Couplings, right hand, 1½ and 2 inch.
Such fittings in this class as have outlets smaller than 1 inch to be classed as "D."

The run of Tees (Bull Heads) gives the size for the purpose of classification, and the outlet being larger does not change it.

PRICE LIST

Class	A	B	C	D	E
Price, per pound, black	$0 30	$0 20	$0 16	$0 13	$0 11
" " " galvanized	0 40	0 27	0 23	0 20	0 18

Return Bends, reduced; Return Bends, tapped on spread; Elbows, tapped on pitch..... 15 per cent added
R. and L. Fittings, not classified above, in lots less than 100 pounds..... 15 " " "

NOTE.—In ordering Malleable Fittings, be careful to state whether plain or beaded are wanted, and whether they are to be black or galvanized.

DROP ELBOW
MALE AND FEMALE



FIG. 1509

DROP TEE
FEMALE

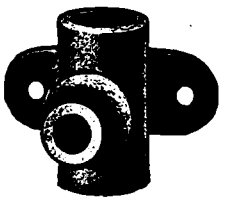


FIG. 1511

DROP TEE
MALE AND FEMALE



FIG. 1513

COUPLING
RIGHT AND LEFT



FIG. 1515

WASTE NUT
OVAL

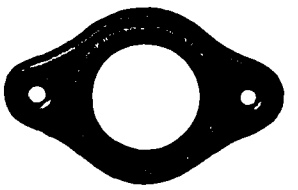


FIG. 1520

SIDE OUTLET ELBOW



FIG. 1510

SIDE OUTLET TEE



FIG. 1512

COUPLING

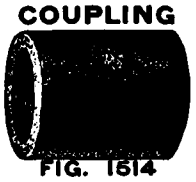


FIG. 1514

REDUCING COUPLING

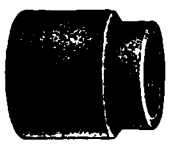


FIG. 1516

DROP ELBOWS, MALE AND FEMALE

WITH FLANGE RIGHT SIDE

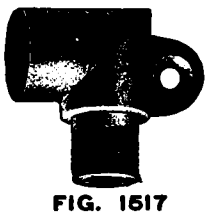


FIG. 1517

WITH FLANGE LEFT SIDE



FIG. 1518

WITH LONG OUTLET

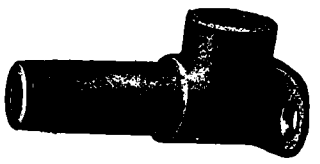


FIG. 1519

BRASS FITTINGS FOR WROUGHT IRON AND BRASS PIPE

PRICES, ROUGH

Size, inches	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4
Elbows	$0.12	.17	.21	.28	.35	.50	.85	1.10	1.50	3.50	4.50	7.00	10.00
Elbows, reducing		.22	.26	.35	.45	.62	1.10	1.40	1.90	4.40	5.65	8.75	12.50
" 45°	.18	.20	.25	.35	.50	.70	1.05	1.40	1.80	3.75	6.00		
Tees	.15	.20	.30	.40	.50	.75	1.00	1.30	1.75	4.00	5.50	9.00	13.00
" reducing		.25	.38	.50	.63	.95	1.25	1.65	2.20	5.00	6.90	11.25	16.25
Crosses	.25	.30	.40	.50	.60	.80	1.50	2.00	3.50	5.00	7.00	10.00	14.50
" reducing		.38	.50	.65	.75	1.00	1.90	2.50	4.40	6.25	8.75	12.50	18.00
Return Bends, open			.32	.48	.94	1.35	2.28	2.90	5.30	8.20	11.00		
" " close			.30	.45	.78	1.15	1.80	2.50	3.90	6.00	8.00		
Couplings	.10	.14	.16	.25	.37	.50	.60	.90	1.35	2.40	3.50	5.00	6.00
Couplings, R. and L		.17	.20	.30	.45	.60	.75	1.12	1.75				

PRICES, ROUGH

Size, inches	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4
Reducers		$0.16	.22	.32	.45	.65	.90	1.12	1.85	3.00	4.50		
Caps	.15	.15	.20	.25	.35	.45	.60	.80	1.10	2.00	3.00		
Plugs	.09	.10	.12	.15	.20	.28	.40	.50	.90	1.25	2.00	3.00	4.00
Bushings		.10	.12	.14	.21	.38	.50	.67	1.00	1.50	2.50		
Locknuts		.10	.12	.15	.20	.30	.45	.70	.95	1.50	2.75		
Nipples, not longer than inches	1½	1½	1½	1½	2	2	2½	2½	2½	3	3		
Nipples, close or shoulder	.12	.15	.20	.25	.30	.40	.60	.90	1.25	2.50	3.50		
" length, inches		2-3½			2½-4		3-4½		3-4½		3½-5		
" long	.15	.20	.30	.35	.45	.60	90	1.25	1.60	3.00	4.50		

For finished, double the above list.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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MALLEABLE IRON FITTINGS

UNION

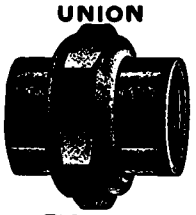


FIG. 1521

AMERICAN UNION

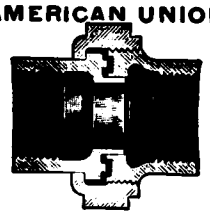


FIG. 1522

KEYSTONE UNION

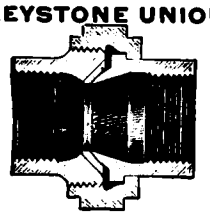


FIG. 1523

BUSHING



FIG. 1524

FACED BUSHING



FIG. 1525

HEXAGON NIPPLE

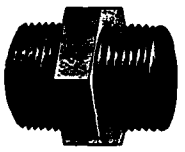


FIG. 1526

MALLEABLE UNIONS

Sizes, inches	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4
Price, black, each	$0 18	20	22	27	33	46	58	75	1 55	2 10	3 65	4 35
" galvanized, each	27	30	33	40	50	70	90	1 15	2 35	3 15	5 50	6 50

KEYSTONE AND AMERICAN UNION

Sizes, inches	¼	⅜	½	¾	1	1¼	1½	2	2½	3
Price, plain, each	$0 20	24	28	35	40	56	80	95	2 00	2 75
" galvanized, each	24	28	35	46	55	78	1 12	1 35	2 90	3 75

BRASS UNIONS

REGULAR

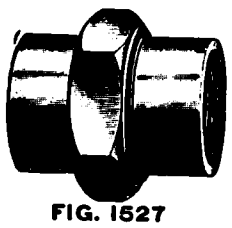


FIG. 1527

EXTRA HEAVY



FIG. 1528

PRICES, FIGS. 1527 AND 1528

Sizes	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3
Finished, each	$0 32	36	50	70	90	1 25	1 70	2 50	3 60	6 00	7 75
Finished and plated, each	47	51	65	90	1 10	1 50	1 95	2 75	3 88	6 35	8 20

EXTRA HEAVY BRASS UNIONS, ROUGH

Sizes	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3
Each	$0 35	0 40	0 55	0 75	1 00	1 40	1 90	2 75	4 00	6 50	8 50

AMERICAN LONGSCREW

FOR STEAM, WATER, AMMONIA, GAS, ACIDS, ETC.

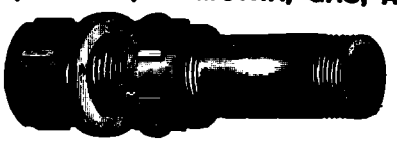


FIG. 1529

Sizes	½	¾	1	1¼	1½	2	2½	3
*Length, inches	3½	4	4½	5	5½	6	7	8
Price, each, plain	$0 45	55	75	1 00	1 50	2 00	3 37	4 50
" " galvanized	60	75	1 00	1 35	2 00	2 70	4 50	6 00

*The lengths given are standard and such as are regularly carried in stock. Longscrews of greater lengths will be charged at an advance on above prices.

For export we furnish the American Longscrew with English Standard Pipe Threads.

PRICES, FIGS. 1524 AND 1525

Sizes	¼	⅜	½	¾	1	1¼	1½	2	2½
Bushings, Fig. 1524, black, each	$0 04	04	04	05	06	07	09	14	21
" " 1524, galvanized, each	08	08	08	10	12	14	18	28	42
Faced bushings, Fig. 1525, "	08	08	09	11	13	17	22	32	48

PRICES, FIG. 1526

Sizes	⅜	½	¾	1	1¼	1½	2
Right and left, black, each	$0 25	25	25	30	40	50	70
" " " galvanized, each	38	38	38	45	60	75	1 05

DART UNION COUPLING

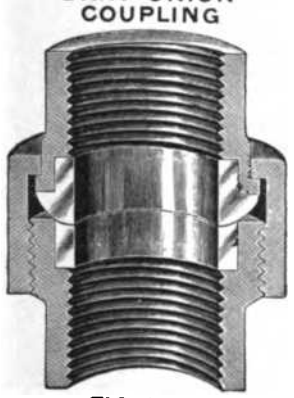


FIG. 1530

DART'S PATENT UNION COUPLING AND FLANGE UNION

UNION COUPLING, PLAIN AND GALVANIZED IRON

Sizes, inches	¼	⅜	½	¾	1	1¼	1½	2	2½	3
Plain, prices, each	$0 30	40	50	60	80	1 20	1 60	2 00	3 20	4 80
Galvanized, prices, each	45	60	75	90	1 20	1 80	2 40	3 00	4 80	6 20

FLANGE UNION, WITH BOLTS AND NUTS

Sizes, inches	1	1¼	1½	2	2½	3	3½	4	5	6	7	8	9	10
Prices, each	$0 80	1 20	1 60	2 00	3 20	4 80	6 00	7 50	10 00	12 50	15 00	18 00	21 60	28 80

DART PATENT FLANGE UNION

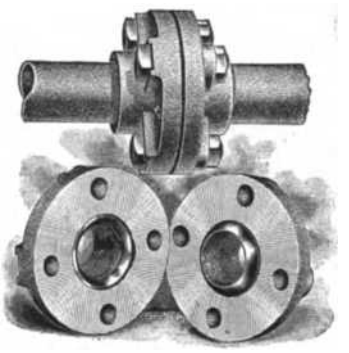


FIG. 1531

FLEXIBLE JOINTS

NO. 1. STRAIGHT FLEXIBLE JOINT, FOR STEAM, AIR AND GAS

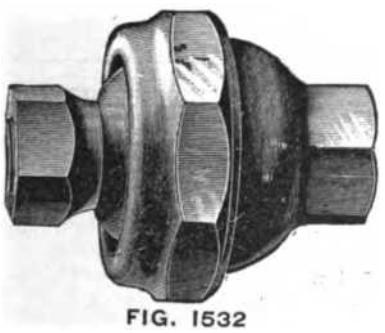


FIG. 1532

NO. 3. FLEXIBLE LIQUID JOINT

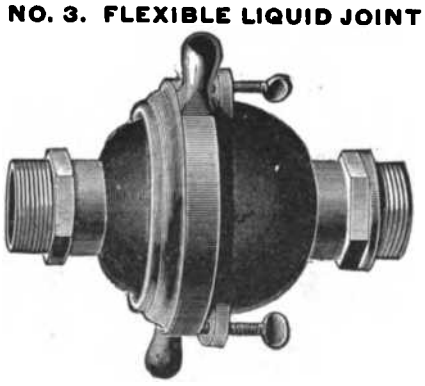


FIG. 1533

SPECIAL RIGHT ANGLE R. R. STEAM HEATING JOINT WITH AUTOMATIC STEAM TRAP ATTACHED

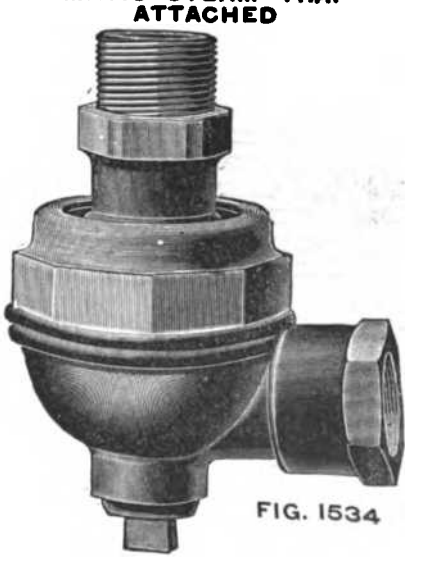


FIG. 1534

PRICES, FIGS. 1532 AND 1533

Sizes	⅜	½	¾	1	1¼	1½	2	2½	3	4	5	6
Each	$3 00	$3 25	$3 75	$4 25	$5 25	$6 00	$7 50	$9 00	$11 25	$15 00	$18 75	$25 00

PRICE FIG. 1534

Sizes	1½
Each	$6 75

Prices for larger sizes on application. The special 1½ inch right angle joint is used for making an all-metal connection between engine and tender for conveying steam heat.

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EXPANSION JOINTS

IRON BODY, BRASS MOUNTED

SCREWED

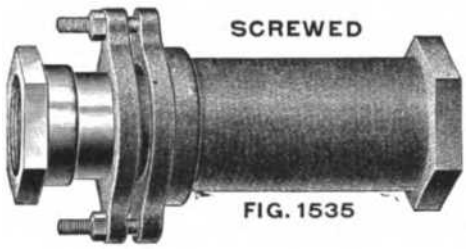


FIG. 1535

FLANGED

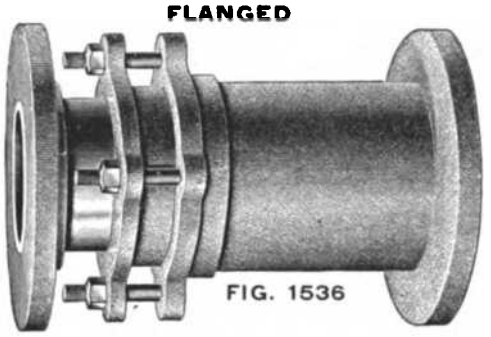


FIG. 1536

Sizes, Inches.	Screwed, Prices.	Flanged, Prices.	Diameters of Flanges, Inches.	Length of Traverse.
2	$11 00	$18 00	6	6
2½	13 00	20 00	7	6
3	17 50	25 00	7½	6
3½	25 00	35 00	8½	6
4	30 00	40 00	9	6
4½	40 00	50 00	9¼	6
5	45 00	55 00	10	6
6	55 00	65 00	11	6
7	70 00	80 00	12½	6
8	100 00	110 00	13½	7
9	110 00	120 00	15	7
10	160 00	175 00	16	7
12	225 00	250 00	21	8

Special Long Traverse made to order.

BRASS STANDARD TRAVERSE

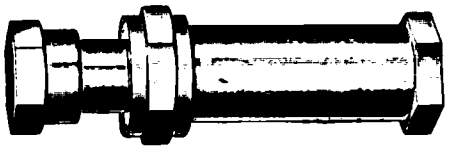


FIG. 1537

Sizes, Inches.	Eastern Pattern, Prices.	Traverse, Eastern Pattern, Inches.
½	$3.80	4
¾	4 00	4
1	4 90	4
1¼	6 30	4
1½	7 40	4
2	9 10	4
2½	20 00	5
3	28 00	5

Special Traverse to order.

BRASS SWING JOINT

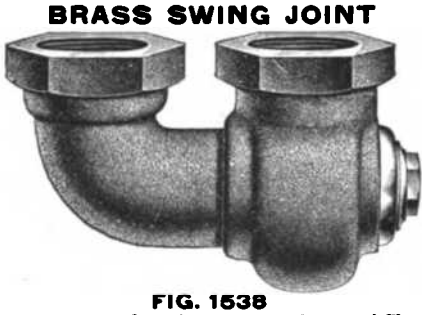


FIG. 1538

Sizes, Inches.	Open in any Position, Prices.	Open and Close at Quarter Turn, Prices.
¼	$1 00	....
⅜	1 25	$2 00
½	1 75	2 50
¾	2 40	3 50
1	3 50	5 00
1¼	4 50	6 50
1½	6 25	9 50
2	9 00	13 50

CORRUGATED COPPER EXPANSION JOINTS

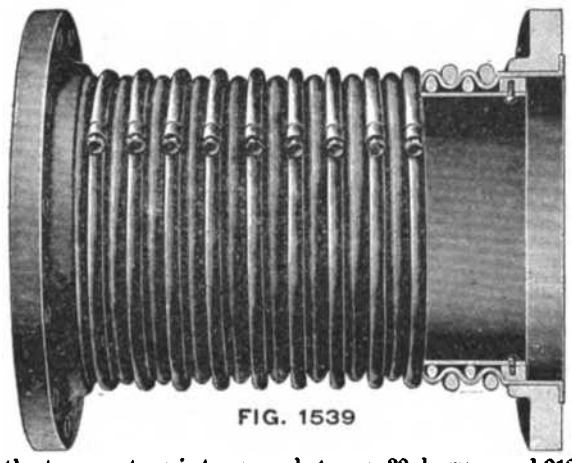


FIG. 1539

These are regular expansion joints with soft corrugated copper tubes which close with the expansion and open with the contraction of the pipe line in which they are placed. They are made of seamless drawn corrugated copper tubing, fastened to heavy cast iron heads. The tube is flanged over and turned into a groove cut in the head, as shown in the cut. Each corrugation is fitted with a loose ring of solid brass. These rings, being placed both inside and outside the tube, serve to distribute the movement of compression through the entire length of the joint, thus preventing an undue movement at any point, while the joint is stiffened by an internal slip tube of seamless brass. By the use of these joints in steam and exhaust lines, and between high and low pressure cylinders of engines and pumps, all trouble due to expansion and contraction may be avoided. In placing the joints in pipe lines care should be taken to provide proper anchorage for the pipe, so as to limit the amount of movement thrown on to each joint to what it can properly bear. The joints are designed to accommodate a movement of from 2 to 2½ inches, varying with the size of the joint. The movement in the pipe line is determined by the length of the line and the range of temperature through which it will pass. A safe and convenient rule will be to assume the expansion in one hundred feet of pipe to equal eight one-thousandths of an inch for each degree of difference in temperature. Thus, if the temperature is to range between 32 degrees and 212 degrees, it will be necessary to provide for a movement of nearly one and one-half inches in a pipe one hundred feet long.

PRICES, FIG. 1539

Sizes....	2	2½	3	3½	4	4½	5	6	7	8	9	10	12	14	16	18
Each....	$30 00	$35 00	$40 00	$45 00	$50 00	$55 00	$60 00	$75 00	$90 00	$125 00	$135 00	$165 00	$225 00	$300 00	$400 00	$500 00

TIGHT JOINT, HYDRAULIC, AMMONIA, STEAM AND COMPRESSED AIR FITTINGS

Will not leak from expansion and contraction.

FLANGE UNION

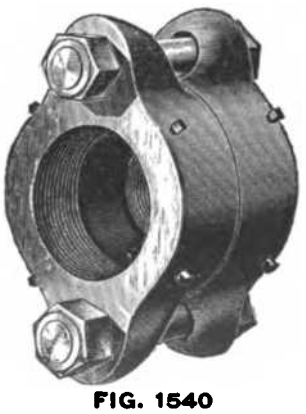


FIG. 1540

ELBOW

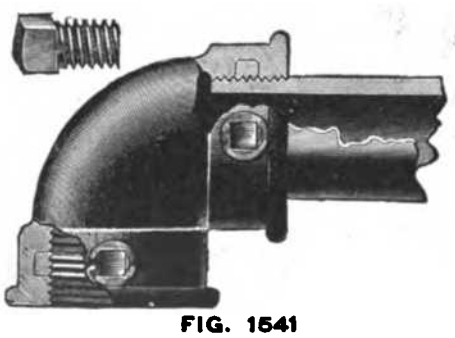


FIG. 1541

TEE

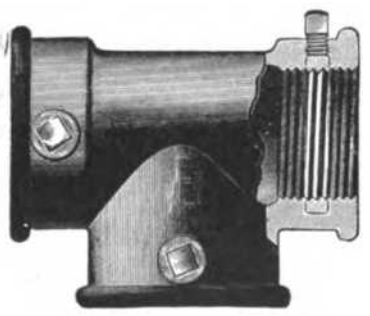


FIG. 1542

A complete line of elbows, tees, couplings, return bends, flange unions, reducing fittings and bushings can be furnished. Prices and special list on application.

CLIMAX STEAM JOINT CLAMP

BRASS

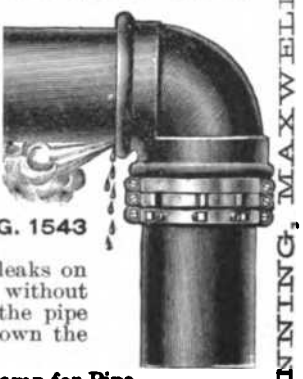


FIG. 1543

To repair, leaks on steam joints without pulling out the pipe or shutting down the plant.

Clamp for Pipe.

Inches.	Prices.	Inches.	Prices.
¾	$1 50	6	$9 00
1	1 50	7	10 50
1¼	1 90	8	13 00
1½	2 25	9	15 75
2	3 00	10	18 75
2½	3 75	12	22 50
3	4 50	14	31 50
3½	5 25	15	33 75
4	6 00	16	36 00
4½	6 75	18	40 50
5	7 50	20	45 00

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AMMONIA FITTINGS

CROSS



FIG. 1544

Sizes, Inches.
⅜
½
¾
1
1¼

PRICES, FIG. 1544

Gland End, Each.	Reducing any one opening to one size. Gland End, Each.
$1 52	$1 75
1 80	2 25
2 30	3 00
4 00	5 00
5 00	6 00

RETURN BEND



FIG. 1546

Sizes, Inches.
¾
1
1¼
1½
1½
2
2½
3

PRICES, FIG. 1546

Distances, Center to Center, Inches.	Gland End, Each.
2½	$1 50
3½	2 00
3¾	3 00
3¾	5 00
4½	5 00
5⅛	6 20
5¼	7 50
5¼	9 50

FLANGE UNION

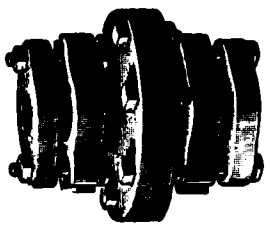


FIG. 1548

PRICES, FIG. 1548

Sizes, Inches.	Gland End, Each.	Sizes, Inches.	Gland End, Each.
½	$3 35	2½	$14 00
¾	4 30	3	15 50
1	5 35	3½	20 00
1¼	6 60	4	24 00
1½	8 25	5	29 00
2	11 40		

UNION



FIG. 1545

COUPLING INCLUDING BOLTS

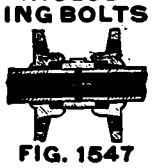


FIG. 1547

ELBOW



FIG. 1549

TEE



FIG. 1550

PRICES, FIG. 1545

Sizes, in.	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½
Each....	$0 38	0 53	0 68	0 90	1 20	1 50	2 15	2 80	4 80	6 20	9 00

PRICES, FIG. 1547

Sizes, in.	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½
Each....	$0 38	0 53	0 68	0 90	1 20	1 50	2 15	2 80	4 80	6 20	9 00

PRICES, FIG. 1549

Straight sizes, inches...	¼	⅜	½	¾	1	1¼	1½
Gland end, each.....	$0 50	0 65	0 80	1 05	1 60	2 15	3 05
Reducing sizes, G.E., each	70	90	1 05	1 40	2 10	2 70	3 80
Straight sizes, inches....	2	2½	3	3½		4	5
Gland end, each.....	$4 20	6 80	11 00	12 00		14 00	20 25
Reducing sizes, G.E., each	5 35	8 30	13 50	15 00		18 00	25 00

PRICES, FIG. 1550

Straight sizes, inches	¼	⅜	½	¾	1	1¼	1½
Gland end, each.....	$0 75	1 05	1 20	1 55	2 50	3 00	4 40
Reducing any one opening to one size, G. E., each,	0 95	1 30	1 55	2 05	3 25	3 75	5 40
Straight sizes, inches.....	2	2½	3	3½		4	5
Gland end, each.....	$7 75	11 00	15 50	18 00		19 00	25 00
Reducing any one opening to one size, G. E., each	9 75	13 25	18 75	22 00		24 00	30 00

RAILING FITTINGS

ELBOW



FIG. 1551

ELBOW, SIDE OUTLET



FIG. 1552

TEE

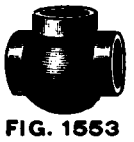


FIG. 1553

TEE, SIDE OUTLET



FIG. 1554

CROSS

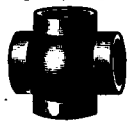


FIG. 1555

CROSS, SIDE OUTLET



FIG. 1556

FLOOR FLANGE



FIQ. 1557

ACORN ORNAMENTS

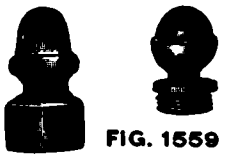


FIG. 1558 FIG. 1559

In ordering these railing fittings be careful to state whether right hand or left hand threads are wanted. Where fittings are required having right and left hand outlet, please fully describe which are wanted right hand and which left hand. A careful observance of the above will save much trouble and secure the accurate filling of your orders.

MALLEABLE IRON

Sizes, Inches.	Elbow.	Elbow, Side Outlet.	Tee.	Tee, Side Outlet.	Cross.	Cross, Side Outlet.	Floor Flange.	Acorn Ornament.	Bushings, Reduced One and Two Sizes.
½	$0 15	$0 20	$ 20	$0 30	$0 30	$0 35	$0 14	$0 16	....
¾	18	23	23	33	33	38	15	18	$0 06
1	20	25	25	35	35	40	15	20	07
1¼	35	40	40	45	45	50	20	25	10
1½	45	50	50	55	58	65	28	35	12
2	72	80	75	90	1 00	1 55	30	90	18
2½	1 00	1 15	1 20	1 40	1 50	1 75	50	1 00	28
3	1 50	1 70	1 90	2 15	2 25	2 60	75	1 50	40

BRASS FINISHED

Sizes, Inches.	Elbow.	Elbow, Side Outlet.	Tee.	Tee, Side Outlet.	Cross.	Cross, Side Outlet.	Floor Flange.	Acorn Ornament.	Bushings, Reduced One and Two Sizes.
½	$0 60	$0 80	$0 80	$1 20	$1 20	$1 40	$0 30	$1 00	....
¾	70	90	90	1 30	1 30	1 50	40	1 50	$0 15
1	80	1 10	1 10	1 50	1 50	1 70	55	2 00	25
1¼	1 20	1 70	1 70	2 00	2 00	2 25	75	2 50	35
1½	1 60	2 00	2 00	2 40	2 40	3 00	1 00	3 25	45
2	2 50	3 00	3 00	3 50	3 50	4 00	1 30	4 50	60
2½	4 00	6 00	6 00	7 00	7 00	8 00	2 00	5 50	1 50
3	7 00	8 50	8 50	10 00	10 00	11 50	3 00	7 00	2 50

BRASS GAS FIXTURE FITTINGS

UNIVERSAL SWING

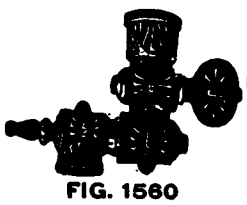


FIG. 1560

HOSE COCK

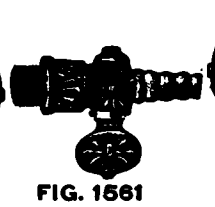


FIG. 1561

ELBOW BURNER COCK



FIG. 1562

TWO LIGHT PENDANT COCK

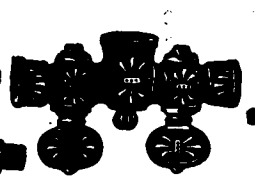


FIG. 1563

TOP SWING



FIG. 1564

STRAIGHT COCK

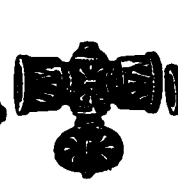


FIG. 1565

ELBOW PENDANT COCK



FIG. 1566

UNIVERSAL REVOLVING COCK

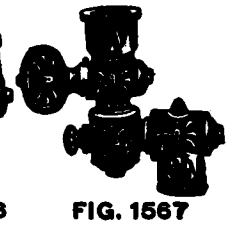


FIG. 1567

PRICES, FIGS. 1560 TO 1567

Sizes, Inches.	Universal Revolving Cocks, Per Doz.	Elbow Pendant Cocks, Per Doz.	Straight Cocks, Per Doz.	Top Swings, per Doz.	Middle Swings, Per Doz.	Universal Bracket Cocks, Per Doz.	Bracket Cocks, Per Doz.	Two Light Pendant Cocks, Per Doz.	Revolv. Cocks, Per Doz.	Universal Swings, Per Doz.
⅛ x ⅛	....	$4 90	$3 90	....	$4 25	....	....	....	$7 00	$7 80
¼ x ⅛	$8 80	4 90	4 25	....	4 55	....	....	$8 45	7 15	8 15
¼ x ¼	9 10	5 20	4 55	....	4 90	$12 05	$8 15	8 75	7 50	8 45
⅜ x ⅛	9 45	5 20	4 55	$5 20	...	12 05	8 15	9 10	7 80	8 65
⅜ x ¼	9 75	5 20	4 55	5 55	....	12 35	8 45	9 10	8 15	8 80
⅜ x ⅜	10 00	5 85	4 90	6 20	....	13 00	9 10	10 10	8 50	9 10
½ x ½	....	....	6 20	....	....	....	....	....	....	....

Sizes, Inches.	Hose Cocks, Male, Per Doz.	Hose Cocks, Female, Per Doz.	Elbow Burner Cocks, Per Doz.	Independent Cocks, Per Doz.
⅛	$4 55	$4 25	$4 25	$6 00
¼	4 90	4 55	4 55	6 00
⅜	5 20	4 90	5 20	6 50
½	....	5 55	6 20	....
¾	....	....	....	....

Size to Burner, Inches.	Pillar Cocks, Per Doz.	Straight Nozzles, Per Doz.	Side Nozzles, Per Doz.
⅛	$3 90	$1 00	$1 00
¼	4 25	1 65	1 65
⅜	4 55	1 95	2 40
½	5 20	....	....
¾	6 50	....	....

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CAST IRON PIPE FOR GAS AND WATER MAINS

BELL AND SPIGOT ENDS

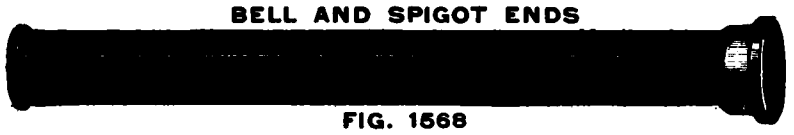


FIG. 1568

FLANGED ENDS

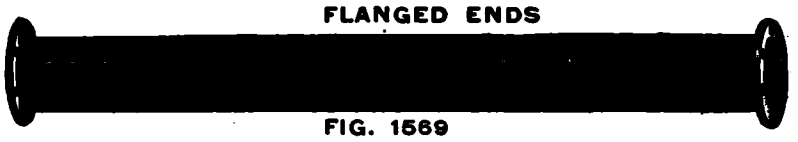


FIG. 1569

Made in all sizes from 4 to 30 inches. Prices on application.

CAST IRON WATER PIPE

STANDARD WEIGHT, FIG. 1568

Sizes, inches	3	4	6	8	10	12	14	16	18	20	24	30	36
Thickness, inches	3/8	1/2	1/2	1/2	9/16	5/8	3/4	3/4	7/8	7/8	15/16	1 1/8	1 1/8
Weight, per foot, lbs.	12	22	33	45	60	80	100	125	150	179	225	350	420

Weights given are standard, but can be changed when pipe is made to order. Coated inside and out and tested 300 lbs. per square inch, hydrostatic pressure. Made in 12 foot lengths, 440 lengths per mile.

CAST IRON GAS PIPE

STANDARD WEIGHT, FIG. 1568

Sizes, inches	3	4	6	8	10	12	14	16	18	20	24	30	36
Thickness, inches	3/8	3/8	7/16	7/16	1/2	1/2	9/16	5/8	11/16	11/16	3/4	13/16	7/8
Weight, per foot, lbs.	11	18	29	40	55	70	90	110	140	150	200	290	360

Weights given are standard, but can be changed when pipe is made to order. Tested 250 lbs. hydrostatic pressure. Made in 12 foot lengths, 440 lengths per mile. Gas pipe is not coated unless specially ordered.

PRICES ON APPLICATION

FITTINGS FOR CAST IRON PIPE

QUARTER BEND



FIG. 1570

SLEEVE



FIG. 1571

PLUG



FIG. 1572

CAP



FIG. 1573

Y BRANCH



FIG. 1574

Sizes, inches	3	4	6	8	10	12	14	16	18	20	24	30	36
Sleeves, weight, lbs.	80	42	76	110	146	208	300	360	360	557	710	965	1,222
Plugs, " "	10	12	22	32	46	66	70	100	125	150	185	370	
Caps, " "	15	25	60	75	100	120							

Plugs tapped for wrought iron pipe furnished in any size.

EIGHTH BEND



FIG. 1575

QUARTER BENDS, 90°

Sizes, inches	3	4	6	8	10	12	14	16	18	20	24	30
Approximate weight, lbs.	48	60	112	200	266	376	450	650	750	1,000	1,500	2,500

EIGHTH BENDS, 45°

Sizes, inches	3	4	6	8	10	12	14	16	18	20	24	30
Approximate weight, lbs.	42	60	125	200	276	390	430	510	820	1,200	1,450	2,200

REDUCER



FIG. 1576

TEE



FIG. 1577

TEES

Sizes, Inches.	Weight, Pounds.	Sizes, Inches.	Weight, Pounds.	Sizes, Inches.	Weight, Pounds.	Sizes, Inches.	Weight, Pounds.
3 x 3 x 3	80	8 x 8 x 4	250	12 x 12 x 10	525	24 x 24 x 24	2,000
4 x 4 x 4	100	10 x 10 x 10	390	12 x 12 x 8	510	30 x 30 x 30	2,880
6 x 6 x 6	204	10 x 10 x 8	354	12 x 12 x 6	500	36 x 36 x 36	4,920
6 x 6 x 4	154	10 x 10 x 6	312	12 x 12 x 4	480	48 x 48 x 48	9,000
8 x 8 x 8	294	10 x 10 x 4	300	16 x 16 x 16	900		
8 x 8 x 6	266	12 x 12 x 12	540	20 x 20 x 20	1,390		

CROSS



FIG. 1578

CROSSES

Sizes, Inches.	Weight, Pounds.	Sizes, Inches.	Weight, Pounds.	Sizes, Inches.	Weight, Pounds.	Sizes, Inches.	Weight, Pounds.
3 x 3 x 3 x 3	100	8 x 8 x 4 x 4	296	12 x 12 x 10 x 10	670	24 x 24 x 24 x 24	2,400
4 x 4 x 4 x 4	130	10 x 10 x 10 x 10	500	12 x 12 x 8 x 8	625	30 x 30 x 30 x 30	3,600
6 x 6 x 6 x 6	200	10 x 10 x 8 x 8	496	12 x 12 x 6 x 6	600	36 x 36 x 36 x 36	6,160
6 x 6 x 4 x 4	190	10 x 10 x 6 x 6	376	12 x 12 x 4 x 4	572	48 x 48 x 48 x 48	10,500
8 x 8 x 8 x 8	400	10 x 10 x 4 x 4	370	16 x 16 x 16 x 16	1,020		
8 x 8 x 6 x 6	354	12 x 12 x 12 x 12	714	20 x 20 x 20 x 20	1,600		

INCREASER



†FIG. 1579

REDUCERS

LONG PATTERN

Sizes, Inches.	Weight, Pounds.	Sizes, Inches.	Weight, Pounds.	Sizes, Inches.	Weight, Pounds.	Sizes, Inches.	Weight, Pounds.	Sizes, Inches.	Weight, Pounds.
4 x 3	80	10 x 8	300	12 x 6	300	16 x 12	475	24 x 20	766
6 x 4	150	10 x 6	270	12 x 4	280	16 x 10	435	30 x 24	1,022
6 x 3	120	10 x 4	260	14 x 12	475	20 x 16	690	30 x 18	1,000
8 x 6	220	12 x 10	310	14 x 10	430	20 x 14	575	36 x 30	1,730
8 x 4	180	12 x 8	318	14 x 8	340	20 x 12	540		

INCREASERS

LONG PATTERN

Sizes, Inches.	Weight, Pounds.	Sizes, Inches.	Weight, Pounds.	Sizes, Inches.	Weight, Pounds.	Sizes, Inches.	Weight, Pounds.	Sizes, Inches.	Weight, Pounds.
4 x 3	78	8 x 4	162	10 x 4	185	10 x 8	204	12 x 8	318
6 x 4	108	8 x 6	164	10 x 6	195	12 x 6	230	12 x 10	332

Y BRANCHES

ALL SIZES FROM 4 TO 36 INCHES

Prices on all above fittings furnished on application.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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CAST IRON SOIL PIPE

SINGLE HUB



FIG. 1580

Diameter of pipe.....	2	3	4	5	6	7	8	10	12	15
Pipe, single hub, per foot.....	$0 24	0 30	0 40	0 50	0 60	1 00	1 25	2 00	3 00	4 50
" " " extra heavy..	0 35	0 55	0 75	1 00	1 20	1 75	2 25	3 00	4 00	....

DOUBLE HUB



FIG. 1581

Diameter of pipe.....	2	3	4	5	6	7	8	10
Pipe, double hub, per length, 5 feet.....	$1 50	1 80	2 30	2 80	3 30	5 75	7 25	13 00
" " " " " extra heavy..	2 05	3 05	4 05	5 30	6 30	9 75	12 75	18 00

CAST IRON SOIL PIPE FITTINGS

ELBOW



FIG. 1582

LONG BEND



FIG. 1583

RETURN BEND



FIG. 1584

FULL S TRAP



FIG. 1585

½ V BRANCH



FIG. 1586

DOUBLE ½ V BRANCH



FIG. 1587

CROSS HEADS

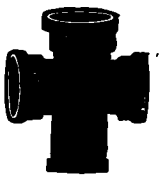


FIG. 1588

In addition to the soil pipe fittings illustrated above, we can furnish any pattern desired. Prices and special list on application.

SPIRAL RIVETED PIPE

HOUSE LEADER

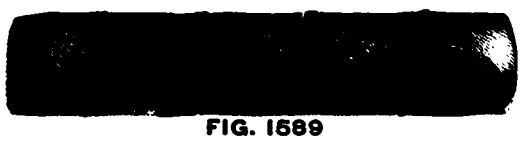


FIG. 1589

PRICES, PER FOOT, 10 FOOT LENGTHS

Inside Diameters, Inches.	Galvanized.
2	$0 14
2½	17
3	19
3½	21
4	25
5	30
6	38

PRICES, FIGS. 1590 TO 1592, PER DOZEN

Sizes, Inches.	Charcoal Iron.	Planished Iron.	Genuine Russia.	Galvanized Iron.	Tin.
1½	.....	.....	.....	$ 2 40	$ 1 80
2	.....	.....	.....	2 40	1 80
2½	.....	.....	.....	3 00	2 40
3	.....	.....	.....	3 60	2 40
3½	.....	.....	.....	4 20	3 60
4	$3 00	$5 00	$ 6 00	4 80	3 60
4½	3 00	5 50	6 50	5 40	4 80
5	3 50	6 50	7 50	6 60	4 80
5½	4 50	7 00	9 50	7 80	6 60
6	4 50	7 00	9 50	8 40	6 60
7	6 00	9 50	11 00	10 20	8 40
8	.....	.....	.....	13 80	10 80
9	.....	.....	.....	15 00	12 60
10	.....	.....	.....	16 80	14 40

ADJUSTABLE ELBOWS



FIG. 1590

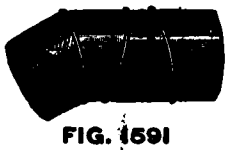


FIG. 1591



FIG. 1592

SHOWING CRIMPED AND PLAIN ENDS



FIG. 1593

These approximate weights are for black pipe only, and intended as guides for estimating freight charges; galvanized or asphalted pipe, same gauge and diameter, is from 20 to 30 per centum heavier. In ordering pipe, the margin of safety should be at least one-half or two-thirds of the bursting pressure.

PRICES, FIG. 1593, IN 10 FOOT LENGTHS

No. 26 Birmingham gauge, .018 inch thick.
Per lineal foot, plain or crimped.

Diameters. Inches.	Black.	Dipped in Coal Tar and Asphalt.	Galvanized.
3	$0 17	$0 20	$0 25
4	21	25	33
5	25	30	40
6	28	34	46

PRICES, FIG. 1593, IN 10 FOOT LENGTHS

No. 24, Birmingham gauge, .022 inch thick. Price per lineal foot. With plain or crimped ends or sheet iron sleeves for slip joint riveted on.

Diameters, Inches.	Black.	Asphalted.	Galvanized.	Approximate Weight per 100 Feet, Pounds.
3	$0 20	$0 23	$0 30	100
4	25	29	38	130
5	30	35	45	160
6	33	39	50	185
7	37	44	60	210
8	42	50	65	240
9	48	57	75	280
10	54	64	85	300
11	60	71	90	330
12	68	80	1 05	400

In lengths of 10 feet and less. Each length tested to service required.

PRICES, FIG. 1593, IN 20 FOOT LENGTHS

No. 22, Birmingham gauge, .028 inch thick. Price per lineal foot. With plain or crimped ends or sheet iron sleeves for slip joint riveted on.

Diameters, Inches.	Black.	Asphalted.	Galvanized.	Approximate Weight per 100 Feet, Pounds.
3	$0 24	$0 27	$0 32	130
4	30	34	43	160
5	37	42	53	200
6	40	46	60	230
7	45	52	65	260
8	53	61	75	300
9	60	69	90	340
10	65	75	1 00	380
11	70	81	1 10	420
12	82	94	1 25	490
13	90	1 03	1 35	530
14	1 00	1 14	1 45	575

In lengths of 20 feet and less. Each length tested to service required.

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SPIRAL RIVETED PIPES—CONTINUED FIG. 1593

PRICES PER LINEAL FOOT OF PIPE. SEE PAGE 215 FOR FITTINGS

With plain or crimped ends, or sheet iron sleeves for slip joint riveted on.

Thickness .0355 inch. No. 20 w. g.

Diameters in Inches.	Prices, Black.	Prices, Asphalt.	Prices, Galvanized.	Weight, per 100 Feet, Lbs.	Approximate bursting pres. in lbs. per square inch, Lbs.
3	$0.27	$0.30	$0.38	150	900
4	.35	.39	.48	200	700
5	.40	.45	.60	250	550
6	.46	.52	.68	300	450
7	.51	.58	.75	325	400
8	.58	.66	.85	360	350
9	.66	.75	.97	410	325
10	.72	.82	1.05	500	275
11	.78	.89	1.20	550	250
12	.90	1.02	1.35	600	225
13	1.00	1.13	1.50	650	210
14	1.10	1.24	1.60	700	200
15	1.20	1.35	1.75	750	190
16	1.30	1.46	1.85	800	160
18	1.40	1.58	2.05	900	150
20	1.60	1.80	2.30	960	140
22	1.80	2.02	2.55	1,040	125
24	1.95	2.19	2.85	1,150	110

In lengths of 25 feet and less, black or asphalted, and 20 feet and less, galvanized. Each length tested to service required.

Thickness .049 inch. No. 18 w. g.

Diameters in Inches.	Prices, Black.	Prices, Asphalt.	Prices, Galvanized.	Approximate weight, per 100 Feet, Lbs.	Approximate bursting pres. in lbs. per square inch, Lbs.
3	$0.34	$0.37	$0.46	185	1,300
4	.42	.46	.58	245	1,000
5	.50	.55	.70	300	800
6	.57	.63	.85	360	700
7	.63	.70	.90	400	600
8	.73	.81	1.05	460	500
9	.82	.91	1.18	525	450
10	.90	1.00	1.30	575	400
11	.95	1.06	1.40	625	360
12	1.15	1.27	1.65	750	330
13	1.25	1.38	1.80	800	300
14	1.35	1.49	1.95	900	280
15	1.50	1.65	2.10	950	260
16	1.60	1.76	2.25	1,000	250
18	1.75	1.93	2.55	1,125	220
20	2.00	2.20	2.90	1,250	200
22	2.20	2.42	3.10	1,350	180
24	2.40	2.64	3.35	1,460	160

In lengths of 25 feet and less, black or asphalted, and 20 feet and less, galvanized. Each length tested to service required.

Thickness .065 inch. No. 16 w. g.

Diameters in Inches.	Prices, Black.	Prices, Asphalt.	Prices, Galvanized.	Approximate weight per 100 Feet.	Approximate bursting pres. in lbs. per square inch, Lbs.
4	$0.50	$0.54	$0.70	320	1,250
5	.60	.65	.85	415	1,000
6	.70	.76	1.00	500	800
7	.80	.87	1.10	550	700
8	.93	1.01	1.28	650	600
9	1.08	1.17	1.47	750	550
10	1.15	1.25	1.55	800	500
11	1.20	1.31	1.70	850	450
12	1.45	1.57	2.05	1,025	400
13	1.55	1.68	2.15	1,100	380
14	1.70	1.84	2.40	1,200	360
15	1.85	2.00	2.60	1,300	330
16	2.00	2.16	2.75	1,375	300
18	2.20	2.38	3.10	1,550	280
20	2.45	2.65	3.40	1,675	250
22	2.80	3.02	3.90	1,825	230
24	3.00	3.24	4.30	2,000	210

In lengths of 25 feet and less, black or asphalted, and 20 feet and less, galvanized. Each length tested to service required.

LUGS FOR WIRING



FIG. 1594

FLANGED ENDS



FIG. 1594A

PRICES, EACH HOOK

Black.....$0 15

Galvanized..... 0 18

PRICES, FIGS. 1594 AND 1594A

Including Attaching.

Diameters in Inches.	Prices, Black, for 1 Flange.	Prices, Galvanized, for 1 Flange.	Diameters in Inches.	Prices, Black, for 1 Flange.	Prices, Galvanized, for 1 Flange.
3	$0.24	$0.39	12	$1.28	$2.08
4	.32	.52	13	1.44	2.34
5	.40	.65	14	1.60	2.60
6	.48	.78	15	1.92	3.12
7	.64	1.04	16	2.72	4.42
8	.72	1.17	18	3.12	5.07
9	.96	1.56	20	3.44	5.59
10	1.12	1.82	22	5.60	9.10
11	1.20	1.95	24	6.00	9.75

Thickness .083 inch. No. 14 w. g.

Diameters in Inches.	Prices, Black.	Prices, Asphalt	Prices, Galvanized.	Approximate weight, per 100 feet. Lbs.	Approximate bursting pres. in lbs. per square inch. Lbs.
6	$0.89	$0.95	$1.15	610	1,100
7	1.02	1.09	1.35	700	950
8	1.15	1.23	1.50	825	825
9	1.32	1.41	1.70	925	750
10	1.40	1.50	1.80	1,025	650
11	1.50	1.61	1.95	1,125	600
12	1.80	1.92	2.35	1,325	550
13	1.90	2.03	2.50	1,425	500
14	2.10	2.24	2.70	1,560	470
15	2.25	2.40	2.90	1,680	450
16	2.40	2.56	3.15	1,790	400
18	2.75	2.93	3.60	2,000	370
20	3.10	3.30	4.00	2,200	325
22	3.40	3.62	4.55	2,400	300
24	3.70	3.94	4.85	2,620	275

In lengths of 25 feet and less, black or asphalted, and 20 feet and less, galvanized. Each length tested to service required.

Thickness .109 inch. No. 12 w. g.

Diameters. In Inches.	Prices, Black.	Prices, Asphalt.	Prices, Galvanized.	Approximate weight per 100 feet. Lbs.	Approximate bursting pres. in lbs. per square inch. Lbs.
6	$1.25	$1.31	$1.90	800	1,330
7	1.40	1.47	2.10	910	1,140
8	1.55	1.63	2.30	1,040	1,000
9	1.70	1.79	2.50	1,180	880
10	1.90	2.00	2.75	1,300	800
11	2.25	2.36	3.00	1,425	725
12	2.50	2.62	3.25	1,700	660
13	2.70	2.83	3.50	1,810	615
14	2.90	3.04	3.75	2,010	570
15	3.10	3.25	4.00	2,165	530
16	3.25	3.41	4.25	2,310	500
18	3.60	3.78	4.70	2,570	440
20	4.00	4.20	5.25	2,830	400
22	4.35	4.57	5.75	3,090	365
24	4.70	4.94	6.25	3,380	335

In lengths of 25 feet and less, black or asphalted, and 20 feet and less, galvanized. Each length tested to service required.

SPIRAL RIVETED FLANGED PRESSURE PIPE

Made of galvanized iron and regalvanized after formation, thereby making all seams and laps perfectly solid.

Each length tested to 150 lbs. hydraulic pressure.

Diameters in Inches.	Thickness, B. W. G.	Double Galvanized Prices per Lineal Foot, including Flanges Attached.	Asphalted, Prices per Lineal Foot, including Flanges Attached.	Approximate Weight per Foot, Lbs.	Approximate Bursting pres. in Lbs. per Square Inch, Lbs.
3	20	$0.50	$0.35	2¼	900
4	20	.70	.45	3	700
5	20	1.00	.55	4	550
6	18	1.20	.75	5	700
7	18	1.40	.80	6	600
8	18	1.70	.95	7	500
9	18	2.00	1.10	8	450
10	16	2.60	1.45	11	500
11	16	2.85	1.55	12	450
12	16	3.15	1.80	14	400
13	16	3.60	1.95	15	380
14	14	4.00	2.50	20	470
15	14	4.40	2.75	22	450
16	14	5.00	3.05	24	400
18	14	6.00	3.50	29	370
20	14	7.00	3.90	34	325
22	12	9.00	5.55	40	365
24	12	10.50	6.00	50	335

If galvanized, in lengths of 20 feet and less. If asphalted, in lengths of 25 feet and less.

Pipe and fittings gotten out to specifications and drawings when desired. Where lengths required are all 5 feet or less, they are charged as being 5 feet each.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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GALVANIZED AND BLACK CAST AND WROUGHT IRON FITTINGS FOR SPIRAL RIVETED PIPES

FLANGED ELBOW



FIG. 1595

FLANGED CROSS

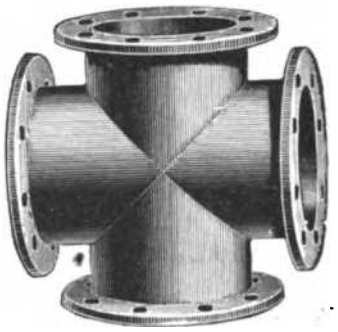


FIG. 1596

FLANGED TEE

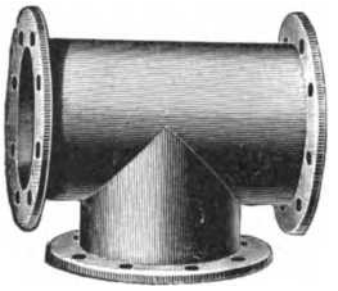


FIG. 1597

PRICES, GALVANIZED

Inside Diam., Inches.	Elbows, 90° and 45°	Tees.	Crosses.	Reducers.	Flanges.	Disks or Blind Flanges.	Bolts and Nuts.	Composition Gaskets.
3	$1 60	$2 75	$4 15	$	$0 39	$0 45	$0 04	$0 09
4	2 10	3 25	5 30	3 00	52	65	04	10
5	2 85	4 40	6 70	3 50	65	78	04	12
6	4 10	5 70	8 00	4 75	78	1 17	04½	16
7	5 10	7 30	11 00	5 50	1 04	1 56	04½	18
8	6 70	9 80	14 25	6 50	1 17	1 82	04½	23
9	9 00	13 80	18 80	8 00	1 56	2 34	04½	31
10	10 00	17 60	24 50	10 25	1 82	2 47	04½	40
11	13 00	20 00	26 50	12 00	1 95	3 25	04½	45
12	15 80	22 50	30 00	13 00	2 08	3 90	04½	50
13	19 15	25 00	33 50	14 60	2 34	4 55	04½	56
14	22 30	30 50	38 00	16 50	2 60	5 46	05	63
15	26 00	37 00	45 00	18 40	3 12	5 98	05	75
16	30 00	44 00	53 00	21 30	4 42	6 76	05	90
18	34 00	50 00	59 00	26 00	5 07	9 10	05½	1 08
20	38 50	56 00	67 00	29 40	5 59	11 70	05½	1 25
22	42 00	60 00	77 00	33 00	9 10	14 30	05½	1 75
24	45 00	70 00	87 00	37 00	9 75	16 90	05½	2 00

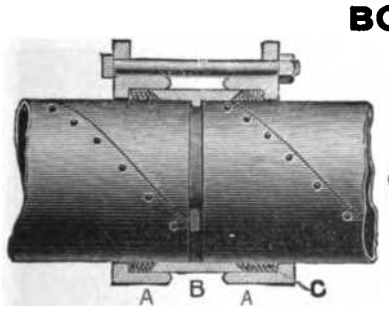
PRICES, BLACK

Inside Diam., Inches.	Elbows, 90° and 45°	Tees.	Crosses.	Reducers.	Flanges.	Disks or Blind Flanges.	Bolts and Nuts.	Composition Gaskets.
3	$1 25	$1 95	$3 00	$	$0 24	$0 28	$0 02½	$0 09
4	1 50	2 20	3 70	2 00	32	40	02½	10
5	2 00	3 10	4 80	2 40	40	48	02½	12
6	2 90	3 90	5 70	3 25	48	72	03	16
7	3 50	5 00	7 70	4 00	64	96	03	18
8	4 50	6 60	9 80	4 75	72	1 12	03	23
9	6 20	9 25	13 00	5 50	96	1 44	03	31
10	6 80	11 50	16 50	7 00	1 12	1 62	03	40
11	8 75	14 00	19 00	8 00	1 20	2 00	03	45
12	10 50	15 00	21 00	9 00	1 28	2 40	03	50
13	12 00	16 50	24 00	9 75	1 44	2 80	03	56
14	13 50	18 60	27 00	11 00	1 60	3 36	03½	63
15	15 00	22 00	31 00	12 25	1 92	3 68	03½	75
16	17 00	25 00	34 50	14 20	2 72	4 16	03½	90
18	20 00	29 00	39 00	17 40	3 12	5 60	04	1 08
20	23 00	34 00	45 00	19 60	3 44	7 20	04	1 25
22	26 00	39 00	51 00	22 00	5 60	8 80	04	1 75
24	30 00	45 00	58 00	25 00	6 00	10 40	04	2 00

The disks can be tapped to suit wrought iron screw threads if desired

Fittings of any design made to order.

BOLTED JOINTS



SECTIONAL

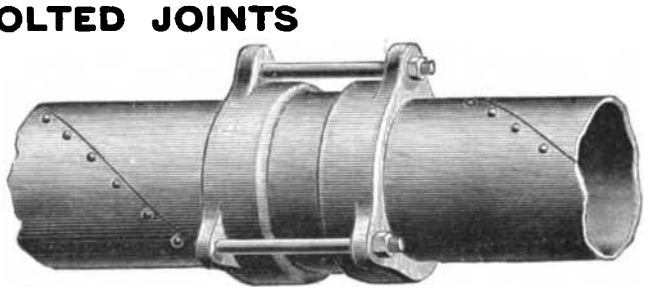


FIG. 1598

PRICES, FIG. 1598

Diam., Inches.	Each.	Approximate Weight, Pounds.	Diam., Inches.	Each.	Approximate Weight, Pounds.
3	$1 15	8	12	$6 00	50
4	1 40	11	13	6 50	55
5	1 70	14	14	7 25	60
6	2 10	17	15	8 00	65
7	2 50	20	16	8 50	70
8	3 25	25	18	10 00	80
9	4 00	30	20	11 50	90
10	4 75	36	22	12 50	105
11	5 50	45	24	13 50	120

CEMENT JOINTS FOR CRIMPED END PIPE

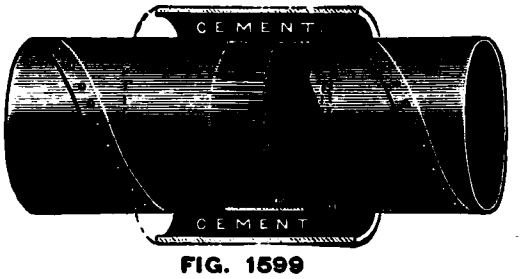


FIG. 1599

DESCRIPTION, FIG. 1599

The cement joint is for use where a moderate and constant pressure is maintained, and where the distribution is by gravity and no tapping for service is required. It consists simply of a sheet iron sleeve, exceeding the diameter of the pipe by 2 inches, and from 8 to 12 inches long. This sleeve encircles the pipe as shown, the annular space between the sleeve and pipe being packed with cement. In most cases, this is the cheapest and simplest joint that can be used with spiral pipe.

Prices of sleeves for cement joint same as price of one foot of pipe of same gauge, but 2 inches larger in diameter than main pipe.

STRAIGHT SEAM RIVETED PIPE AND FITTINGS

Heavy gauges, black and galvanized sheet iron, suitable for water, blower, air, ventilator pipe, and smoke stacks, etc.

PIPE, GALVANIZED

Nos.	Per Pound.
10 to 14, W. G.	$0 11
15 " 17, "	12
18 " 20, "	14
21 " 24, "	16

BLACK

Nos.	Per Pound.
10 to 14, W. G.	$0 08
15 " 17, "	09
18 " 20, "	10
21 " 24, "	11

WROUGHT IRON LUGS FOR SLIP JOINT

	Each.
Black	$0 15
Galvanized	18

FITTINGS COATED WITH COAL TAR AND ASPHALT AT 300° TEMPERATURE, EXTRA

Nos.	Per Pound.
16, W. G., and heavier	extra $0 01
17, " " lighter	" 01½

Pipe ½ cent for each inch of diameter per lineal foot.

FITTINGS, ELBOWS, TEES, CROSSES, ETC. GALVANIZED

Nos.	Per Pound.
10 to 14, W. G., 8 inch diameter, and larger	$0 21
15 " 17, " 8 " " " "	22
18 " 20, " 8 " " " "	25
21 " 24, " 8 " " " "	30
18 " 20, " 7 " " " smaller	28
21 " 24, " 7 " " " "	35

FITTINGS, ELBOWS, TEES, CROSSES, ETC. BLACK

Nos.	Per Pound.
10 to 14, W. G., 8 inch diameter, and larger	$0 18
15 " 17, " 8 " " " "	19
18 " 20, " 8 " " " "	21
21 " 24, " 8 " " " "	26
18 " 20, " 7 " " " smaller	24
21 " 24, " 7 " " " "	31

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STEAM AND HOT WATER RADIATORS



FIG. 1600

No. of sections.	Length 2½ in. per sec.	Heating Surface—Square Feet: 45 in. Hgt., 5 sq. ft. per sec.	38 in. Hgt., 4 sq. ft. per sec.	32 in. Hgt., 3½ sq. ft. per sec.	26 in. Hgt., 2⅞ sq. ft. per sec.	23 in. Hgt., 2½ sq. ft. per sec.	20 in. Hgt., 2 sq. ft. per sec.
Prices per ft.		$0 41	$0 42	$0 46	$0 49	$0 53	$0 57
2	5	10	8	6⅔	5⅓	4⅔	4
3	7½	15	12	10	8	7	6
4	10	20	16	13⅓	10⅔	9⅓	8
5	12½	25	20	16⅔	13⅓	11⅔	10
6	15	30	24	20	16	14	12
7	17½	35	28	23⅓	18⅔	16⅓	14
8	20	40	32	26⅔	21⅓	18⅔	16
9	22½	45	36	30	24	21	18
10	25	50	40	33⅓	26⅔	23⅓	20
11	27½	55	44	36⅔	29⅓	25⅔	22
12	30	60	48	40	32	28	24

Larger sizes, prices quoted on application.



FIG. 1601

DIRECT STEAM RADIATORS

TWO-ROW STEAM RADIATOR



FIG. 1602

CIRCULAR



FIG. 1603

CORNER



FIG. 1604

INDIRECT RADIATOR
STEAM AND HOT WATER

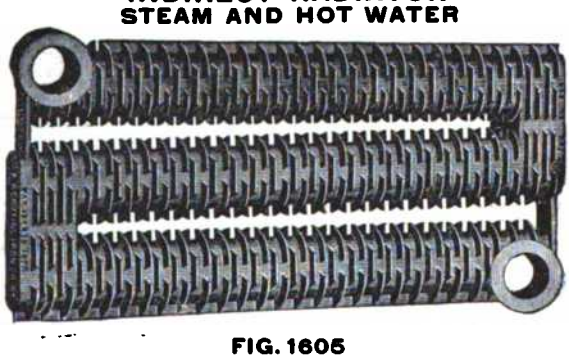


FIG. 1605

CLIMAX INDIRECT RADIATOR
STEAM AND HOT WATER

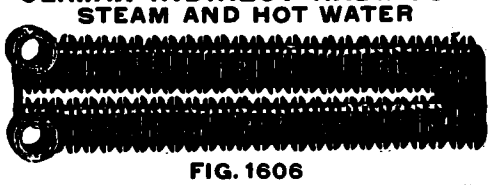


FIG. 1606

PERFECT INDIRECT RADIATOR
STEAM ONLY

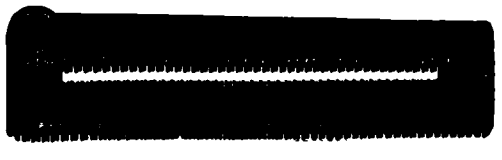


FIG. 1607

COILS AND BENDS

SPIRAL COIL



FIG. 1608

With ends turned out as desired. Coil work and pipe bending of every description.

We will be pleased to quote price upon receipt of sketch.

OBLONG COIL

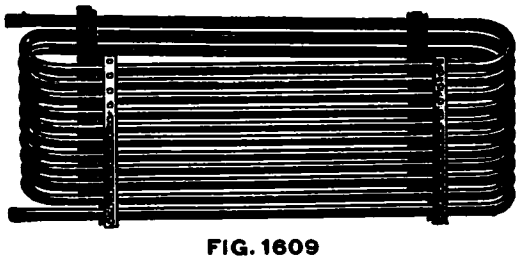


FIG. 1609

ZIGZAG COIL

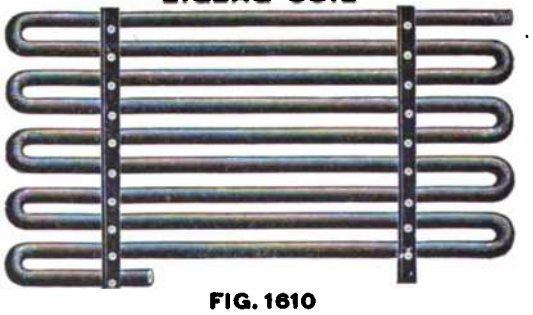


FIG. 1610

Figs. 1608 to 1610 made of either iron, brass, or copper pipe, to order. Prices on application.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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BRASS RADIATOR FITTINGS

RADIATOR NIPPLE

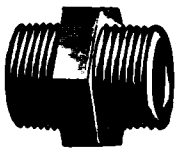


FIG. 1611

PRICES, FIG. 1611

Sizes	½	¾	1	1¼	1½	2
With right and left threads, each,	$0 30	$0 30	$0 45	$0 75	$1 00	$1 25

PRICES, FIG. 1612

Sizes	¾	1	1¼	1½	2
Rough body, finished trimmings, each,	$1 25	$1 60	$2 15	$2 85	$4 50
Finished all over "	1 70	2 10	2 80	3 75	5 35
Rough body, plated all over "	1 50	1 85	2 40	3 15	4 80
Finished and " " " " "	1 95	2 35	3 05	4 05	5 65

RADIATOR UNION ELBOW

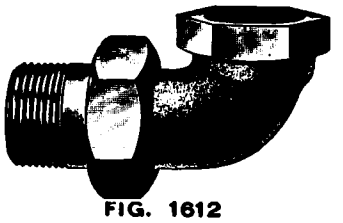


FIG. 1612

RADIATOR AIR VALVES

IMPROVED AUTOMATIC AIR VALVES

Suitable for high or low pressure.

DRIP CUP

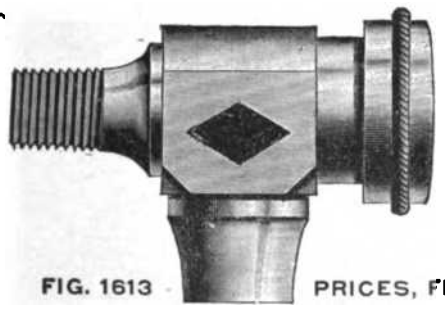


FIG. 1613

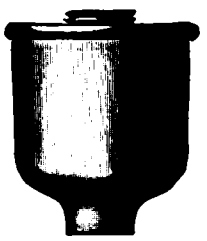


FIG 1614

PRICES, FIGS. 1613 AND 1614

	Per Dozen
Finished and nickel plated	$7 50
Drip Cups, " "	2 00

AUTOMATIC AIR VALVE

For Steam



FIG. 1615

PRICES, FIG. 1615

Threaded for ⅛ inch iron pipe.

No.	Each.
1	$1 00

SPRING SELF-CLOSING AIR VALVE

For Steam and Hot Water

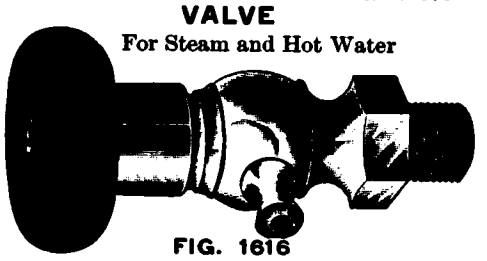


FIG. 1616

Threaded for iron pipe, size ⅛ inch.

	Per Dozen.
Wood wheel	$3 00

COMPRESSION AIR VALVE

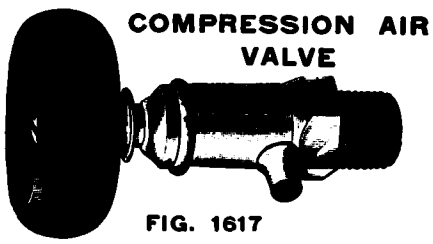


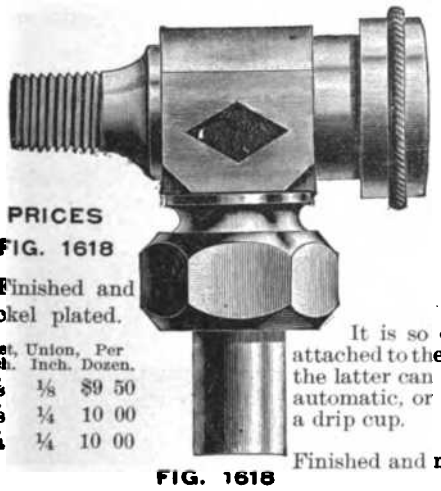
FIG. 1617

Threaded for iron pipe, size ⅛ inch.

	Plain, Each.	Nickeled, Each.
Wood wheel	$0 65	$0 70

WITH UNION DRIP CONNECTION

AUXILIARY VALVE AND DRIP CUP



PRICES

FIG. 1618

Finished and nickel plated.

Inlet, Inch.	Union, Inch.	Per Dozen.
⅛	⅛	$9 50
⅛	¼	10 00
¼	¼	10 00



FIG. 1619

It is so designed that when attached to the automatic air valve the latter can be used either as an automatic, or a direct valve with a drip cup.

Per Dozen.

Finished and nickel plated, $2 50

COMPRESSION KEY AIR VALVE

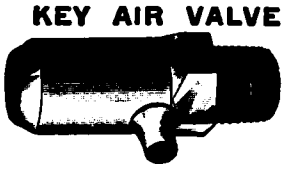
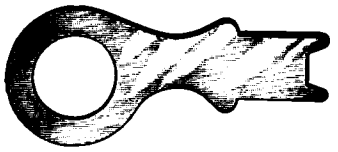


FIG. 1620



KEY FOR FIG. 1620

Threaded for iron pipe, size.	Plain, Inch. ⅛	Nickeled, Inch. ⅛
Price, each	$0 65	$0 70

MIDGET, NON-DRIP POSITIVE AND AUTOMATIC AIR VALVE



FIG. 1621

Threaded for ⅛ inch iron pipe.

	Per Dozen.
Price	$5 00

AUTOMATIC RADIATOR AIR VALVES

AUTOMATIC AND POSITIVE HOT WATER AIR VALVE

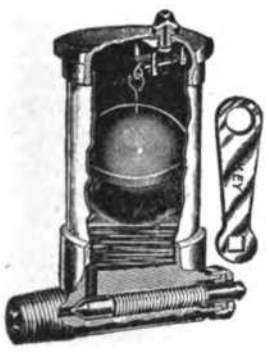


FIG. 1622

WITH KEY

Price, each.....$3 00

DUPLEX AUTOMATIC STEAM AIR VALVE



FIG. 1623

Made for ⅛ or ¼ inch pipe

Price, each.....$1 15

DUPLEX AUTOMATIC AIR VALVE WITH KEY

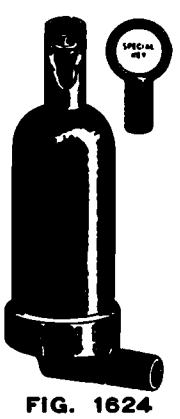


FIG. 1624

Made for ⅛ or ¼ inch pipe

Price, each.....$1 35

RADIATOR AIR VALVES

WOOD HANDLE BALL AND TIP



FIG. 1625

LOOSE KEY WITH TIP

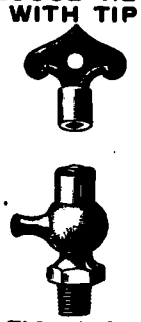


FIG. 1626

PLAIN WITH LOOSE KEY

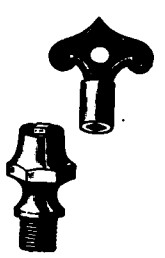


FIG. 1627

PLAIN



FIG. 1628

Size		Brass, Each. ⅛	Brass, Each. ¼	Finish, Nickel plated, Each. ⅛	Finish, Nickel plated, Each. ¼
Fig. 1625.	Wood Handle, ball and tip.	$0 65	$0 70	$0 70	$0 75
" 1626.	Loose key with tip	50	55	55	60
" 1627.	Plain with loose key	30	35	35	40
" 1628.	Plain	30	35	35	40

Extra keys for Figs. 1626 and 1627. Brass, $0.12; nickel plated, $0.18.

When ordering state size wanted.

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REGRINDING RADIATOR VALVES

FEMALE ENDS



FIG. 1629

LOCK SHIELD



FIG. 1630

MALE AND FEMALE ENDS

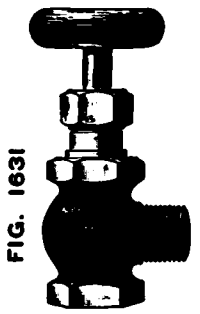


FIG. 1631

WOOD WHEEL, T HANDLE OR LOCK SHIELD

PRICES, FIG. 1629

Sizes, Inches.	Rough Body, Each.	Rough Body, Nickel Plated Trimmings, Each.	Rough Body, Nickel Plated all over, Each.	Finished Body, Each.	Finished Body, Nickel Plated all over, Each.
½	$1 35	$1 55	$1 65	$1 85	$2 15
¾	1 60	1 85	1 95	2 15	2 50
1	2 25	2 50	2 65	2 85	3 25
1¼	3 25	3 50	3 70	4 00	4 45
1½	4 50	4 80	5 00	5 50	6 00
2	7 00	7 50	7 75	8 50	9 25

PRICES, FIG. 1631

Sizes, Inches.	Rough Body, Each.	Rough Body, Nickel Plated Trimmings, Each.	Rough Body, Nickel Plated all over, Each.	Finished Body, Each.	Finished Body, Nickel Plated all over, Each.
½	$1 45	$1 65	$1 75	$1 95	$2 25
¾	1 70	1 95	2 05	2 25	2 60
1	2 35	2 60	2 75	2 95	3 35
1¼	3 35	3 60	3 80	4 10	4 55
1½	4 60	4 90	5 10	5 60	6 10
2	7 10	7 60	7 85	8 60	9 35

Keys for lock shield valves, each 12 cents.

When ordering radiator valves, always designate threads, style and finish; also if wanted with wood wheel, T handle or lock shield. Unless otherwise specified, valves will be sent with wood wheels.

OFFSET CORNER COMPOSITION DISK

REGRINDING WITH UNION



FIG. 1632

WOOD WHEEL, T HANDLE OR LOCK SHIELD

LEFT HAND PATTERN

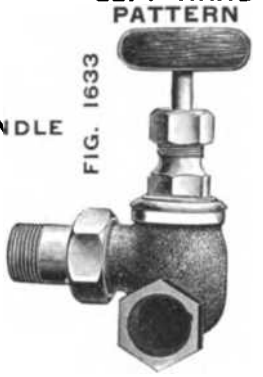


FIG. 1633

PRICES, FIG. 1632

Sizes, Inches.	Rough Body, with Union, Each.	Rough Body, Nickel Plated Trimmings, with Union, Each.	Rough Body, Nickel Plated all over, with Union, Each.	Finished Body, with Union, Each.	Finished Body, Nickel Plated all over, with Union, Each.
½	$2 05	$2 30	$2 40	$2 55	$2 90
¾	2 45	2 75	2 85	3 00	3 40
1	3 25	3 50	3 65	3 85	4 30
1¼	4 50	4 85	5 05	5 25	5 80
1½	6 50	6 90	7 10	7 50	8 10
2	10 00	10 50	10 85	11 50	12 35

PRICES, FIG. 1633 W. W. OR LOCK SHIELD

Sizes.....Inches,	½	¾	1	1¼	1½	2
FEMALE ENDS						
Rough body, finished trimmings.	$2 25	$2 75	$3 50	$5 00	$7 00	$11 55
Finished all over.....	2 75	3 25	4 25	5 75	8 00	12 95
Rough body, plated trimmings...	2 55	3 05	3 80	5 30	7 30	11 85
Rough body, plated all over.....	2 65	3 15	3 90	5 40	7 40	11 95
Finished and plated all over.....	3 15	3 65	4 65	6 15	8 40	13 35
MALE OR FEMALE UNION						
Rough body, finished trimmings.	$3 05	3 85	4 75	6 45	8 55	13 85
Finished all over.....	3 50	4 40	5 30	7 05	9 65	15 25
Rough body, plated trimmings...	3 35	4 15	5 05	6 85	8 85	14 15
Rough body, plated all over.....	3 45	4 25	5 15	6 95	8 95	14 25
Finished and plated all over.....	3 90	4 80	5 70	7 45	10 05	15 65

JENKINS RADIATOR VALVES, GLOBE OR ANGLE, SCREWED ENDS

FEMALE ANGLE

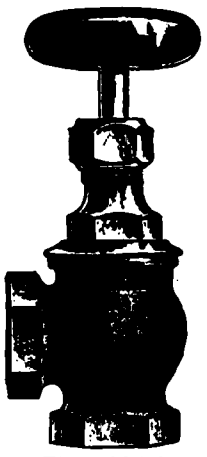


FIG. 1634

Right or left hand threads, as ordered.

Nos.		Sizes.	¼	⅜	½	¾	1	1¼	1½	2
1	Wood wheels, rough body, finished trimmings.....		$1 50	1 85	2 00	2 50	3 20	4 50	6 25	10 50
2	" " finished all over.....		2 00	2 25	2 50	3 00	3 75	5 25	7 25	11 75
3	" " rough body, nickel plated trimmings.		1 80	2 15	2 30	2 80	3 50	4 80	6 55	10 80
4	" " " " " " all over.....		1 90	2 25	2 40	2 90	3 60	4 90	6 65	10 90
5	" " finished and nickel plated all over....		2 40	2 70	2 90	3 40	4 15	5 65	7 65	12 15

With male or female unions, as ordered.

Nos.		Sizes.	½	¾	1	1¼	1½	2
6	Wood wheels, rough body, finished trimmings, with union....		$2 75	3 50	4 30	5 85	7 75	12 60
7	" " finished all over " "		3 20	4 00	4 80	6 40	8 75	13 85
8	" " rough body, nickel plated trimmings, with union		3 05	3 80	4 60	6 15	8 05	12 90
9	" " " " " " " all over " "		3 15	3 90	4 70	6 25	8 15	13 00
10	" " " " " " " " " "		3 60	4 40	5 20	6 80	9 15	14 25

CORNER VALVES, REGULAR AND OFFSET PATTERN

Screwed ends, right or left hand threads, as ordered

Nos.		Sizes.	½	¾	1	1¼	1½	2
1	Wood wheels, rough body, finished trimmings.....		$2 25	2 75	3 50	5 00	7 00	11 55
2	" " finished all over.....		2 75	3 25	4 25	5 75	8 00	12 95
3	" " rough body, nickel plated trimmings.....		2 55	3 05	3 80	5 30	7 30	11 85
4	" " " " " " all over		2 65	3 15	3 90	5 40	7 40	11 95
5	" " finished and nickel plated all over		3 15	3 65	4 65	6 15	8 40	13 35

With male or female unions, as ordered.

Nos.		Sizes.	½	¾	1	1¼	1½	2
6	Wood wheels, rough body, finished trimmings.....		$3 05	$3 85	$4 75	$6 45	$8 55	$13 85
7	" " finished all over.....		3 50	4 40	5 30	7 05	9 65	15 25
8	" " rough body, nickel plated trimmings.....		3 35	4 15	5 05	6 85	8 85	14 15
9	" " " " " all over		3 45	4 25	5 15	6 95	8 95	14 25
10	" " finished and nickel plated all over.....		3 90	4 80	5 70	7 45	10 05	15 65

Lock shield valves same price as wood wheel valves. Tee Handle Keys extra—Sizes ¼, ⅜, ½ and ¾, 17c.; 1 and 1¼, 18c.; 1½ and 2, 27c.

CORNER VALVE

REGULAR PATTERN RIGHT HAND



FIG. 1635

BUNDY QUICK OPENING BONNETLESS HOT WATER RADIATOR VALVES

WITH UNION

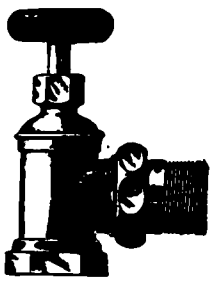


FIG. 1636

Fig. 1636 Threads—R. H. on union. R. H. on bottom.

Fig. 1636A Threads—L. H. on side. R. H. on bottom.

PRICES, FIGS. 1636 AND 1636A

ROUGH BODY, PLATED ALL OVER

Sizes, inches	¾	1	1¼	1½	2
With union.	$2 85	3 65	5 05	7 10	10 85
Without union.	1 95	2 65	3 70	5 00	7 75

WITHOUT UNION



FIG. 1636A

QUICK OPENING RADIATOR VALVES

PLAIN



FIG. 1637

FOR HOT WATER CIRCULATION

PRICES, PLAIN, FIG. 1637

Sizes, inches	¾	1	1¼	1½	2
Rough body, finished trim..	$1 25	1 75	2 50	3 50	5 50
Rough body, plated all over.	1 60	2 15	2 95	4 00	6 25

PRICES, FIG. 1638 WITH GROUND UNION

Sizes, inches	¾	1	1¼	1½	2
Rough body, finished trim...	$2 00	2 50	3 50	5 00	7 50
Rough body, plated all over.	2 40	3 00	4 10	5 60	8 25

WITH UNION



FIG. 1638

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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BRASS RADIATOR VALVES, VULCANIZED ASBESTOS DISK

WOOD WHEEL

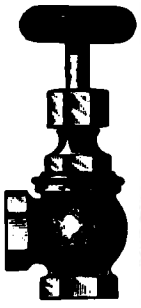


FIG. 1639

WOOD WHEEL, WITH UNION

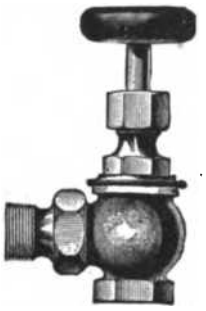


FIG. 1640

PRICES, FIGS. 1639 TO 1642

Sizes, inches	½	¾	1	1¼	1½	2
W. W.						
Fig. 1639. Rough body, finished trimmings	$2 00	2 50	3 20	4 50	6 25	10 50
" " " plated trimmings	2 25	2 70	3 50	4 75	6 50	10 75
" " " " plated all over	2 50	2 85	3 65	4 90	6 75	11 00
" Finished all over	2 50	3 00	3 75	5 25	7 25	11 75
" " " and plated all over	2 85	3 10	4 00	5 40	7 75	12 25
With Lock Shield.						
Fig. 1641. Rough body, finished trimmings	2 00	2 70	3 20	4 50	6 25	10 50
" " " " plated trimmings	2 25	2 70	3 50	4 75	6 50	10 75
" " " " plated all over	2 50	2 85	3 65	4 90	6 75	11 00
" Finished all over	2 50	3 00	3 75	5 25	7 25	11 75
" Finished and plated all over	2 85	3 10	4 00	5 40	7 75	12 25
Male or Female Union.						
Fig. 1640. Rough body, finished trimmings	2 75	3 50	4 30	5 85	7 75	12 60
" " " " plated trimmings	3 00	3 75	4 65	6 25	8 00	12 85
" " " " plated all over	3 20	3 80	4 75	6 40	8 10	13 10
" Finished all over	3 20	4 00	4 80	6 40	8 75	13 85
" Finished and plated all over	3 25	4 25	5 25	7 00	9 25	14 35
Fig. 1642. Rough body, finished trimmings	2 75	3 50	4 30	5 85	7 75	12 60
" " " " plated trimmings	3 00	3 75	4 65	6 25	8 00	12 85
" " " " plated all over	3 20	3 80	4 75	6 40	8 10	13 10
" Finished all over	3 20	4 00	4 80	6 40	8 75	13 85
" Finished and plated all over	3 25	4 25	5 25	7 00	9 25	14 35

WITH LOCK SHIELD

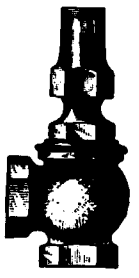


FIG. 1641

WITH LOCK SHIELD AND UNION

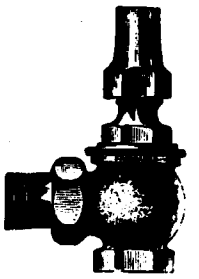


FIG. 1642

CORNER VALVES



FIG. 1643

CORNER VALVES, WITH UNION

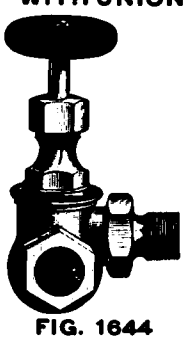


FIG. 1644

PRICES, FIGS. 1643 TO 1646

Sizes, inches	½	¾	1	1¼	1½	2
W. W.						
Fig. 1643. Rough body, finished trimmings	$2 25	2 75	3 50	5 00	7 00	11 50
" " " plated trimmings	2 50	3 00	3 75	5 25	7 25	11 75
" " " " plated all over	2 75	3 25	4 00	5 50	7 50	12 00
" Finished all over	2 75	3 50	4 25	5 80	8 25	13 00
" Finished and plated all over	3 25	3 75	4 75	6 25	8 50	13 25
Fig. 1645. Rough body, finished trimmings	2 25	2 75	3 50	5 00	7 00	11 50
" " " " plated trimmings	2 50	3 00	3 75	5 25	7 25	11 75
" " " " plated all over	2 75	3 25	4 00	5 50	7 50	12 00
" Finished all over	2 75	3 50	4 25	5 80	8 25	13 00
" Finished and plated all over	3 25	3 75	4 75	6 25	8 50	13 25
Male or Female Union.						
Fig. 1644. Rough body, finished trimmings	3 00	3 75	4 60	6 35	8 50	13 75
" " " " plated trimmings	3 25	4 00	4 90	6 75	8 75	14 00
" " " " plated all over	3 50	4 25	5 10	7 00	8 85	14 25
" Finished all over	3 50	4 50	5 30	7 15	9 75	15 25
" Finished and plated all over	4 00	4 90	6 00	7 85	10 00	15 60
Fig. 1646. Rough body, finished trimmings	3 00	3 75	4 60	6 35	8 50	13 75
" " " " plated trimmings	3 25	4 00	4 90	6 75	8 75	14 00
" " " " plated all over	3 50	4 25	5 10	7 00	8 85	14 25
" Finished all over	3 50	4 50	5 30	7 15	9 75	15 25
" Finished and plated all over	4 00	4 90	6 00	7 85	10 00	15 60

OPPOSITE ANGLE VALVES

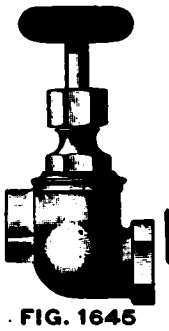


FIG. 1645

OPPOSITE ANGLE VALVES, WITH UNION

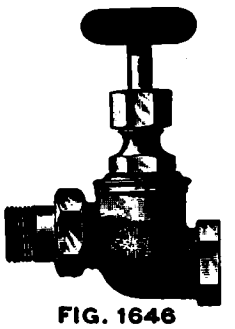


FIG. 1646

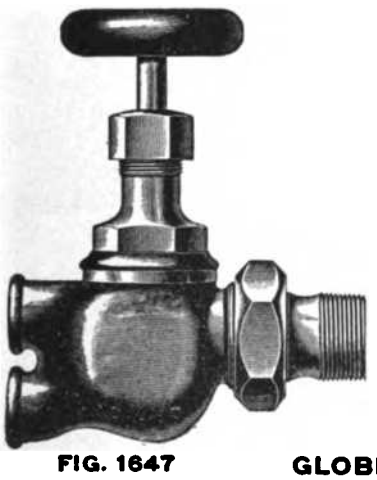


FIG. 1647

COLLIS CIRCULATING VALVE
FOR RADIATORS, HEATING COILS, ETC.

These valves are made of the best steam metal, and are extra heavy They are made in the following sizes:

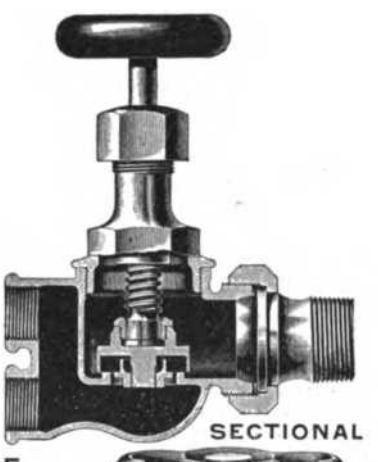
1¼ inch to radiator, ¾ x ¾ inch steam and return, which will supply radiators or coils up to 60 square feet of surface.

1½ inch to radiator, 1 x 1 inch steam and return, which will supply radiators or coils up to 100 square feet of surface.

2 inches to radiator, 1¼ x 1¼ steam and return, which will supply radiators or coils over 100 square feet of surface.

PRICES, FIG. 1647

Nos.	Sizes, inches	1¼	1½	2
6	Wood wheels, rough body, finished trimmings	$7 65	$10 65	$19 15
9	" " " " nickel plated all over	7 80	10 95	19 50
10	" " " finished, nickel plated all over	8 90	11 95	21 35



SECTIONAL

STANDARD BRASS VALVES

GLOBE

SCREWED

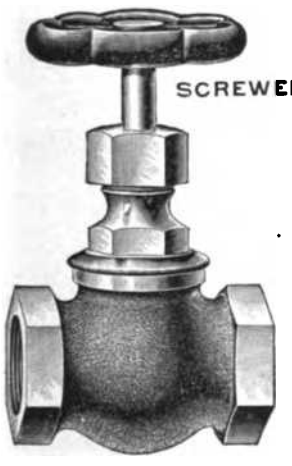


FIG. 1648

FLANGED

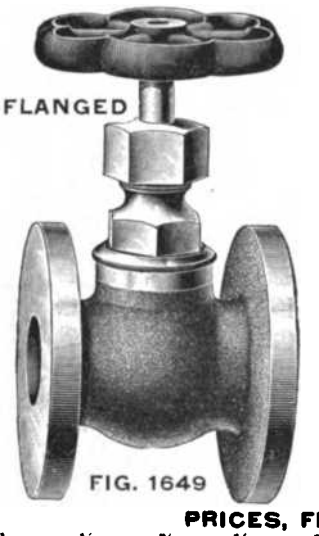


FIG. 1649

ANGLE

SCREWED

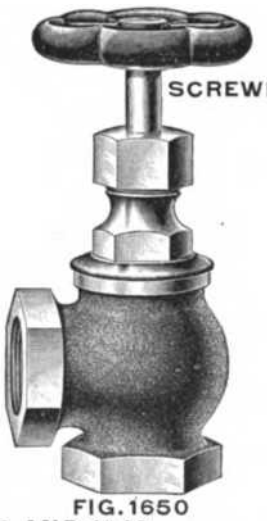


FIG. 1650

FLANGED

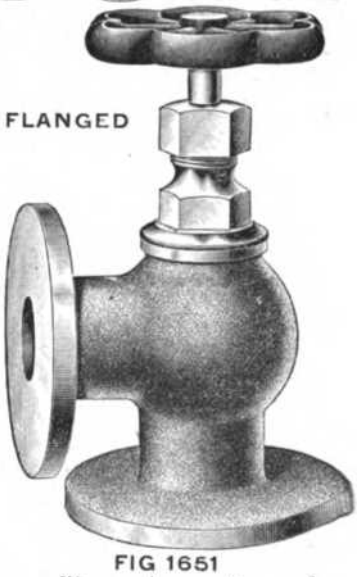


FIG 1651

PRICES, FIGS 1648 AND 1649

Sizes, inches	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6
Fig. 1648, screwed	$0 72	$0 72	$0 77	$1 00	$1 26	$1 80	$2 52	$3 50	$5 30	$10 00	$14 40	$26 50	$36 00		
" 1649, flanged	....	....	....	4 50	5 00	6 75	8 50	10 50	16 00	23 00	35 00	50 00	70 00	$125 00	$200 00
Diameters of flanges, inches	....	....	....	3	3½	4	4½	5	6	7	7½	8½	9	10	11
Face to face, inches	....	....	....	2 11/16	3 1/16	3½	3 15/16	4 9/16	4⅞	6¼	7	9⅜	11	12	13½

PRICES, FIGS. 1650 AND 1651

Sizes, inches	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6
Fig. 1650, screwed	$0 72	$0 72	$0 77	$1 00	$1 26	$1 80	$2 52	$3 50	$5 30	$10 00	$14 40	$26 50	$36 00		
" 1651, flanged	....	....	....	4 50	5 00	6 75	8 50	10 50	16 00	23 00	35 00	50 00	70 00	$125 00	$200 00
Diameters of flanges, inches	....	....	....	3	3½	4	4½	5	6	7	7½	8½	9	10	11
Face to face, inches	....	....	....	2 11/16	2 15/16	3⅜	3 15/16	3 15/16	3¾	4¼	4⅝	5½	6	6¾	7¾

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STANDARD BRASS CROSS VALVES

PRICES, FIG. 1652

Sizes, Inches.	Each.
¼	$ 1 25
⅜	1 25
½	1 50
¾	2 00
1	2 50
1¼	3 50
1½	5 00
2	8 00
2½	16 00
3	24 00
3½	45 00
4	60 00

PRICES, FIG. 1653

Sizes, Inches.	Each.
½	$ 5 25
¾	7 00
1	9 00
1¼	12 00
1½	15 75
2	22 00
2½	33 00
3	45 00
3½	75 00
4	100 00

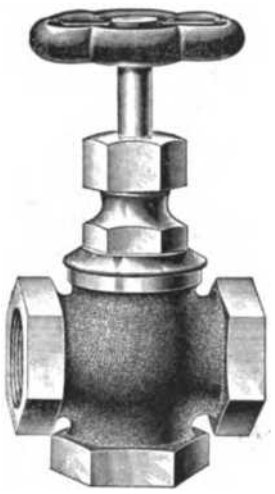


FIG. 1652

DIMENSIONS, FIG. 1653

Sizes, Inches.	Diameter of Flanges, Inches.	Face to Face.	Center to Face.
½	3	4⅛	2 1/16
¾	3½	4⅝	2⅜
1	4	5¼	2⅝
1¼	4½	5⅞	2 15/16
1½	5	6⅜	3 3/16
2	6	7½	3¾
2½	7	8½	4¼
3	7½	9¼	4⅝
3½	8½	11	5½
4	9	12	6

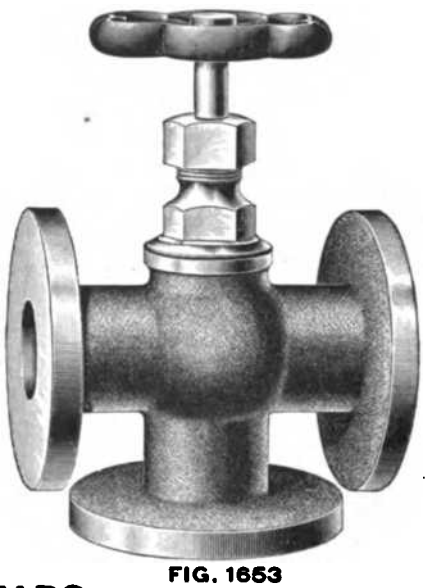


FIG. 1653

BRASS VALVES WITH ENGLISH THREADS

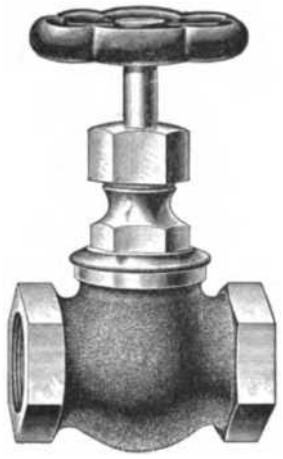


FIG. 1654

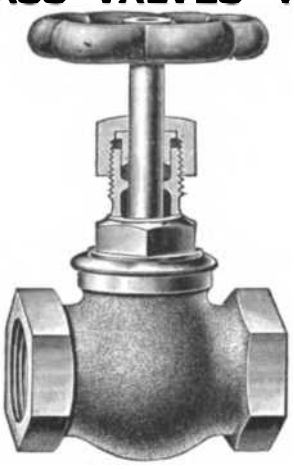


FIG. 1655

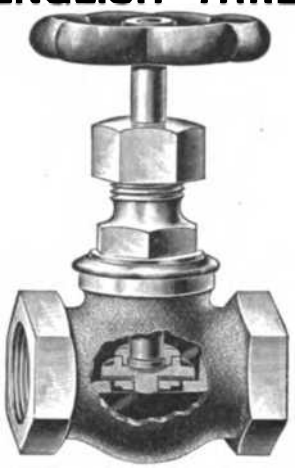


FIG. 1656

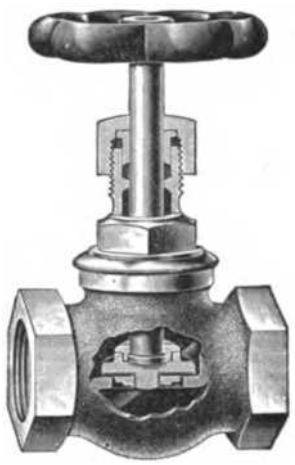


FIG. 1657

STANDARD BRASS GLOBE VALVES

Sizes, Inches.	Without Follower, Fig. 1654. Prices, each.
¼	$ 0 72
⅜	77
½	1 00
¾	1 35
1	1 80
1¼	2 80
1½	3 90
2	5 90
2½	11 25
3	16 00
3½	30 00
4	40 00

Sizes, Inches.	With Follower, or Gland Stuffing Box, Fig. 1655. Prices, each.
¼	$ 0 85
⅜	95
½	1 20
¾	1 50
1	2 00
1¼	3 10
1½	4 30
2	6 50
2½	12 40
3	17 60
3½	33 00
4	44 00

GLOBE VALVES, WITH LEATHER DISKS

Sizes, Inches.	Without Follower, Fig. 1656. Prices, each.
¼	$ 0 85
⅜	95
½	1 20
¾	1 50
1	2 00
1¼	3 10
1½	4 30
2	6 50
2½	12 40
3	17 60
3½	33 00
4	44 00

Sizes, Inches.	With Follower, or Gland Stuffing Box, Fig. 1657. Prices, each.
¼	$ 1 00
⅜	1 15
½	1 40
¾	1 65
1	2 20
1¼	3 40
1½	4 70
2	7 10
2½	13 55
3	19 20
3½	36 00
4	48 00

STANDARD IRON BODY VALVES

GLOBE SCREWED

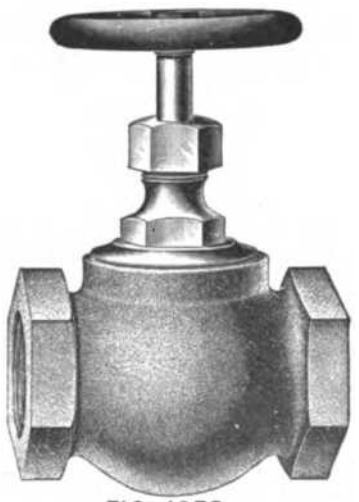


FIG. 1658

PRICES, FIG. 1658. GLOBE

Sizes, inches	1	1¼	1½	2	2½	3
Screwed, iron body, brass mounted,	$2 25	$2 75	$3 50	$5 40	$7 35	$9 80
" all iron	5 70	6 00	6 60	7 50	9 40	12 50
Flanged, iron body, brass mounted,	3 25	3 85	4 80	7 00	9 00	12 50
" all iron	6 90	7 25	7 80	9 00	11 50	16 50
Diameter of flanges, inches	4½	5	5½	6	7	7½
Face to face, "	4	4½	5	5⅝	7⅜	7½

PRICES, FIG. 1659. ANGLE

Sizes, inches	1	1¼	1½	2	2½	3
Screwed, iron body, brass mounted,	$2 25	$2 75	$3 50	$5 40	$7 35	$9 80
" all iron	5 70	6 00	6 60	7 50	9 40	12 50
Flanged, iron body, brass mounted,	3 25	3 85	4 80	7 00	9 00	12 50
" all iron	6 90	7 25	7 80	9 00	11 50	16 50
Diameter of flanges, inches	4½	5	5½	6	7	7½
Center to face, "	2½	2¾	3	3½	3¾	4¼

ANGLE FLANGED

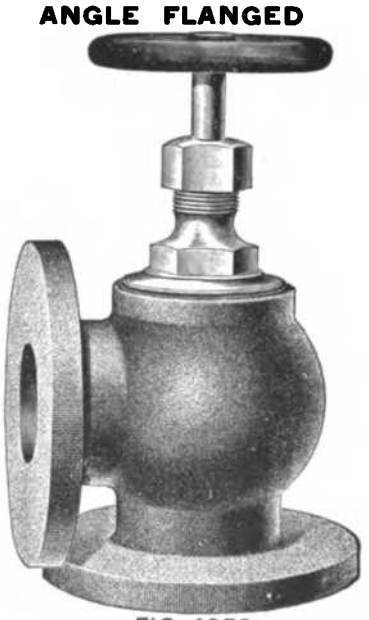


FIG. 1659

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MANNING, MAXWELL & MOORE, 85, KING WILLIAM STREET, STRAND, NEW YORK

STANDARD IRON BODY BRASS MOUNTED CROSS VALVES

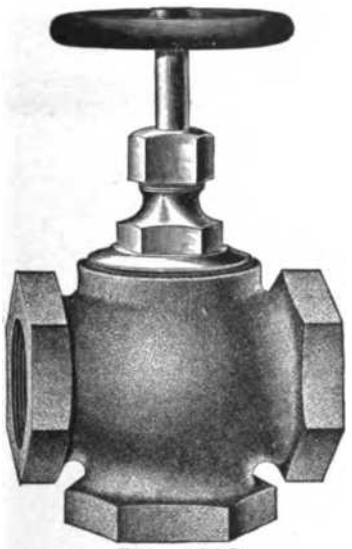


FIG. 1660

PRICES, FIG. 1660

Sizes.	Each.
2	$6 50
2½	9 00
3	12 50

PRICES, FIG. 1661

Sizes.	Each.
2	$9 00
2½	11 75
3	16 50

DIMENSIONS, FIG. 1661

Sizes.	Diameters of Flanges.	Face to Face.	Center to Face.
2	6 inches	7 inches	3½ inches
2½	7 "	7½ "	3¾ "
3	7½ "	8½ "	4¼ "

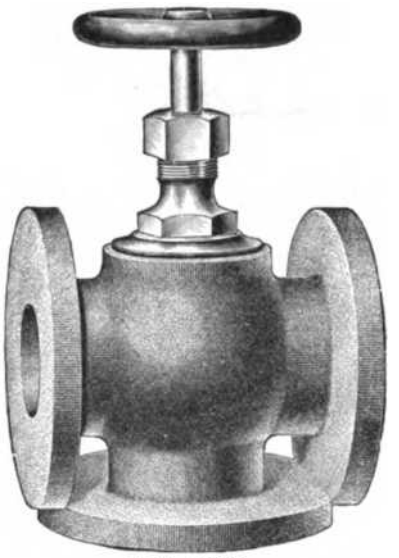


FIG. 1661

STANDARD IRON BODY VALVES WITH YOKE

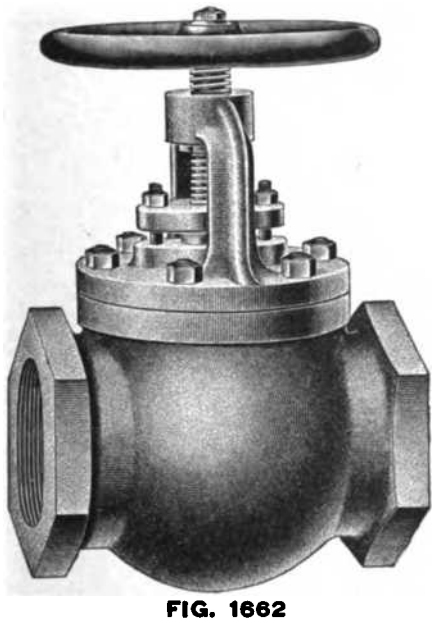


FIG. 1662

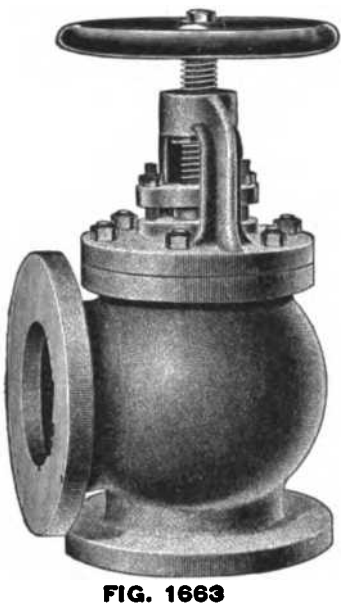


FIG. 1663

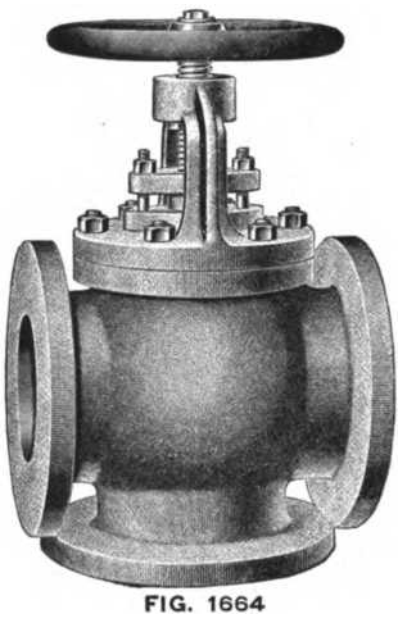


FIG. 1664

PRICES, FIGS. 1662 TO 1664

Sizes. Inches.	2	2½	3	3½	4	4½	5	6	7	8	10	12	14	16
Globe Screwed, Iron Body, Brass Mounted.....	$7 00	9 00	12 50	15 25	19 00	24 00	27 00	37 50	63 00	72 00	114 00	170 00		
Globe Screwed, All Iron,	....	.....	.....	$27 75	31 80	39 00	40 50	52 50	77 00	93 00				
Globe Flanged, Iron Body, Brass Mounted.....	$8 60	10 75	15 00	18 50	22 50	27 50	31 00	42 00	68 00	77 00	123 00	187 00	350 00	475 00
Globe Flanged, All Iron.	....	.....	.....	$29 55	33 70	41 00	44 70	57 60	81 00	99 00				
Globe Flanged, Diameter of Flanges. Inches...	6	7	7½	8½	9	9¼	10	11	12½	13½	16	19	21	23½
Globes Flanged, Face to Face. Inches.....	5⅝	7⅜	7½	9⅜	11	11	12	13½	16	16½	19½	22½	25½	34
Angle Screwed, Iron Body, Brass Mounted.....	$7 00	9 00	12 50	15 25	19 00	24 00	27 00	37 50	63 00	72 00	114 00	170 00		
Angle Screwed, All Iron.	....	.....	.....	$27 75	31 80	39 00	40 50	52 50	77 00	93 00				
Angle Flanged, Iron Body, Brass Mounted.....	$8 60	10 75	15 00	18 50	22 50	27 50	31 00	42 00	68 00	77 00	123 00	187 00	350 00	475 00
Angle Flanged, All Iron.	....	.....	.....	$29 55	33 70	41 00	44 70	57 60	81 00	99 00				
Angle Flanged, Diameter of Flanges. Inches...	6	7	7½	8½	9	9¼	10	11	12½	13½	16	19	21	23½
Angle Flanged, Center to Face. Inches.....	3½	3¾	4¼	4¾	5¼	5½	6	6¾	8	8¼	9¾	11¼	12¾	17
Cross Screwed, All Iron.	$8 50	11 75	16 25	20 00	23 50	30 65	35 25	47 25	78 00	92 00	162 00	240 00		
Cross Flanged, All Iron.	$11 00	14 50	20 00	25 00	28 50	36 00	41 00	54 00	85 00	100 00	175 00	265 00		
Cross Flanged, Diameter of Flanges. Inches...	6	7	7½	8½	9	9¼	10	11	12½	13½	16	19		
Cross Flanged, Face to Face. Inches.....	7	7½	8½	9½	10½	11	12	13½	16	16½	19½	22½		
Cross Flanged, Center to Face. Inches.....	3½	3¾	4¼	4¾	5¼	5½	6	6¾	8	8¼	9¾	11¼		

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IRON BODY BRASS MOUNTED ENGINE VALVES

WITH FINISHED WHEELS, BONNET, EDGES AND GLAND STUFFING BOXES

GLOBE SCREWED



FIG. 1665

GLOBE FLANGED



FIG. 1666

ANGLE SCREWED



FIG. 1667

ANGLE FLANGED



FIG. 1668

PRICES, FIGS. 1665 AND 1666

Sizes, Inches	2	2½	3	3½	4	5	6
Screwed, each	$20 00	$25 00	$30 00	$36 00	$40 00	$52 00	$65 00
Flanged, "	22 00	27 00	33 00	40 00	44 00	57 00	70 00
Diam. of flanges, in.	6	7	7½	8½	9	10	11
Face to face	7½	8	8¾	9⅜	11	12	13½

PRICES, FIGS. 1667 AND 1668

Sizes, Inches	2	2½	3	3½	4	5	6
Screwed, each	$20 00	$25 00	$30 00	$36 00	$40 00	$52 00	$65 00
Flanged, "	22 00	27 00	33 00	40 00	44 00	57 00	70 00
Diam. of flanges, in.	6	7	7½	8½	9	10	11
Center to face	3¾	4½	4¾	5½	5¾	6½	7

RENEWABLE VULCANIZED ASBESTOS DISK VALVES

BRASS SCREWED HUB, IRON WHEEL

BRASS GLOBE, SCREWED

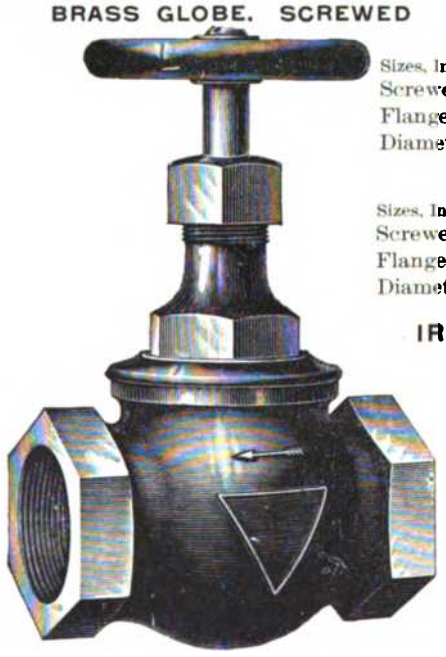


FIG. 1669

GLOBE OR ANGLE VALVES

Sizes, Inches.	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4
Screwed,	$1 10	$1 10	$1 25	$1 60	$2 20	$2 80	$4 00	$5 50	$8 75	$15 75	$22 00	$43 25	$51 00
Flanged,						6 00	9 00	11 00	16 50	25 00	34 00	58 00	66 00
Diameters of flanges, inches						4	4½	5	6	6½	7½	8½	9

CROSS VALVES

Sizes, Inches	½	¾	1	1¼	1½	2	2½	3
Screwed	$2 25	$2 50	$3 25	$4 75	$6 25	$9 50	$20 00	$30 00
Flanged			8 75	11 50	15 25	23 00	32 00	47 00
Diameters of flanges, inches			4	4½	5	6	6½	7½

IRON BODY, COMPOSITION HUB AND MOUNTINGS

GLOBE AND ANGLE VALVES

Sizes, Inches	1½	2	2½	3	3½	4
Screwed	$5 00	$7 25	$11 00	$16 00	$18 50	$23 00
Flanged	6 00	8 50	13 00	18 00	20 50	25 00
Diameters of flanges, inches	5	6½	7	8	9	10

CROSS VALVES

Sizes, Inches	1½	2	2½	3	3½	4
Screwed	$12 00	$14 00	$16 00	$21 00	$25 00	$27 00
Flanged	15 00	17 00	19 00	24 00	27 00	30 00
Diameters of flanges, inches	5	6½	7	8	9	10

BRASS CROSS, SCREWED

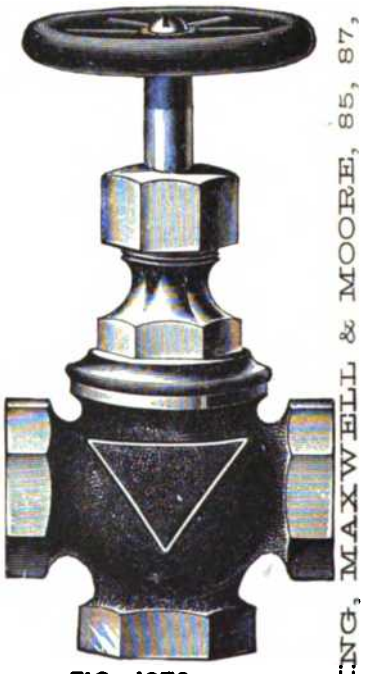


FIG. 1670

IRON BODY, COMPOSITION MOUNTINGS WITH YOKE

GLOBE AND ANGLE

Sizes, Inches	2	2½	3	3½	4	4½	5	6	7	8	9	10	12	14
Screwed	$10 00	$12 00	$16 75	$19 50	$24 00	$32 00	$40 00	$48 00	$80 00	$90 00		$130 00	$185 00	
Flanged	11 75	14 00	18 50	21 50	26 00	34 00	42 00	50 00	80 00	90 00		130 00	185 00	$334 00
Diameters of flanges, inches	6½	7	8	9	10	10½	11	12	13	14		16	19	21

CROSS VALVES

Sizes, Inches	2	2½	3	3½	4	4½	5	6
Screwed	$14 00	$16 00	$21 00	$26 00	$30 00	$42 00	$45 00	$58 00
Flanged	17 00	19 00	24 00	29 00	33 00	45 00	48 00	62 00
Diameters of flanges, inches	6½	7	8	9	10	10½	11	12

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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BRASS AND IRON BODY BRASS MOUNTED VALVES

BRASS GLOBE, SCREWED

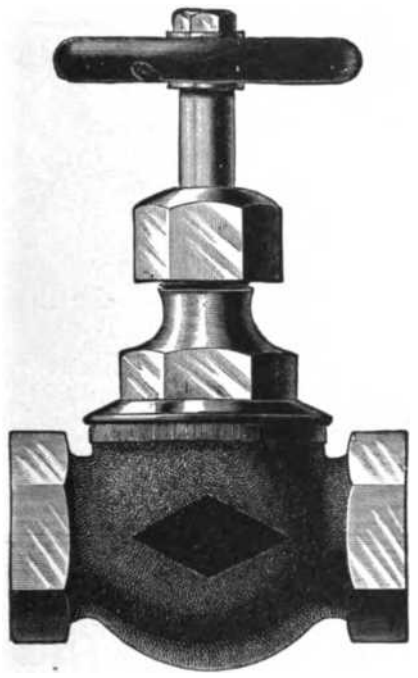


FIG. 1671

IRON BODY, BRASS HUB, SCREWED

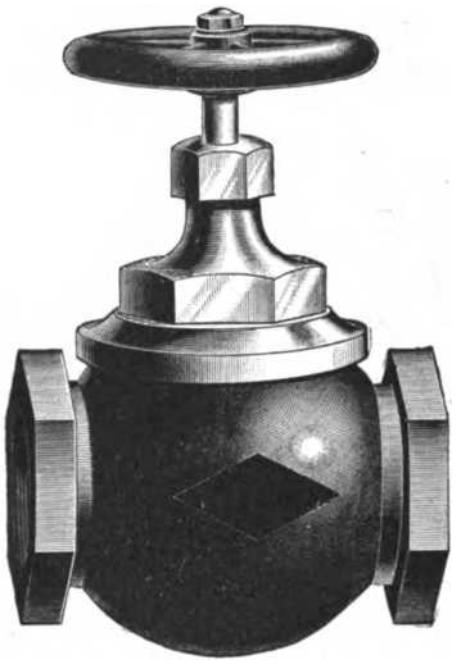


FIG. 1672

IRON BODY, WITH YOKE, SCREWED

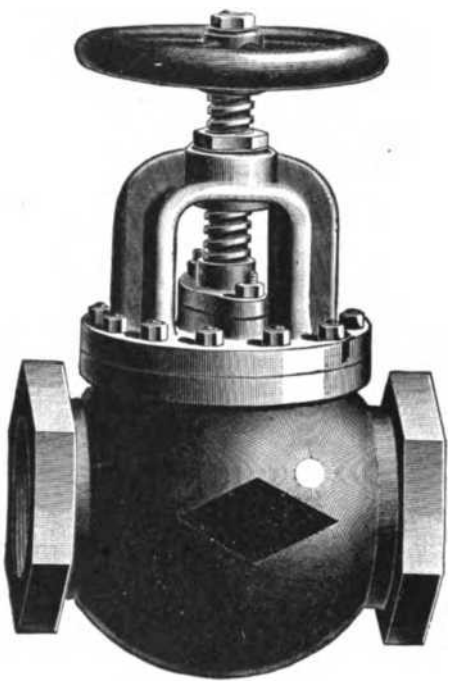


FIG. 1673

PRICES, BRASS

Sizes, Inches.	Brass Globe and Angle Valves, Screwed.	Brass Globe and Angle Valves, Flanged.	Brass Cross Valves, Screwed.	Brass Cross Valves, Flanged.	Diameters of Flanges, Inches.
⅛	$1 10				
¼	1 10	$3 50	$1 70		
⅜	1 25	4 00	2 00		
½	1 60	4 00	2 25	.....	3
¾	2 20	5 00	2 50	.....	3½
1	2 80	6 00	3 25	$8 64	4
1¼	4 00	9 00	4 75	11 45	4½
1½	5 50	11 00	6 25	15 10	5
2	8 75	16 50	9 50	22 70	6
2½	15 75	25 00	20 00	32 82	6½
3	22 00	34 00	27 50	44 30	7½

PRICES, JENKINS' DISKS FOR VALVES

Sizes, Inches.	Each.	Sizes, Inches.	Each.
¼	$0 03	3½	$0 45
⅜	04	4	52
½	04	4½	60
¾	05	5	68
1	06	6	90
1¼	09	7	98
1½	12	8	1 20
2	18	9	1 60
2½	24	10	1 75
3	33	12	2 25

PRICES, IRON BODY, COMPOSITION MOUNTED

Sizes, inches	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6	7	8	9	10	12
Globe and angle valves:																	
Brass hub, screwed	$2 75	$2 85	$3 85	$5 00	$7 25	$11 00	$16 00										
" flanged	....	....	....	....	8 50	13 00	18 00										
With yoke, screwed	....	....	....	....	10 00	12 00	16 75	$19 50	$24 00	$32 00	$40 00	$48 00	$80 00	$90 00	$121 00	$130 00	$185 00
" flanged	....	....	....	....	11 75	14 00	18 50	21 50	26 00	34 00	42 00	50 00	80 00	90 00	121 00	130 00	185 00
Cross valves, screwed	....	....	....	....	....	16 00	21 00	26 00	30 00	42 00	45 00	58 00					
" flanged	....	....	....	....	....	19 00	24 00	29 00	33 00	45 00	48 00	62 00					
Diameter of flanges, iron body, inches					6	7	7½	8½	9	9¼	10	11	12½	13½	15	16	19

BRASS REGRINDING VALVES

GLOBE VALVE

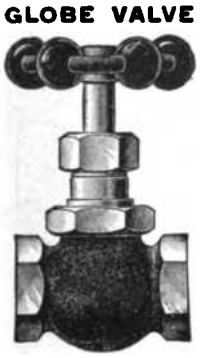


FIG. 1674

SCREW ENDS CROSS VALVE

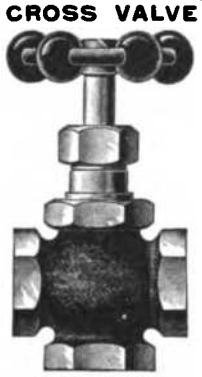


FIG. 1675

ANGLE VALVE



FIG. 1676

GLOBE VALVE, FLANGE ENDS

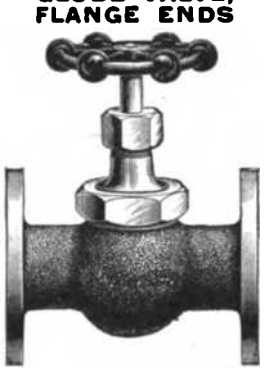


FIG. 1677

GLOBE VALVE

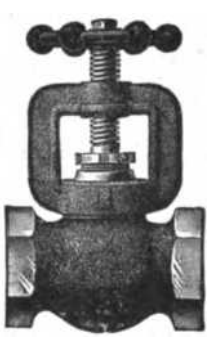


FIG. 1678

Sizes, Inches.	Globe Valves, Brass, Each.	Angle Valves, Brass, Each.	Cross Valves, Brass, Each.	Globe or Angle Valves, Fin. all over with Fin. Brass Wheel, Brass, Each.	Cross Valves, Fin. all over with Fin. Brass Wheel, Brass, Each.
⅛	$0 70	$0 70	$1 00	$1 75	$2 40
¼	70	70	1 00	1 90	2 60
⅜	85	85	1 00	2 15	2 90
½	1 15	1 15	1 50	2 50	3 30
¾	1 45	1 45	2 00	3 10	4 20
1	2 00	2 00	2 70	3 65	4 90
1¼	2 80	2 80	3 50	5 25	7 00
1½	3 90	3 90	5 10	7 25	9 70
2	6 20	6 20	8 00	10 75	14 30
2½	12 00	12 00	16 00	22 00	29 30
3	16 50	16 50	24 00	33 50	44 70

PRICES, FIG. 1677

Sizes, Inches.	Globe Valves, Flange Ends, Each.	Angle Valves, Flange Ends, Each.	Cross Valves, Flange Ends, Each.	Diam. of Flanges on above Valves, Inches.
⅜	$2 60	$2 60	$3 20	2½
½	3 20	3 20	4 00	3
¾	4 00	4 00	5 30	3½
1	5 50	5 50	7 00	4
1¼	7 90	7 90	9 80	4½
1½	10 60	10 60	13 40	5
2	14 50	14 50	18 70	6
2½	21 90	21 90	27 70	7
3	32 50	32 50	41 00	7½

PRICES, FIG. 1678

Sizes, Inches.	Globe Valves, Each.	Angle Valves, Each.	Cross Valves, Each.
½	$1 60	$1 60	$2 20
¾	2 20	2 20	2 70
1	3 20	3 20	4 10
1¼	4 20	4 20	5 20
1½	5 50	5 50	6 70
2	7 90	7 90	9 40
2½	13 00	13 00	15 60
3	20 00	20 00	23 80

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FLANGED HUB BRASS VALVES, OUTSIDE SCREW AND YOKE

SCREW ENDS

GLOBE VALVE

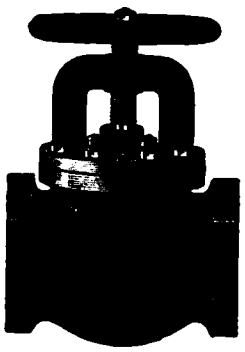


FIG. 1679

ANGLE VALVE

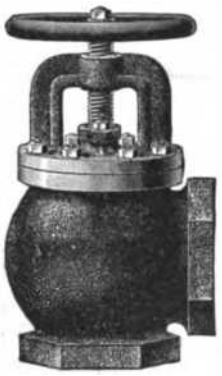


FIG. 1680

CROSS VALVE



FIG. 1681

PRICES, FIG. 1679 TO 1681, MEDIUM PATTERN

Sizes, Inches.	Globe Valves, Each.	Angle Valves, Each.	Cross Valves, Each.
2	$10 70	$10 70	$12 90
2½	17 50	17 50	21 00
3	25 90	25 90	30 80
3½	36 50	36 50	43 50
4	47 10	47 10	55 60
4½	58 50	58 50	69 10
5	74 80	74 80	87 60
6	100 00	100 00	116 40
7	148 30	148 30	171 50
8	203 80	203 80	236 50

PRICES, FIG. 1679 TO 1681, EXTRA HEAVY PATTERN

Sizes, Inches.	Globe Valves, Each.	Angle Valves, Each.	Cross Valves, Each.
2	$16 90	$16 90	$20 10
2½	23 60	23 60	28 50
3	34 40	34 40	41 00
3½	46 70	46 70	55 60
4	61 50	61 50	72 60
4½	76 60	76 60	90 40
5	97 50	97 50	113 80
6	125 60	125 60	147 00
7	179 80	179 80	208 50
8	252 60	252 60	292 90

FLANGE ENDS

GLOBE VALVE



FIG. 1682

ANGLE VALVE



FIG. 1683

CROSS VALVE

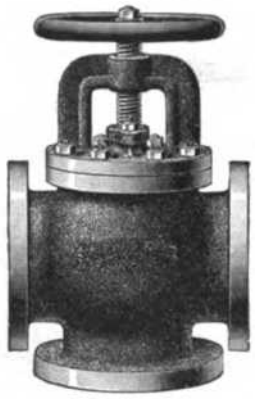


FIG. 1684

PRICES, FIGS. 1682 TO 1684, MEDIUM PATTERN

Sizes, Inches.	Globe Valves, Each.	Angle Valves, Each.	Cross Valves, Each.	Diameter of Flanges on Above Valves, Inches.	Thickness of Flanges on Above Valves, Inches.
2	$18 80	$18 80	$22 60	6	7/16
2½	26 90	26 90	32 20	7	15/32
3	36 90	36 90	43 90	7½	½
3½	49 70	49 70	59 10	8½	17/32
4	61 10	61 10	72 10	9	9/16
4½	73 90	73 90	87 20	9¼	9/16
5	91 40	91 40	106 90	10	5/8
6	116 90	116 90	136 80	11	11/16
7	168 60	168 60	195 60	12½	¾
8	232 50	232 50	268 70	13½	15/16

PRICES, FIGS. 1682 TO 1684, EXTRA HEAVY PATTERN

Sizes, Inches.	Globe Valves, Each.	Angle Valves, Each.	Cross Valves, Each.	Diameter of Flanges on Above Valves, Inches.	Thickness of Flanges on Above Valves, Inches.
2	$28 10	$28 10	$33 70	6	9/16
2½	36 40	36 40	43 70	7	19/32
3	49 20	49 20	58 60	7½	5/8
3½	63 10	63 10	75 20	8½	11/16
4	79 90	79 90	94 30	9	¾
4½	97 00	97 00	114 50	9¼	¾
5	118 60	118 60	138 80	10	13/16
6	147 80	147 80	172 90	11	⅞
7	204 20	204 20	237 00	12½	15/16
8	280 80	280 80	325 80	13½	1

EXTRA HEAVY SEMI-STEEL BABBITT SEAT GATE VALVES FOR AMMONIA

SCREW END, SCREW TOP

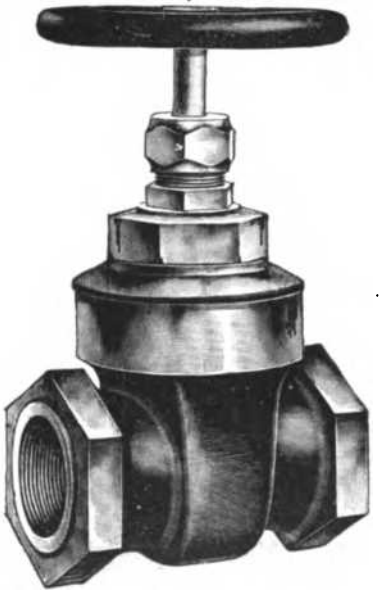


FIG. 1685

These valves are made from extra heavy patterns, especially designed for holding anhydrous ammonia and other refrigerating liquids and gases; also for gas and oil under heavy pressures. They are extensively used on the ammonia pipes of refrigerating plants of both compression and absorption systems. They are designed for a working pressure of 300 pounds per square inch and have a factor of safety amply large to cover the ordinary stresses of the service.

The bodies, caps, and plugs are made of semi-steel, a very dense close grained metal particularly suited to the purpose; the seats are of a special babbitt metal which resists the action of ammonia and gas; the spindles are of wrought iron or soft steel, and the wheels are of cast iron, japanned. Valves 2 inches and less in size have screw tops and driving gland stuffing boxes; the larger valves have bolt tops and bolt follower stuffing boxes. All boxes are packed with special sectional ammonia packing, ready for use.

We list the valves with screw ends and with plain or tongued flange ends but can furnish them with ends of any style desired.

PRICES

Diameter of Port, Inches.	Screw End, Each.	Flange End, Plain Flanges, Each.	Flange ends Tongued Flanges, Each.	Drilling, End Flanges, Extra.
		SCREW TOP		
¼	$5 50	$5 80		
⅜	5 50	5 80		
½	5 75	6 10		
¾	6 20	6 80		
1	7 50	8 20	$8 60	$0 20
1¼	8 75	9 50	10 00	20
1½	10 25	11 50	12 00	20
2	12 75	14 50	15 00	20
		BOLT TOP		
2½	16 00	16 75	18 00	35
3	21 50	22 50	24 00	35
3½	25 50	27 50	29 00	40
4	30 00	31 00	32 75	55
4½	36 50	37 25	39 00	80
5	47 00	48 00	50 00	1 00
6	56 25	58 00	59 50	1 50
7	72 00	73 00	75 00	1 75
8	83 00	85 00	87 00	1 75
9	.....	.....	.....	2 10
10	.....	119 00	122 00	2 50
12	.....	163 00	166 00	3 50

SECTIONAL

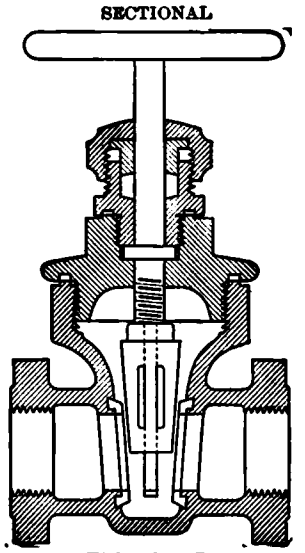


FIG. 1685

GLOBE AND ANGLE AMMONIA VALVES

GLOBE

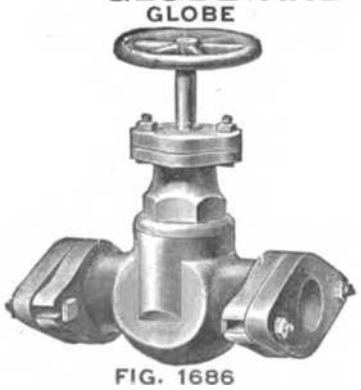


FIG. 1686

PRICES, FIGS. 1686 AND 1687

Sizes, Inches.	Gland Ends, Globe and Angle, Each.	Sizes, Inches.	Gland Ends, Globe and Angle, Each.
¼	$3 00	2	$17 00
⅜	4 00	2½	22 00
½	5 00	3	29 00
¾	6 50	3½	75 00
1	8 00	4	94 00
1¼	9 00	5	122 00
1½	11 80		

Sizes from 1¼ inch to 3 inch inclusive, can be furnished with flanged ends, without additional charge.

Sizes 3½ 4, and 5 inches have flanged ends only. They are extra heavy and have finished bonnets and flanges.

ANGLE

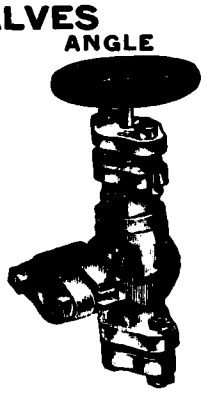


FIG. 1687

ACID VALVE

DESCRIPTION, FIG. 1688

Made of acid resisting metal.

These valves are intended for use in sulphite pulp works, paper mills, mines and other places where other styles of valves are not suitable.

Information given and prices quoted upon application.



FIG. 1688

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JENKINS Y OR BLOW-OFF VALVES

IRON FLANGED

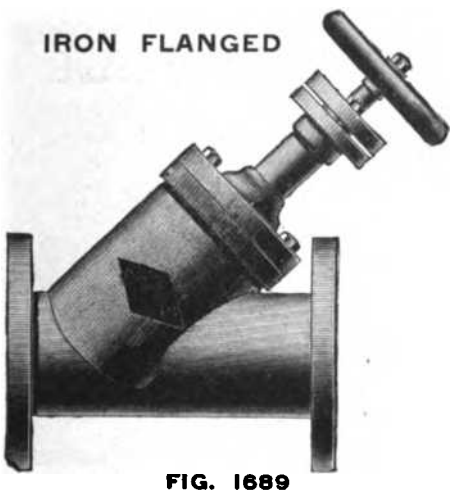


FIG. 1689

BRASS SCREWED

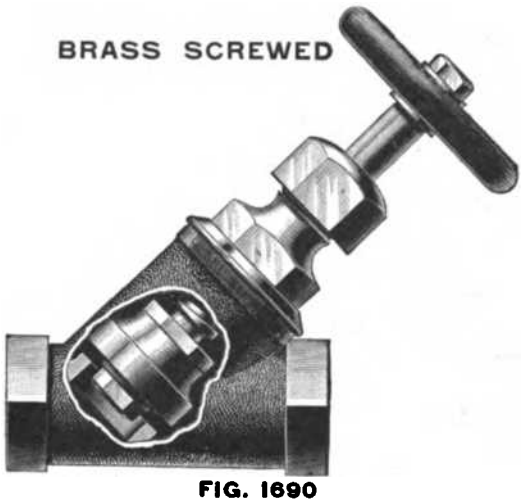


FIG. 1690

BRASS VULCANIZED ASBESTOS DISK



FIG. 1691

Sizes, inches	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6
Brass, screwed	$2 00	$3 00	$4 00	$5 00	$6 50	$9 25	$18 00	$25 00				
" flanged	....	....	8 64	10 78	12 96	19 41	28 05	36 68				
Iron body, screwed	....	....	....	....	....	10 40	14 80	20 00	28 00	$35 00	$58 80	$70 00
" flanged	....	....	....	....	....	12 40	17 40	23 00	31 00	38 40	64 00	70 00
Iron body Y valves, flanged. Diameter of flanges						6	7	7½	8½	9	10	11
Iron body Y valves, flanged. Face to face of flanges						8½	11	12⅛	15	14	16½	18¾

SCREWED HUB, IRON WHEEL

Sizes, inches	½	¾	1	1¼	1½	2	2½	3
Screwed ends, each	$2 00	$3 00	$4 00	$5 00	$6 00	$8 50	$18 00	$25 00
Flanged " "	....	....	8 65	10 75	13 00	19 50	28 00	36 75

REGRINDING STRAIGHTWAY BLOW-OFF VALVE—BRASS

MALE AND FEMALE ENDS

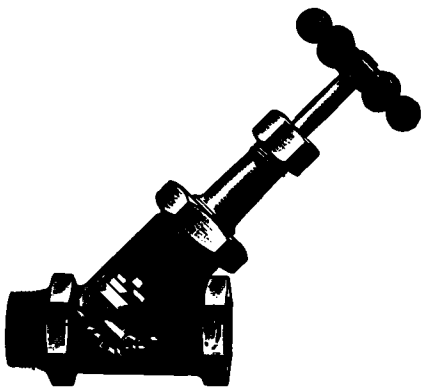


FIG. 1692

Unless otherwise specified valves will be sent with male and female ends, as shown in cut.

Sizes, inches	¾	1	1¼	1½	2	2½
Female ends or male and female ends, each	$2 75	$3 25	$4 00	$5 75	$9 00	$18 50

BLOW-OFF VALVE

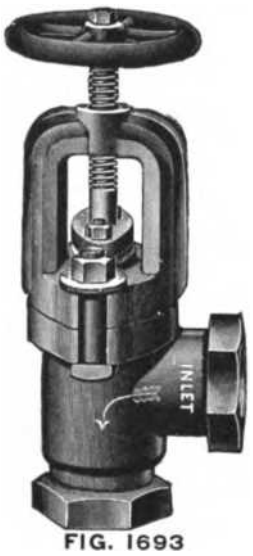


FIG. 1693

Suitable for extreme high steam pressure up to 250 pounds.

PRICES, FIG. 1693

Sizes, inches	2	2½	3
(Iron body) screwed.... Each	$15 00	$20 00	$30 00
(Iron body) flanged..... Each	15 00	20 00	30 00
Dis. center to face, screw'd Inches	4½	5¼	6
Dis. center to face, flanges Inches	4½	5¼	6
Diameter of flanges Inches	6	7	7½

JENNINGS STRAIGHTWAY OR BLOW-OFF VALVE

QUICK-OPENING

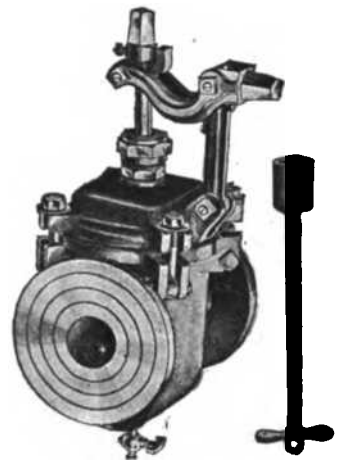


FIG. 1694

Sizes	2 inch.	2½ inch.	3 inch.
Diameter of flange	6½ "	7¼ "	8¼ "
Face to face	8 "	10 "	12 "
Flanged ends, each	$12 00	$16 00	$20 00

JENNINGS DUPLEX STRAIGHTWAY OR BLOW-OFF VALVE

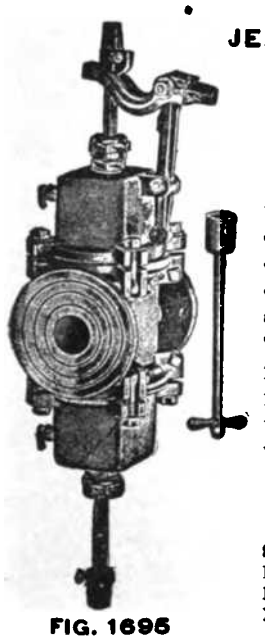


FIG. 1695

DESCRIPTION, FIG. 1695

With the duplex valve the engineer can make necessary repairs without blowing the boiler pressure down or removing the valve, as he has perfect control over it at all times, and can make repairs or renew the disks during working hours, with the pressure on, thus avoiding breaking joints or using a leaky blow-off. The port or opening through this duplex valve is perfectly round and of full area of the pipe, without a pocket, and none of the working parts are subjected to the wear and tear incidental to other valves and cocks, when used as a blow-off.

PRICES, FIG. 1695

Sizes, inches	2	2½	3
Diameter of flanges	6½	7¼	8¼
Face to face	8	10	12
Flanged ends, each	$18 00	$26 00	$35 00

ANGLE BLOW-OFF VALVE—IRON BODY FLANGE ENDS

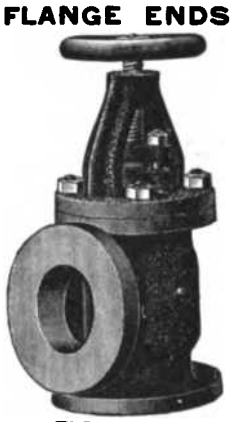


FIG. 1696

For working pressure up to 250 pounds.

Sizes, inches	2	2½	3
Screw ends, each	$13 50	18 20	27 50
Screw and flange ends, "	14 40	19 20	28 60
Flange ends, "	15 00	20 00	30 00
Diameter of flanges, inches	6	7	7½

DOUBLE BLOW-OFF VALVES

STRAIGHT PATTERN. BOLT OUTSIDE TOP SCREW.

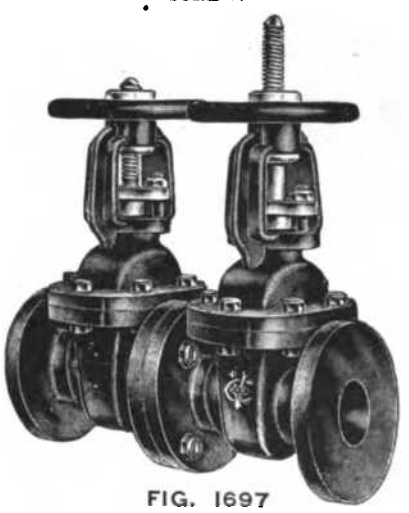


FIG. 1697

Iron body, bronze mounted, to 250 pounds working steam pressure, renewable bronze seats.

	Screw Top			Bolt Top			
Diameter of port, inches	1¼	1½	2	2½	3	3½	4
Straight pattern, inside screw	$18 50	22 00	27 50	46 00	58 00	64 00	77 00
Angle pattern, " "	....	....	20 00	49 00	61 50	69 00	83 00
Straight pattern, outside screw	22 50	27 50	35 00	53 50	66 50	76 50	93 00
Angle pattern, " "	....	....	36 50	56 50	70 00	81 50	99 00
Drilling end flanges, extra	20	20	20	35	35	40	55

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HOMESTEAD VALVES

THREE WAY VALVE



FIG. 1698

STRAIGHTWAY VALVE

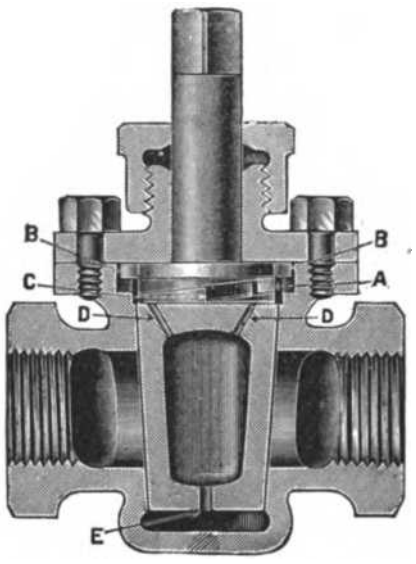


FIG. 1699

FOUR WAY VALVE



FIG. 1700

JUNIOR VALVE

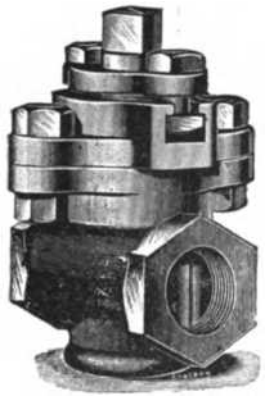


FIG. 1701

DESCRIPTION, FIGS. 1698 TO 1700

These valves lock and unlock automatically by ¼ turn of lever on the straightway, ⅛ turn on the three-way, and ½ turn on the four-way, and are controlled by pressure balance when open, and patent cam when closed.

PRICES, FIG. 1698, FOR 600 LBS. PRESSURE

Sizes, Inches	½	¾	1	1¼	1½	2	2½	3
Three-way valves, screwed,	$5 10	8 55	11 40	14 70	16 95	22 50	33 75	56 25

PRICES, FIG. 1699, FOR 600 LBS. PRESSURE

Sizes, Inches	½	¾	1	1¼	1½	2	2½	3
Straightway valve, screwed,	$3 00	4 50	6 15	7 80	10 50	15 00	30 00	48 00

PRICES, FIG. 1700, FOR 600 LBS. PRESSURE

Sizes, Inches	½	¾	1	1¼	1½	2	2½
Four-way valves, screwed...	$13 50	16 95	23 55	28 20	33 75	42 75	67 50

PRICES, FIG. 1701, FOR 150 LBS. PRESSURE

Sizes, Inches	½	¾	1	1¼	1½	2	2½	3	4	5	6
Junior valves,	$1 65	2 10	3 00	4 50	6 30	10 95	18 00	30 00	60 00	72 00	81 00

PRICES, FIG. 1702

Sizes, Inches	1¼	1½	2
Locomotive blow-off valves, all brass, screwed ends,	$4 50	6 00	9 00

LOCOMOTIVE BLOW OFF VALVE

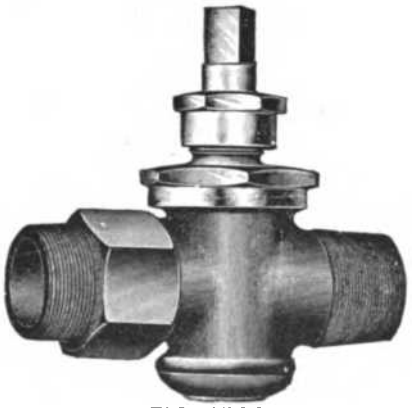


FIG. 1702

STANDARD BRASS CHECK VALVES

HORIZONTAL SCREWED

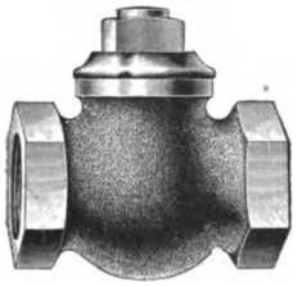


FIG. 1703

HORIZONTAL, FLANGED



FIG. 1704

ANGLE, SCREWED



FIG. 1705

VERTICAL SCREWED

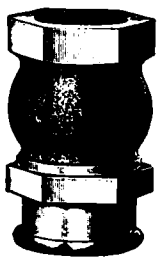


FIG. 1706

VERTICAL, CAP ON SIDE SCREWED



FIG. 1707

HORIZONTAL WITH DRIP COCKS

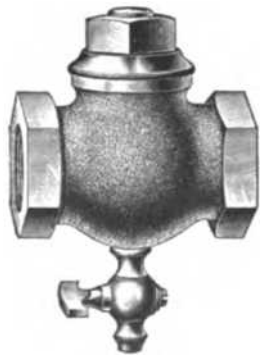


FIG. 1708

PRICES, FIGS. 1703 TO 1709

Size, Inches	⅛	¼	⅜	½	¾	1	1¼	1½
Horizontal, screwed	$0 65	0 65	0 70	0 90	1 15	1 60	2 25	3 15
" flanged	....	....	....	4 40	4 90	6 50	8 25	10 15
Vertical and angle, screwed	0 72	0 72	0 77	1 00	1 26	1 80	2 52	3 50
" " " flanged	....	....	....	4 50	5 00	6 75	8 50	10 50
Horizontal, with drip cock, screwed,	....	....	....	2 15	2 55	3 15	4 05	5 40
Vertical, cap on side, screwed	....	....	....	1 85	2 50	3 25	4 15	5 00
Horizontal, with ball	...	....	....	1 60	2 30	3 10	4 00	6 20

Sizes, Inches	2	2½	3	3½	4	5	6
Horizontal, screwed	$4 75	9 00	13 00	24 00	32 50	.....	.....
" flanged	15 50	22 00	33 50	47 50	66 50	120 00	190 00
Vertical and angle, screwed	5 30	10 00	14 40	26 50	36 00	.....	.....
" " " flanged	16 00	23 00	35 00	50 00	70 00	125 00	200 00
Horizontal, with drip cock, screwed,	.....	.....	.....	.....	.....	.....	.....
Vertical, cap on side, screwed	7 25	18 00	25 00	.....	.....	.....	.....
Horizontal, with ball	9 40	.....	.....	.....	.....	.....	.....

HORIZONTAL, WITH BALL VALVE

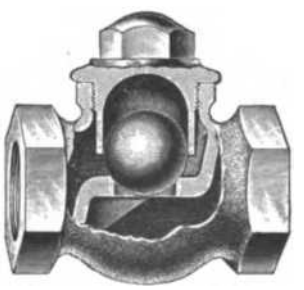


FIG. 1709

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK.

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BRASS REGRINDING CHECK VALVES

SCREWED ENDS

HORIZONTAL CHECK VALVE

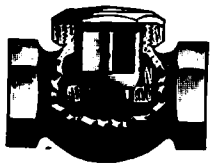


FIG. 1710

VERTICAL CHECK VALVE

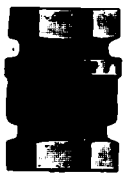


FIG. 1711

ANGLE CHECK VALVE



FIG. 1712

Sizes, Inches,	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3
Check valves, horizontal angle, or vertical, each,	$0 50	0 50	0 60	0 85	1 15	1 55	2 30	3 25	5 20	10 00	14 00
Check Valves, horizontal enlarged seats, each,					$1 15	1 55	2 30	3 25	5 20	10 00	
Check valves, with drain cocks, each,				$1 05	1 30	1 60	2 00	2 75	3 70	5 65	10 50	14 50
Check valves, enlarged seats, with drain cocks, each,					$1 60	2 00	2 75	3 70	5 65	10 50	

FLANGED ENDS

HORIZONTAL CHECK VALVE

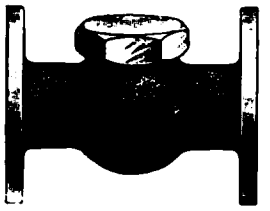


FIG. 1713

VERTICAL CHECK VALVE

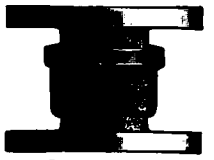


FIG. 1714

ANGLE CHECK VALVE

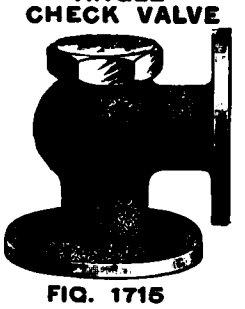


FIG. 1715

Sizes, Inches.	⅜	½	¾	1	1¼	1½	2	2½	3
Horiz. check valves flange ends, each,	$2 30	2 90	3 60	5 00	7 30	9 80	13 50	20 40	29 80
Angle-check valves, flange ends, each,	$2 30	2 90	3 60	5 00	7 30	9 80	13 50	20 40	29 80
Vertical check valves, flange ends, each,	$2 30	2 90	3 60	5 00	7 30	9 80	13 50	20 40	29 80
Diameter of flanges on above valves, inch,	2½	3	3½	4	4½	5	6	7	7½

BRASS AND IRON BODY CHECK VALVES

HORIZONTAL, BRASS

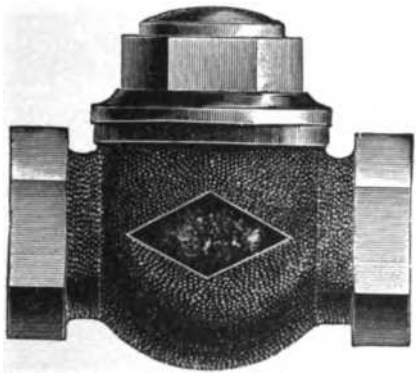


FIG. 1716

HORIZONTAL SCREWED, IRON BODY

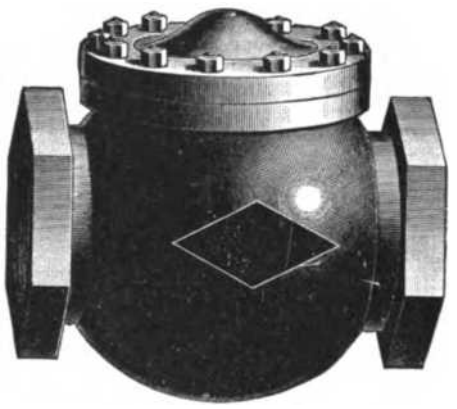


FIG. 1717

ANGLE, BRASS

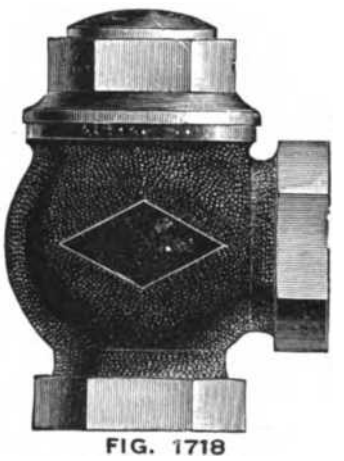


FIG. 1718

PRICES, FIGS. 1716 TO 1718

Sizes	¼	⅜	½	¾	1	1¼	1½	2	2½	3
Brass, horizontal, angle, and vertical, screwed	$1 10	1 20	1 30	1 90	2 60	3 60	5 00	7 50	13 50	20 50
" " " " " flanged				$4 75	5 50	7 80	9 80	15 00	22 80	32 40
Diameter of flanges, inches				3½	4	4½	5	6	6½	7½
Sizes	2½		3		3½		4		5	6
Iron body check, screwed, horizontal, angle, and vertical	$10 50		14 00		17 00		20 00		30 00	40 00
" " " flanged, " " " "	$12 50		16 50		20 00		23 00		33 00	43 00
Diameter of flanges, inches	7		7½		8½		9		9¼	10

HORIZONTAL SCREWED WITH BRASS CAP

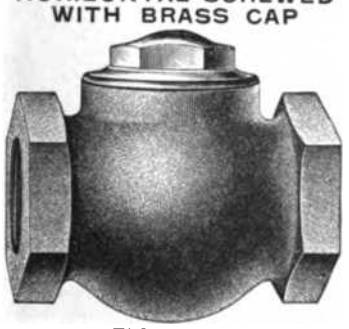


FIG. 1719

STANDARD I. B. CHECK VALVES

HORIZONTAL AND ANGLE WITH BRASS CAPS

Sizes, inches	1	1¼	1½	2	2½	3
Screwed	$1 50	2 20	2 65	3 60	6 50	8 90
Flanged	$2 50	3 25	4 00	5 25	8 25	11 50
Diameter of Flanges, inches,	4½	5	5½	6	7	7½

HORIZONTAL SCREWED IRON CAP BOLTED ON

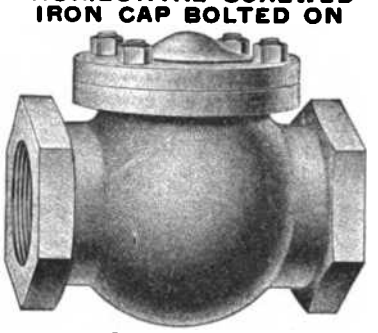


FIG. 1720

HORIZONTAL AND ANGLE, IRON CAPS BOLTED ON

Sizes, inches.	3½	4	4½	5	6	7	8	10	12	14	16
Screwed	$12 25	14 25	19 00	22 00	30 00	45 00	57 00	105	155		
Flanged	$15 50	18 00	22 50	26 00	35 00	50 00	62 00	115	175	300	425
Diameter of Flanges, ins.	8½	9	9¼	10	11	12½	13½	16	19	21	28

VERTICAL, IRON CAP BOLTED ON

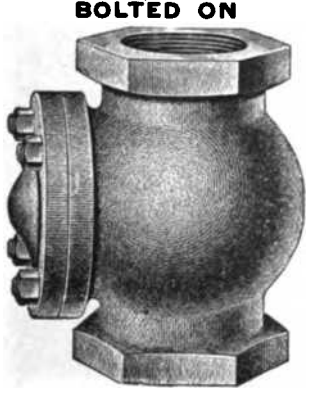


FIG. 1721

VERTICAL IRON CAP BOLTED ON

Sizes, inches.	2	2½	3	3½	4	4½	5	6	7	8
Screwed	$7 00	9 50	12 50	17 00	21 00	30 00	33 00	40 00	62 00	73 00
Flanged	$8 75	11 50	15 00	20 00	25 00	33 50	37 00	45 00	67 00	78 00
Diameter of Flanges, ins.	6	7	7½	8½	9	9¼	10	11	12½	13½

VERTICAL FLANGED

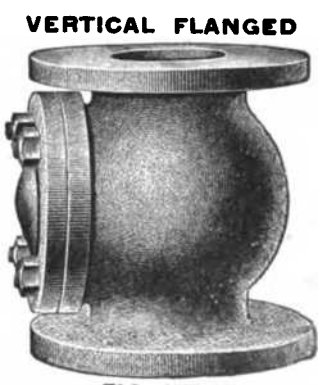


FIG. 1722

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BRASS STRAIGHTWAY SWING CHECK VALVES, WITH ROTATING DISK

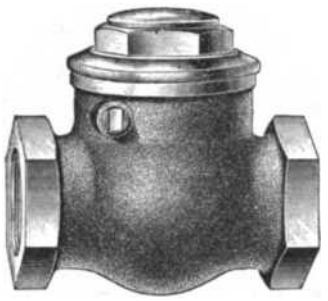


FIG. 1723

PRICES, FIG. 1723

Sizes	⅜	½	¾	1	1¼	1½	2	2½	3
Each	$1 25	$1 30	$1 75	$2 25	$3 25	$4 25	$6 25	$11 50	$16 00

PRICES, FIG. 1724

Sizes	⅜	½	¾	1	1¼	1½	2	2½	3
Each	$1 25	$1 30	$1 75	$2 25	$3 25	$4 25	$6 25	$11 50	$16 00

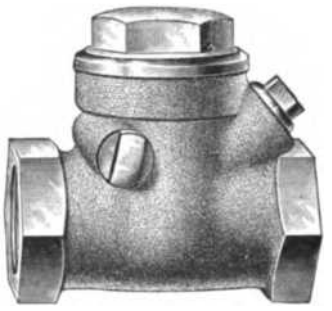


FIG. 1724

BRASS STRAIGHTWAY SWINGING CHECK VALVES

WITH ROTATING BRASS, ASBESTOS, OR LEATHER DISK

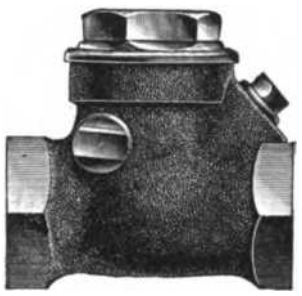


FIG. 1725

PRICES, BRASS

Sizes, inches	¼	⅜	½	¾	1	1¼	1½	2	2½	3
Screwed ends, horizontal and vertical	$1 25	1 30	1 50	1 75	2 25	3 25	4 25	6 25	12 00	20 00
Screwed ends, angle,	....	....	$1 50	1 75	2 25	3 25	4 25	6 25	12 00	20 00
Flanged ends, horizontal and vertical	....	....	....	....	$6 25	7 85	10 25	15 50	25 00	32 50
Diameters of flanges, inches.					4	4½	5	6	7	8
Male union, horizontal, vertical and angle	....	....	$3 00	3 50	4 50	6 50	8 50	12 50		

PRICES, ASBESTOS, OR LEATHER DISKS

Sizes, inches	½	¾	1	1¼	1½	2	2½	3
Screwed ends, horizontal and vertical	$1 50	1 75	2 25	3 25	4 25	6 25	12 00	20 00



FIG. 1725, SECTION

SCREWED

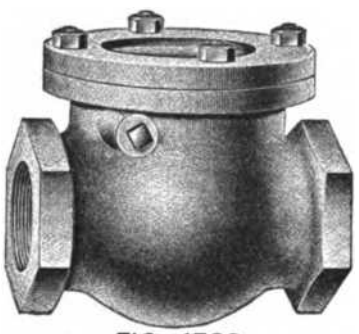


FIG. 1726

IRON BODY SWING CHECK VALVES

PRICES, FIGS. 1726 AND 1726A

Sizes	2	2½	3	3½	4	5	6	7	8
Screwed and hub ends, each	$6 25	10 00	12 00	16 00	18 00	25 00	32 00	41 00	50 00

PRICES, FIG. 1727

Sizes	2½	3	3½	4	5	6	7	8
Flanged, each	$12 00	14 50	19 00	21 00	29 00	37 00	46 00	55 00
Diam. of flanges, inches	7	7½	8½	9	10	11	12½	13½

HUB ENDS



FIG. 1726A

FLANGED

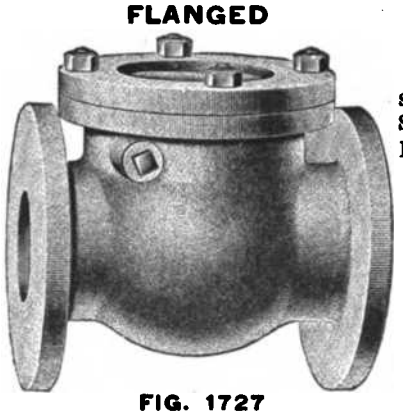


FIG. 1727

PRICES, FIG. 1728

Sizes	2	2½	3	3½	4	5	6	7	8
Screwed, each,	$6 25	10 00	12 00	16 00	18 00	25 00	32 00	41 00	50 00
Flanged, "	....	$12 00	14 50	19 00	21 00	29 00	37 00	46 00	55 00

WITH ROTATING DISK

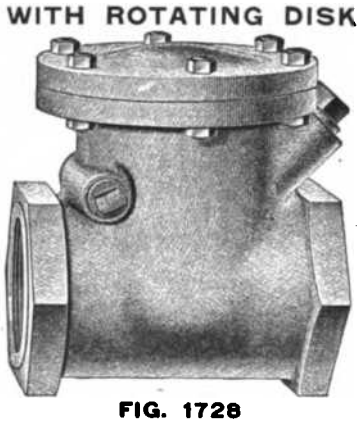


FIG. 1728

AMMONIA IRON BODY STRAIGHT-WAY SWINGING CHECK VALVES

SCREWED CAP

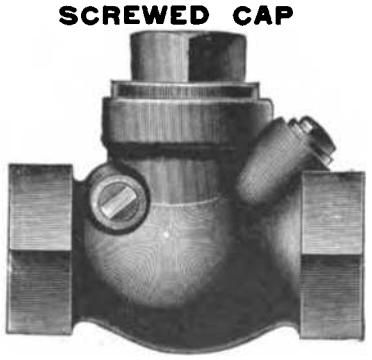


FIG. 1729

ROTATING DISK

SCREWED ENDS

Sizes, inches	½	¾	1	1¼	1½	2	2½	3
Screwed Cap	$1 95	2 10	2 25	2 75	3 50	4 25		
Bolted "	....	....	....	....	....	$4 25	9 50	12 00

GLAND ENDS

Sizes, inches	½	¾	1	1¼	1½	2	2½	3
Screwed Cap	$2 80	3 10	3 40	4 00	4 85	5 90		
Bolted "	....	...	....	....	....	$5 90	13 00	17 00

2 inch size has two bolts in gland. Larger sizes have four bolts in gland.

BOLTED CAP

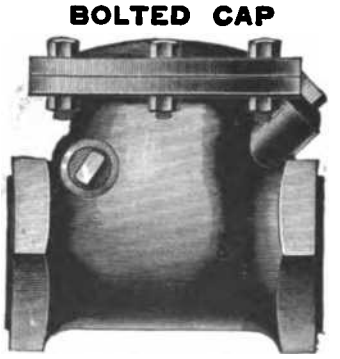


FIG. 1730

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SELF ADJUSTING SWING CHECK VALVE

BRASS, FIG. 1731

Sizes, inches	⅜	½	¾	1	1¼	1½	2	2½	3
Brass, screwed	$1 20	$1 30	$1 90	$2 60	$3 60	$5 00	$7 50	$13 50	$20 50
" flanged				5 50	7 80	9 80	15 00	22 80	32 40

IRON BODY, FIG. 1731

Sizes, inches	2½	3	3½	4	5	6
Iron Body, screwed	$12 00	$15 50	$18 50	$22 75	$32 90	$43 75
" " flanged	13 90	17 75	20 60	25 45	36 10	47 10

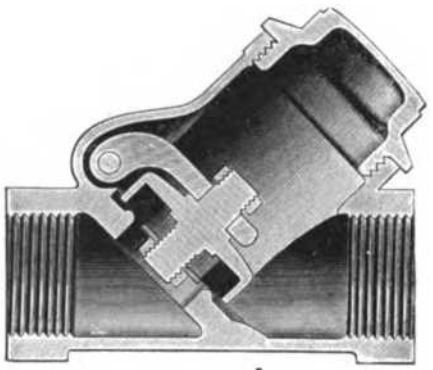


FIG. 1730

REGRINDING SWING CHECK VALVES

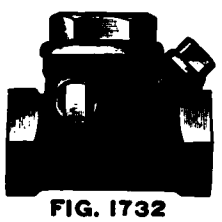


FIG. 1732

FLANGE ENDS

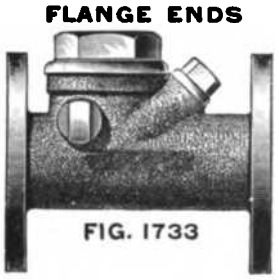


FIG. 1733

SCREW AND FLANGE ENDS

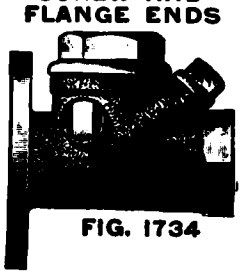


FIG. 1734

SCREW ENDS



FIG. 1735

FLANGE ENDS



FIG. 1736

BRASS

Sizes, Inches.	Brass, Screw Ends, Each.	Brass, Screw and Flange Ends, Each.	Brass, Flange Ends, Each.	Diameter of Flanges on Flange End Valves, Inches.
¼	$1 25	.....	.....	....
⅜	1 25	$2 00	$2 60	2½
½	1 30	2 20	2 90	3
¾	1 75	2 80	3 60	3½
1	2 25	3 80	4 90	4
1¼	3 25	5 50	7 20	4½
1½	4 25	7 00	9 20	5
2	6 25	9 70	12 30	6
2½	11 50	15 50	18 50	7
3	16 00	22 20	26 80	7½

IRON BODY, BRASS MOUNTED

Sizes, Inches.	Iron Body, Brass Mounted, Screw Ends, Each.	Iron Body Brass Mounted, Flange Ends, Each.	Diameter of Flanges on Flange End Valves, Inches.
2	$6 25	$6 25	6
2½	10 00	10 00	7
3	12 00	12 00	7½
3½	16 00	16 00	8½
4	18 00	18 00	9
4½	21 00	21 00	9¼
5	25 00	25 00	10
6	32 00	32 00	11

HORIZONTAL SWING CHECK VALVES

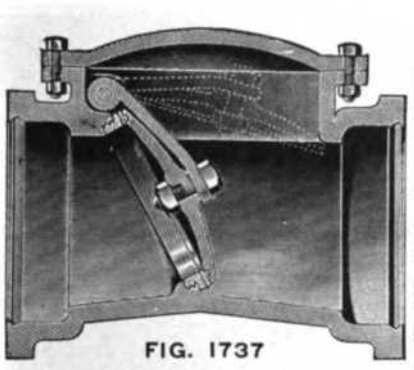


FIG. 1737

Represents 16 inches and below.



FIG. 1738

Represents 18 inches and larger.

IRON BODY, WITH BRONZE MOUNTINGS

Tested at 300 pounds pressure per square inch, water pressure.

PRICES, FIGS. 1737 AND 1738

Brass Mounted. Sizes, Inches.	Screwed Ends.	Flanged Ends.	Hub or Bell Ends.	Measurements. Diameters of Standard Flanges, Inches.	Face to face of Flanges, Inches.	Face to face of Screw Socket, Inches.	End to end of Hubs or Bells, Inches.	Depth of Hubs or Bells, Inches.
2	$7 00	$7 75	.....	6	7¾	6⅝	...	...
2½	7 75	8 75	.....	7	8⅝	7⅝	9½	2¼
3	9 75	11 00	$10 25	7½	9⅛	9	11¾	2¾
3½	14 50	15 50	14 25	8½	9¾	9⅜	11¾	2⅞
4	20 50	21 50	20 50	9	11¾	9⅞	13⅝	2⅞
4½	23 00	24 00	.....	9¼	....	....	....	...
5	25 50	27 00	25 00	10	13⅛	13	15	3
6	31 00	32 50	28 50	11	14½	13⅜	16	3
7	41 50	43 00	.....	12½	16	15	18⅛	...
8	44 50	46 00	43 00	13½	17¾	16¼	19	3¼
9	62 50	62 00	61 00	15	....	....	....	...
10	77 50	76 50	73 00	16	21½	....	24	3¼
12	97 00	95 00	92 00	19	24½	21⅞	26½	3¼
14	.....	150 00	146 00	21	26	....	29	3½
15	.....	.....	.....	22¼	....	....	....	...
16	.....	165 00	160 00	23½	29	....	31	3½
18	.....	230 00	225 00	25	31¾	....	34½	3¾
20	.....	285 00	280 00	27½	35¼	....	38	4
24	.....	400 00	390 00	32	39¾	....	44½	4¾
30	.....	1200 00	1120 00	39	59¾	....	71	5½
36	.....	1890 00	1825 00	45	68	....	79½	5½

VERTICAL CHECK VALVES

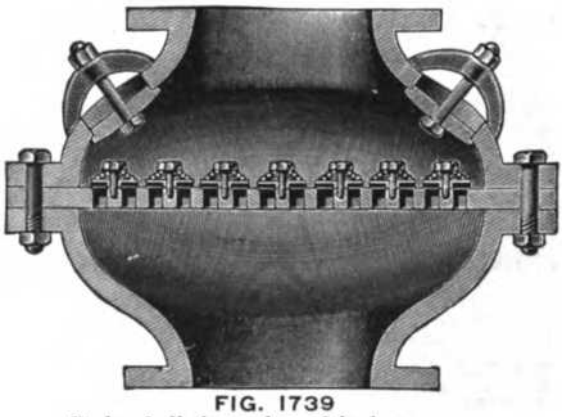


FIG. 1739

Style of all sizes, above 9 inches.

IRON BODY, WITH BRONZE MOUNTINGS, GATES RUBBER FACED

Tested at 300 pounds pressure per square inch, water pressure.

PRICES, FIG. 1739

Check Valves. Sizes, Inches.	Screw Ends.	Flanged Ends.	Hub or Bell Ends.	Measurements. Diameters of Standard Flanges, Inches.	Face to Face of Screw Sockets, Inches.	Face to Face of Flanges, Inches.	End to End of Hubs or Bell Ends, Inches.	Depth of Hub or Bell Ends, Inches.
2	$7 50	$8 00	$8 00	6	7⅜	5 1/16	9½	2¼
2½	8 00	8 50	8 50	7	7⅜	5¼	9¾	2¼
3	12 70	12 70	12 70	7½	8½	6	11	2½
3½	.....	.....	.....	....	....	....	....	....
4	16 50	16 50	16 50	9	10⅜	7⅜	12⅛	2⅝
5	22 50	22 00	22 00	10	12⅜	9⅜	16⅜	3½
6	29 00	28 00	30 00	11	13½	10½	17¾	3½
7	32 50	31 50	35 00	....	....	....	....	..
8	37 90	36 50	39 00	13½	14	10⅜	19¾	4¼
10	92 90	92 50	94 50	16	17½	15½	22⅝	4½
12	123 00	123 00	125 00	19	....	16¾	23¼	4¼
14	.....	166 00	168 00	21	....	19	27¼	4¼
16	.....	221 00	224 00	23½	....	21	30	4¼
18	.....	270 00	273 00	25	...	22	31	4½
20	.....	329 00	332 00	27½	....	23½	33½	5
24	.....	493 00	498 00	32	. ..	29½	40½	5½
30	.....	850 00	860 00	39	...	32½	42	6

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VERTICAL FOOT VALVES

SCREWED, FLANGED OR HUB END

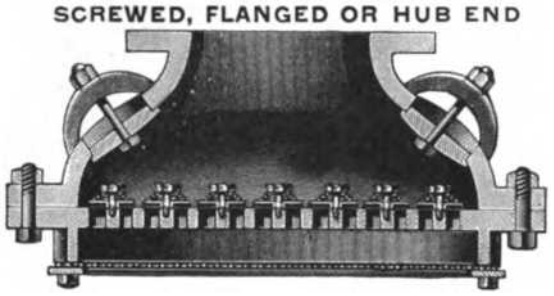


FIG. 1740

With nest of gates, copper plate screen and hand holes.

Style of all sizes above 9 inches.

Iron body with bronze mountings. Gates rubber faced. Tested at 200 lbs. pressure per square inch, water pressure.

SCREWED END

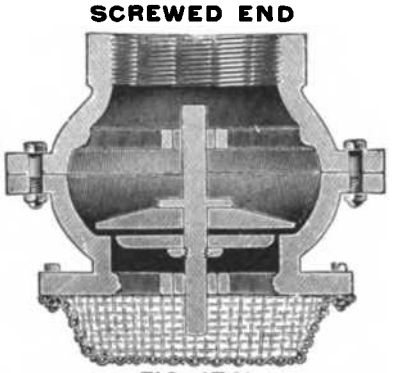


FIG. 1741

With single gate and copper basket screen.

Style of sizes, 9 inches and under.

FLANGED END

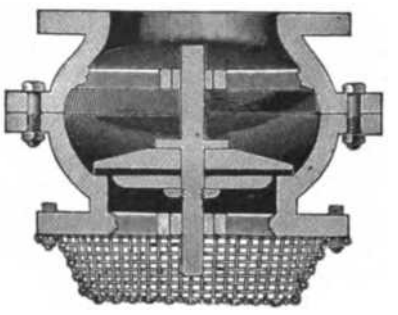


FIG. 1742

With single gate and copper basket screen.

Style of sizes, 9 inches and under.

PRICES, FIGS. 1740 TO 1742

Sizes, Inches.	Foot Valves. Screw Socket.	Flange.	Hub.	If without Screen Deduct.	Diam. of Standard Flange, Inches.	Face of Screw Socket to Strainer, Inches.	Measurements. Face of Flange to Bottom of Strainer, Inches.	End of Hub to Bottom of Strainer, Inches.	Depth of Hubs or or Bell, Inches.	Greatest Diam. of Valve, Inches.
2	$11 50	$11 75	....	....	6	9⅛	8	10¼	2¼	7
2½	12 00	12 25	....	....	7	9¼	8⅝	10⅞	2¼	7½
3	16 25	16 25	....	....	7½	11	9¾	12¼	2½	8½
4	20 00	20 00	....	$4 50	9	12¾	11¼	13⅞	2⅝	11
5	26 25	25 75	....	5 25	10	14⅝	13¼	16⅝	3½	12
6	33 00	32 50	$33 25	6 25	11	15⅝	14¼	17¾	3½	14
7	38 50	38 00	39 00	7 00	12½	....	....	....	....	16¼
8	44 75	43 50	46 50	8 00	13½	15¾	14½	18¾	4¼	16⅞
10	82 00	82 00	83 00	7 00	16	....	10	13¼	4½	22⅞
12	113 00	112 00	113 00	10 00	19	....	11	14¼	4¼	26½
14	....	145 00	147 00	12 50	21	....	12¾	16⅜	4¼	31
16	....	190 00	193 00	15 00	23½	....	13¼	17⅝	4¼	34
18	....	235 00	238 00	21 00	25	....	13⅝	18¼	4½	36⅞
20	....	265 00	268 00	24 50	27½	....	15¼	20¼	5	39
24	....	400 00	405 00	31 00	32	....	16⅝	22¼	5½	48
30	....	780 00	790 00	50 00	39	....	21	27	6	65⅞

BRASS FOOT VALVES WITH STRAINERS

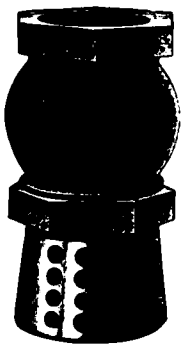


FIG. 1743

Sizes.	Each.
½	$1 50
¾	1 50
1	2 00
1¼	2 75
1½	3 75
2	5 50
2½	12 00
3	16 00

STANDARD IRON BODY BRASS MOUNTED FOOT VALVES AND STRAINERS

¾ TO 2½ INCHES. SCREWED 3 TO 12 INCHES. FLANGED

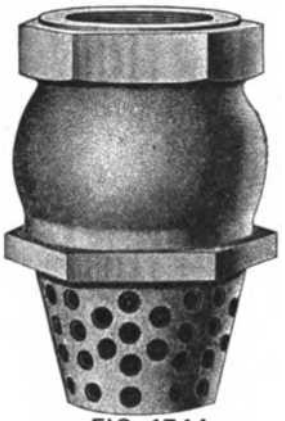


FIG. 1744

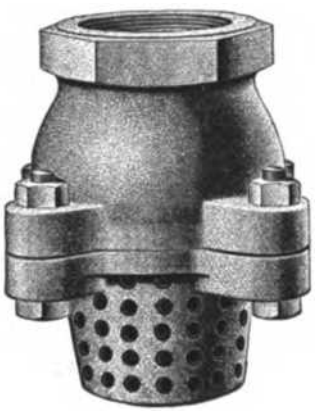


FIG. 1745



FIG. 1746

CAST IRON STRAINERS



FIG. 1747

PRICES, FIGS. 1744 AND 1745

Sizes	¾	1	1¼	1½	2	2½
Black, each	$1 15	$1 90	$1 40	$1 90	$2 40	$3 30
Galvanized, each	1 75	1 95	2 10	2 85	3 60	4 95

Sizes	3	3½	4	4½	5	6	7	8	10	12
Black, each	$3 90	$5 60	$7 80	$10 50	$11 25	$14 75	$35 00	$41 00	$64 00	$100 00
Galvanized, each	5 85	8 40	10 95	15 75	16 90	22 15	52 50	61 50	96 00	150 00

PRICES, FIG. 1746

Sizes	2	2½	3	3½	4	4½	5
Diameter of flanges, inches	6	7	7½	8½	9	9¼	10
Black, each	$3 50	$4 50	$5 75	$7 50	$9 50	$13 00	$14 00
Galvanized, each	5 25	6 75	8 65	11 25	14 25	19 50	21 00

Sizes	6	7	8	10	12	14	16
Diameter of flanges, inches	11	12½	13½	16	19	21	23½
Black, each	$17 50	$38 00	$45 00	$70 00	$112 00	$150 00	$200 00
Galvanized, each	26 25	57 00	67 50	105 00	168 00	225 00	300 00

FOOT VALVES WITH STRAINERS

SCREWED

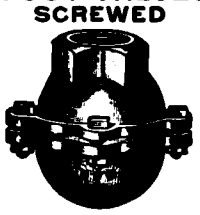


FIG. 1748

FLANGED

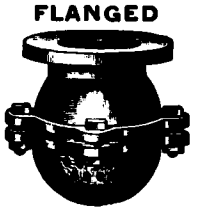


FIG. 1749

AMMONIA STRAINER



FIG. 1750

PRICES, FIG. 1747

Sizes	¾	1	1¼	1½	2	2½	3	3½	4	5	6	8
Black, each	$0 22	0 25	0 33	0 44	0 55	0 82	1 10	1 75	2 00	2 50	3 50	7 50
Galvanized, each	30	34	43	58	80	1 20	1 70	2 60	3 00	3 90	5 00	11 00

PRICES, FIG. 1750

Sizes	1	1¼	1½	2
Each	$11 00	$12 00	$13 50	$15 00

PRICES FIGS. 1748 AND 1749

Sizes	¾	1	1¼	1½	2	2½	3	3½	4	5	6	8	10
Iron body, with leather seats, screwed	$0 10	$0 42	$0 46	$0 58	$0 78	$1 22	$1 70	$2 75	$2 75	$4 30	$6 40	.....	.....
" " " " *flanged	.....	.....	.....	.....	.....	.....	2 85	.....	3 75	5 10	7 65	18 48	29 40
" " " " galvanized, screwed	62	64	76	1 02	1 46	2 25	2 95	4 70	4 70	7 20	10 80	.....	.....
" " " " " flanged	.....	.....	.....	.....	.....	.....	4 50	.....	5 85	8 60	12 00	.....	.....
Strainers, galvanized, screwed	20	20	26	32	48	80	1 00	1 65	3 50	4 00	8 00	14 00	

*Foot Valves larger than 10 inch, special prices on application.

Prices for Strainers to suit any valve up to 18 inches upon application.

BRASS

Sizes, Inches	¾	1	1¼	1½	2	2½	3	3½	4
Foot Valve with Strainer	$3 00	$3 60	$5 00	$6 50	$8 00	$12 00	$15 00	$20 00	$20 00

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MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

GALVANIZED FLANGED FOOT VALVES AND STRAINERS

Diameter Suction Pipe. Inches. A	Prices, Each.	Diameter Valve Chamber. Inches. B	Diameter Strainer. Inches. C	Length Valve Chamber. Inches. D	Thickness Valve Seat. Inches. E	Length Strainer. Inches. F	Approximate Weight in Lbs.
4	$13 00	6	6	8	5/8	7	40
5	15 00	7	7	9	3/4	8	50
6	18 50	8	8	11	3/4	9	65
7	22 00	9	9	11	3/4	10	80
8	25 00	10	10	11 1/2	7/8	11	105
9	35 00	12	12	12 1/2	7/8	12 1/2	130
10	45 00	14	14	13 1/2	1	13 1/2	160
12	70 00	18	18	16	1	15	240
14	95 00	20	20	18	1 1/8	16 1/2	330
16	120 00	22	22	20	1 1/8	20	430
18	150 00	24	24	23	1 1/8	24	570
20	185 00	28	28	26	1 1/4	28	760
22	225 00	32	32	29	1 1/4	32	970
24	270 00	36	36	32	1 1/4	36	1,200

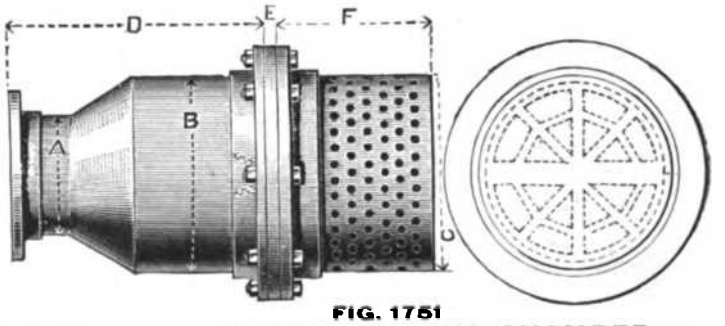


FIG. 1751

CONTINUOUS SERVICE FOOT VALVE

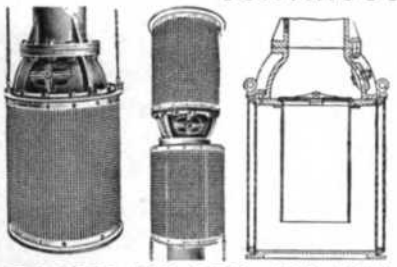


FIG. 1752 FIG. 1753 FIG. 1754

Diameter of Pipe, Inches.	Diameter of Flange, Inches.	Diameter of Bolt Circles, Inches.	Thickness of Flange, Inches.	Extreme Diameter of Valve, Inches.	Extreme Height of Valve, Inches.	Number of Bolts.	Diameter of Bolts, Inches.
4	9	7 1/4	15/16	14 3/4	12 1/2	4	3/4
6	11	9 5/8	1	14 3/4	19 3/8	8	3/4
8	13 1/2	11 3/4	1 1/8	21 3/4	24	8	3/4
10	16	14 1/4	1 3/16	25 1/4	30	12	7/8
12	19	16 1/2	1 1/4	29 1/2	36	12	7/8
14	21	18 3/4	1 3/8	33	40	12	1
16	23 1/2	21 1/4	1 7/16	38 1/2	45	16	1
18	25	23 3/4	1 9/16	40	51	16	1 1/8
20	27 1/2	25	1 11/16	44 1/2	56	20	1 1/8
24	32	29 1/2	1 7/8	54	67	20	1 1/4

Prices on application.

SAND VACUUM CHAMBER

FOR HAND AND STEAM PUMPS

This strainer protects the pump from sand, and also in its capacity as a vacuum chamber greatly eases its action. If the pump is emptied of water this is also emptied, thus guarding against freezing.

Size of Suction Pipe, Inches.	Area of Strainer, Square Inches.	All with Side Openings
1 1/4	36 1/3	$5 00
1 1/2	45	6 50
2	65	8 50
For steam pumps. 3	150	16 00
4	190	25 00

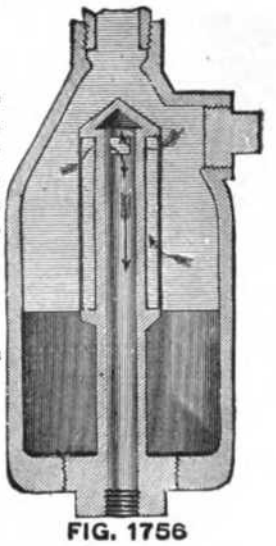


FIG. 1756

MUSHROOM STRAINER



FIG. 1755

Suction Pipe, Inches.	Plain Malleable.	Galvanized Malleable.
1	$0 85	$1 02
1 1/4	1 10	1 35
1 1/2	1 25	1 50
2	1 61	2 00
2 1/2	2 05	2 50
3	2 75	3 41
4	5 00	6 07
5	10 00	12 54
6	11 00	13 60
7	17 32	22 26
8	18 32	23 30
9	25 23	30 00
10	26 53	32 00

SAND SCREEN AND STRAINER

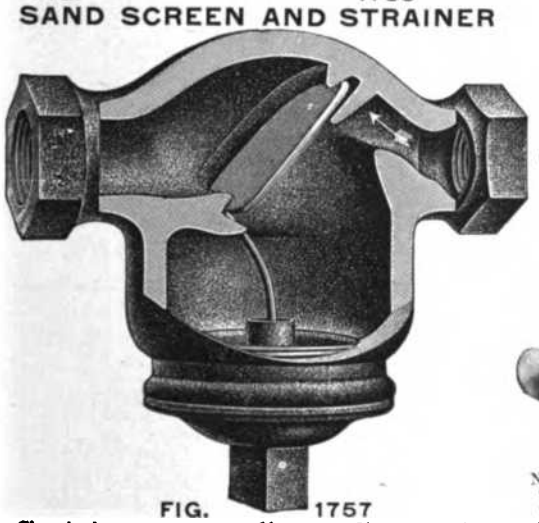


FIG. 1757

Size, inches	1/2	3/4	1
Each	$2 00	$2 00	$3 00

MORSE AND DEXTER VALVE RESEATING MACHINE

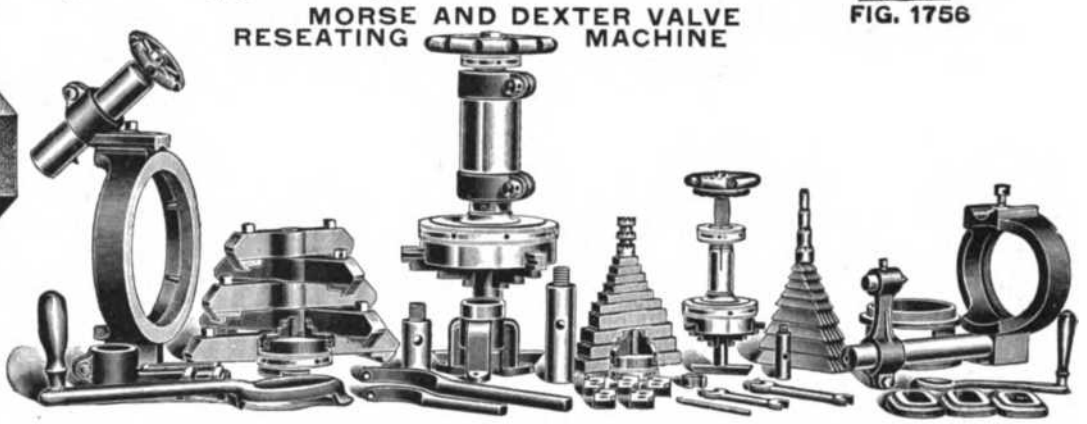


FIG. 1758

No. 3. Reseating flat and taper seat valves, 1/4 to 3 inches.....Price, $75 00
" 4. " " " " 1/4 " 4 " ..... " 90 00
" 6. " " " " 1/4 " 6 " ..... " 125 00
" 9. " " " " 1/4 " 9 " ..... " 175 00
" 9A. " " " " 3 " 9 " ..... " 135 00

DEXTER'S PATENT VALVE RESEATING MACHINE AND DISK CUTTER

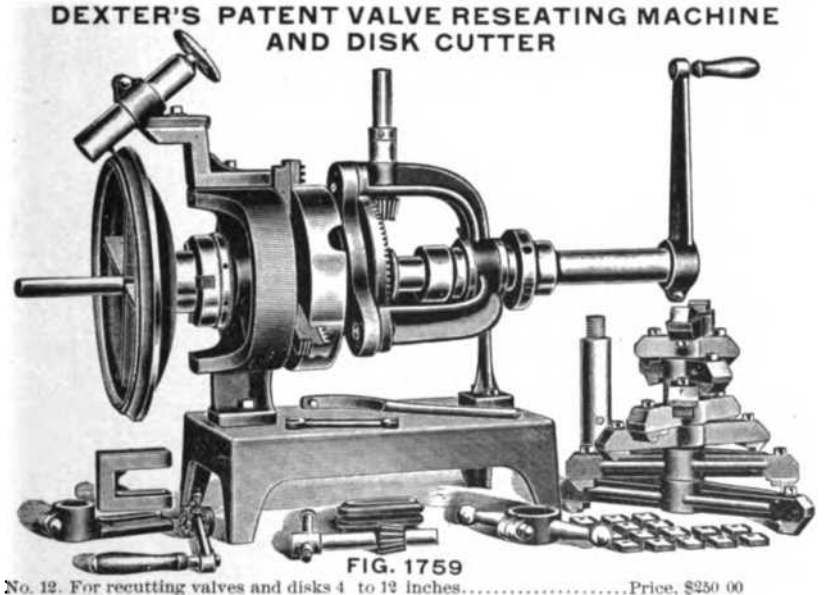


FIG. 1759

No. 12. For recutting valves and disks 4 to 12 inches.....Price, $250 00
" 12. " " " " " 1/4 " 12 " ..... " 325 00
" 12. " " straight and taper seated valves 4 to 12 inches without removing valve from pipe without disks..... " 250 00

UNIVERSAL BLOCK CHUCK VALVE RESEATING MACHINE

Showing Valve Reseating Machine resurfacing and dressing a flat-seated valve.

PRICES

Outfit.	Consisting of	Reseats, in Inches from		Each.
No. 1.	1 Machine.	3/8	to 2 incl.	$35 00
" 2.	1 "	3/8	" 3 "	40 00
" 3.	1 "	3/4	" 4 "	50 00
" 6.	2 Machines.	3/4	" 6 "	100 00
" 9.	2 "	3/8	" 9 "	150 00
" 12.	1 Machine.	4	" 12 "	225 00

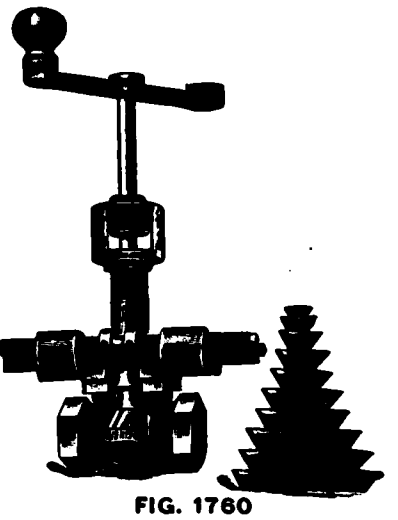


FIG. 1760

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GLOBE AND ANGLE STOP VALVES AND REGISTER VALVES

GLOBE STOP VALVE

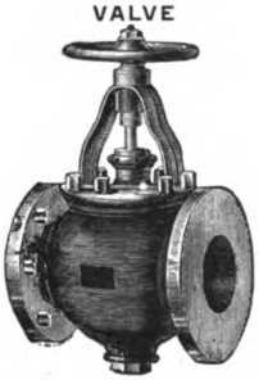


FIG. 1761

ANGLE STOP VALVE



FIG. 1762

PRICES, FIGS. 1761 AND 1762

Sizes.	Each.	Diameters Flanges. Scr'wd	Distance Between Flanges.
1¼	$6 00		4¾
1½	8 00		5½
2	9 75		6¾
2¼	11 50	6	7⅜
2½	12 50	6½	7⅞
2¾	15 50	7	8¾
3	18 00	8	9⅝
3½	22 00	9	11⅛
4	25 00	10	11⅜
4½	32 00	10½	12⅝
5	38 00	11	13¼
5½	44 00	12	14½
6	50 00	13	15
7	80 00	14½	15¼
8	103 00	16	19½
9	140 00	17	
10	180 00	19	

REGISTER VALVE

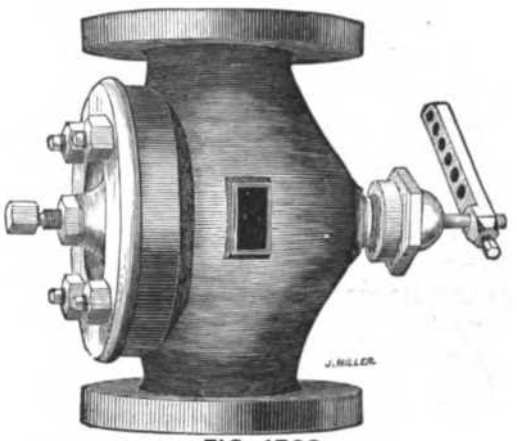


FIG. 1763

PRICES, FIG. 1763

Sizes.	Each.	Diameters of flanges.	Lengths.
1½	$10 00	5½	7
2	12 00	6	8½
2½	15 00	7	9½
3	20 00	8	12
3½	24 00	9	13
4	30 00	10	14
5	40 00	11	16
6	50 00	14	20⅝

1½, 2, 2½, and 3 inches, screwed or flanged.

FOSTER CLASS W PRESSURE REGULATORS

2½ to 6 inches. ½ to 2 inches.

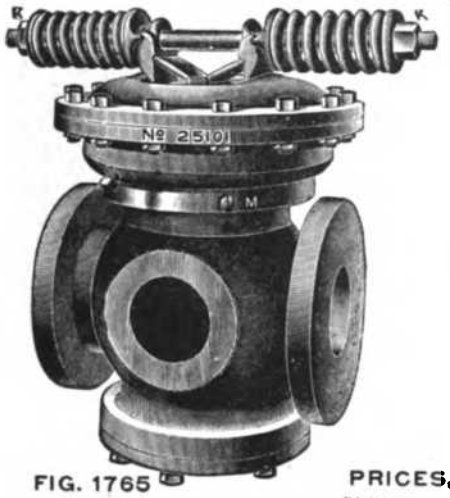


FIG. 1765

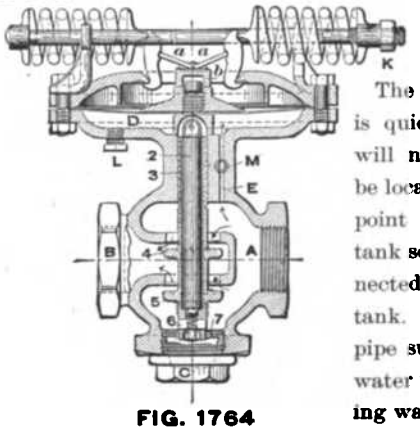


FIG. 1764

PRICES, FIGS. 1764 AND 1765

Sizes, Inches.	Screwed Ends.	Flanged Ends.	Diam. of Flanges, Inches.	Distance between Faces, Inches.	APPROXIMATE WEIGHTS. Iron Bodies. Screwed, Lbs.	Iron Bodies. Flanged, Lbs.	Composition. Screwed, Lbs.	Composition. Flanged, Lbs.
½	$18	....	....	....	....	....	5	
¾	20	$22	3¾	4¼	....	....	11	13
1	22	24	4¼	5¾	....	....	12	16
1¼	28	30	5	5½	19	23	21	26
1½	35	37	5⅞	6	22	28	26	32
2	44	46	6	7	40	50	51	60
2½	57	60	7	9	60	75	70	87
3	72	75	7½	10	73	80	84	95
3½	90	95	8½	11	84	100	94	112
4	100	105	9	12	139	160	155	180
4½	120	125	9¼	14	154	174	....	193
5	135	140	10	15	180	191	....	209
6	180	185	11	17	233	275	....	324
7	....	220	12½	18¾	....	390	....	480
8	....	260	13½	20⅝	....	450		
10	....	350	16	23½	....	575		
12	....	450	19	27¼	....	1050		
14	....	575	21½	31	....	1275		
16	....	700	23½	35	....	1600		
18	....	875	25	37½	....	1900		

Dimensions given are standard. Flanges of different dimensions or distances between faces are made only to order, at additional price. Drilling flanges, extra. Special valves, made of Government composition, only to order.

FOSTER FLOAT VALVE

The Foster Float Valve is quick and sensitive, will not leak, and may be located at any desired point on the supply pipe of an open tank service, and by a cord or wire connected to a small operating float in the tank. It may also be used on the steam pipe supplying the pump that supplies water to the tank, or of a pump returning water of condensation from an inclosed tank to the boilers.

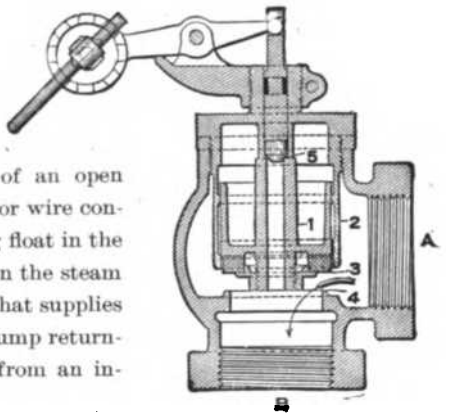


FIG. 1766

PRICES OF FLOAT VALVES (INCLUDING FLOATS)

Sizes..... inches.	¾	1	1¼	1½	2	2½	3	4
Each.....	$6 50	$8 00	$9 50	$12 00	$20 00	$40 00	$60 00	$88 00

FOSTER CLASS Q REQULATORS

For low pressures, not exceeding 15 lbs. Delivery, as in steam heating, etc., etc.

With spanner nut. Sizes, 2 inches and under.

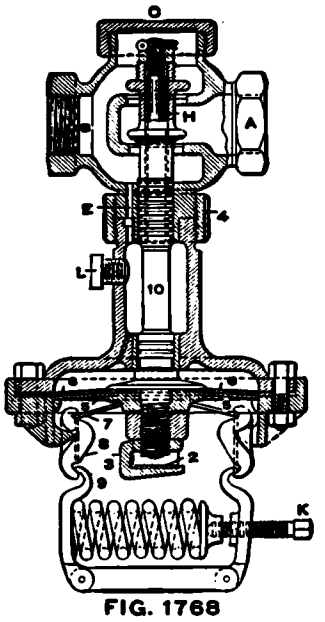


FIG. 1768

With flanges. Sizes, 2½ inches and over.

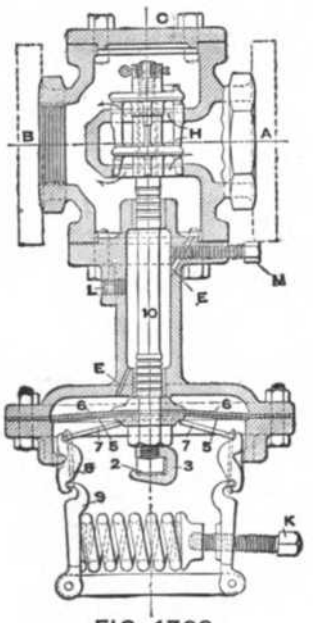


FIG. 1769

PRICES, FIGS. 1768 AND 1769

Sizes.....inches.	1	1¼	1½	2	2½	3	3½	4	5	6	8	10	12
Screwed.....each.	$20	24	28	35	40	48	55	70	85	120			
Flanged..... "	....	....	....	38	43	52	60	75	90	125	200	300	350

NOTE.—A strainer should always be applied to valves required for low pressure service, such as steam heating, etc.

In ordering Figs. 1766 to 1769, state initial and delivery pressures, also service. In the absence of this information, all regulators will be provided with a spring to deliver pressures between 10 to 60 lbs.

STRAINERS FOR FOSTER CLASS W AND CLASS Q VALVES

FOR SCREWED ENDS

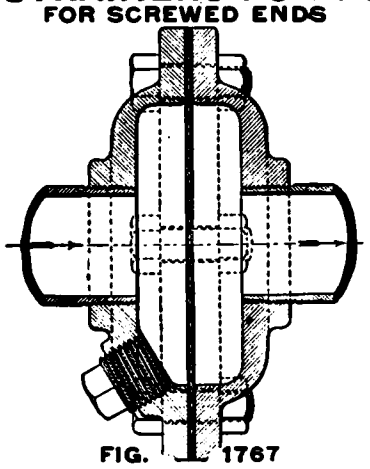


FIG. 1767

A strainer has been found desirable in nearly all cases—in many cases absolutely necessary—to prevent scale, grit, cuttings, etc., from lodging on the valve seats. The strainer should be applied on the inlet side of the valve. Its use remedies many supposed defects in valves, which are really chargeable to the piping.

Cut shows strainer for screwed ends. For flanged ends the construction is slightly different. Prices quoted are for cast iron strainers.

PRICES OF STRAINERS

Sizes.....inches.	¾ or 1	1¼, 1½	2	2½, 3	4	5	6	7	8	10
Screwed.....each.	$3 00	4 00	5 00	6 00	9 00	10 00	12 00			
Flanged, inc. attach'g to reg., each...	$6 50	7 50	10 00	11 50	13 50	16 00	17 00			20 00

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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PRESSURE REGULATORS AND REDUCING VALVES

STANDARD PRESSURE REGULATOR AND REDUCING VALVE.

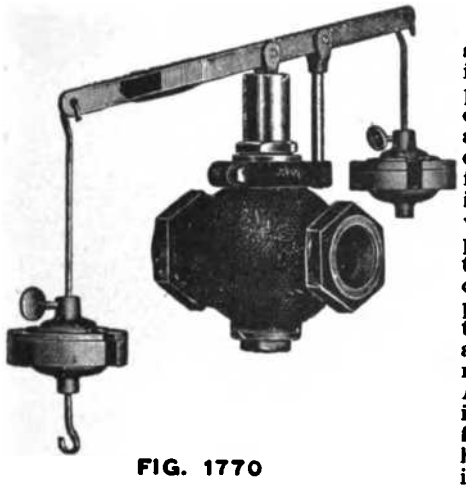


FIG. 1770

This regulator has a double seated balance valve, positive in its action and simple in its construction and operation. It is noiseless and has no waste pipe or oil cylinder; can be taken apart for repairs without removing it from the pipe. This valve will reduce from any pressure down to the fraction of a pound. When ordering, please state the purpose for which they are to be used and the pressure, as near as you can, that the regulator is to work at. All the regulators above 2½ inches are furnished with flanges, extra heavy, with holes drilled and bolts fitted in them ready to go on the pipe.

PRICES, FIG. 1770

Sizes of Regulators.	Inlet, Inches.	Outlet, Inches.	Length Reg. Screwed Ends.	Length of Regulators incl. both Flanges.	Diam. Flanges, Inches.	Weight, Pounds.	Each.
1	1	1¼	4¼	4¼	....	12	$40 00
1¼	1¼	1½	5	5	....	14	44 00
1½	1½	2	7	7	....	21	46 00
2	2	2½	7½	7½	....	28	54 00
2½	2½	3	8	8	....	33	63 00
3	3	3½	...	12¼	7	77	72 00
3½	3½	4	...	1.-¼	7	85	87 00
4	4	5	...	13	8½	130	105 00
5	5	6	...	14¼	10	175	135 00
6	6	7	...	15½	12	224	180 00
7	7	8	...	13½	13	270	240 00
8	8	10	...	18½	15	315	300 00
10	10	12	...	20	18	440	450 00
12	12	15	...	22	20	565	652 00
15	15	18	...	25	22	690	900 00

PRESSURE REGULATOR

Designed especially for steamship work. Made for reducing extremely high pressures to any lower pressure desired for use in connection with donkey engines, hoisting engines, steering gear, dynamos, capstans, windlasses, deck engines, etc.

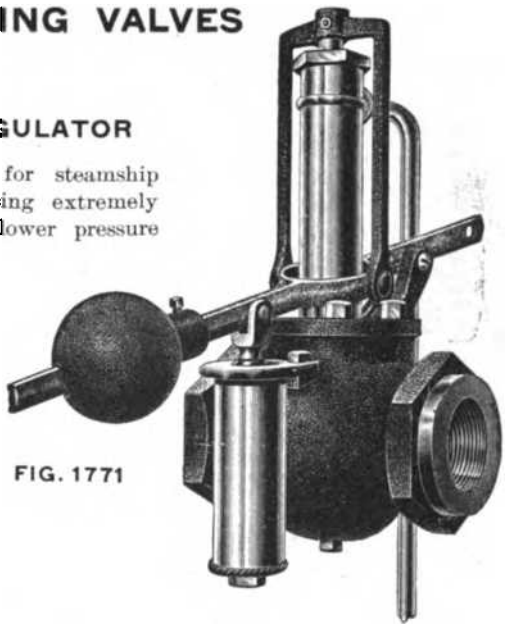


FIG. 1771

PRICES, FIG. 1771

Sizes, inches	¾	1	1¼	1½	2	2½	3	3½	4	5	6	7	8	10	12	15
Each.....	$25	27	29	30	36	42	48	58	70	90	120	160	200	300	435	600
Length, screw end valves, in.	3¼	4	5	7	7½	7½	9½	9½	10½	11½	12½	..	..	..	..	..
Length, fl'ged valves, inches.....				7½	7½	9½	9½	10½	11½	12½	13½	16	20	21	24½	
Diameter of flanges, inches.....				6½	7	8	8	9	10	12	13	15	18	20	22	

WATSON'S PRESSURE REGULATOR

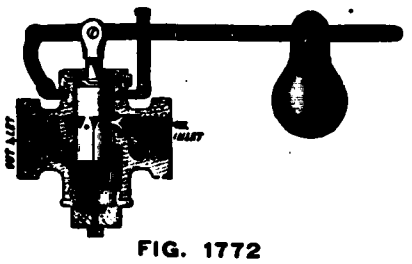


FIG. 1772

PRICES BRASS REGULATORS WITH SCREWED ENDS ONLY

Sizes, inches	¾	1	1¼	1½	2	2½	3	4
Each	$14	$17	$22	$28	$38	$55	$70	$90

Iron body and brass lined, with flanges also tapped for screwing, and can be used either way.

Sizes, inches	2	2½	3	4	5	6
Each	$38	$55	$70	$90	$110	$150

In ordering regulators, if possible state boiler pressure, and something near the pressure used on the light side; also the use to which you intend to apply the regulator.

WATSON'S NEW DIAPHRAGM REDUCING VALVE

FOR USE ON STEAM, WATER, GAS AND AIR

This valve is made with balanced valves connected by a valve stem to compound levers, said levers being connected to the diaphragm, which is controlled by an adjusting spring.

ALL BRASS, SCREWED ENDS

Sizes, Inches.	Prices, Each.
¾	$17 00
1	20 00
1¼	25 00
1½	30 00

IRON BODIES, FLANGED ENDS

Sizes, Inches.	Prices, Each.
2	$ 38 00
2½	55 00
3	70 00
4	90 00
5	110 00
6	150 00



FIG. 1773

WATSON'S SPRING PRESSURE REGULATOR

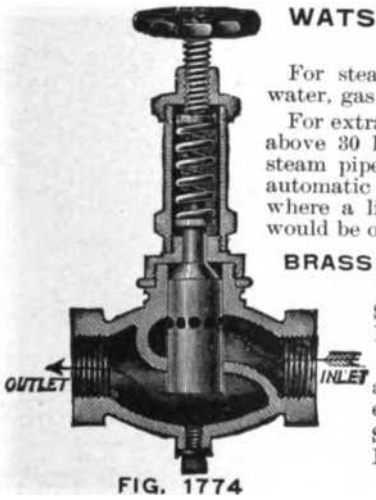


FIG. 1774

For steam pumps, engines, steam vessels, and water, gas and air.

For extra high pressures, say for pressures wanted above 30 lbs. on the light side, or where used on steam pipes leading to steam pumps or engines, or automatic sprinklers, ice machines, and in all cases where a little swinging of the weight and lever would be objectionable.

BRASS REGULATOR, WITH SCREWED ENDS ONLY

Sizes, inches..	¾	1	1¼	1½	2	2½	3	4
Prices, each..	$14	17	22	28	38	55	70	90

Iron body and brass lined, with flanges, also tapped for screwing, and can be used either way.

Sizes, inches..	2	2½	3	4	5	6
Prices, each....	$38 00	$55 00	$70 00	$90 00	$110 00	$150 00



FIG 1775

CURTIS PRESSURE REGULATOR

It is compact and self-contained, without levers, weights or projections. It has no drip or leak of steam or water. All that passes into it passes through it, without waste or loss.

It has no glands, or packing; and the seat may be made of any suitable material for steam, air, or any other gas or fluid.

PRICES, FIG. 1775

Sizes, inches	1	1¼	1½	2	2½	3
Each.....	$22 00	$28 00	$35 00	$44 00	$57 00	$72 00
Size, inches....	4	5	6	7	8	
Each.....	$100	$135	$180	$210	$250	

Special quotations for larger sizes.

The lockup attachment, five dollars extra.

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PRESSURE REGULATING AND REDUCING VALVES

AIR SPRING PRESSURE REGULATOR FOR STEAM, AIR OR GAS



FIG. 1776

Accurate pressure maintained, regardless of any variation of initial pressure. Has full area of pipe used. Particularly suitable for the patent vacuum system for low pressure heating. Can be made to operate perfectly noiseless when required,

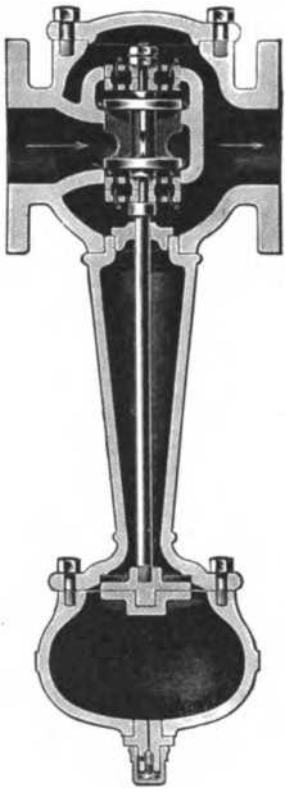
This pressure regulator will automatically control the pressure of steam, air or gas, at any point desired regardless of the variation of the initial pressure.

AIR SPRING PRESSURE REGULATORS

Sizes, Screwed, Inches.	Prices, Each.	Sizes. Flanged, Inches.	Prices, Each.
1	$22 00	3	$72 00
1¼	28 00	4	100 00
1½	35 00	5	135 00
2	44 00	6	180 00
2½	57 00	7	210 00
		8	250 00
		10	350 00

NOISELESS AIR SPRING PRESSURE REGULATORS

Sizes, Screwed, Inches,	Prices, Each.	Sizes, Flanged, Inches.	Prices, Each.
2	$53 00	3	$87 00
2½	69 00	4	120 00
		5	162 00
		6	216 00
		7	252 00
		8	300 00
		10	420 00



SECTION

HIGH PRESSURE REGULATING VALVE



FIG. 1777

For reducing steam or air pressure from the initial or high pressure carried, which may be as high as 125 pounds per square inch, down to any pressure on the reduced size above 15 pounds, that may be desired.

Sizes, Inches.	Prices, Each.	Face to Face Flanges, Inches.	Sizes, Inches.	Prices, Each.	Face to Face Flanges Inches.
¾	$20 00	4½	4	$100 00	10⅜
1	22 00	4½	5	135 00	11¾
1¼	28 00	4½	6	180 00	12¾
1½	35 00	4½	7	225 00	13¾
2	44 00	6¼	8	275 00	14½
2½	57 00	7½	9	350 00	16½
3	72 00	8½	10	350 00	16½
3½	85 00	9½	12	470 00	18½

Sizes ¾ to 2 inches, inclusive, made with screw ends only: all larger have flange ends. Companion flanges are always extra and only furnished with valves when so ordered. In ordering it is especially important that you state clearly the pressures desired to be reduced from and to what.

EUREKA LOW PRESSURE REGULATING VALVE



FIG. 1778

For reducing steam, air or gas pressures from the initial or high pressure carried, which may be as high as 125 pounds per square inch, down to any pressure on the reduced side less than 15 pounds, and from this point down to as low as 1 pound.

Sizes, Inches.	Prices, Each.	Face to Face Flanges, Inches.	Sizes, Inches.	Prices, Each.	Face to Face Flanges, Inches.
¾	$20 00	4½	4	$100 00	10⅜
1	22 00	4½	5	135 00	11¾
1¼	28 00	4¾	6	180 00	12¾
1½	35 00	4¾	7	225 00	13¼
2	44 00	6	8	275 00	14½
2½	57 00	7½	9	350 00	16½
3	72 00	8½	10	350 00	16½
3½	85 00	9½	12	470 00	18½

Sizes ¾ to 2 inches, inclusive, made with screw ends only; all larger have flange ends. Companion flanges are always extra and only furnished with valves when so ordered.

In ordering it is especially important that you state clearly the pressures desired to be reduced from and to what.

HIGH PRESSURE REDUCING VALVE

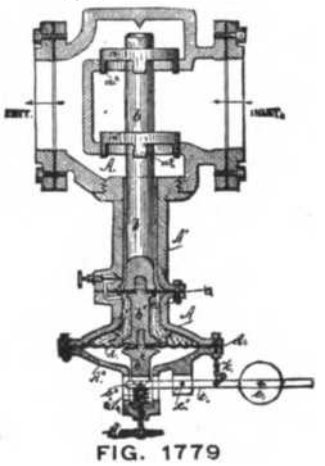


FIG. 1779

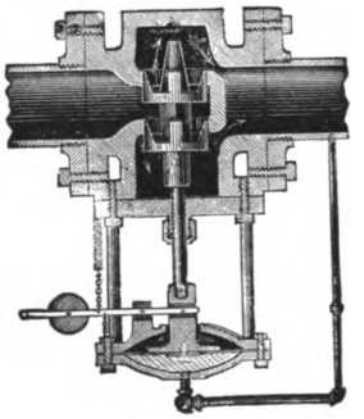


FIG. 1780

PRICES, FIGS. 1779 AND 1780

Sizes, Inches.	Prices, Each.	Sizes, Inches.	Prices, Each.	Sizes, Inches.	Prices, Each.	Sizes, Inches.	Prices, Each.
1	$22 00	3½	$86 00	8	$250 00	16	$800 00
1¼	28 00	4	100 00	9	300 00	18	1000 00
1½	35 00	4½	117 00	10	400 00	20	1200 00
2	44 00	5	135 00	12	500 00	24	1500 00
2½	57 00	6	180 00	14	650 00		
3	72 00	7	215 00				

THE MASON REDUCING VALVE

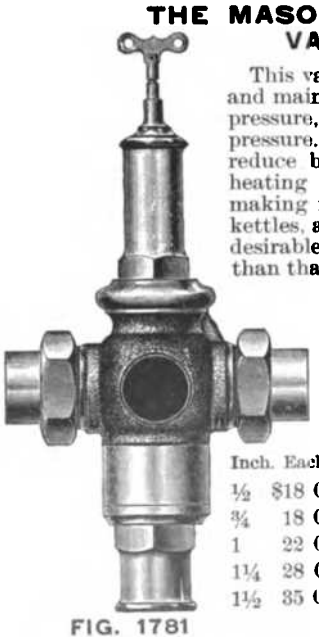


FIG. 1781

This valve is designed to reduce and maintain an even steam or air pressure, regardless of the initial pressure. It will automatically reduce boiler pressure for steam heating coils, dry rooms, paper making machinery, slashers, dye kettles, and all places where it is desirable to use lower pressure than that of the boiler.

PRICES FIG. 1781

Inch.	Each.	Inch.	Each.	Inch.	Each.
½	$18 00	2	$44 00	5	$135 00
¾	18 00	2½	57 00	6	180 00
1	22 00	3	72 00	8	250 00
1¼	28 00	3½	85 00	10	350 00
1½	35 00	4	100 00		

MASON LOCOMOTIVE REDUCING VALVE

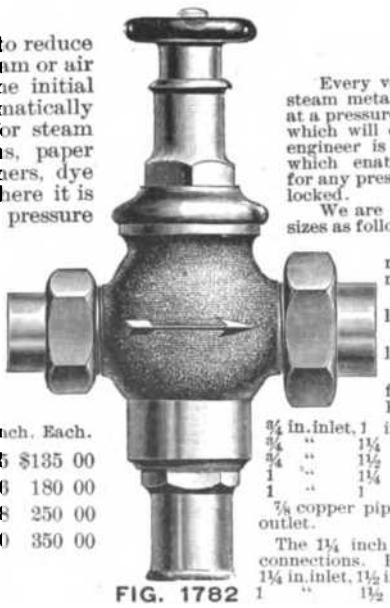


FIG. 1782

Every valve is made of the best steam metal, and will not steam cut at a pressure of 250 lbs. One feature which will commend itself to every engineer is the self-locking device, which enables the valve to be set for any pressure, and automatically locked.

We are prepared to furnish the sizes as follows:

The ¾ size can be furnished with these connections. Price, $18.00.

½ inch inlet, ¾ inch outlet, unions both ends.

¾ inch inlet, ¾ inch outlet, unions both ends.

The 1 inch size with the following connections. Price, $22.00.

¾ in. inlet, 1 in. outlet, unions both ends
¾ " 1¼ " " " "
¾ " 1½ " " " "
1 " 1¼ " " " "
1 " 1½ " " " "

⅞ copper pipe inlet, 1½ inch screwed outlet.

The 1¼ inch size with the following connections. Price, $28.00.

1¼ in. inlet, 1½ in. outlet, unions both ends
1 " 1½ " " " "

SPECIAL 1900 PRESSURE REGULATING VALVE



FIG. 1783

For low pressure service in reducing from any initial pressure up to 125 down to from 1 to 20 pounds on delivery or reduced side.

In ordering it is especially important that you state clearly the pressures desired to be reduced from and to what.

Made screwed ends only.

Sizes, Inches.	Prices, Each.	End to End, Inches.	Sizes, Inches.	Prices, Each.	End to End, Inches.
½	$22 00	2¾	1¼	$30 00	4⅜
¾	24 00	3¼	1½	35 00	4¾
1	26 00	3¾	2	44 00	5¾

MANNING, MAXWELL & MOORE, 85, 87 AND 89 LIBERTY STREET, NEW YORK

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BACK PRESSURE AND WATER PRESSURE VALVES AND REGULATORS

FOSTER BACK PRESSURE VALVE

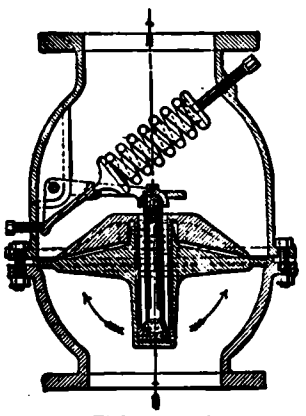


FIG. 1784

Size, inches....	4	5
Flanged	$52 00	$70 00
Size, inches....	6	7
Flanged	$95 00	$110 00
Size, inches....	8	10
Flanged	$130 00	$175 00
Size, inches....	12	14
Flanged	$225 00	$285 00
Size, inches....	16	18
Flanged	$350 00	$440 00

VERTICAL SEMI-BALANCED BACK PRESSURE VALVE



FIG. 1785

This type of valve is intended for use in vertical lines of piping and is of a new and improved design, and has been thoroughly tested on the severest conditions of service.

Size, Inches.	Prices, Each.	Face to Face Flanges, Inches.
2½	$24 00	8¼
3	30 00	9
3½	35 00	9¾
4	40 00	10
4½	45 00	10½
5	55 00	11½
6	75 00	12½
7	100 00	13½
8	130 00	15
9	200 00	17
10	200 00	17
12	275 00	19
14	345 00	21
16	465 00	23
18	600 00	25

Sizes 2½ to 6 inches, made with screw or flange ends; all larger have flange ends only. Companion flanges are always extra and only furnished with valves when so ordered. In ordering it is especially important that we have particulars of service upon which valve is to be used.

NOISELESS BACK PRESSURE VALVE

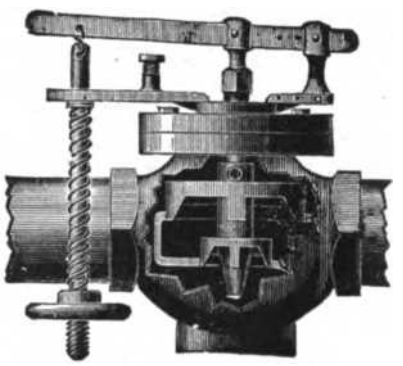


FIG. 1786

PRICES

Inches.		Inches.	
2	$17 00	10	$175 00
2½	20 00	12	250 00
3	25 00	14	340 00
4	32 00	16	455 00
5	45 00	18	550 00
6	65 00	20	700 00
7	85 00	22	850 00
8	115 00	24	975 00

DAVIS NOISELESS BACK PRESSURE VALVE

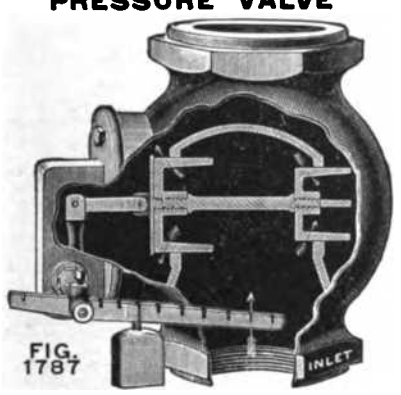


FIG. 1787

STANDARD IRON BODY BACK PRESSURE VALVE

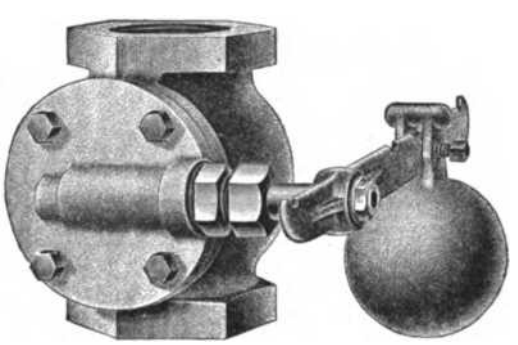


FIG. 1788

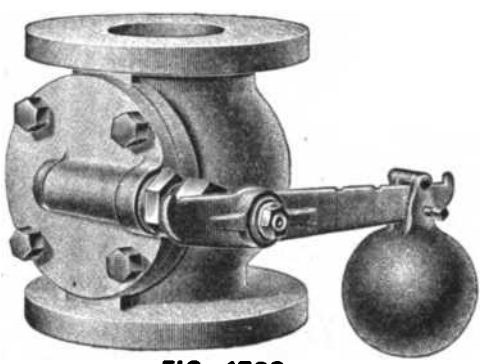


FIG. 1789

When ordering specify whether for condensing or non-condensing engines. Unless specified, valve for non-condensing engine will be sent.

Sizes, Inches.	Prices, Each.	Length Screw-end Valves, Inches.	Length Flanged Valves, Inches.	Diameter of Flanges, Inches.
2	$14 00	7½	(Screw end only.)	
2½	16 00	7½		
3	18 00	8¾	8¼	7½
3½	22 00	9	9¼	8½
4	25 00	10	10	9
4½	30 00	10¾	10¾	9¼
5	40 00	11½	11½	10
6	60 00	13	13	11
7	80 00	14½	14¼	12½
8	$100 00	Valves from 3 to 7 inches inclusive made either flang'd or screwed end. Larger sizes flanged end only.	16½	13½
9	120 00		18	15
10	145 00		19	16
12	220 00		21	19
14	345 00		23	21
16	465 00		26	23½
18	600 00		29½	25
20	750 00		33	27½
22	900 00		36	29½
24	1,050 00		39	32

SCREWED

Sizes, inches	1½	2	2½	3	3½	4	4½
Prices	$9 00	$11 00	$13 00	$15 00	$19 00	$22 50	$28 50
Sizes, inches	5	6	7	8	10	12	
Prices	$33 50	$43 00	$70 00	$85 00	$120 00	$180 00	

FLANGED

Sizes, inches	1½	2	2½	3	3½	4	4½	5
Prices	$10 50	$12 75	$15 00	$17 50	$22 00	$26 00	$32 00	$37 00
Diameter of flanges, inches.	5½	6	7	7½	8½	9	9¼	10
Face to face	5	6⅛	7⅜	7½	9⅛	11	11	12
Sizes, inches	6	7	8	10	12	14	16	
Prices	$47 00	$75 00	$90 00	$130 00	$200 00	$350 00	$475 00	
Diameter of flanges, inches.	11	12½	13½	16	19	21	23½	
Face to face	13½	16	16½	19½	22½	25½	34	

FOSTER NEW CLASS T WATER PRESSURE REGULATOR

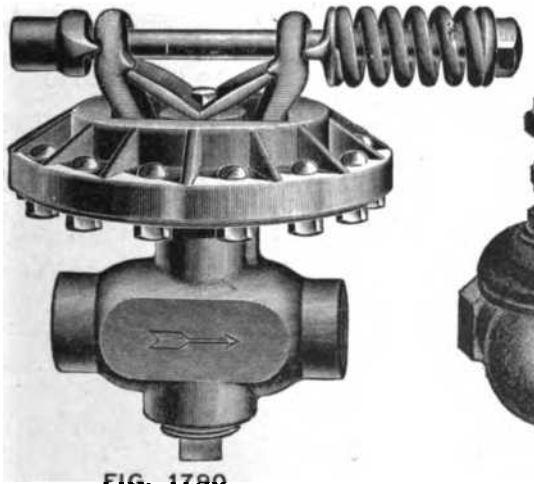


FIG. 1790

A strainer must be applied to the inlet of the regulator.

Prices, ½ and ¾ inch, each.....$12 00
Strainer, extra..... 3 00

WATER PRESSURE REGULATING VALVE

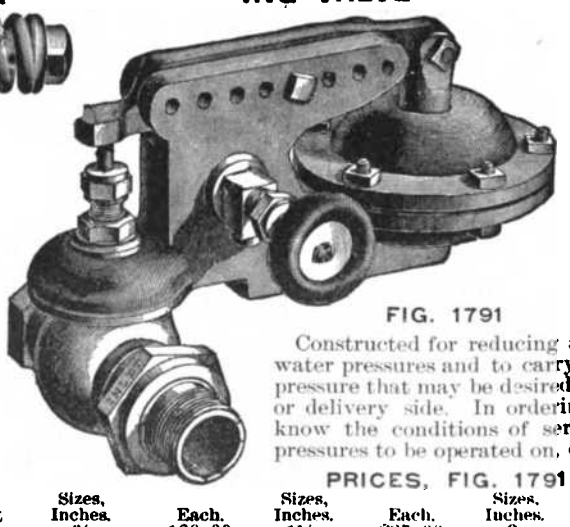


FIG. 1791

Constructed for reducing and regulating very heavy water pressures and to carry any portion of the initial pressure that may be desired uniformly on the reduced or delivery side. In ordering it is important that we know the conditions of service, initial and delivery pressures to be operated on, etc.

PRICES, FIG. 1791

Sizes, Inches.	Each.	Sizes, Inches.	Each.	Sizes, Inches.	Each.	Sizes, Inches.	Each.
¾	$20 00	1½	$35 00	3	$72 00	6	$180 00
1	22 00	2	44 00	4	100 00	7	220 00
1¼	28 00	2½	57 00	5	135 00	8	250 00

Larger sizes to order. Prices on application.

CURTIS WATER PRESSURE REGULATOR OR REDUCING VALVE

Prices, with union couplings for lead pipe.

Inches.	Each.
¾	$17 00
1	22 00
1¼	28 00
1½	35 00
2	44 00
2½	57 00
3	72 00

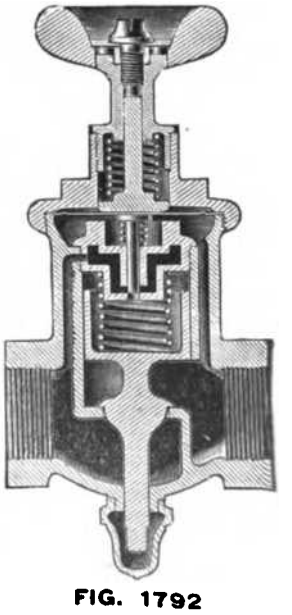


FIG. 1792

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AUTOMATIC EXHAUST RELIEF VALVE

VERTICAL

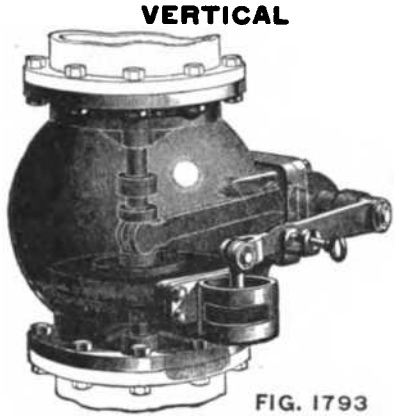


FIG. 1793



FIG. 1795

DESCRIPTION, FIGS. 1793 AND 1794

These Automatic Exhaust Relief Valves are especially designed for use with condensing engines. They allow the engine to exhaust instantly into the atmosphere in case of accident to the condensing apparatus, and are prompt and noiseless in their action. The valve should be placed in a branch leading from the main exhaust pipe to the atmosphere. (Note:—The usual practice is to make this branch and valve one size less diameter than the main exhaust pipe.) As long as a vacuum is maintained in the condenser, the relief valve remains tightly closed, but as soon as the vacuum is lost the valve promptly opens and the engine exhausts into the atmosphere and continues to run non-condensing until the vacuum is restored, when the valve closes automatically. The special feature in the design of these relief valves is the dash pot, which allows the valve to open and close quietly. An ordinary check valve would pound from the effect of the engine's intermittent exhaust. The facing of the Relief Valve is made of a special material which keeps the valve tight, but does not allow it to adhere to the seat. An attachment for permanently holding the valve wide open, when it becomes necessary to do this for any length of time, is included with each valve.

Sizes, Inches.	Horizontal Pattern. Prices.	Horizontal Pattern. Net Weight, Pounds.	Vertical Pattern. Prices.	Vertical Pattern. Net Weight, Pounds.
3	$35 00	60	$45 00	85
3½	40 00	70	45 00	95
4	45 00	80	50 00	125
5	55 00	119	55 00	130
6	70 00	188	70 00	189
8	100 00	325	100 00	266
10	180 00	675	180 00	415
12	200 00	700	200 00	526
14	225 00	1070	240 00	860
16	265 00	1386	275 00	1075
18	370 00	1935	390 00	1500
20	565 00	2456	565 00	2500
22	650 00	2750	650 00	2800
24	800 00	3450	800 00	3600
26	835 00	3850	835 00	3800
28	935 00	4000	935 00	4000
30	1285 00	5500	1285 00	5500

HORIZONTAL

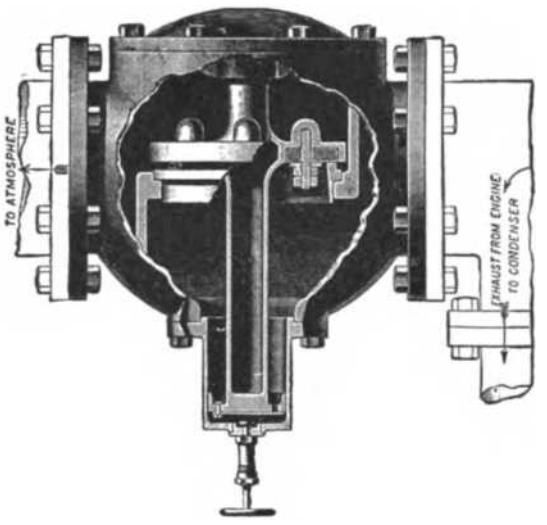


FIG. 1794

THE CONSOLIDATED WATER RELIEF VALVE

DESCRIPTION, FIG. 1795

For water works, fire pumps, pumping stations and hydraulic elevators. This valve has been recommended and approved by all fire insurance companies. This valve, as its title indicates, is designed to protect water chambers of steam fire engines, steam pumps, rotary pumps, and all water pressure cylinders, as well as fire hose, from excessive pressure due to any cause, including the closing of gates or stop valves and the turning off of water at the hose nozzle while the pump is in action. It gives the hoseman control of the stream at the end of the line, and the shutting off of the water there does not subject the hose or pump to a greater pressure than that at which the valve is set to relieve. Thus damage from the bursting of the hose is prevented. A night watchman, without assistance, can with perfect safety start a pump thus equipped, and by proper use of this valve the needless flooding of buildings can be avoided. The outlet can be piped to the suction pipe (making a run-around), as the valve case is water tight. Unless otherwise ordered, we always furnish valves with regulating wheel, as shown in cut, but we can make them for wrench adjustment, if required. We use the adjustable ring feature on all of our water relief valves, and they are so made that they can be taken apart for cleaning, regrinding, changing springs, or any other purpose, without disconnecting the piping. The top regulating wheel has cast in it the word "Open," with an arrow head pointing to the direction for turning it to decrease the opening pressure. A reverse movement of this wheel increases the opening pressure.

Diameter	1½ inches	2 inches	2½ inches	3 inches	3½ inches	4 inches	5 inches	6 inches
Prices	$30	$40	$55	$75	$87	$100	$125	$150 each.

In ordering, always state highest working pressure.

BALANCE VALVE WITH LEVER

PRICES, FIG. 1797

Adapted to steam, air, gas, water or any other fluid. Movement perfectly balanced and extremely sensitive. Made of the best steam metals.

Used in connection with feed water heaters, open and closed tanks, boiler feeders, pumps, pump governors, tank feeders, etc.

½ inch brass body	$5 50
¾ "	6 50
1 "	8 00
1¼ "	9 50
1½ inch iron body, brass trimmed	11 00
2 " "	14 00
2½ " "	19 00
3 " "	25 00
3½ " "	30 00
4 " "	35 00
5 " "	45 00
6 " "	55 00
7 " "	65 00
8 " "	75 00

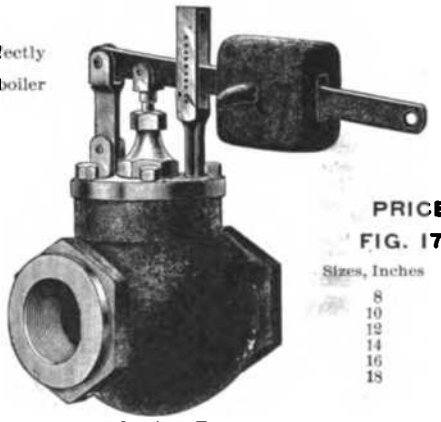


FIG. 1797

FOSTER RELIEF OR FREE EXHAUST VALVE

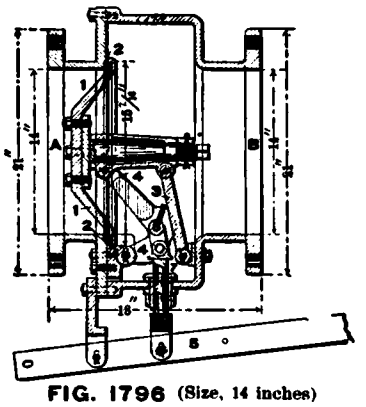


FIG. 1796 (Size, 14 inches)

PRICES
FIG. 1796

Sizes, Inches	Each
8	$130
10	175
12	225
14	295
16	350
18	440

QUICK OPENING ELEVATOR VALVE

WITH BALANCED DISKS

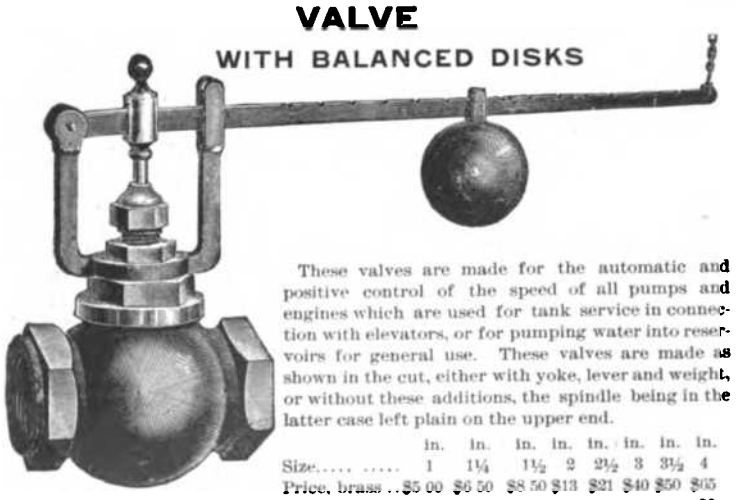
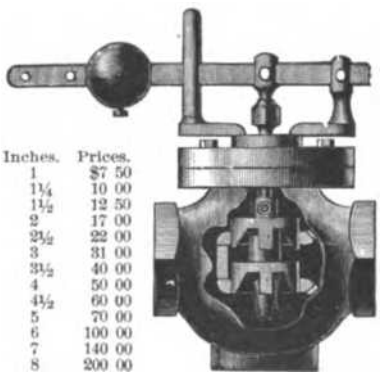


FIG. 1798

These valves are made for the automatic and positive control of the speed of all pumps and engines which are used for tank service in connection with elevators, or for pumping water into reservoirs for general use. These valves are made as shown in the cut, either with yoke, lever and weight, or without these additions, the spindle being in the latter case left plain on the upper end.

Size	in. 1	in. 1¼	in. 1½	in. 2	in. 2½	in. 3	in. 3½	in. 4
Price, brass	$5 00	$6 50	$8 50	$13	$21	$40	$50	$65
Price, iron body								50

BALANCE VALVE



Inches.	Prices.
1	$7 50
1¼	10 00
1½	12 50
2	17 00
2½	22 00
3	31 00
3½	40 00
4	50 00
4½	60 00
5	70 00
6	100 00
7	140 00
8	200 00

FIG. 1799

BALANCED GOVERNOR VALVE

FOR STEAM ONLY

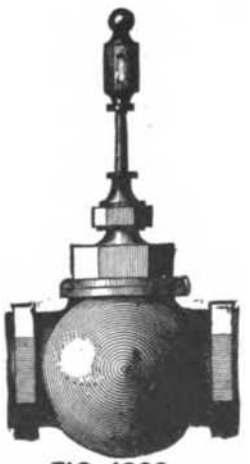


FIG. 1800

Sizes.	Prices. Brass.
1	$5 00
1¼	7 50
1½	9 00
2	15 00
2½	21 00
3	40 00

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PUMP GOVERNORS AND PRESSURE REGULATORS

FOSTER SPEED GOVERNOR, FLUID ACTUATED WITH BALANCED VALVE

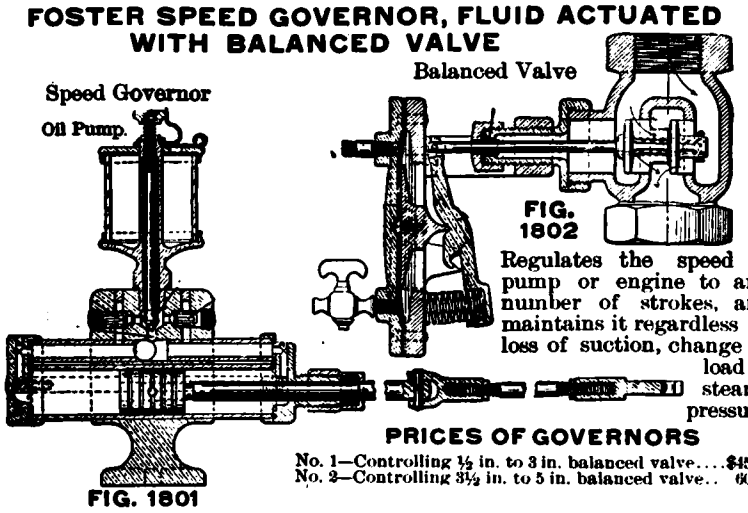


FIG. 1802

FIG. 1801

Regulates the speed of pump or engine to any number of strokes, and maintains it regardless of loss of suction, change of load or steam pressure.

PRICES OF GOVERNORS

No. 1—Controlling ½ in. to 3 in. balanced valve....$45 00
No. 2—Controlling 3½ in. to 5 in. balanced valve.. 60 00

PRICES OF BALANCED VALVE (Screwed)

Sizes, In.	½	¾	1	1¼	1½	2	2½	3	3½	4	5
Each....	$5 50	6 50	8 00	9 00	10 50	13 00	19 50	25 00	31 00	37 00	45 00

FOSTER PISTON ACTUATED PUMP GOVERNOR

WITH COMPENSATING SPRING

Designed to meet the demand for a governor controlled solely by the discharge pressure. Made of the best steam metal in smaller sizes, up to 2 inches inclusive, and larger sizes of iron bodies with brass trimmings. The valve clappers have Jenkins' Composition Disks, which can be renewed and applied by any engineer and insure perfectly tight seats. The compensating spring movement allows the steam valve to open or close instantly, to the fullest extent necessary, with slight variation of discharge pressure.

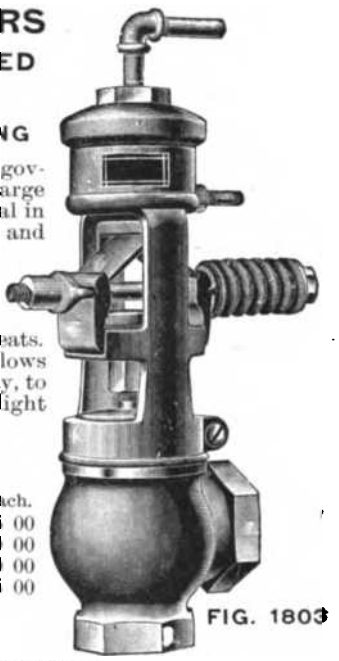


FIG. 1803

PRICES

Sizes, Inches.	Each.	Sizes, Inches.	Each.
¾	$18 00	2½	$35 00
1	20 00	3	40 00
1¼	22 00	4	50 00
1½	25 00	5	65 00
2	30 00		

THE MASON ELEVATOR PUMP PRESSURE REGULATOR

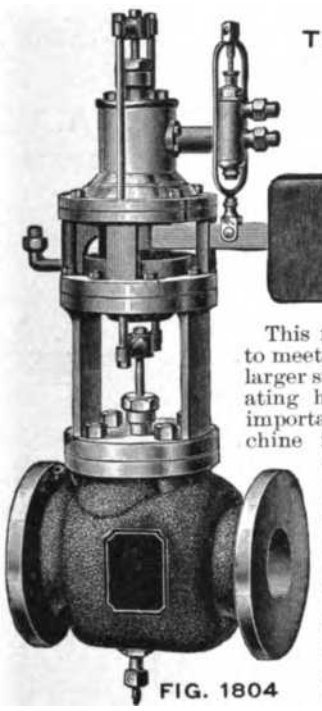


FIG. 1804

This regulator was designed to meet the requirements of the larger sizes of steam pumps operating hydraulic elevators. The important feature with this machine is that it operates on the slightest change of pressure, opening and closing the steam valve to its full extent promptly and with a certainty.

PRICES

Inches.	Each.
2	$45 00
2½	55 00
3	70 00
3½	80 00
4	90 00

Special prices on larger sizes.

MASON PUMP PRESSURE REGULATOR

For fire, tank, elevator, air and water works pumps or any class of pumping machinery where it is necessary to maintain a constant pressure. The regulator may be instantly adjusted to any pressure desired by simply turning the key as shown in the cut.

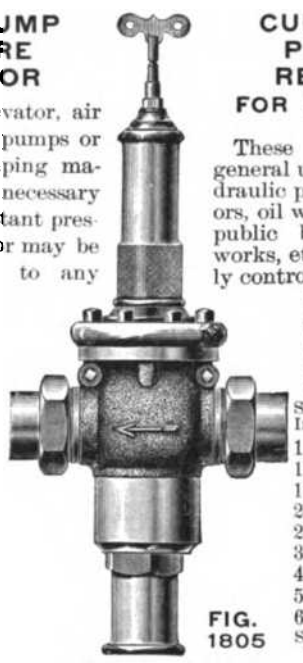


FIG. 1805

PRICES

Sizes Pipe, Inches.	Each.
½	$20 00
¾	20 00
1	25 00
1¼	30 00
1½	42 00
2	55 00
2½	68 00
3	85 00
3½	100 00
4	115 00

CURTIS PUMP PRESSURE REGULATOR

FOR ENGINES AND PUMPS

These regulators are in general use on elevators, hydraulic presses, air compressors, oil works, breweries and public buildings, water works, etc., and will perfectly control pressure on pumps for any purpose, including vacuum pumps for steamships, sugar works, and ice machines.

Sizes Pipe. Inches.	Fig. 1806. Prices, Each.
1 and under	$25 00
1¼	28 00
1½	35 00
2	44 00
2½	57 00
3	72 00
4	100 00
5	135 00
6	180 00

Special quotations for larger sizes.

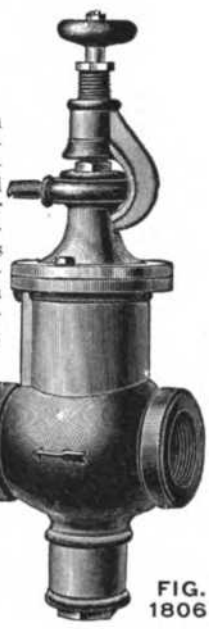


FIG. 1806

PERFECTION AUTOMATIC PUMP GOVERNOR



FIG. 1807

Suitable for steam, gas, ammonia, air, or other services where a uniform pressure is desired maintained at all times.

Sizes, Inches.	Screw Ends. Prices, Each.	Flange Ends. Prices, Each.
½	$25 00	.....
¾	27 50	.....
1	30 00	.....
1¼	35 00	.....
1½	42 50	$45 00
2	50 00	50 00
2½	58 00	60 00
3	70 00	75 00
3½	.....	87 50
4	.....	100 00
5	.....	125 00
6	.....	150 00

ROCKAWAY AUTOMATIC PUMP GOVERNOR

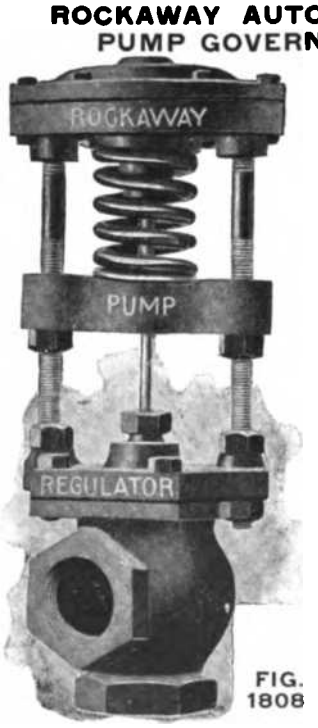


FIG. 1808

For automatically stopping and starting steam pumps working under pressure and controlling same so as to maintain a uniform pressure on discharge side at all times while being operated.

PRICES

Sizes, Inches.	Each.
1	$30 00
1¼	35 00
1½	42 50
2	50 00
2½	58 00
3	70 00
3½	87 50
4	100 00

MASON AIR BRAKE PUMP REGULATOR

This device is constructed so as to allow of its application to air brake pumps without changing the fittings on the locomotive. It is only necessary to place the regulator in the steam pipe leading to the pump and connect the air pressure inlet with the train service pipe. As the air chamber is entirely separate from the steam working parts, any particles of dirt which may get into the main service pipe can not get into the working parts of the regulator and thence into the pump. Neither can the steam and air pressures have access to each other. The regulator is fitted with couplings so that no change in piping will be necessary in substituting it for those regulators now in use.

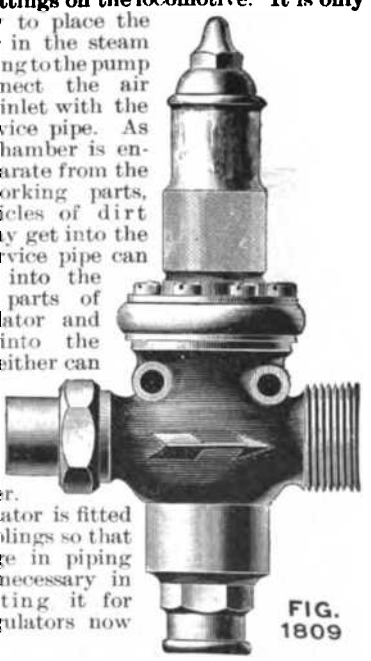


FIG. 1809

¾ inch (weight with couplings, 8½ pounds)..... $15 00
1 inch (" " " 14½ ")..... 18 00

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FITTS CHRONOMETER GOVERNOR VALVES

PLAIN

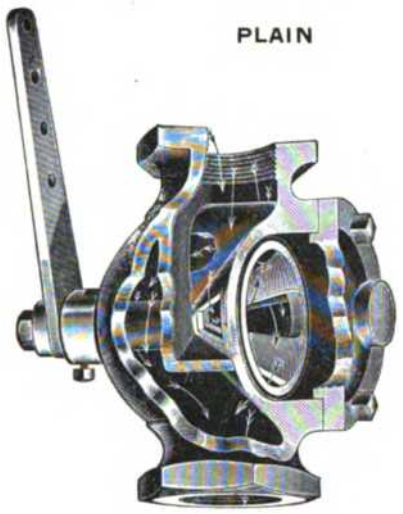


FIG. 1810

WITH YOKE



FIG. 1811

PRICES, FIGS. 1810 AND 1811

Sizes	¾	½	¾	1	1¼	1½	2	2½	3	4	6
Iron Body	....	....	$5 50	$8 00	$11 00	$15 00	$20 00	$25 00	$35 00	$60 00	$120 00
Bronze Body	....	....	7 00	10 00	14 00	20 00	28 00	37 00	55 00	.....	.....
Iron Body, with Yoke	....	....	.....	.....	15 00	20 00	25 00	33 00	45 00	75 00	150 00
Bronze Body, with Yoke	$9 00	$9 00	10 00	13 00	18 00	25 00	33 00	45 00	65 00	.....	.....

FAN ENGINE REGULATOR

For induced or forced drafts. Regulating the speed of the fan by the pressure in the boilers.

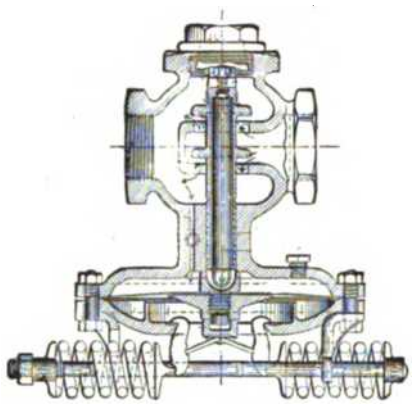


FIG. 1812

PRICES, INCLUDING STRAINER

Sizes, Inches	½	¾	1	1¼	1½	2	2½
All Steam Metal	$21 00	$23 00	$25 00				
Iron Body	....	....	....	$32 00	$39 00	$49 00	$63 00

For Gun Metal, special prices on application.

BUTTERFLY VALVES

IRON BODY, BRASS MOUNTED

BRASS SCREWED



FIG. 1813

SCREWED



FIG. 1814

FLANGED

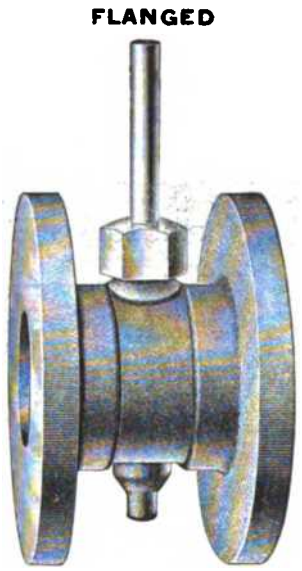


FIG. 1815

PRICES, FIGS. 1813 TO 1815

Sizes, Inches	¾	1	1¼	1½	2	2½	3	3½	4	5	6
All Brass	$3 10	$4 40	$5 65	$6 75	$10 00	$13 75	$21 00				
Iron Body, Brass Mounted, Screwed	.....	.....	6 35	7 00	8 00	9 50	12 00	$16 00	$18 50	$28 50	$42 50
" " " " Flanged	.....	.....	7 50	8 50	9 50	11 50	15 00	19 00	22 00	32 00	47 00
Dimension of Flanges, Inches	....	.....	5	5½	6	7	7½	8½	9	10	11

ENGINE THROTTLE VALVE

IRON BODY, BRASS MOUNTED

SCREW AND FLANGE ENDS

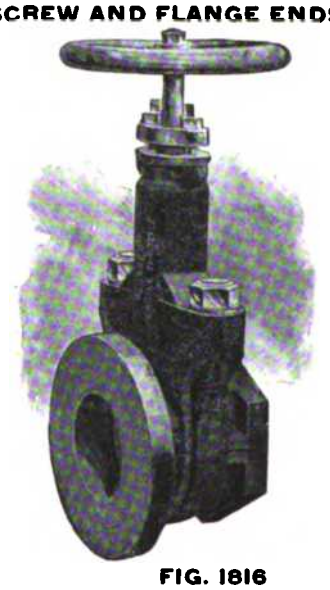


FIG. 1816

With renewable seat and interior by-pass, with screw, flange, or screw and flange ends.

Further information and prices on application.

LEVER THROTTLE VALVES

SPECIAL HEAVY PATTERN FOR HIGH PRESSURES

FOR 175 POUNDS WORKING PRESSURE

BRASS BODY

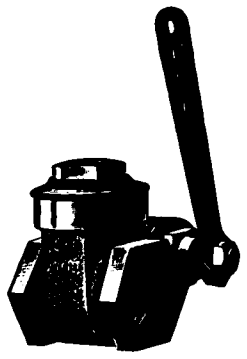


FIG. 1817

BRASS

Screw ends only, not made with flange ends.

Sizes, Inches.	Brass Body, Each.
¾	$3 00
1	4 00
1¼	5 00
1½	7 00
2	10 00
2½	19 00

IRON BRASS MOUNTED

Sizes, Inches.	Iron Body, Brass Mounted, Each.
2½	$16 00
3	20 00
3½	25 00
4	30 00
5	35 00
6	40 00

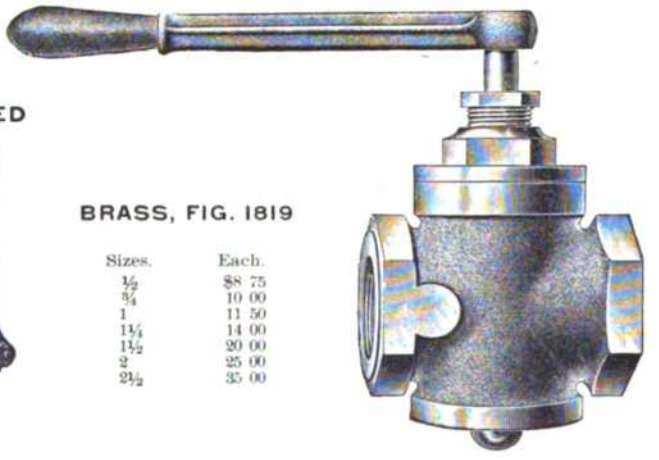
All brass valves are provided with gun metal disk carriers.

IRON BODY
BRASS MOUNTED



FIG. 1818

THROTTLE VALVE



BRASS, FIG. 1819

Sizes.	Each.
½	$8 75
¾	10 00
1	11 50
1¼	14 00
1½	20 00
2	25 00
2½	35 00

FIG. 1819

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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GOLDSMITH THROTTLE VALVES

ANGLE



FIG. 1820

STRAIGHTWAY

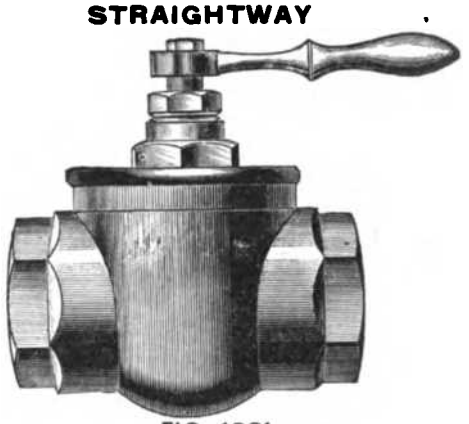


FIG. 1821

BRASS AND IRON BODY BRASS MOUNTED

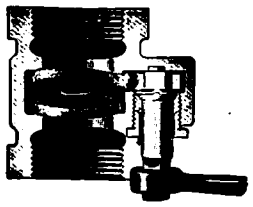
PRICES, FIGS. 1820 AND 1821

Sizes, inches	⅜	1	1¼	1½	2	2½	3	4	5	6	7
Brass, screw ends, without auxiliary	$4 00	$6 00	$8 00	$10 00	$16 00	$26 00	$41 00				
Brass, flange ends, " "	....	....	....	....	18 00	30 00	45 00				
Brass, screw ends, with auxiliary	....	....	....	....	25 00	35 00	50 00				
Brass, flange ends, " "	....	....	....	....	28 00	40 00	55 00				
Iron body, screw ends, with auxiliary	....	....	....	....	15 00	22 00	30 00	$45 00	$75 00	$100 00	$130 00
Iron body, flange ends, " "	....	....	....	....	16 00	23 00	32 00	47 00	78 00	105 00	135 00
Dis. end to end, screwed brass, inches.	3⅝	4½	5¼	5¾	7¼	8½	9½				
Dis. end to end, screwed iron body "	....	....	....	....	9¾	1 ½	12½	14½	16½	20¼	23
Dis. face to face, flanged brass, "	....	....	....	....	7½	9	10				
Dis. face to face, flanged iron body "	....	....	....	....	9½	10¾	12¼	14	16	22	23½
Diameters of flanges	....	....	....	....	6	7	7½	9	10	11	13

HANDY GATE VALVES

SECTIONAL

Showing disks, ball joint, stem, and packing.



IRON

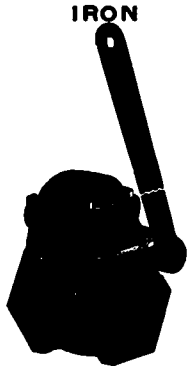
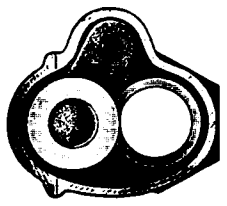


FIG. 1822

INTERIOR

Showing movement of disks.



BRASS



FIG. 1823

FOR PRESSURES NOT TO EXCEED 75 POUNDS

Screw ends only, not made with flange ends.

Sizes, inches	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6	8
Brass body, prices each.	$1 60	1 80	2 50	3 50	5 00	7 50	13 50	19 00	40 00	60 00				
Iron body, brass m't'd. prices each..	....	....	....	....	....	$7 00	12 00	15 00	18 00	21 00	25 00	30 00	35 00	65 00
All iron, prices each..	....	$3 40	4 00	4 50	6 00	7 00	12 00	15 00	18 00	21 00	25 00	30 00	35 00	65 00

The Handy is also made in acid metal at a special discount off brass list; also furnished threaded for casing pipe, or with English Standard pipe threads.

DOUBLE SEATED VICTOR GATE VALVES

SCREW ENDS



FIG. 1826

FLANGE ENDS

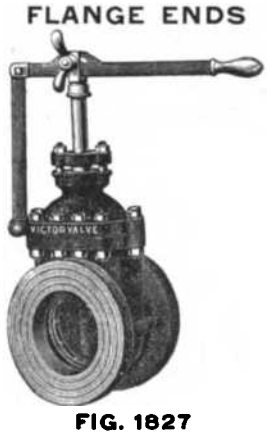


FIG. 1827

FOR 175 POUNDS WORKING PRESSURE

Victor Valves, when so ordered, can be furnished with English instead of American standard threads and flanges, without extra charge.

Victor Valves made entirely of gun metal with Tobin bronze bolts can be furnished when required. Prices will be sent upon receipt of specifications.

Sizes, inches	2	2½	3	3½	4	4½	5	6	7	8	9	10	12
Iron body brass m't'd. screw ends, prices each	$9 00	11 00	14 00	22 00	29 00	34 00	42 00	53 00	60 00	75 00	90 00	115 00	170 00
Iron body brass m't'd, flanged ends, prices each	$9 00	11 00	14 00	22 00	29 00	34 00	42 00	53 00	60 00	75 00	90 00	115 00	170 00
All iron, screw ends, prices each	$9 00	11 00	14 00	22 00	29 00	34 00	42 00	53 00	60 00	75 00	90 00	115 00	170 00
All iron, flange ends, prices each	$9 00	11 00	14 00	22 00	29 00	34 00	42 00	53 00	60 00	75 00	90 00	115 00	170 00
Diam. of Standard size flanges..	6	7	7½	8½	9	9¼	10	11	12½	13½	15	16	19

DOUBLE SEATED CLIP GATE VALVES

QUICK OPENING PATTERN

SCREW ENDS

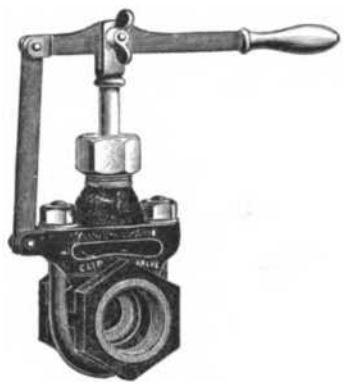


FIG. 1824

FLANGE ENDS



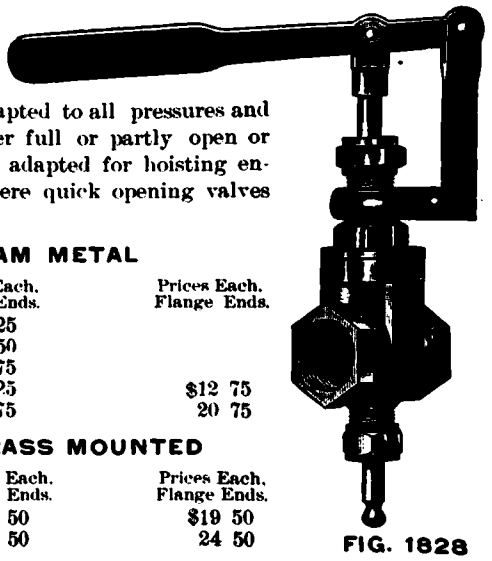
FIG. 1825

FOR 100 POUNDS WORKING PRESSURE

Sizes, inches	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6
Iron body brass m't'd, screw ends, prices each	$1 50	1 90	2 50	3 50	5 00	7 50	12 00	15 00	18 00	20 00	23 00	2 00	30 00
Iron body brass m't'd, flange ends, prices each	....	....	....	....	....	$8 50	13 50	16 90	20 80	24 50	26 00	28 80	33 80
All iron, screw ends, prices each	$1 50	1 90	2 50	3 50	5 00	7 50	12 00	15 00	18 00	20 00	23 00	25 00	30 00
All iron, flange ends, prices each	....	....	....	....	....	$8 50	13 50	16 90	20 80	22 50	26 00	28 80	33 80

Clip Valves can be furnished with English Standard threads and flanges instead of American, when so ordered, without extra charge.

ROSS QUICK OPENING LEVER VALVE



With double stem. Adapted to all pressures and perfectly reliable, whether full or partly open or closed. It is particularly adapted for hoisting engines and all engines where quick opening valves are required.

BEST STEAM METAL

Sizes, Inches.	Prices Each, Screw Ends.	Prices Each, Flange Ends.
1	$4 25	
1¼	5 50	
1½	6 75	
2	9 25	$12 75
2½	16 75	20 75

IRON BODY, BRASS MOUNTED

Sizes, Inches.	Prices Each, Screw Ends.	Prices Each, Flange Ends.
3	$17 50	$19 50
4	22 50	24 50

FIG. 1828

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QUICK OPENING SLIDING STEM AND LEVER GATE VALVES

JENKINS

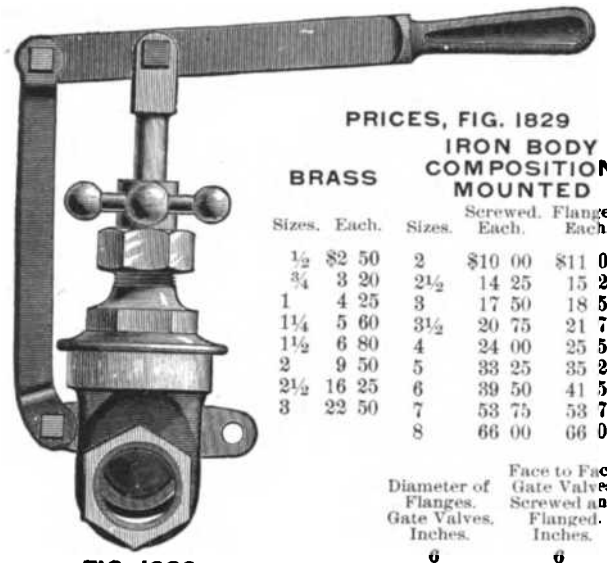


FIG. 1829

PRICES, FIG. 1829

BRASS		IRON BODY COMPOSITION MOUNTED		
Sizes.	Each.	Sizes.	Screwed. Each.	Flanged. Each.
½	$2 50	2	$10 00	$11 00
¾	3 20	2½	14 25	15 25
1	4 25	3	17 50	18 50
1¼	5 60	3½	20 75	21 75
1½	6 80	4	24 00	25 50
2	9 50	5	33 25	35 25
2½	16 25	6	39 50	41 50
3	22 50	7	53 75	53 75
		8	66 00	66 00

Diameter of Flanges. Gate Valves. Inches.	Face to Face. Gate Valves, Screwed and Flanged. Inches.
6	6
7	7¼
7½	7⅝
8½	7⅞
9	8⅜
10	9½
11	10
12½	11
13½	12¼

NELSON COMPOSITION STRAIGHTWAY

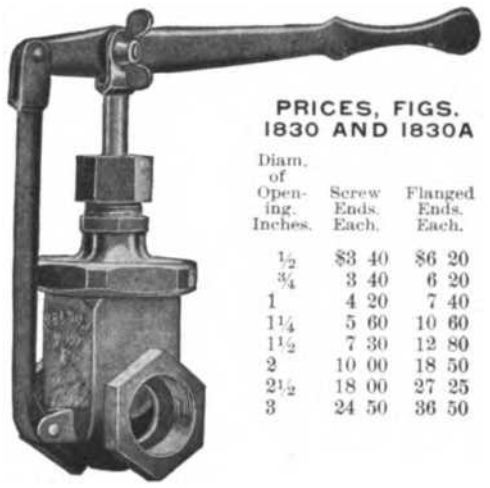


FIG. 1830

PRICES, FIGS. 1830 AND 1830A

Diam. of Opening. Inches.	Screw Ends. Each.	Flanged Ends. Each.
½	$3 40	$6 20
¾	3 40	6 20
1	4 20	7 40
1¼	5 60	10 60
1½	7 30	12 80
2	10 00	18 50
2½	18 00	27 25
3	24 50	36 50

NELSON COMPOSITION ANGLE



FIG. 1830A

LUDLOW DOUBLE GATE



FIG. 1833

KENNEDY COMPOSITION

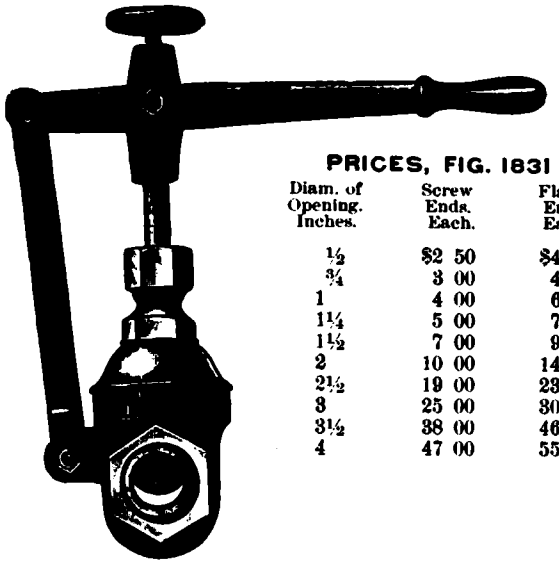


FIG. 1831

PRICES, FIG. 1831

Diam. of Opening. Inches.	Screw Ends. Each.	Flange Ends. Each.
½	$2 50	$4 00
¾	3 00	4 75
1	4 00	6 00
1¼	5 00	7 00
1½	7 00	9 50
2	10 00	14 50
2½	19 00	23 00
3	25 00	30 00
3½	38 00	46 00
4	47 00	55 00

BURNHAM BRASS



FIG. 1832

PRICES, FIG. 1833

BRONZE			IRON BODY BRONZE MOUNTED		
Size. Inch.	Screw Ends. Each.	Flange Ends. Each.	Size. Inch.	Screw Ends. Each.	Flange Ends. Each.
¼	$2 20	....	2½	$12 00	$12 50
¾	2 60	$4 50	3	14 25	15 25
1	3 15	4 95	3½	18 50	19 50
1¼	4 40	6 70	4	20 00	20 50
1½	5 40	8 40	4½	25 25	25 75
2	7 50	12 25	5	27 25	27 75
			6	32 75	33 25

All above tested at 300 pounds pressure.

PRICES, FIG. 1832

Size, inches,	½	¾	1	1¼	1½	2	2½	3
Each,	$2 50	$3 00	$4 00	$5 00	$7 00	$10 00	$19 00	$25 00

BRASS HOSE VALVES

HOSE END

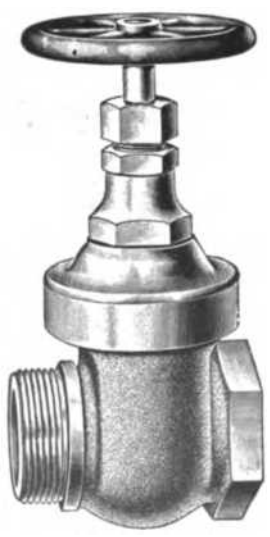


FIG. 1834

WITH CAP AND CHAIN

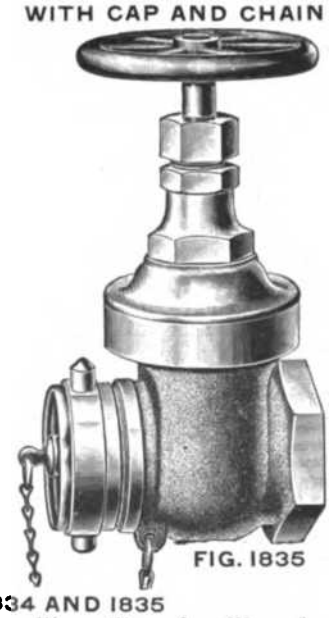


FIG. 1835

PRICES, FIG. 1834 AND 1835

Size, inches.....	1	1¼	1½	2	2½	3
Hose End with iron wheel, each,	$2 50	$3 50	$5 00	$7 50	$14 00	$30 00
" " " brass " "	5 75	7 50	9 75	13 75	23 00	30 00
Cap and Chain with iron wheel "	3 75	4 85	6 50	9 25	16 50	23 50
" " " " brass " "	7 15	9 15	11 50	15 75	26 00	34 00

COMPOSITION WEDGE HOSE VALVE

SOLID BRONZE SEAT

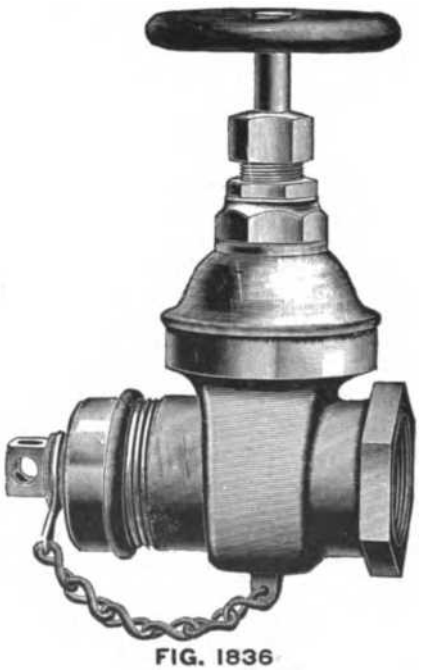


FIG. 1836

PRICES, FIG. 1836

Diameters of Opening. Inches.	Without Cap or Chain. Each.	Finished all over, Brass Wheel. Each.	Finished and Nickel Plated all over, Brass Wheel. Each.	Finished Brass Cap and Chain, extra. Each.
¾	$1 75			$1 00
1	2 25	$4 00	$4 50	1 25
1¼	3 25	5 00	5 50	1 35
1½	4 25	6 00	6 50	1 50
2	6 25	8 25	9 00	1 75
2½	11 50	18 00	19 00	2 50
3	16 00	25 00	26 00	3 50

When other than New York standard thread is required send gauge or coupling.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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BRASS AND IRON BODY BRASS MOUNTED HOSE VALVES

CLIP HOSE VALVE

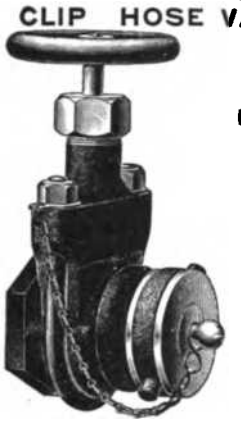


FIG. 1837

IRON BODY BRASS MOUNTED

FOR 100 POUNDS WORKING PRESSURE

PRICES

Sizes, Inches.	I. B. B. M., without Cap and Chain, Each.	Finished Brass Cap and Chain, extra, Each.
¾	$1 90	$1 00
1	2 50	1 20
1¼	3 50	1 60
1½	5 00	2 25
2	7 50	3 25
2½	14 00	5 00
3	20 00	6 00

BRASS

FOR 150 POUNDS WORKING PRESSURE

PRICES

Sizes, Inches.	Brass, without Cap and Chain, Each.	Finished Cap and Chain, extra, Each.
¾	$1 90	$1 00
1	2 50	1 20
1¼	3 50	1 60
1½	5 00	2 25
2	7 50	3 25
2½	14 00	5 00
3	20 00	6 00

GATE VALVE

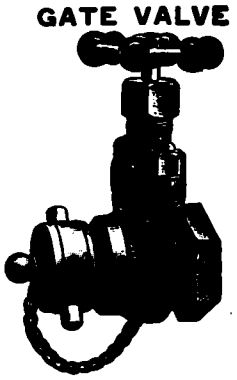


FIG. 1838

BRASS DOUBLE GATE VALVES

SCREW ENDS

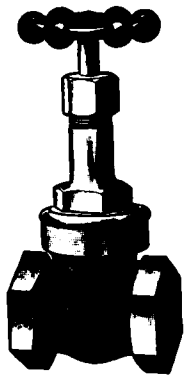


FIG. 1839

SCREW AND FLANGE ENDS

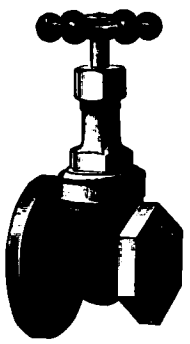


FIG. 1840

FLANGE ENDS



FIG. 1841

BRONZE VALVES, DOUBLE GATE

SCREWED ENDS
2½ to 6 inches

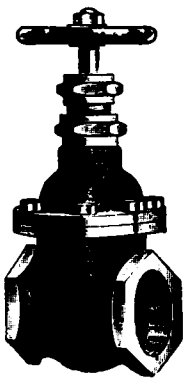


FIG. 1842

SCREWED ENDS
7 inches



FIG. 1843

FLANGED ENDS
2½ to 6 inches

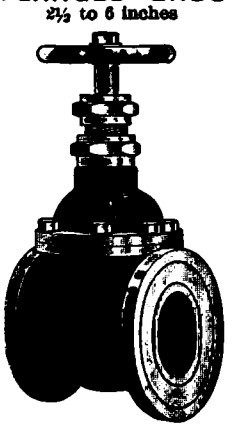


FIG. 1844

MEDIUM PATTERN

FOR 175 POUNDS WORKING PRESSURE

PRICES

Sizes, Inches.	Brass, Screw Ends, Each.	Finished Brass with Wood Wheels, Each.	Brass, Screw and Flange Ends, Each.	Brass, Flange Ends, Each.	Diameter of Flanges on above Valves, Inches.
¼	$1 10	....	....	....	....
⅜	1 10	....	$2 00	$2 60	2½
½	1 30	$2 60	2 40	3 00	3
¾	1 90	3 30	3 10	4 00	3½
1	2 50	4 50	4 20	5 30	4
1¼	3 50	6 00	5 90	7 70	4½
1½	5 00	7 50	8 20	10 50	5
2	7 50	12 00	11 20	14 00	6
2½	14 00	....	18 00	21 00	7
3	20 00	....	27 20	32 00	7½

EXTRA HEAVY PATTERN

FOR 350 POUNDS WORKING PRESSURE

Sizes, Inches.	Brass, Screw Ends, Each.	Brass, Screw and Flange Ends, Each.	Brass, Flange Ends, Each.	Diameter of Flanges, Inches.
¼	$1 90	....	....	....
⅜	1 90	$2 80	$3 50	2½
½	2 20	3 30	4 20	3
¾	3 10	4 50	5 50	3½
1	4 40	6 20	7 50	4
1¼	6 00	8 60	10 50	4½
1½	8 90	12 10	14 50	5
2	12 80	16 50	19 40	6
2½	21 00	25 20	29 00	7
3	34 00	40 00	44 00	7½

FOR STEAM OR WATER

Tested 6 inches and under at 300 lbs. pressure per square inch, water pressure.

Tested 7 inches and above at 250 lbs. pressure per square inch, water pressure.

PRICES

Sizes, Inches.	Screw Socket, Each.	Flange, Each.	Diameter Standard Flange, Inches.	Face to Face of Screw Socket, Inches.	Face to Face of Flanges, Inches.
½	$1 40	$3 40	3	2¼	2¾
¾	1 80	3 70	3½	2½	3
1	2 35	4 15	4	2⅞	3
1¼	3 40	5 70	4½	3⅜	3⅝
1½	4 40	7 40	5	3¾	3⅞
1¾	....	....	5¼	...	4 1/16
2	6 25	11 00	6	4½	4⅝
2½	13 75	18 75	6½	4 13/16	5⅛
3	15 50	21 50	7	5	6¼
3½	23 50	30 50	7½	5⅝	6⅞
4	34 00	43 00	9	6¼	7 1/16
4½	45 00	55 00	9½	7	7¾
5	52 00	64 00	10	7¼	8¼
6	76 00	88 00	11	7½	9
7	.....	120 00	12	...	10¼
8	.....	158 00	13	...	10½

JENKINS

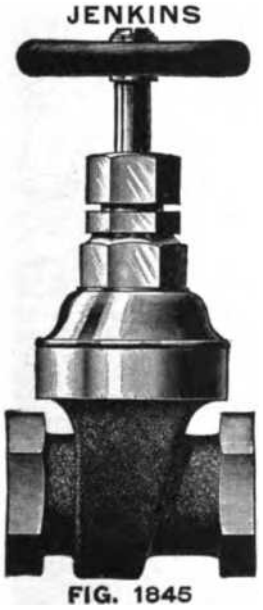


FIG. 1845

BRASS GATE VALVES

PRICES, EACH

Sizes, Inches.....	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	4½	5	6	8
JENKINS																
Screwed	...	...	$2 00	2 50	3 25	4 25	5 25	7 50	14 00	20 00	....	....	....	....	....	....
Flanged.....	...	...	$3 50	4 50	6 00	7 50	10 00	14 00	21 00	28 00	....	....	....	....	....	....
KENNEDY																
Screwed Ends, Stationary or Rising Spindle.	...	...	$1 40	1 80	2 50	3 50	5 00	7 50	14 00	20 00	32 00	40 00	....	55 00	78 00	....
Flanged.....	...	...	$2 75	3 50	4 50	5 50	7 50	12 00	18 00	25 00	40 00	48 00	....	66 00	94 00	....
EDDY																
Screwed	...	...	$1 30	1 70	2 20	3 20	4 20	6 20	11 50	16 00	22 00	35 00	....	50 00	80 00	130 00
Flanged.....	...	...	...	...	...	...	...	$9 00	15 00	20 00	28 00	42 00	....	60 00	90 00	130 00
CHAPMAN																
Screwed	$1 35	1 35	1 50	1 85	2 55	3 30	4 50	6 70	11 35	16 50	30 50	39 00	....	....	....	....
Flanged.....	$2 00	2 00	2 50	2 85	4 00	5 00	7 25	10 25	16 35	20 75	38 00	46 25	....	....	....	....
LUDLOW																
Screwed Ends.....	...	$1 40	1 40	1 80	2 35	3 40	4 40	6 25	13 75	15 50	23 50	34 00	45 00	52 00	76 00	....
Flanged.....	...	...	$3 40	3 70	4 15	5 70	7 40	11 00	18 75	21 50	30 50	43 00	55 00	64 00	88 00	....

KENNEDY STATIONARY SPINDLE

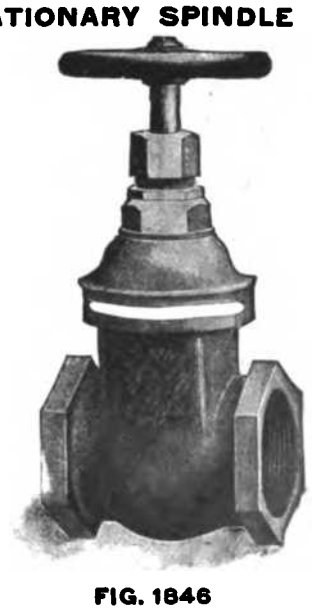


FIG. 1846

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BRASS GATE VALVES

NELSON COMPENSATING DISK VALVES

SCREW TOP SCREW ENDS



FIG. 1847

BOLT TOP SCREW ENDS



FIG. 1847A

SCREW TOP FLANGE ENDS

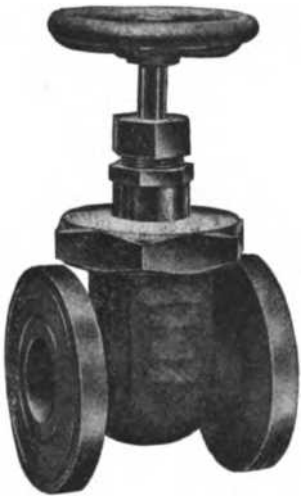


FIG. 1847B

PRICES, FIGS. 1847 TO 1847B

	Diameters of Opening, Inches.	Face to Face Screw Ends, Inches.	Face to Face Flange Ends, Inches.	Diameters of Flanges, Inches.	Screw Ends, Each.	Flange Ends, Each.
Screw Top	½	2¼	....	....	$1 80	$5 00
	¾	2½	3½	3⅝	2 20	5 00
	1	2⅞	3⅞	4	2 80	6 00
	1¼	3	4	4⅝	4 00	9 00
	1½	3½	4½	5	5 50	11 00
	2	3⅞	4⅞	6	8 00	16 50
Bolt Top.	2½	4¾	6	6½	15 75	25 00
	3	5¼	6¼	7	22 00	34 00

Sizes, ½, ¾ and 1 inch are made with rising stems, 1¼ inch and above with stationary stems.

RENEWABLE VULCANIZED ASBESTOS SEAT RING VALVES

STATIONARY SPINDLE

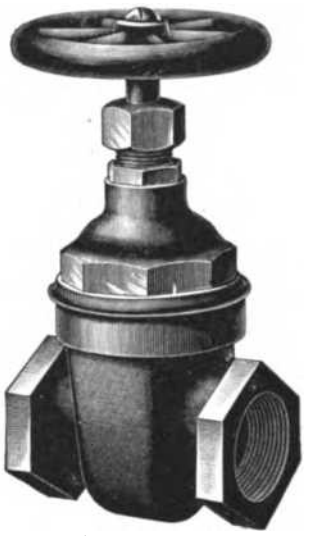


FIG. 1848



FIG. 1849

PRICES, FIGS. 1848 AND 1849

Sizes, Inches.	Stationary Spindle, Screwed.	Stationary Spindle, Flanged.	Rising Spindle, Screwed.	Rising Spindle, Flanged.	Stationary Spindle, Bolted Bonnet Scr'w'd.	Stationary Spindle, Bolted Bonnet Fla'g'd
¼	$1 50	.....	.....	.....	.....	.....
⅜	1 50	.....	.....	.....	.....	.....
½	1 65	$4 65	$1 65	$4 65	.....	.....
¾	2 20	5 65	2 20	5 65	.....	.....
1	2 80	7 50	2 80	7 50	.....	.....
1¼	4 00	9 35	4 00	9 35	.....	.....
1½	5 30	14 00	5 30	14 00	.....	.....
2	7 80	16 00	7 80	16 00	.....	.....
2½	17 00	26 50	17 00	26 50	.....	.....
3	23 00	35 75	23 00	35 75	$34 25	$39 25
3½	45 00	57 00	45 00	57 00	50 00	58 50
4	56 00	68 00	56 00	68 00	66 00	73 00
5	.....	.....	.....	.....	81 00	88 00
6	.....	.....	.....	.....	104 00	113 00

HEAVY PRESSURE STEAM AND WATER GATE VALVES

DESCRIPTION, FIGS. 1850 AND 1850A

BRASS SCREW ENDS



FIG. 1850

In these valves each disk is a separate piece provided with lugs, which have shoulders arranged near the peripheries of the disks and engaging pivotally with the hollow wedge shaped carrier, which is arranged loosely between the disks, having lugs on sides which slide in guides cast in valve body, so that the carrier is only free to move vertically, thus enabling the disks and wedge to be withdrawn as one piece from the valve, the lugs on each disk being arranged to overlap the lugs on the other disk and to bear against its central portion, whereby both disks are pressed uniformly upon the valve seats.

IRON BODY SCREW ENDS

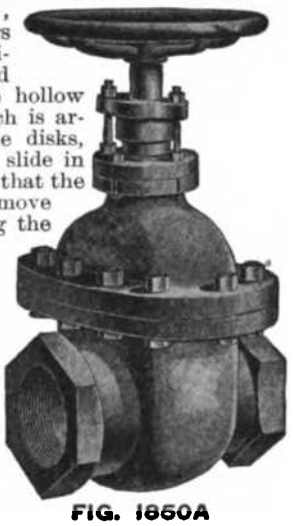


FIG. 1850A

PRICES, FIG. 1850

Sizes, in.	½	¾	1	1¼	1½	2	2½	3
Each,	$4 25	4 50	7 00	9 75	14 50	25 00	29 00	38 00

Sizes ½ to 2 inches are made with screw tops.
Sizes 2½ and 3 inches with bolt tops.

PRICES, FIG. 1850A

Sizes, inches.....	2½	3	3½	4	4½	5	6	7
Screw and flange ends..	$12 00	$14 00	$19 00	$22 00	$31 00	$36 00	$46 00	$54 00
Sizes, inches.....	8	10	12	14	15	16	20	24
Screw and flange ends..	$61 00	$87 00	$139 00	$175 00	$216 00	$250 00	$367 00	$482 00

HEAVY IRON BODY BRONZE MOUNTED GATE VALVES FOR STEAM AND WATER

BOLT TOP FLANGE ENDS

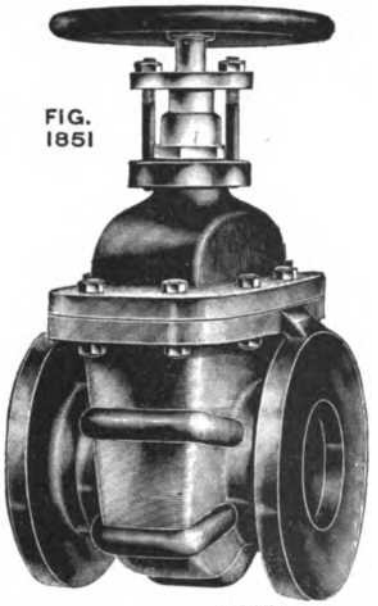


FIG. 1851

PRICES, FIG. 1851

	Sizes, Inches.	Screwed Ends.	Flanged Ends.	By Pass Extra.	Drilling Flanges, Extra.
Screw Top	1¼	$5 25	$6 00	.....	$0 12
	1½	7 00	8 00	.....	12
	2	9 00	9 50	.....	12
Bolt Top	2½	16 00	17 00	.....	16
	3	19 50	20 00	.....	16
	3½	23 50	25 00	.....	16
	4	28 00	29 00	.....	16
	4½	36 00	38 00	.....	16
	5	37 50	39 50	$8 00	20
	6	46 00	48 00	9 25	25
	7	56 00	57 00	9 25	35
	8	68 50	70 00	10 50	40
	9	83 00	85 00	10 50	1 10
	10	100 00	103 00	10 50	1 40
	12	142 00	138 00	12 50	2 00
	14	.....	177 00	12 50	2 50

Larger sizes, prices on application.
2 inch and smaller, 160 lbs. working steam pressure.
2½ inch and larger, 125 lbs. working steam pressure.

DOUBLE SEATED IRON BODY BRASS MOUNTED AND ALL IRON GATE VALVES

VICTOR FLANGE ENDS

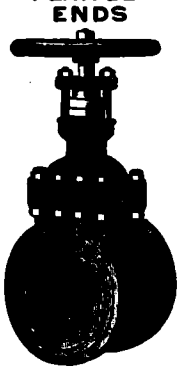


FIG. 1852

VICTOR FOR 175 LBS. WORKING PRESSURE

Sizes, Inches.	Iron Body, Brass Mounted and all Iron Screw Ends.	Iron Body, Brass Mounted and all Iron Flange Ends.	Diameters of Flanges, Inches.
2	$9 00	$10 50	6
2½	11 00	11 00	7
3	14 00	14 00	7½
3½	22 00	22 00	8½
4	29 00	29 00	9
4½	34 00	34 00	9¼
5	42 00	42 00	10
6	53 00	53 00	11
7	60 00	60 00	12½
8	75 00	75 00	13½
9	90 00	90 00	15
10	115 00	115 00	16
12	170 00	170 00	19

Victor valves, when so ordered, can be furnished with English instead of American standard threads or flanges. We can furnish with tongued and grooved body and companion flanges when required. Prices upon application.

Victor valves made entirely of gun metal with Tobin bronze bolts can be furnished when required. Prices will be sent upon receipt of specifications.

CLIP FOR 100 LBS. WORKING PRESSURE

Sizes, Inches.	Iron Body, Brass Mounted and all Iron Screw Ends.	Iron Body, Brass Mounted and all Iron Flange Ends.
½	$1 50	.....
¾	1 90	.....
1	2 50	.....
1¼	3 50	.....
1½	5 00	.....
2	7 50	$8 50
2½	12 00	13 50
3	15 00	16 90
3½	18 00	20 30
4	20 00	22 50
4½	23 00	26 00
5	25 00	28 30
6	30 00	33 80

Clip valves can be furnished with English standard threads or flanges, instead of American, when so ordered, without extra charge.

CLIP SCREW ENDS



FIG. 1853

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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JENKINS, SCREWED

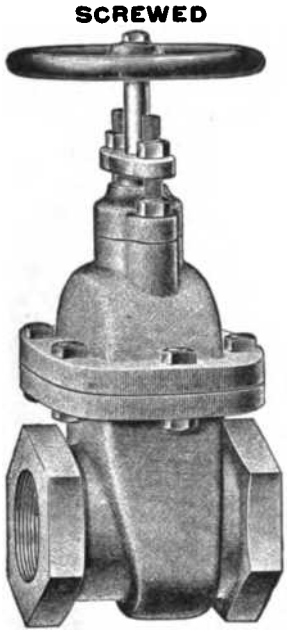


FIG. 1854

IRON BODY BRASS MOUNTED AND ALL IRON DOUBLE GATE VALVES

PRICES FIG. 1854

Sizes. Inches.	All Iron. Screwed.	All Iron. Flanged.	Iron Body Brass Mounted. Screwed.	Iron Body Brass Mounted. Flanged.	Hub Ends. Screwed.	Dia. of Flange. Inches.
2	$8 25	$10 25	$8 00	$9 00	$9 00	6
2½	10 00	11 50	12 00	13 00	12 00	7
3	12 25	13 75	15 00	16 00	15 00	7½
3½	15 00	16 50	18 00	19 00	18 00	8½
4	18 25	20 50	21 00	22 50	21 00	9
4½	....	....	29 00	31 00	29 00	9¼
5	....	....	30 00	32 00	30 00	10
6	....	....	36 00	38 00	36 00	11
7	....	....	50 00	50 00	50 00	12½
8	....	....	62 00	62 00	62 00	13½
10	....	....	85 00	85 00	85 00	16
12	....	....	120 00	120 00	120 00	19

PRICES FIG. 1855

Sizes. Inches.	Screwed.	Flanged.	Diam. of Flange.
2	$10 00	$10 00	6
2½	12 00	12 50	7
3	15 00	15 50	8
3½	18 00	19 00	8½
4	20 00	21 00	9
4½	23 00	24 00	9½
5	25 00	27 00	10
6	30 00	32 00	11
7	43 00	43 00	12
8	53 00	53 00	13
9	60 00	60 00	15
10	70 00	70 00	16
12	95 00	95 00	18

KENNEDY, SCREWED

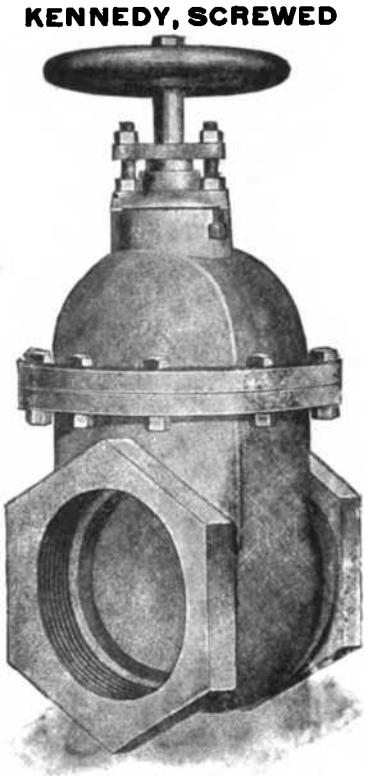


FIG. 1855

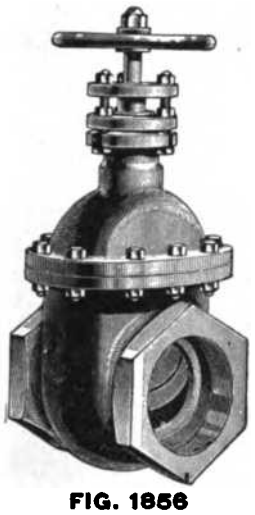
FLANGED, 6 IN. AND UNDER



FIG. 1857

FIG. 1856

SCREWED, SIZES ABOVE 6 IN.



LUDLOW IRON BODY BRASS MOUNTED AND ALL IRON DOUBLE GATE VALVES

IRON BODY BRASS MOUNTED

FOR 350 LBS. PRESSURE EITHER SIDE OF GATE

Sizes, inches	3	3½	4	4½	5	6	7	8	9	10	12
Screwed, price each	$15 00	$16 50	$19 00	$23 00	$25 00	$32 50	$38 00	$48 00	$62 00	$70 00	$88 00
Flanged, price each	16 00	17 50	20 00	23 50	25 50	33 00	38 00	47 00	62 00	70 00	88 00
Diam. of flanges, in.	7½	8½	9	9¼	10	11	12½	13½	15	16	19

FOR HIGH STEAM PRESSURE TESTED 400 LBS.

Sizes, inches	2	2½	3	3½	4	4½	5	6	7	8	9	10	12
Screwed, price each	....	$14 00	$16 00	$18 00	$21 00	....	$29 50	$37 00	....	$54 00			
Flanged, price each	$9 00	15 00	17 00	19 00	22 00	$26 00	30 00	37 50	$43 50	54 00	$70 00	$81 00	$101 00
Diam. of flanges, in.	....	....	7½	8½	9	9¼	10	11	12½	13½	15	16	19

ALL IRON

FOR GAS, ACIDS, AMMONIA, ETC., TESTED 350 LBS.

Sizes, inches	3	3½	4	4½	5	6	7	8	9	10	12
Screwed, price each	$13 00	$14 00	$16 50	$20 50	$23 00	$28 00	$33 00	$40 00	$48 00	$61 00	$77 00
Flanged, price each	14 25	15 25	17 50	21 50	23 50	29 00	33 50	40 50	47 00	60 00	75 00
Diam. of flanges, in.	7½	8½	9	9¼	10	11	12½	13½	15	16	19

FIG. 1856

LUDLOW IRON BODY BRASS MOUNTED DOUBLE GATE VALVE

SCREWED

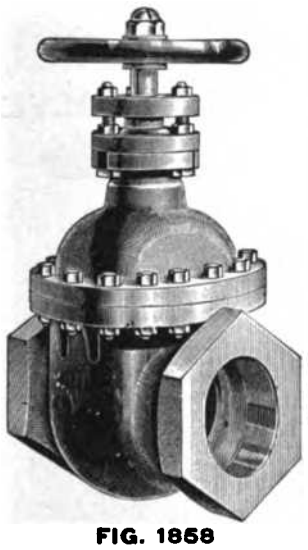


FIG. 1858

FLANGED



FIG. 1859

TESTED AT 600 LBS. FOR VERY HIGH STEAM WORKING PRESSURES, EITHER SIDE OF GATE

Sizes, inches	1½	2	2½	3	3½	4	4½
Screwed ends, price each	$10 00	$11 00	$15 00	$19 50	$21 50	$24 00	
Flanged ends, " "	12 50	13 50	19 00	23 50	25 25	28 00	$36 00
Diam. of Standard flanges	6	6½	7½	9	9	10	10½

Sizes, inches	5	6	7	8	9	10	12
Screwed ends, price each	$38 00	$49 50	$59 00	$69 00			
Flanged ends, " "	41 00	55 00	64 50	73 00	$95 00	$110 00	$148 00
Diam. of Standard flanges	11	13	14	15	16	17½	20

EDDY IRON BODY BRASS MOUNTED DOUBLE GATE VALVES

Sizes. Inches.	SCREWED Prices. Each.	FLANGED Diam. Std. Flanged. Inches.	FLANGED Prices. Each.
2	$7 00	6	$7 00
2½	10 50	7	10 50
3	13 00	8	13 00
3½	16 50	8½	16 50
4	18 00	9	18 00
4½	22 00	9½	22 00
5	25 00	10	25 00
6	31 00	11	31 00
7	37 00	12	37 00
8	45 00	13	45 00
10	60 00	16	60 00
12	80 00	18	80 00
14	.....	21	120 00
15	.....	22	135 00
16	.....	23	150 00
18	.....	25	190 00
20	.....	27	240 00
22	.....	28¼	320 00
24	.....	31	400 00
30	.....	38	700 00
36	.....	45	1,200 00

SCREWED

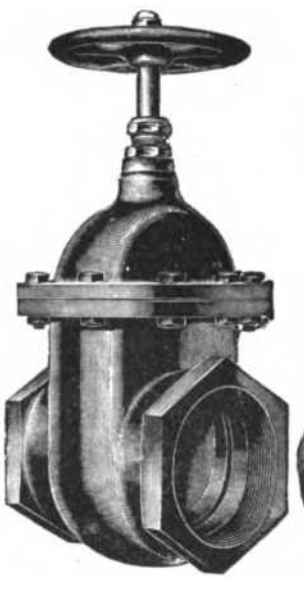


FIG. 1860

FLANGED

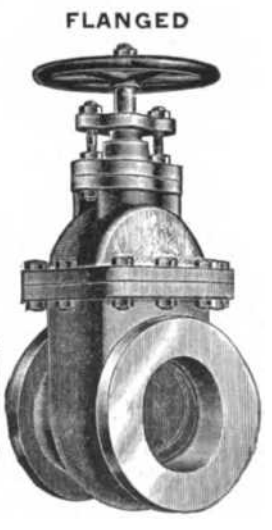


FIG. 1861

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IRON BODY BRASS MOUNTED GATE VALVES

WITH COMPENSATING DISKS

DESCRIPTION, FIGS. 1862 AND 1863

These valves are made with cast iron bodies, caps and wheels, and composition spindles and stuffing boxes up to and including 5 inches; above that with the bolt gland stuffing box. All valves are provided with the Patent Stuffing Box. These flanges fit together with a metal joint, no gasket or packing being used. The larger sizes can be fitted with either bevel or upright gearing as desired.

With renewable seats and disks, tested to 300 pounds.

GLOBE



FIG. 1862

ANGLE

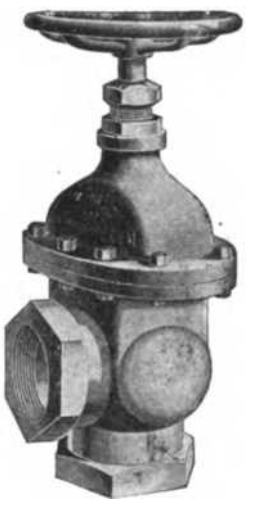


FIG. 1863

PRICES, FIGS. 1862 AND 1863

Diameters Opening, Inches.	Diameters of Flanges, Inches.	Screw Ends, Each.	Flanged Ends, Each.	Add for Lever Attachment, Each.	Angle Valve Screwed, Each.	Angle Valve Flanged, Each.
2	6	$8 50	$10 00	$4 00	$13 00	$15 00
2½	7	12 00	13 00	4 00	16 75	18 00
3	7½	15 00	16 00	4 50	18 50	20 00
3½	8½	18 00	19 00	5 00	19 50	21 50
4	9	21 00	22 50	5 00	24 00	26 00
4½	9¼	29 00	31 00	5 50	30 00	32 00
5	10	30 00	32 00	5 50	40 00	41 00
6	11	36 00	38 00	6 00	48 00	50 00
7	12½	50 00	50 00	6 00	80 00	83 00
8	13½	62 00	62 00	7 00	90 00	94 00
10	16	.....	85 00	9 75	.....	.....
12	18	.....	120 00	12 00	.....	.....
14	21	.....	150 00	.....	.....	.....
15	22¼	.....	175 00	.....	.....	.....
16	23½	.....	195 00	.....	.....	.....
18	25	.....	225 00	.....	.....	.....
20	27½	.....	264 00	.....	.....	.....
22	....	.....	.....	.....	.....	.....
24	31½	.....	400 00	.....	.....	.....

IRON BODY GATE VALVES

RENEWABLE VULCANIZED ASBESTOS SEAT RINGS

PRICES FIGS. 1864 AND 1865

SCREWED PACKING NUT

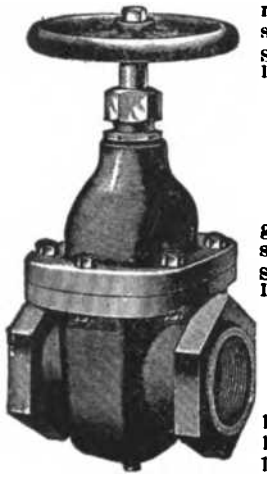


FIG. 1864

Bolted bonnet, screwed packing nut and stationary spindle.

Sizes, Inches.	Screwed or Flanged, each.
2	$7 50
2½	10 75
3	14 00
3½	18 25
4	20 50

Bolted packing gland, stationary spindle.

Sizes, Inches.	Screw, Each.	Flange, Each.
4½	$25 00	$25 00
5	27 00	27 00
6	34 00	34 00
7	41 00	41 00
8	51 50	51 50
10	73 00	73 00
12	100 00	100 00
14	.....	168 00
16	.....	223 00
18	.....	292 00
20	.....	346 00
24	.....	494 00

BOLTED PACKING GLAND

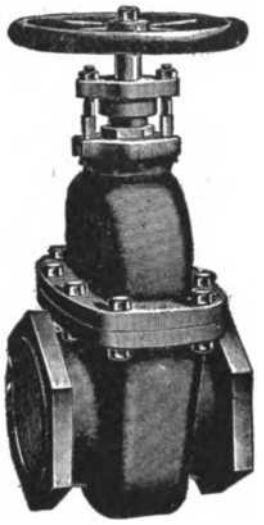


FIG. 1865

AMMONIA IRON GATE VALVES

RENEWABLE SEAT RINGS

SCREWED HUB AND SCREW ENDS

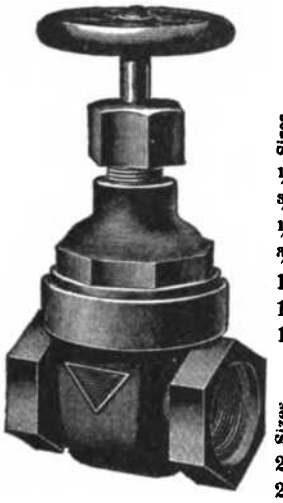


FIG. 1866

PRICES FIGS. 1866 AND 1867

Sizes, Inches.	Screw'd Hub, Screw Ends, Each.	Screw'd Hub, Gland Ends, Each.
¼	$3 00	$4 00
⅜	3 00	4 00
½	3 00	4 00
¾	3 60	4 80
1	4 20	5 55
1¼	5 10	6 60
1½	6 00	7 65

Sizes, Inches.	Bolted Bonnet, Screw Ends, Each.	Bolted Bonnet, Gland Ends, Each.
2	$8 50	$10 45
2½	12 00	16 20
3	14 50	20 50

SCREWED HUB AND GLAND ENDS



FIG. 1867

ALL IRON DOUBLE GATE VALVE

FOR GAS, OIL OR AMMONIA

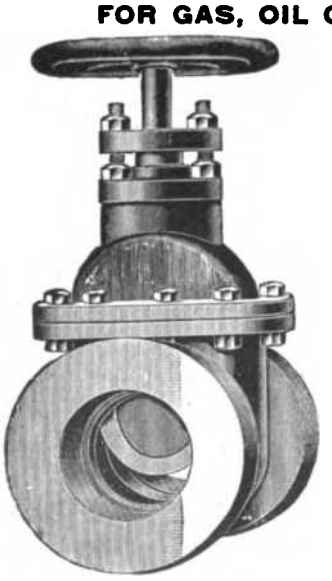


FIG. 1868

PRICES BRASS, FIG. 1868

Diameters of Opening, Inches.	Screw or Flange Ends, Each.	Sliding Stem and Lever, Each.	Diameters of Flanges, Inches.
2	$10 00	$11 00	6
2½	12 00	16 00	7
3	15 00	20 00	8
3½	18 00	22 00	8½
4	20 00	25 00	9
5	25 00	.....	10
6	30 00	.....	11
7	43 00	.....	12
8	53 00	.....	13
10	70 00	.....	16
12	95 00	.....	18

These valves should never be used for water.

Prices of larger sizes given on application.

PRICES, IRON BODY, COMPOSITION MOUNTED FIG. 1869

Diameters of Opening, Inches.	Screw Ends, Each.	Flange Ends, Each
2	$13 75	$13 75
2½	16 50	17 00
3	20 25	20 75
3½	24 00	25 00
4	26 75	27 25
4½	30 00	31 00
5	32 50	34 50
6	39 00	41 00
7	53 50	53 50
8	65 00	65 00
10	85 00	85 00
12	113 00	113 00

SPECIAL FIRE OR INDICATOR VALVE

PRICES FIG. 1869

Diameters of Opening, Inches.	Screw Ends, Each.	Flange Ends, Each.
1½	$9 25	$11 25
2	13 75	17 75
2½	20 25	24 25
3	27 25	32 25
3½	41 00	49 00
4	51 75	59 75

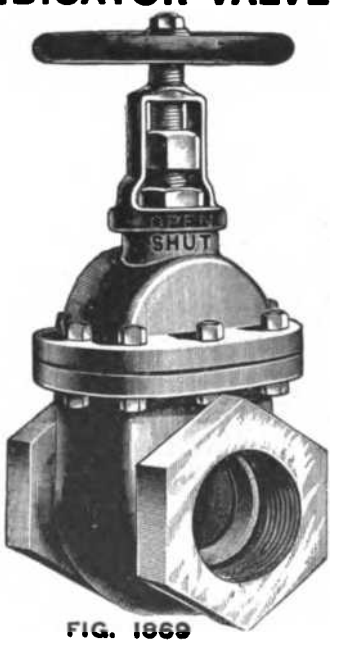


FIG. 1869

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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DOUBLE SEATED VICTOR GATE VALVES WITH INDICATOR

SCREW ENDS

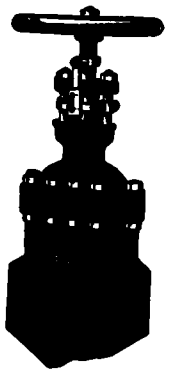


FIG. 1870

IRON BODY BRASS MOUNTED, AND ALL IRON—STATIONARY STEM

FLANGE ENDS

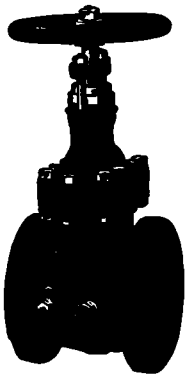


FIG. 1871

Sizes, inches	2	2½	3	3½	4	4½	5	6	7	8	9	10	12
Iron body brass mounted, screw ends, each	$10 00	$12 00	$15 50	$24 00	$32 00	$37 50	$46 50	$58 50	$66 00	$82 50	$98 50	$125 00	$180 00
Iron body brass mounted, flange ends, each	10 00	12 00	15 50	24 00	32 00	37 50	46 50	58 50	66 00	82 50	98 50	125 00	180 00
All iron, screw ends, each	10 00	12 00	15 50	24 00	32 00	37 50	46 50	58 50	66 00	82 50	98 50	125 00	180 00
All iron, flange ends, each	10 00	12 00	15 50	24 00	32 00	37 50	46 50	58 50	66 00	82 50	98 50	125 00	180 00
Diameters of standard size flanges, inches	6	7	7½	8½	9	9¼	10	11	12½	13½	15	16	19

These valves, when so ordered, can be furnished with English instead of American standard threads and flanges. Prices upon application. And also furnish them tongued and grooved body and companion flanges when required. Prices furnished upon application.

These valves made entirely of gun metal with Tobin bronze bolts can be furnished when required. Prices will be sent upon receipt of specifications.

IRON BODY BRASS MOUNTED AND ALL IRON DOUBLE GATE VALVES WITH NUT FOR WATER AND GAS

HUB OR BELL END WATER OR GAS VALVE



FIG. 1872

SPIGOT END VALVE SHOWING MALE AND FEMALE ENDS OR REGULAR PATTERN



FIG. 1873

HUB END FOR WATER

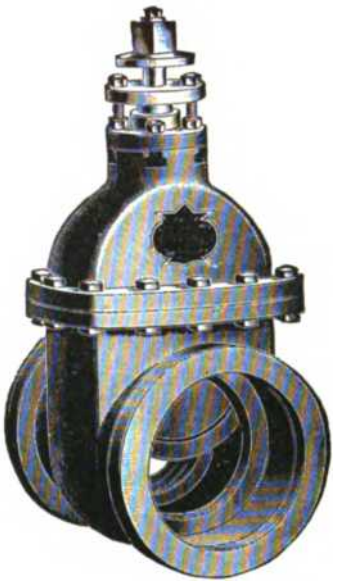


FIG. 1874

HUB END FOR GAS



FIG. 1875

IRON BODY BRASS MOUNTED, 300 LBS. PRESSURE EITHER SIDE OF GATE

Sizes, inches	2	2½	3	3½	4	4½	5	6	7	8	10	12
Hub or Bell ends, each	$7 00	$10 00	$14 50	$16 00	$17 00	$22 00	$24 00	$28 00	$37 00	$42 00	$60 00	$76 00
Spigot ends, each	7 25	10 25	15 00	16 50	17 50	22 50	24 50	28 75	38 00	43 25	62 50	79 50

ALL IRON, 300 LBS. PRESSURE EITHER SIDE OF GATE

Sizes, inches	2	2½	3	3½	4	4½	5	6	7	8	10	12
Hub or Bell ends, each	$7 00	$8 50	$10 25	$13 75	$15 00	$20 50	$22 00	$26 00	$32 00	$35 00	$51 00	$62 00
Spigot ends, each	7 25	8 75	10 75	14 25	15 50	21 00	22 50	26 75	33 00	36 25	53 50	65 50

IRON BODY BRASS MOUNTED, 350 LBS. PRESSURE EITHER SIDE OF GATE

Sizes, inches	3	3½	4	4½	5	6	7	8	9	10	12
Hub or Bell ends, each	$14 50	$16 00	$18 00	$22 00	$24 00	$31 50	$37 00	$45 00	$58 00	$63 00	$83 00
Spigot ends, each	15 00	16 50	18 50	22 50	24 50	32 25	38 25	47 50	60 50	65 50	86 00

IRON BODY WATER GATES, COMPOSITION MOUNTED, FIG. 1874

Diameters of opening, inches	2	3	4	5	6	8	10	12
Bell or spigot end, each	$10 00	$15 00	$20 00	$25 00	$30 00	$53 00	$70 00	$95 00

ALL IRON GAS GATES, FIG. 1875

Diameters of opening, inches	2	3	4	5	6	8	10	12
Bell or spigot end, each	$10 00	$15 00	$20 00	$25 00	$30 00	$53 00	$70 00	$95 00

IRON BODY COMPOSITION MOUNTED WATER GATES

BELL ENDS — SPIGOT ENDS



FIG. 1876

DESCRIPTION, FIGS. 1876 AND 1877

These valves are made with cast iron bodies, caps, and nuts, composition spindle, double stuffing boxes, gland followers, gates cast iron, copper faces.

They are more especially for use in street mains. Are extra heavy to resist the water hammer and general hard usage to which they are liable. The construction of the gate is such that in opening the valve the center wedge is drawn from between the disk, avoiding all tendency to stick or wedge fast as in solid wedge valves. Gates can be furnished with either bevel or upright gearing.



FIG. 1877

PRICES, FIGS. 1876 AND 1877

Sizes, inches	3	4	5	6	8	10	12
Diameters of Bell socket	4⅞	5¾	6⅞	8⅞	10	12	14⅜
Each	$15 00	$21 00	$30 00	$36 00	$52 00	$85 00	$120 00

IRON BODY COMPOSITION MOUNTED WATER GATES

RENEWABLE VULCANIZED ASBESTOS SEAT RINGS

PRICES, FIG. 1878

Sizes, Inches	Bell or Spigot Ends, Each
2	$7 50
3	14 00
4	20 50
5	27 00
6	34 00
7	41 00
8	51 50
10	73 00
12	100 00
14	168 00
16	223 00
18	292 00
20	346 00
24	494 00

BELL ENDS

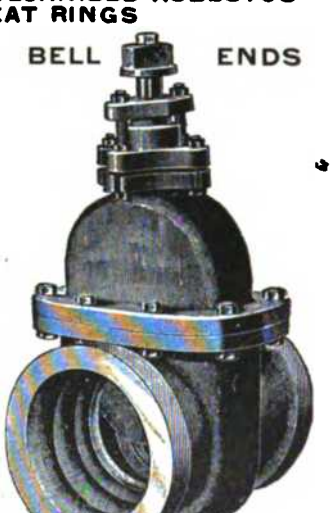


FIG. 1878

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IRON BODY BRASS MOUNTED AND ALL IRON DOUBLE GATE VALVES WITH OUTSIDE SCREW AND YOKE

LUDLOW

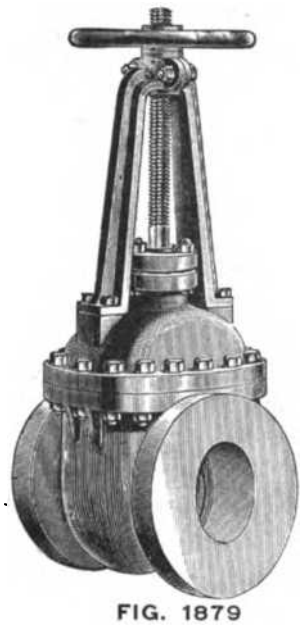


FIG. 1879

PRICES, FIG. 1879

Iron body brass mounted, 300 pounds pressure either side of gate.

Sizes, inches	3	3½	4	4½	5	6	7	8	10	12
Outside screw and yoke, screwed, each	$20 75	$25 75	$28 00	$34 00	$37 00	$44 50	$54 00	$63 00	$87 00	$110 00
Outside screw and yoke, flanged, each	21 75	26 75	28 50	34 50	37 50	45 00	54 00	61 50	87 50	107 50

PRICES, FIG. 1879

Iron body brass mounted, 350 pounds pressure either side of gate.

Sizes, inches	3	3½	4	4½	5	6	7	8	9	10	12
Outside screw and yoke, screwed, each	$23 50	$25 75	$29 00	$34 00	$37 00	$46 50	$54 00	$66 00	$82 00	$93 00	$115 50
Outside screw and yoke, flanged, each	24 50	26 75	30 00	34 50	37 50	47 00	54 00	65 00	82 00	93 00	115 50

PRICES, FIG. 1879

Iron body brass mounted, for high steam pressure, tested 400 pounds.

Sizes, inches	3	3½	4	4½	5	6	7	8	9	10	12
Outside screw and yoke, screwed, each	$24 50	$27 25	$31 00	....	$41 50	$51 00	....	$72 00	....	....	....
Outside screw and yoke, flanged, each	25 50	28 25	32 00	37 00	42 00	51 50	59 50	72 00	90 00	104 00	128 50

PRICES, FIG. 1880

For water, steam. gas, oil, ammonia, etc.

Sizes, inches	2½	3	3½	4	4½	5	6	7	8	10	12
Screw and flange ends, brass mounted, each	$20 00	$23 00	$28 00	$33 00	$40 00	$46 00	$55 00	$65 00	$83 00	$110 00	$135 00
Screw and flange ends, all iron, each	18 00	20 70	25 20	29 70	36 00	41 40	49 50	58 50	74 70	99 00	111 50

Prices on all size valves, from 12 to 48 inches, given on application.

KENNEDY

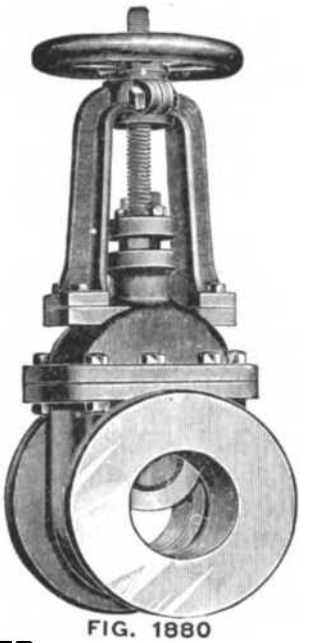


FIG. 1880

IRON BODY STEAM VALVES

Composition mounted.

FLANGE ENDS

PRICES, FIG. 1881

With renewable seats and disks, tested to 300 pounds.



Sizes, Inches.	Screw Ends.	Flange Ends.	Diam. Flange, Inches.
2	$15 50	$17 00	6
2½	19 50	20 50	7
3	23 75	24 75	7½
3½	27 50	28 50	8½
4	31 25	32 75	9
4½	40 25	42 25	9¼
5	42 00	44 00	10
6	50 25	52 25	11
7	66 00	66 00	12½
8	80 75	80 75	13½
10	.....	109 00	16
12	.....	148 75	18
14	.....	185 50	21
15	.....	220 00	22¼
16	.....	245 00	23½
18	.....	280 00	25
20	.....	324 00	27½
24	.....	470 00	31½

FIG. 1881

SCREWED



FIG. 1882

IRON BODY GATE VALVES

Renewable vulcanized asbestos seat ring.

PRICES, FIG. 1882

Iron body brass mounted.

Sizes, inches	2	2½	3	3½	4	4½
Screwed, each	$16 50	$22 75	$26 00	$31 75	$36 50	$44 00

Sizes, inches	5	6	7	8	10	12
Screwed, each	$51 00	$61 00	$71 00	$91 00	$124 00	$154 00

PRICES, FIG. 1883

Iron body brass mounted.

Sizes, inches	2	2½	3	3½	4	4½
Flanged, each	$16 50	$22 75	$26 00	$31 75	$36 50	$44 00
Diameters of flanges, inches.	6½	7	8	8½	9	9½

Sizes, inches	5	6	7	8	10	12
Flanged, each	$51 00	$61 00	$71 00	$91 00	$124 00	$154 00
Diameters of flanges, inches.	10	11	12	13	16	18

Sizes, inches	14	16	18	20	24
Flanged, each	$232 00	$300 00	$417 00	$487 00	$668 00
Diameters of flanges, inches.	21	23	25	27	31

FLANGED

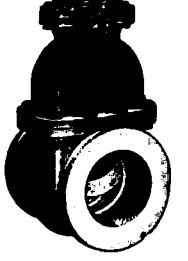


FIG. 1883

HEAVY PRESSURE IRON BODY STEAM VALVES

FLANGE END WITH BY-PASS

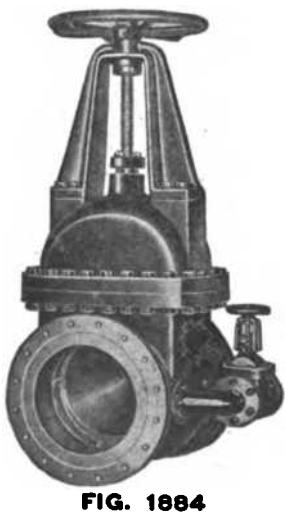


FIG. 1884

SCREW ENDS

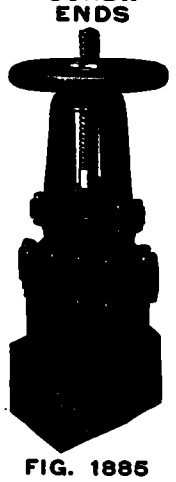


FIG. 1885

VICTOR GATE VALVES

Iron body brass mounted.

PRICES, FIG. 1885

Sizes, inches	2	2½	3	3½	4
Screw and flange ends, each	$12 00	$15 00	$19 00	$30 00	$38 00
Diameters of standard size flanges, inches	6	7	7½	8½	9
Sizes, inches	4½	5	6	7	
Screw and flange ends, each	$45 00	$53 00	$66 00	$75 00	
Diameters of standard size flanges, inches	9¼	10	11	12½	
Sizes, inches	8	9	10	12	
Screw and flange ends, each	$94 00	$112 00	$142 00	$210 00	
Diameters of standard size flanges, inches	13½	15	16	19	

PRICES, FIG. 1886

Sizes, inches	5	6	7	8
Screw and flange ends, each	$58 00	$72 00	$81 00	$100 00
Diameters of standard size flanges, inches	10	11	12½	13½
Sizes, inches	9	10		12
Screw and flange ends, each	$120 00	$154 00		$227 00
Diameters of standard size flanges, inches	15	16		19

FLANGE ENDS WITH BY-PASS

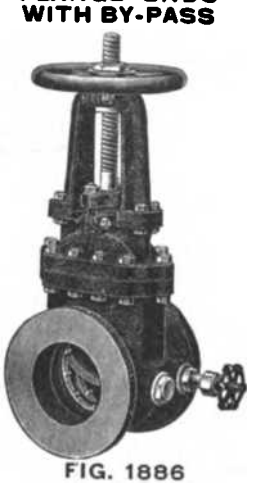


FIG. 1886

Victor valves, when so ordered, can be furnished with English instead of American standard threads and flanges. We can also furnish with tongued and grooved body and companion flanges when required. Prices furnished upon application. These valves, made entirely of gun metal, with Tobin bronze bolts, can be furnished when required. Prices will be sent upon receipt of specifications.

PRICES, FIG. 1884, OUTSIDE SCREW AND YOKE

Sizes, inches	2½	3	3½	4	4½	5	6	7	8	10	12	14	15	16	20	24
Screw and flange ends, each	$14 00	$18 00	$23 00	$27 00	$37 00	$44 00	$53 00	$62 00	$70 00	$99 00	$151 00	$188 00	$219 00	$268 00	$391 00	$513 00
Add for by-pass attachments	....	....	....	....	....	20 00	22 00	24 00	25 00	27 00	28 75	30 00	35 00	40 00	50 00	70 00

Flanges tongued, grooved and drilled as desired, at extra cost.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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6 INCH, 1,500 POUNDS PRESSURE

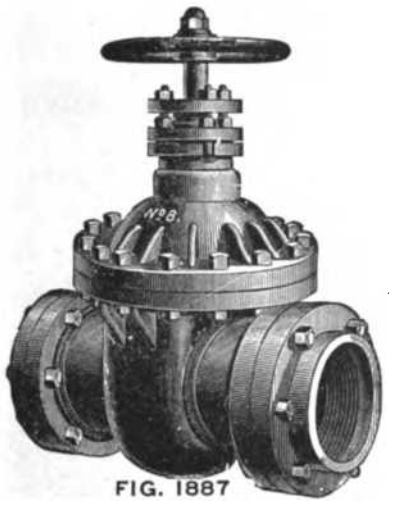


FIG. 1887

With loose flanges bolted on.

HEAVY PRESSURE GATE VALVES

FOR HYDRAULIC WORK, NATURAL GAS, OIL, ETC.

PRICES, FIG. 1887, IRON BODY, BRASS MOUNTED 1,500 POUNDS PRESSURE

Sizes, Inches.	Screwed, Each.	Flanged, Each.	Diameters of Flanges, Inches.
1½	.....	$9 50	....
2	$13 75	14 75	7
2½	20 00	21 50	7½
3	24 00	26 00	9
4	35 00	37 00	10
5	61 00	67 00	12
6	68 00	71 00	12
7	.....	93 00	14
8	.....	122 00	15
10	.....	272 00	19½

PRICES, FIG. 1887. ALL IRON, 1,500 LBS. PRESSURE

Sizes, Inches.	Screwed, Each.	Flanged, Each.	Diameters of Flanges, Inches.
1½	.....	.....	....
2	$13 75	.....	7
2½	19 50	$21 00	7½
3	23 00	25 00	9
4	.....	35 50	10
5	.....	.....	12
6	61 00	67 00	12
7	.....	.....	14
8	.....	111 00	15
10	.....	250 00	19½

PRICES, FIG. 1888, IRON BODY, BRASS MOUNTED, 2,000 POUNDS PRESSURE

Sizes, Inches.	Screwed, Each.	Flanged, Each.	Diameters of Flanges, Inches.
1½	.....	.....	....
2	.....	.....	....
2½	$28 50	$29 00	8½
3	30 00	32 50	10
4	67 00	77 00	12
5	.....	125 00	13
6	.....	160 00	14

6 INCH, 2,000 POUNDS PRESSURE

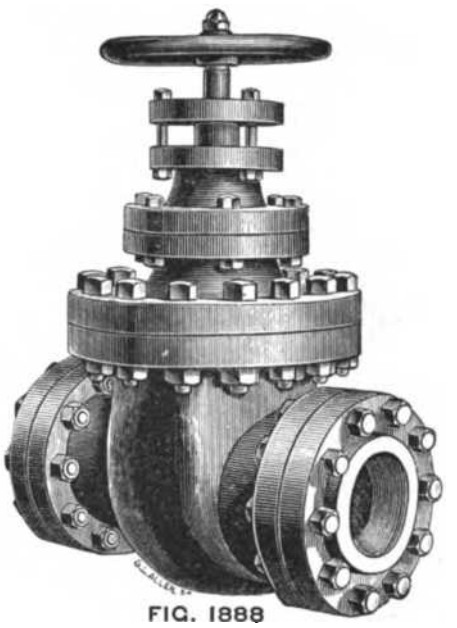


FIG. 1888

Showing style of 6 inch valve with loose flanges bolted on.

All other sizes are made without the loose neck.

Prices on application.

AUTOMATIC GLOBE AIR VALVE



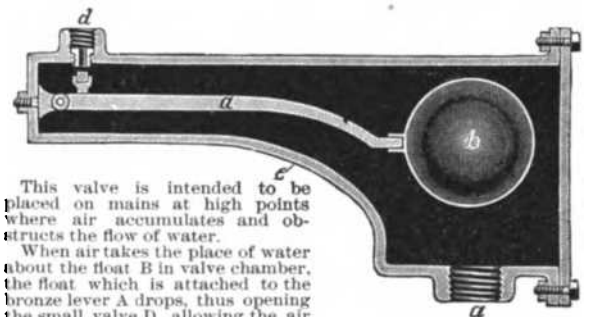
FIG. 1889

This valve is intended to be placed on mains at high points where air accumulates and obstructs the flow of water. When air takes the place of water about the float in valve chamber the valve opens, permitting the air to escape. As the water returns the valve is closed.

PRICE, $38 00

AUTOMATIC LEVER AND FLOAT AIR VALVE

WITH BRONZE MOUNTINGS, COPPER FLOAT



SECTION

This valve is intended to be placed on mains at high points where air accumulates and obstructs the flow of water.

When air takes the place of water about the float B in valve chamber, the float which is attached to the bronze lever A drops, thus opening the small valve D, allowing the air to escape. As the water returns it lifts the float, thereby closing the valve.

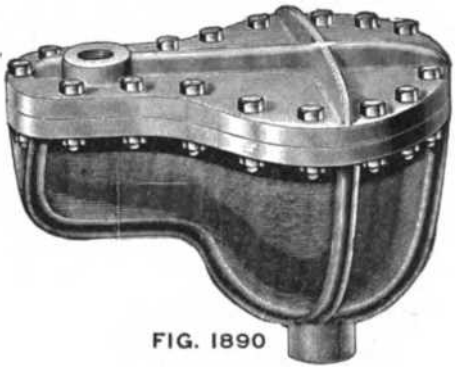


FIG. 1890

PRICES, FIG. 1890

FOR LIGHT PRESSURE	FOR HEAVY PRESSURE	FOR EXTRA HEAVY PRESSURE
Tested at 100 pounds pressure per square inch, water pressure.	Tested at 300 pounds pressure per square inch, water pressure.	Tested at 600 pounds pressure per square inch, water pressure.
Inches.	Inches.	Inches.
Inlet connection, screwed..... 2	Inlet connection, screwed..... 3	Inlet connection, screwed..... 3
Outlet..... 1	Outlet..... 2	Outlet..... 2
Air valve opening, 5/16	Air valve opening, 7/16	Air valve opening, 7/16
Each.....$28 50	Each.....$47 00	Each.....$64 00

SEMI-METALLIC DISKS FOR VALVES

DESCRIPTION, FIG. 1891

They are not affected by steam heat, oil or acid, and will pack an oil, acid, air, steam or water valve equally well and not leak.

They are not brittle, but are sufficiently elastic to make a perfect seat without the use of a wrench.

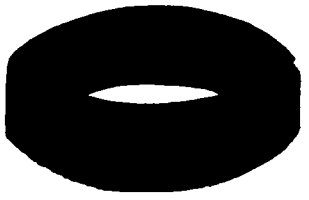


FIG. 1891

PRICES

Sizes, Inches.	Each.	Sizes, Inches.	Each.
¼	$0 04	5	$0 80
⅜	05	6	1 00
½	06	7	1 20
¾	07	8	1 40
1	08	10	1 75
1¼	12	12	2 00
1½	16	14	3 00
2	24	16	4 50
2½	32	18	6 00
3	40	20	8 00
3½	50	22	10 00
4	60	24	12 00

JENKINS DISKS FOR VALVES

PRICES, FIG. 1892

Will stand steam, oils, or acids. Soft disks for cold water.

Sizes,	¼	⅜	½	¾	1	1¼	1½	2
Each,	$0 03	04	04	05	06	09	12	18
Sizes,	2½	3	3½	4	4½	5	6	7
Each,	$0 24	33	45	52	60	68	90	98
Sizes,	8	9	10	12	14	16	18	20	24
Each,	$1 20	1 60	1 75	2 25	3 00	4 00	5 00	6 00	9 00

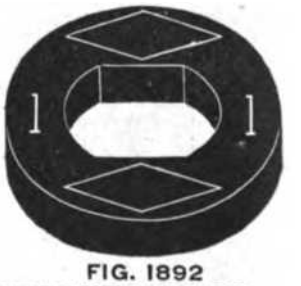


FIG. 1892

RUBBER DISKS FOR VALVES

WITH ROUND HOLE



FIG. 1893

WITH OBLONG HOLE



FIG. 1893A

DESCRIPTION, FIGS. 1893 AND 1893A

To fit valves of all standard makes. Either round or oblong hole in the centre. Made either hard or semi-hard. They are not affected by steam, oil, or heat, and will pack any valve equally well and not leak. The semi-hard will conform to rough, or uneven, or pitted seats.

PRICES, FIGS. 1893 AND 1893A

Sizes.	Each.	Sizes.	Each.	Sizes.	Each.	Sizes.	Each.	Sizes.	Each.
¼	$0 03	1¼	$0 09	3½	$0 45	7	$0 98	16	$4 00
⅜	04	1½	12	4	52	8	1 20	18	5 00
½	04	2	18	4½	60	10	1 75	20	6 00
¾	05	2½	24	5	68	12	2 25	24	9 00
1	06	3	33	6	90	14	3 00		

HYDRANT VALVES



FIG. 1894

Specially molded beveled edge valves of an extra quality pure stock. Prices on application.

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HYDRANTS AND WATER CRANE

MILL HYDRANT
SINGLE DISCHARGE



FIG. 1895

MILL HYDRANT
DOUBLE DISCHARGE



FIG. 1896

MILL HYDRANT
DOUBLE VALVE



FIG. 1897

MILL HYDRANTS

PRICES, FIGS. 1895 TO 1897

Screwed or Flanged.

	Inlet.	Outlet.	Each.
Fig. 1895	2½	2½	11 00
" 1896	2½	2½	12 00
" 1897	4½	2½	22 50

Diameter of bottom flanges, 8 inches.

STANDARD COMPRESSION FIRE HYDRANT

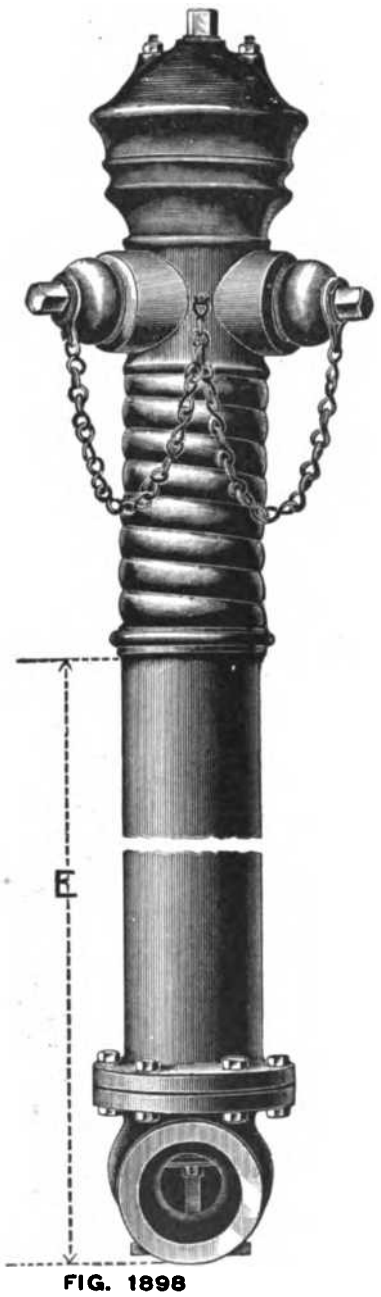
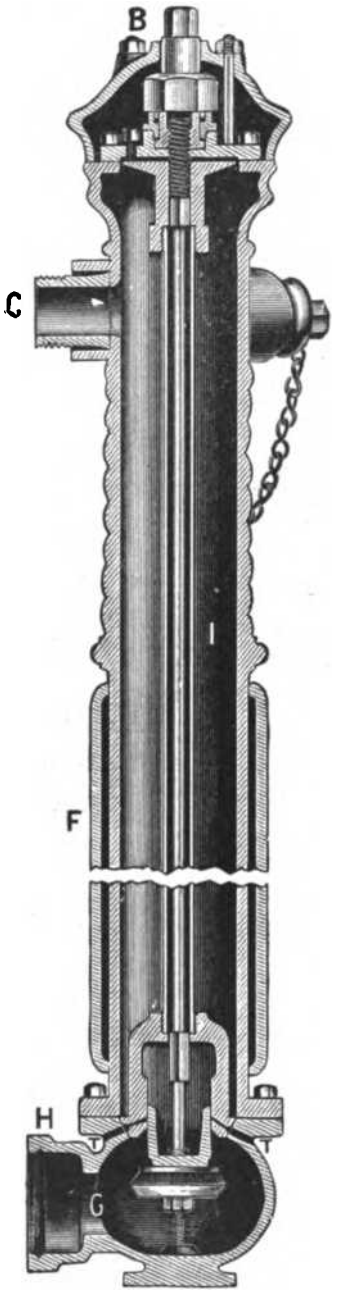


FIG. 1898



SECTIONAL

WATER CRANE

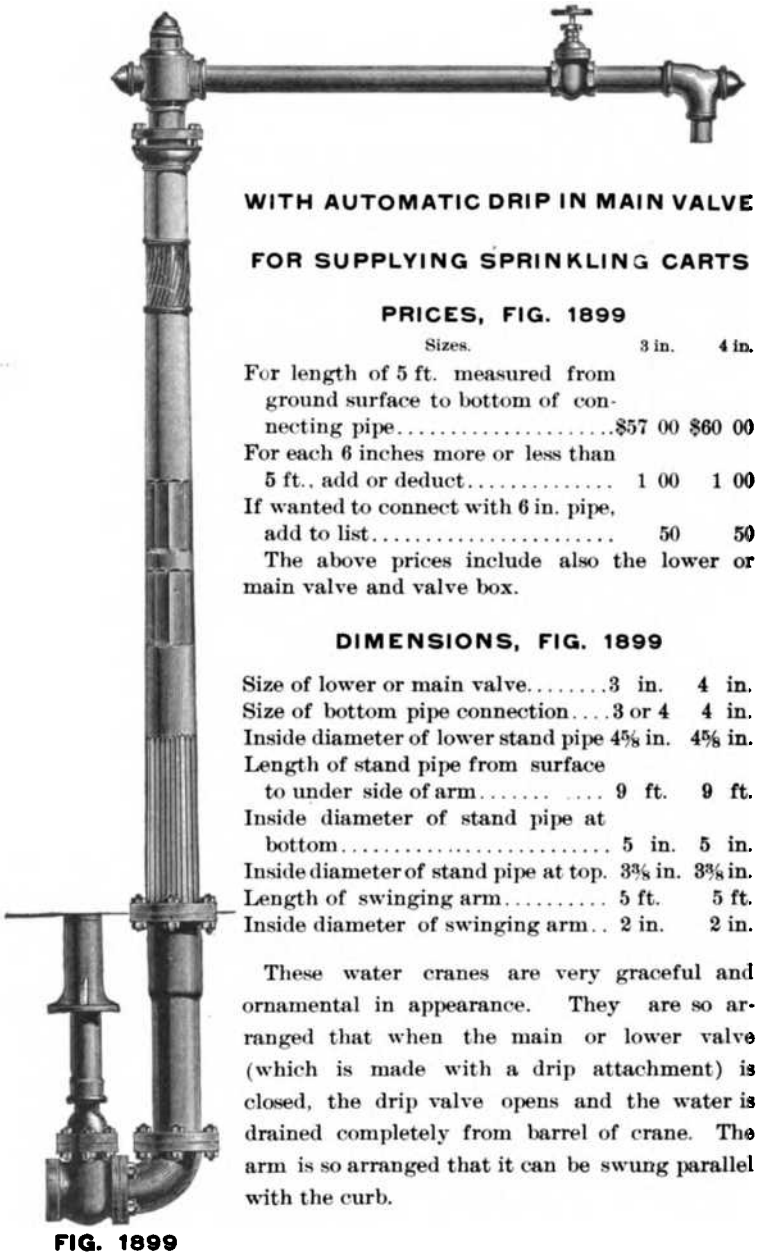


FIG. 1899

WITH AUTOMATIC DRIP IN MAIN VALVE

FOR SUPPLYING SPRINKLING CARTS

PRICES, FIG. 1899

Sizes.	3 in.	4 in.
For length of 5 ft. measured from ground surface to bottom of connecting pipe	$57 00	$60 00
For each 6 inches more or less than 5 ft., add or deduct	1 00	1 00
If wanted to connect with 6 in. pipe, add to list	50	50

The above prices include also the lower or main valve and valve box.

DIMENSIONS, FIG. 1899

Size of lower or main valve	3 in.	4 in.
Size of bottom pipe connection	3 or 4	4 in.
Inside diameter of lower stand pipe	4⅝ in.	4⅝ in.
Length of stand pipe from surface to under side of arm	9 ft.	9 ft.
Inside diameter of stand pipe at bottom	5 in.	5 in.
Inside diameter of stand pipe at top.	3⅜ in.	3⅜ in.
Length of swinging arm	5 ft.	5 ft.
Inside diameter of swinging arm	2 in.	2 in.

These water cranes are very graceful and ornamental in appearance. They are so arranged that when the main or lower valve (which is made with a drip attachment) is closed, the drip valve opens and the water is drained completely from barrel of crane. The arm is so arranged that it can be swung parallel with the curb.

DIMENSIONS AND PRICES, WITH OR WITHOUT FROST CASE, FIG. 1898

Diameters of Pipe Connection.	Diameters of Stand Pipe.	Valve Openings.	Numbers and Sizes of Nozzles.	Length from Pavement to Bottom of Connection, 5 ft.	Add or Deduct for each 6 ins. Difference in Length from 5 ft.	Each 2½ inch Nozzle Additional.	Each Steamer Nozzle Additional.	Frost Case Additional	Add for Secondary Stop Valve.
3 or 4 ins.	5 inches	3 inches	One 2½ inch	$28 00	$1 00	$2 00	$3 50	$4 50	$5 75
4 or 6 "	6 "	4 "	Two 2½ inch	33 00	1 00	2 00	3 50	5 00	7 50
4 or 6 "	6 "	4 "	One steamer or two 2½ inch	33 00	1 00	2 00	3 50	5 00	7 50
4 or 6 "	7 "	5 "	One steamer or two 2½ inch	36 00	1 25	2 00	3 50	6 00	9 00
4 or 6 "	7 "	5 "	One steamer and one 2½ inch	38 00	1 25	2 00	3 50	6 00	9 00
6 "	9 "	6 "	One steamer and two 2½ inch	51 35	1 75	2 00	3 50	9 00	11 00

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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IRON BODY AUTOMATIC DRIP OR STOP AND WASTE GATE VALVES

SCREW END, SCREW TOP

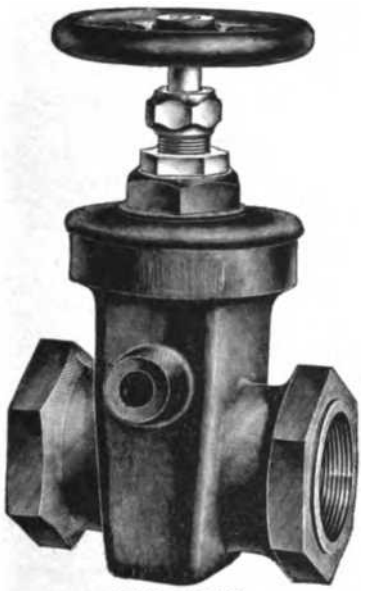


FIG. 1900

These valves are suitable for railroad water pipes, fire protection and street sprinkling stand pipes, or for any purpose where a drip is desirable. When fitted with T heads or square nuts, they are especially suitable for use as stop and waste valves for the house pipes of water works and plumbing systems.

The valves have iron bodies, caps and wheels; all bronze or bronze faced plugs and babbitt metal seats. The stuffing boxes have screw packing nuts, and are packed ready for use.

If desired, we furnish the screw and flange end valves with T heads or square nuts on the spindles without extra charge. Bell end valves have bolt gland and follower stuffing boxes, are provided with 2 inch square nuts on the spindles, and arranged to turn to right to open, unless specified.

Valves 2½ inches and larger have the drip outlet tapped for drain pipe; smaller valves have plain drip outlet, unless specially ordered.

They are designed for a working pressure of 200 pounds per square inch, and have a factor of safety amply large to cover the ordinary stresses of expansion and water hammer.

PRICES, FIGS. 1900 AND 1900A

	Diameters of Port. Inch.	Screw End.	Flange End.	Bell End.	Spigot End.	Drilling Flanges, Extra.
Screw Top.	1	$4 70	$5 40	.....	.....	$0 35
	1¼	5 60	6 25	.....	.....	12
	1½	6 75	7 75	.....	.....	12
	2	9 25	9 60	.....	.....	12
	2½	12 50	12 75	.....	.....	16
Bolt Top.	3	15 50	16 60	$17 50	$17 50	16
	3½	20 00	20 50			16
	4	24 75	25 25	26 50	26 50	16
	4½	31 75	31 75			16
	5	32 75	32 75	32 50	32 50	20
	6	42 00	42 00	41 25	41 25	25
	7	53 50	52 50	50 00	50 00	35
	8	63 50	62 50	60 50	60 50	40
	9	.....	.....	.....	.....	1 10
	10	.....	.....	.....	.....	1 40

SCREW END, BOLT TOP

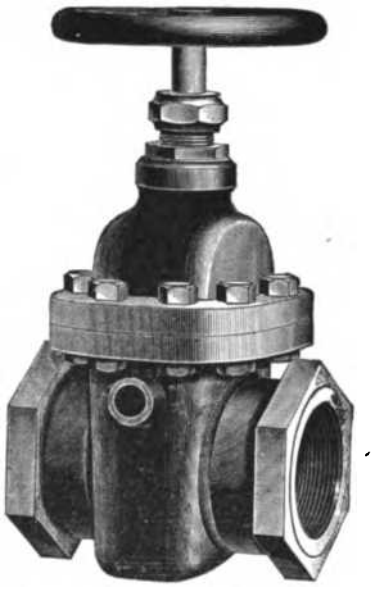


FIG. 1900A

SERVICE AND VALVE BOXES AND EXTENSIONS

ROUND BASE
FOR 6 TO 8 INCH OVAL OR ROUND VALVES

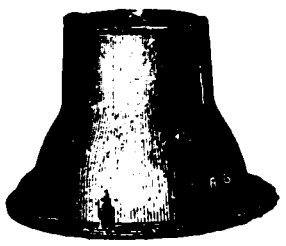


FIG. 1901

EXTENSION SECTIONS



FIG. 1902

ROUND HEAD ROADWAY BOXES

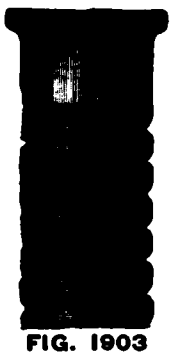


FIG. 1903

SQUARE HEAD ROADWAY BOXES



FIG. 1904

NEW PATTERN SERVICE BOXES



FIG. 1905

OLD STYLE SERVICE BOXES



FIG. 1906

ROADWAY EXTENSION



FIG. 1907

EXTENSION SECTION FOR SERVICE BOXES
PRICES, FIG. 1902

Inches	2½				3		
Sizes	151	152	153	154	155	156	157
Increasing length of box, inches	9½	16½	28	38	18	24	30
Each	$0 70	$0 80	$1 00	$1 10	$0 90	$1 00	$1 10

ROUND HEAD ROADWAY BOXES, WITH FLANGE BASE, 4¼ INCH SHAFT
PRICES, FIG. 1903

Sizes	41Q	42Q	42R	43R	44R	45R
Extension, inches	18-24	27-34	27-42	34-48	39-54	46-60
Each	$3 20	$3 50	$3 90	$4 10	$4 30	$4 50

ROUND HEAD ROADWAY BOXES, WITH OPEN BASE 4¼ INCH SHAFT
PRICES, FIG. 1903

Sizes	141Q	142Q	142R	143R	144R	145R
Extension, inches	18-24	27-34	27-42	34-48	39-54	46-60
Each	$3 20	$3 50	$3 90	$4 10	$4 30	$4 50

SQUARE HEAD ROADWAY BOXES, WITH OPEN BASE, 4¼ INCH SHAFT
PRICES, FIG. 1904

Sizes	137	138	140V	141S	142S	142T
Extension, inches	12	16	18-25	21-31	25-35	29-42
Each	$2 80	$3 00	$3 20	$3 40	$3 70	$3 90

NEW PATTERN SERVICE BOXES, 2½ INCH DIAMETER
PRICES, FIG. 1905

Sizes	88	89A	90B	91C	92C	92D	93D
Extension, inches	12	12-20	18-26	28-33	24-38	24-42	36-48
Each	$1 10	$1 20	$1 30	$1 40	$1 46	$1 50	$1 60
Sizes		93E	94D	94E	95E	100E	100F
Extension, Inches		36-54	42-57	42-60	48-66	54-72	54-78
Each		$1 66	$1 70	$1 80	$2 00	$2 10	$2 20

OLD STYLE SERVICE BOXES, 3 INCH DIAMETER
PRICES, FIG. 1906

Sizes	0	1	1½	2	3	4	5	7
Extension, in.	10	13-21	18-28	24-39	32-48	34-58	42-66	48-72
Each	$1 30	$1 60	$1 70	$1 80	$2 00	$2 10	$2 30	$2 60

ROADWAY EXTENSION
PRICES, FIG. 1907

No. 49. For 4½ inch roadway boxes, increasing length 18 in... $1 20

VALVE BOXES, 5¼ INCH SHAFT
PRICES, FIG. 1908

Sizes	AAA	AA	A	B	C	CC	D
Extending, inches	17	22-28	28-40	36-48	42-54	48-60	42-66
Each	$4 80	$5 50	$5 60	$6 10	$6 30	$6 70	$7 00

Above prices on valve boxes are with No. 6 base, Fig. 1901.

FIG. 1908, WITH DIFFERENT STYLES OF BASES

With No. 4, round base, for 2, 3 and 4 inch oval or round valves, reduce price of valve box $0 50

With No. 8, round base, for 10 inch round valves, increase price of valve box 50

With No. 140, round dome base, with flange 17 inches square; adapted for valves set near the surface. Will cover all valves up to 24 inches. Reduces length of box 6 inches. Price same as with No. 6 base

With No. 160, oval base, for 10, 12 and 16 inch oval valves, increase price of valve box 70

With No. 162, oval base, for 18 and 20 inch oval valves, increase price of valve box 2 50

VALVE BOXES



FIG. 1908

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STANDARD BRASS STEAM COCKS

SQUARE HEAD

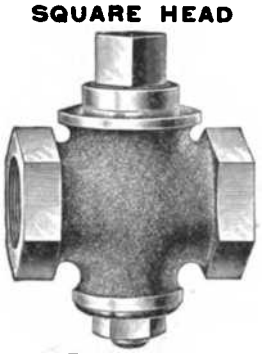


FIG. 1909

FLAT HEAD



FIG. 1910

SQUARE HEAD, FLANGED

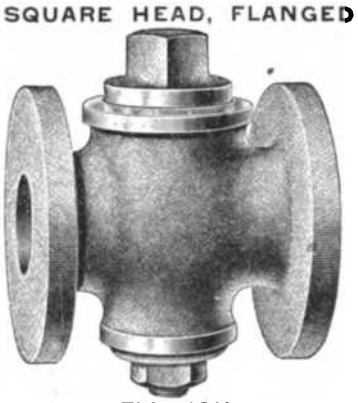


FIG. 1911

WITH CHECK OR STOP ON KEY



FIG. 1912

MALE AND FEMALE



FIG. 1913

T HANDLE



FIG. 1914

IRON LEVER HANDLE

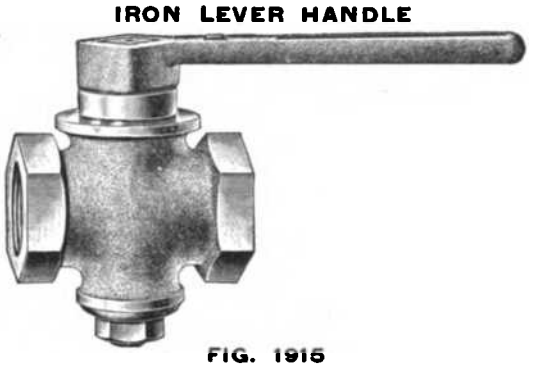


FIG. 1915

THREE WAY SCREWED



FIG. 1916

THREE WAY FLANGED

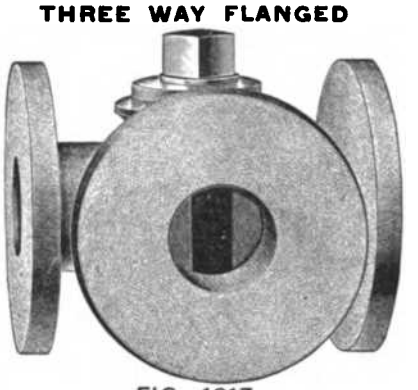


FIG. 1917

PRICES, FIGS. 1909 TO 1917

STANDARD

Sizes, inches	⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6
Square and flat head, screwed	$0 85	85	1 00	1 25	1 70	2 35	3 70	4 85	7 30	14 50	22 50	38 50	50 00	.....	.....
" head, flanged	....	....	....	4 75	5 50	7 30	9 70	11 75	18 00	27 50	43 00	02 00	84 00	150 00	275 00
Check or stop on key, screwed	1 00	1 00	1 15	1 40	1 90	2 55	3 95	5 15	7 65	15 00	23 25	....	....	.....	.....
Male and female, screwed	1 35	1 35	1 45	2 00	2 50	3 00	5 35	6 75	9 85	17 50	25 75	....	....	.....	.....
T Handle, screwed	85	85	1 00	1 25	1 70	2 35	3 70	4 85	7 30	....	....	....	....	.....	.....
T " with check, screwed	1 00	1 00	1 15	1 40	1 90	2 55	3 95	5 15	7 65	....	....	....	....	.....	.....
Iron lever handle, screwed	95	95	1 10	1 35	1 85	2 60	4 10	5 25	7 80	....	....	....	....	.....	.....
Three way, screwed	....	....	....	2 50	3 00	3 75	5 75	7 15	11 00	18 75	26 00	50 00	70 00		
" flanged	....	....	....	7 75	8 75	11 25	14 75	17 75	27 00	38 25	57 00	85 00	121 00		

HEAVY AND EXTRA HEAVY

⅛	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4
$1 30	1 30	1 50	2 00	2 85	4 00	6 75	8 50	13 50	25 00	37 00	54 00	75 00
....	....	....	6 50	7 75	10 00	14 25	17 25	27 00	41 00	63 00	84 00	120 00
....	1 45	1 65	2 15	3 05	4 20	7 00	8 80	13 85	....	....	....	.....
....	....	....	....	....	....	....	....	....	....	....	....	.....
1 30	1 30	1 50	2 00	2 85	4 00	6 75	8 50	13 50	25 00	37 00	54 00	75 00
1 45	1 45	1 65	2 15	3 05	4 20	7 00	8 80	13 85	25 50	37 75		
1 40	1 40	1 60	2 10	3 00	4 25	7 15	8 90	14 00				

STANDARD IRON COCKS

SQUARE HEAD

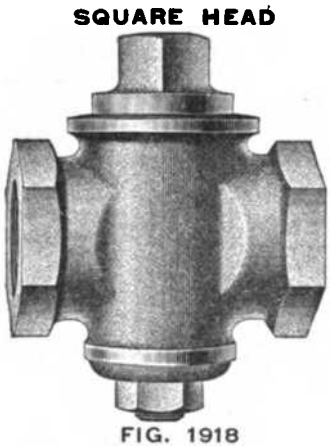


FIG. 1918

FLAT HEAD



FIG. 1919

SQUARE HEAD, FLANGED

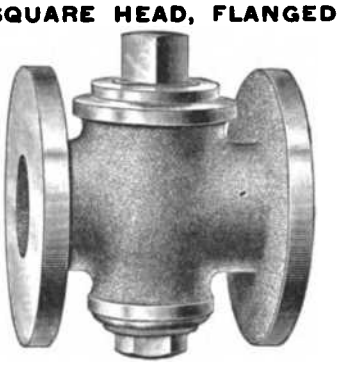


FIG. 1920

FLAT HEAD, FLANGED

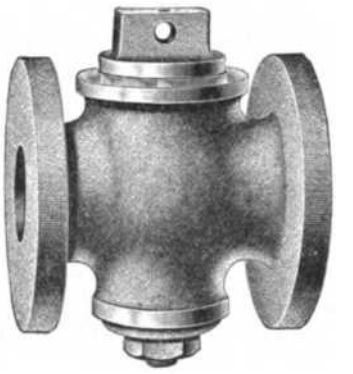


FIG. 1921

THREE WAY SCREWED

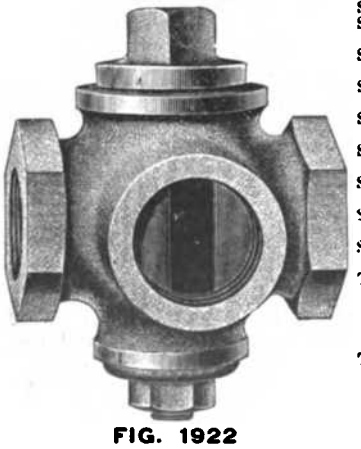


FIG. 1922

PRICES, FIGS. 1918 TO 1923

Sizes, inches	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4	5	6
Square and flat head, all iron, screwed	$0 85	90	1 05	1 30	1 60	1 95	2 70	4 40	6 75	12 00	15 50	32 00	45 00
Square and flat head, with brass washer, screwed	....	1 00	1 20	1 55	1 95	2 35	3 20	5 15	7 75	14 00	19 00	38 00	53 00
Square and flat head, with brass plug, screwed	1 25	1 30	1 00	1 90	2 65	3 75	5 25	8 75	13 00	27 50	36 50	67 00	94 00
Square and flat head, with brass plug and washer, sc'wd	....	1 40	1 75	2 15	3 00	4 15	5 75	9 50	14 00	29 50	40 00	73 00	102 00
Square and flat head, all iron, flanged	....	....	....	2 25	2 75	3 25	4 25	6 25	9 50	15 00	19 00	36 00	50 00
Square and flat head, with brass washer, flanged	....	....	....	2 50	3 10	3 65	4 75	7 00	10 50	17 00	22 50	42 00	58 00
Square and flat head, with brass plug, flanged	....	....	....	3 00	3 75	5 00	7 00	10 50	15 75	30 00	40 00	70 00	100 00
Square and flat head, with brass plug and washer, fl'g'd	....	....	....	3 25	4 10	5 40	7 50	11 25	16 75	32 00	43 50	76 00	108 00
Three way, all iron, screwed	....	....	1 65	1 80	2 05	2 65	3 65	5 35	7 50	14 00	19 00	36 50	52 00
" with brass wash. "	....	....	1 80	2 05	2 40	3 05	4 15	6 10	8 50	16 00	22 50	42 50	60 00
" " plug, "	....	....	2 20	2 40	3 10	4 50	6 25	9 75	13 75	30 00	40 00	71 50	100 00
" " " and washer, screwed	....	....	2 35	2 65	3 45	4 90	6 75	10 50	14 75	32 00	43 50	77 50	108 00
Three way, all iron flanged	....	....	....	3 75	4 25	5 25	7 00	9 00	12 75	20 00	26 00	44 00	60 00
" with brass wash. "	....	....	....	4 00	4 60	5 65	7 50	9 75	13 75	22 00	29 50	50 00	68 00
" " plug, "	....	....	....	4 50	5 25	7 00	9 50	13 25	19 00	36 00	47 00	80 00	108 00
" " " and washer, flanged	....	....	....	4 75	5 00	7 40	10 00	14 00	20 00	38 00	50 50	86 00	116 00

THREE WAY FLANGED

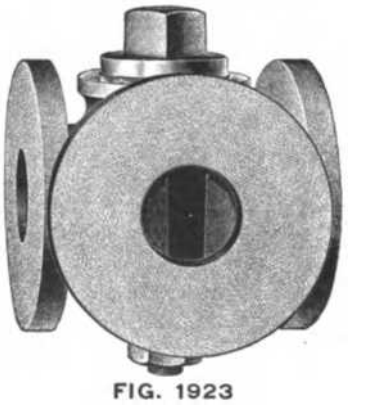


FIG. 1923

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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BRASS AND IRON COCKS

STANDARD ACID AJAX METAL COCKS

SQUARE HEAD



FIG. 1924

FLAT HEAD

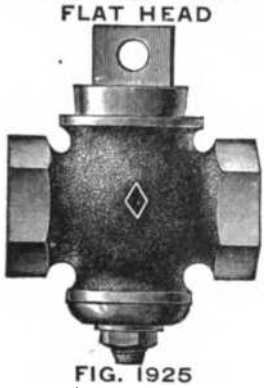


FIG. 1925

PRICES, FIGS. 1924 AND 1925

Sizes, Inches.	Sq. or Flat Head, Screwed.	Sq. or Flat Head, Flanged.
¼	$0 50	
⅜	75	
½	1 00	
¾	1 25	
1	1 50	$3 70
1¼	2 50	5 40
1½	3 25	6 60
2	5 00	10 00
2½	10 00	15 00
3	14 00	22 00
3½	24 00	36 00
4	35 00	50 00
5	80 00	106 00
6	100 00	140 00

AMMONIA IRON COCKS

VULCANIZED ASBESTOS PACKED

SCREWED ENDS

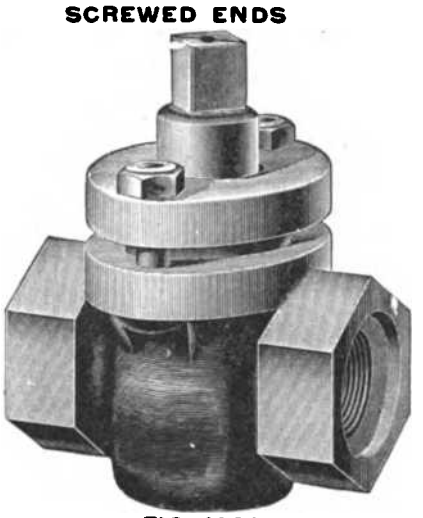


FIG. 1926

GLAND ENDS

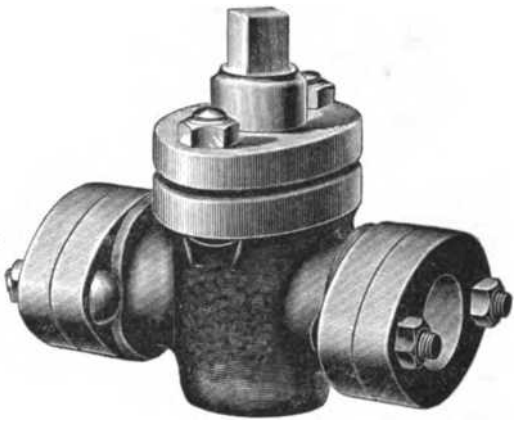


FIG. 1927

PRICES, FIGS. 1926 AND 1927

Sizes, inches.....	¼	⅜	½	¾	1	1¼	1½	2	2½	3	3½	4
Scr'w'd, ... each,	$1 40	1 50	1 60	2 10	2 50	3 50	4 75	7 00	12 00	18 00	27 00	30 00
Gland ends.....	2 10	2 25	2 45	3 10	3 65	4 75	6 10	8 65	15 50	23 00		

VULCANIZED ASBESTOS PACKED BRASS AND IRON COCKS

Sizes, Ins.	Brass. Scr'd.	Brass. Fl'ng'd.	Extra Heavy Brass. Scr'd.	Extra Heavy Brass. Fl'ng'd.	Iron. Scr'd.	Iron. Fl'ng'd.	Heavy Iron. Scr'd.	Heavy Iron. Fl'ng'd.	Extra Heavy Iron. Scr'd.	Extra Heavy Iron. Fl'g'd.
¼	$3 35	....	3 75	....	$1 30	....	$1 50			
⅜	3 35	....	3 75	....	1 45	....	1 75			
½	3 35	....	3 75	....	1 60	....	2 00	....	$2 40	
¾	4 20	....	4 75	....	2 10	....	2 50	....	3 00	
1	5 60	10 50	6 30	12 00	2 50	2 50	3 00	$3 00	3 50	$3 50
1¼	8 00	12 50	9 00	15 00	3 50	3 50	4 25	4 25	5 00	5 00
1½	10 35	14 50	11 60	17 00	4 75	4 75	5 75	5 75	6 75	6 75
2	16 00	26 00	18 00	29 00	7 00	7 00	8 50	8 50	10 00	10 00
2½	26 50	38 00	30 00	42 00	12 00	12 00	14 50	14 50	17 00	17 00
3	37 50	49 00	42 00	60 00	18 00	18 00	21 50	21 50	26 00	26 00
3½	50 50	69 50	66 00	76 50	27 00	27 00	32 50	32 50	38 00	38 00
4	64 00	90 00	82 50	93 00	30 00	30 00	36 00	36 00	42 00	42 00
4½	....	....	....	....	....	....				
5	....	120 00	....	....	45 00	45 00				
6	....	....	....	....	60 00	60 00				

SCREWED. ¼ to 2 inches.

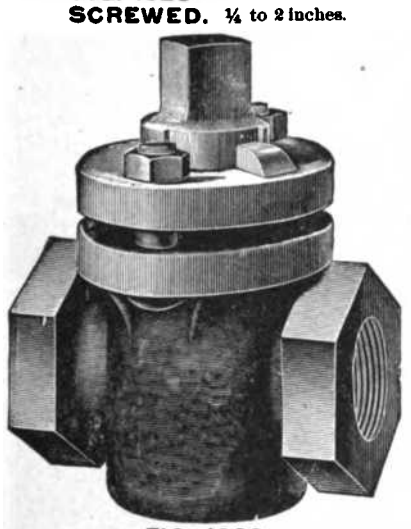


FIG. 1928

FLANGED

2½ to 5 inches.

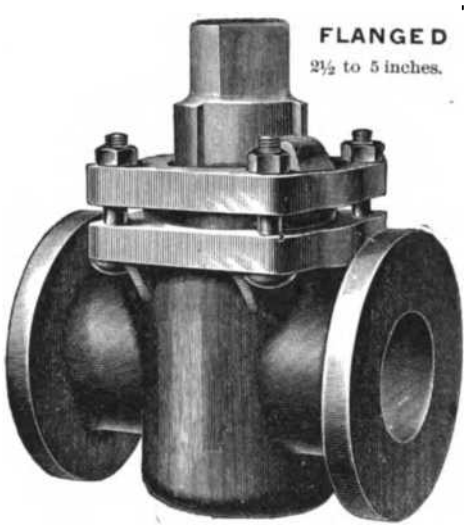


FIG. 1929

ALL BRASS AIR COCKS

SINGLE THREAD

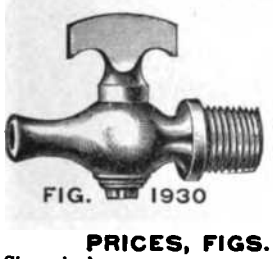


FIG. 1930

DOUBLE THREAD

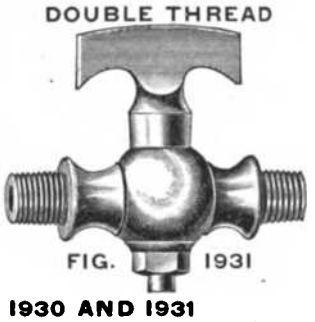


FIG. 1931

PRICES, FIGS. 1930 AND 1931

Sizes, inches.....	⅛	¼	⅜	½
Single thread.....each,	$0 40	$0 40	$0 50	$0 60
Double thread..... "	55	55	65	90

BIBB NOZZLE DOUBLE THREAD

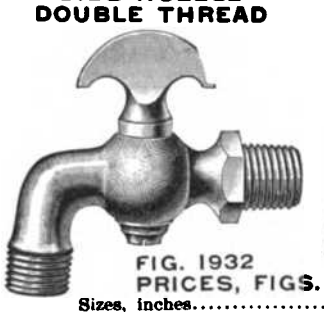


FIG. 1932

BIBB NOZZLE SINGLE THREAD

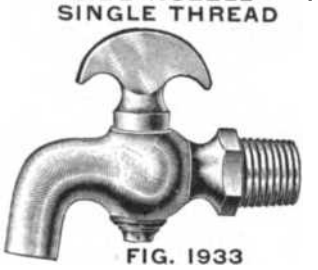


FIG. 1933

PRICES, FIGS. 1932 AND 1933

Sizes, inches.....	⅛	¼	⅜	½
Single thread.....	$0 70	$0 70	$0 80	$0 90
Double thread.....	80	1 00	1 10	1 35

FEMALE THREAD T HANDLE

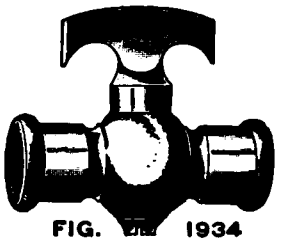


FIG. 1934

PRICE, FIG. 1934

⅛ inch.....	$0 70
¼ "	70

LEVER HANDLE, SINGLE THREAD

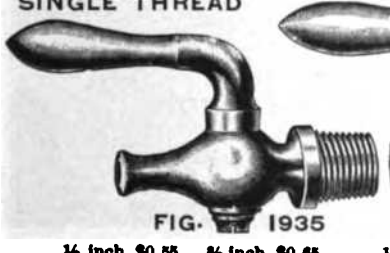


FIG. 1935

LEVER HANDLE, DOUBLE THREAD

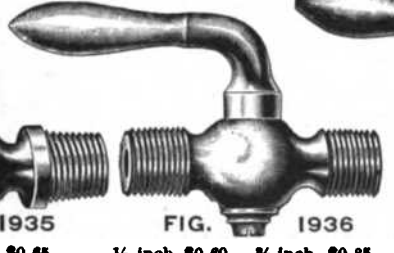


FIG. 1936

LEVER HANDLE, BIBB NOZZLE, SINGLE THREAD

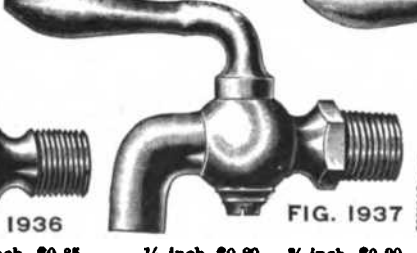


FIG. 1937

LEVER HANDLE, BIBB NOZZLE, DOUBLE THREAD

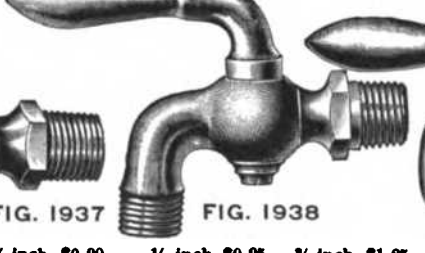


FIG. 1938

LEVER HANDLE, FEMALE THREADS

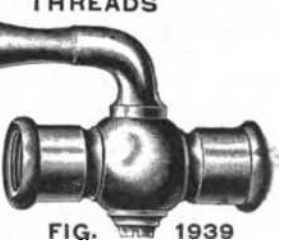


FIG. 1939

FIG. 1935	FIG. 1936	FIG. 1937	FIG. 1938	FIG. 1939
⅛ inch, $0 55	⅛ inch, $0 60	½ inch, $0 80	½ inch, $0 95	½ inch, $0 60
¼ " 55	¼ " 70	¼ " 80	¼ " 1 15	¼ " 80
⅜ inch, $0 65	⅜ inch, $0 85	⅜ inch, $0 90	⅜ inch, $1 25	
½ " 75	½ " 1 00	½ " 1 00	½ " 1 50	

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ALL BRASS CYLINDER COCKS

SINGLE THREAD BIBB NOZZLE

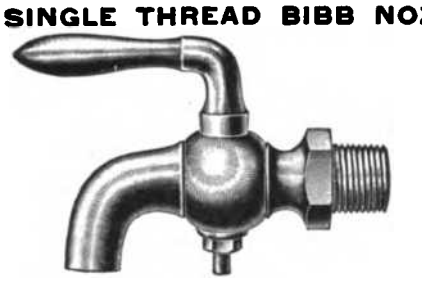


FIG. 1940

PRICES, FIG. 1940

Sizes, inches	¼	⅜	½	¾
Each	$1 15	$1 30	$1 85	$2 60

PRICES, FIG. 1941

Sizes, inches	¼	⅜	½	¾
Each	$1 25	$1 50	$2 10	$2 70

DOUBLE THREAD BIBB NOZZLE



FIG. 1941

STRAIGHT, WITH UNION

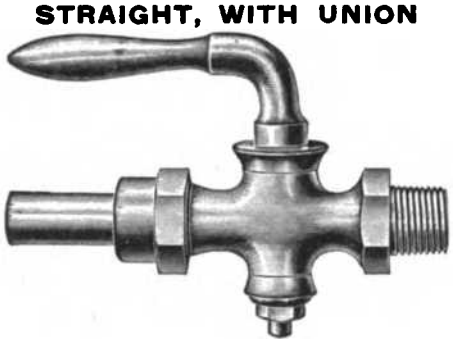


FIG. 1942

PRICES, FIG. 1942

Sizes, inches	¼	⅜	½	¾	1
Each	$1 75	$2 00	$2 50	$3 75	$6 00

PRICES, FIG. 1943

Sizes, inches	¼	⅜	½	¾	1
Each	$1 75	$2 00	$2 50	$3 75	$6 00

BIBB NOZZLE WITH UNION

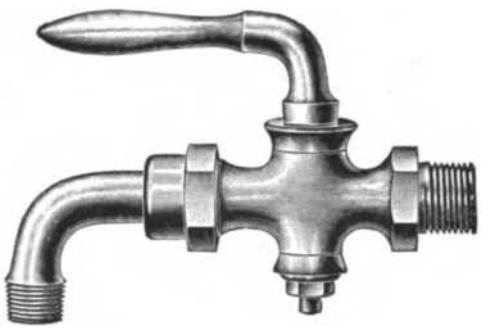


FIG. 1943

WITH COUPLING

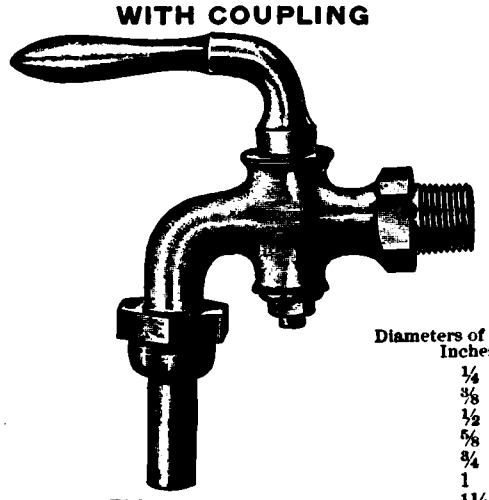


FIG. 1944

PLAIN

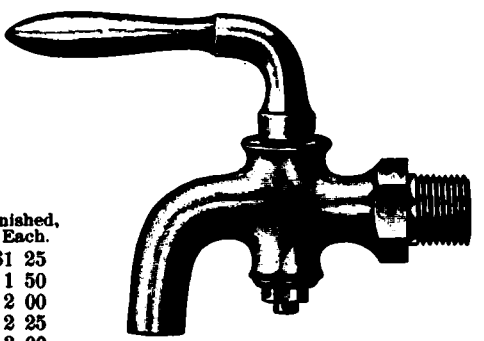


FIG. 1945

ALL BRASS STEAM BIBBS

PRICES, FIG. 1944

Diameters of Opening. Inches.	Threaded for Iron Pipe. Sizes.	Rough. Not Shown. Each.	Finished Each.
¼	¼	$1 25	$1 50
⅜	⅜	1 50	1 75
½	½	2 00	2 50
⅝	¾	2 25	2 75
¾	¾	3 00	3 50
1	1	4 50	5 50
1¼	1¼	6 00	7 00
1½	1½	10 00	12 00
2		18 00	20 00

PRICES, FIG. 1945

Diameters of Opening, Inches.	Threaded for Iron Pipe. Sizes.	Rough. Not Shown. Each.	Finished, Each.
¼	¼	$1 00	$1 25
⅜	⅜	1 25	1 50
½	½	1 50	2 00
⅝	¾	1 75	2 25
¾	¾	2 50	3 00
1	1	3 50	4 50
1¼	1¼	5 00	6 00
1½	1½	8 00	10 00
2		15 00	18 00
2½		25 00	30 00
3		35 00	40 00

ASHCROFT'S SELF CLEANING WOOD HANDLE GAUGE COCKS

BRASS SEAT

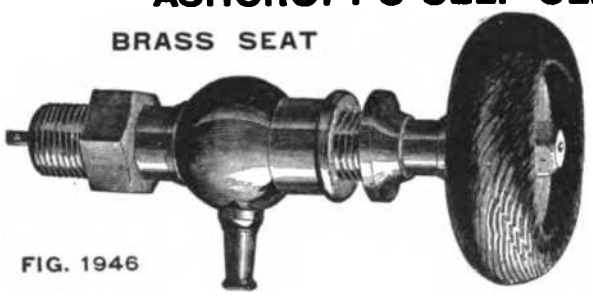


FIG. 1946

We can recommend these gauge cocks to anyone desiring a well-made, steam tight cock for high pressure. The self-cleaning attachment, A, is a flattened rod extending through the body of the gauge cock and into the boiler, and, being secured to the handle, when it turns, the self-cleaner turns and disturbs all accumulation of sediment, which blows out when cock is opened; thus a free passage for steam or water is always secured.

½ inch, brass	Price, each, $2 25
¾ " "	" 2 50

LOCOMOTIVE, WITH NICKEL SEAT



FIG. 1947

These gauge cocks are heavy and strong, and have self-cleaning attachments, as described, Fig. 1946. The nickel seats are non-corrosive, and, being very hard, render the gauge cocks practically indestructible. They are made more especially for locomotive use.

	Price, Each.
¾ inch, brass	$3 00

WITH STUFFING BOX

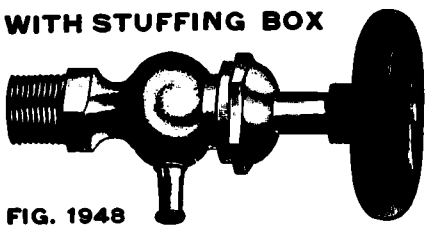


FIG. 1948

COMPRESSION GAUGE COCKS

WITH WOOD WHEELS

PRICES, FIGS. 1948 AND 1949

Sizes, inches	⅜	½	¾
No. 1. With stuffing box, each	$1 35	$1 50	$1 70
" 2. Standard, each	1 10	1 20	1 35

STANDARD

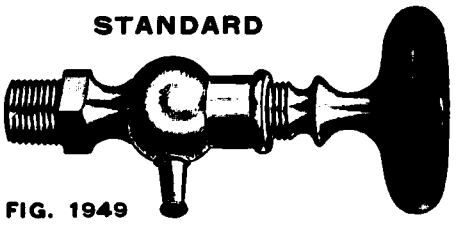


FIG. 1949

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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COMPRESSION GAUGE COCKS, WITH PATENT WOOD WHEELS

LIGHT PATTERN

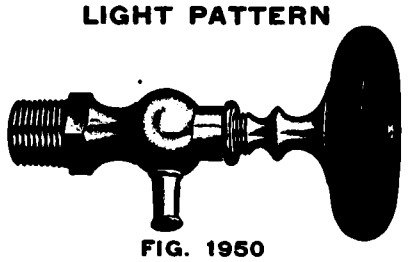


FIG. 1950

PRICES, FIGS. 1950 AND 1951

Sizes, Inches	⅜	½	¾
No. 3. Light pattern, each	$0 95	$1 00	$1 25
" 4. With loose seat, "	1 50	2 00	2 25

LOOSE SEAT

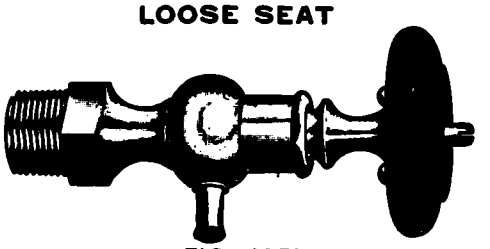


FIG. 1951

SIPHON COMPRESSION GAUGE COCKS

WOOD WHEEL

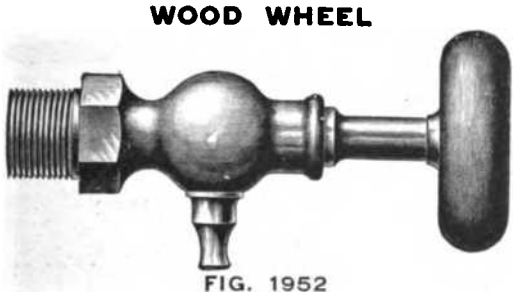
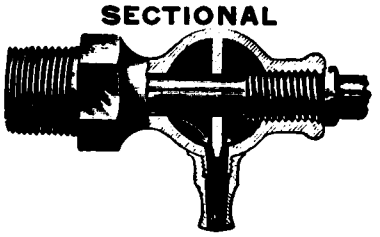


FIG. 1952

SECTIONAL



FIGS. 1952 TO 1954

Made of steam metal, extra heavy and very highly finished, with soft metal seats.

This gauge cock requires no stuffing box, as it is constructed so that the steam that usually escapes around the stem is siphoned out of the nozzle.

PRICES, FIG. 1952

	Each.
⅜ inch	$1 05
½ " medium size	1 10
½ " large "	1 20
¾ " " "	1 25
¾ " extra large	1 75

PRICES, FIG. 1953

⅜ inch	$1 60
½ " medium size	1 70
½ " large "	2 00
¾ " " "	2 10

PRICES, FIG. 1954

¾ inch, extra large, threaded for iron pipe $2 75

LEVER HANDLE

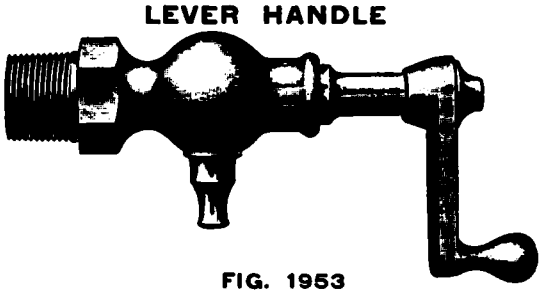


FIG. 1953

LEVER HANDLE

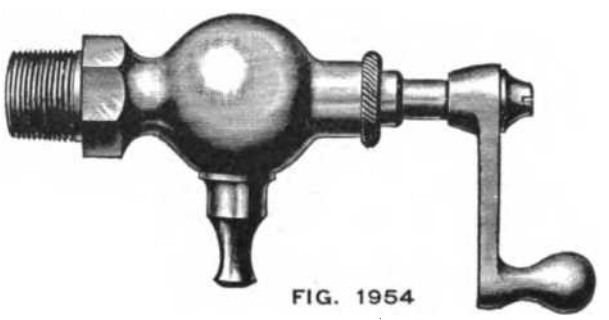


FIG. 1954

ACME HIGH PRESSURE SIPHON GAUGE COCK

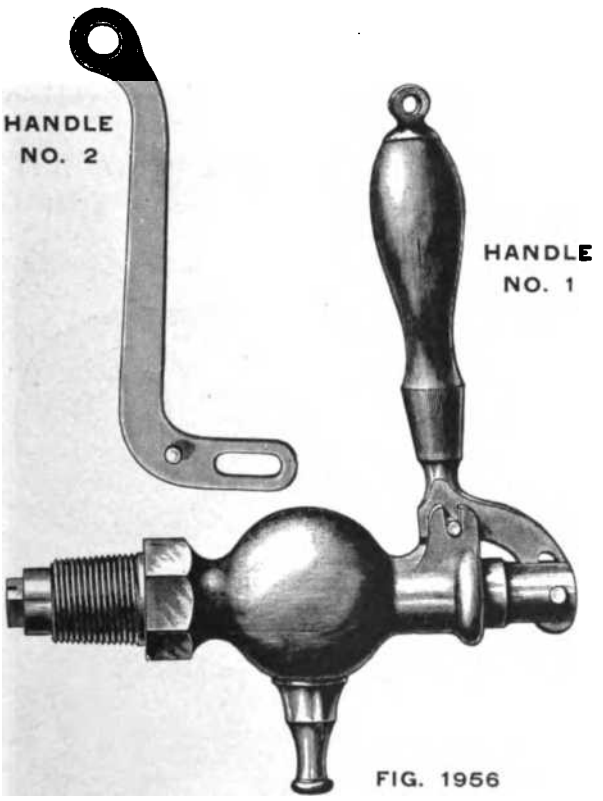


FIG. 1956

First-class steam metal, highly finished. Handle No. 1, wood finish. Handle No. 2, brass polished.
Threaded for iron pipe, size ¾ $3 00
When ordering say which handle is preferred.

VICTOR SAFETY AUTOMATIC HIGH PRESSURE SIPHON GAUGE COCK

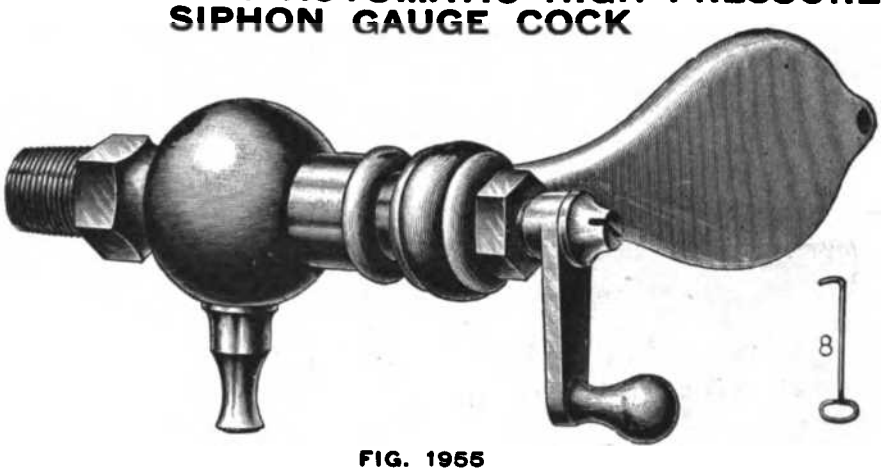
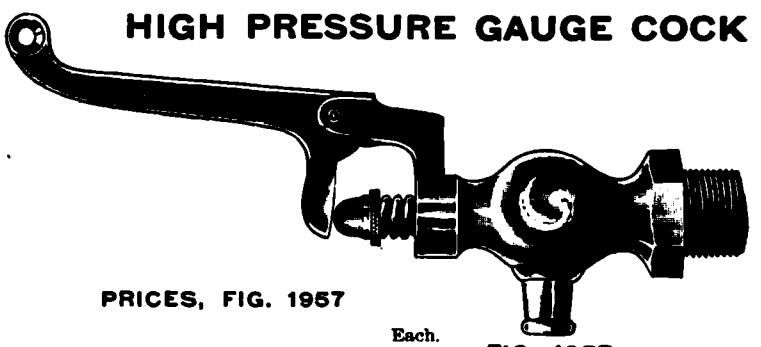


FIG. 1955

Threaded for iron pipe, size, ¾ inch, iron japanned weight $3 00
If desired a polished brass weight can be furnished, at extra cost.

HIGH PRESSURE GAUGE COCK



PRICES, FIG. 1957

	Each.
½ and ¾ inch, brass	$2 00
½ " ¾ " nickel	2 50

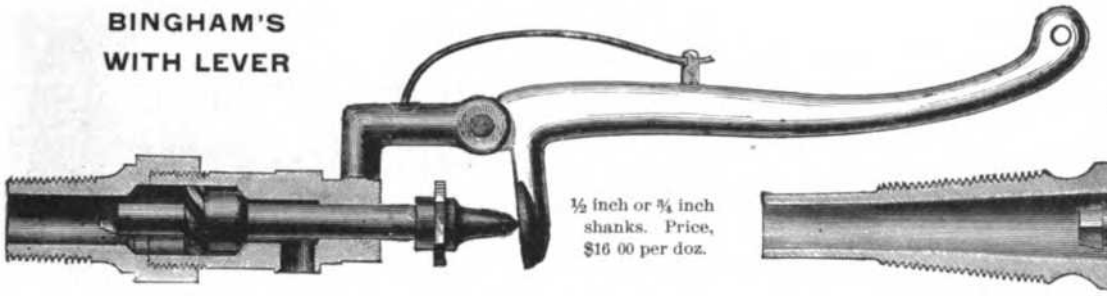
FIG. 1957

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SELF GRINDING, ROTATING GAUGE COCKS

BINGHAM'S WITH LEVER

½ inch or ¾ inch shanks. Price, $16 00 per doz.



BINGHAM'S WITHOUT LEVER

½ inch or ¾ inch shanks. Price, $16 00 per dozen.

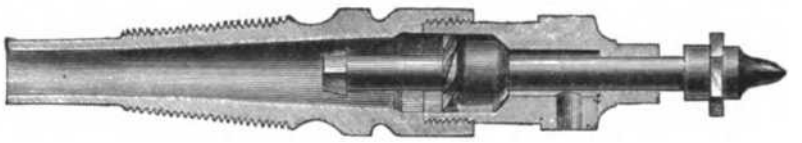


FIG. 1958

FIG. 1959

WILLIAMS ROTATING REGRINDING GAUGE COCKS

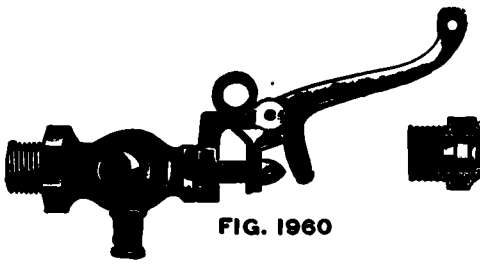


FIG. 1960

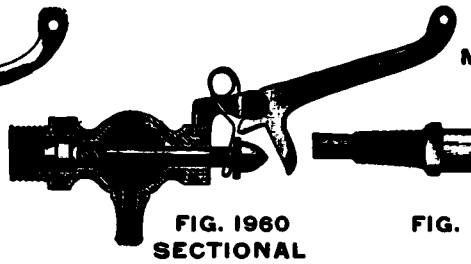


FIG. 1960 SECTIONAL

Phosphor bronze valves and seats. Highly polished brass.
Spiral in front of seat always keeps clean. ½ or ¾ inch shank.
Plain.....Each, $1 50 Nickel-plated.....Each, $1 75
In ordering, state whether ½ or ¾ inch shank is wanted.

WILLIAMS MISSISSIPPI STYLE

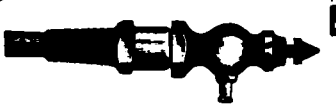


FIG. 1961

½ or ¾ inch shanks
Plain..... Each, $1 50
Nickel-plated... " 1 75

FREE SEATED TRY COCK

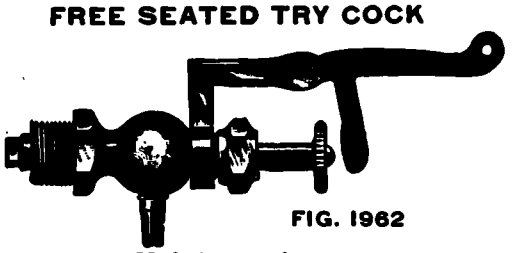


FIG. 1962

Made in ½ and ¾ sizes.
Price.....Each, $2 00

In ordering, state size wanted.

BRASS MISSISSIPPI GAUGE COCKS

THREADED

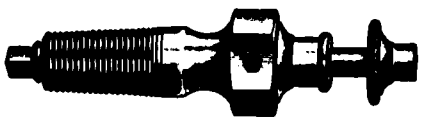


FIG. 1963

BLANK

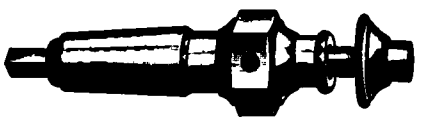


FIG. 1964

WITH SPRING

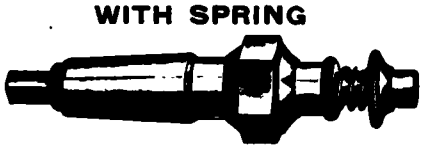


FIG. 1965

PRICES AND DIMENSIONS, FIGS. 1963 TO 1965

Size of blank shank, inches	⅝	¾	⅞	1
Iron pipe size when cut, inches	⅜	½	¾	1
Threaded, Fig. 1963, each	$0 90	$1 20	$1 50	$1 80
Blank, Fig. 1964, "	$0 90	$1 20	$1 50	$1 80
With spring, Fig. 1965, "	1 00	1 35	1 70	2 05

WEIGHTED GAUGE COCKS

SELF CLOSING GAUGE COCK WITH BABBITT VALVE AND SWIVEL ATTACHMENT

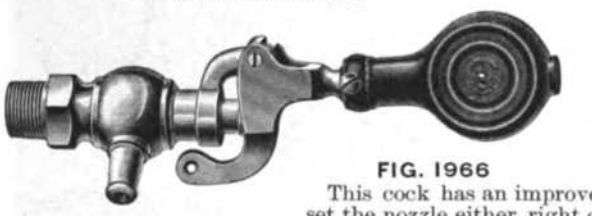


FIG. 1966

This cock has an improved swivel attachment to set the nozzle either right or left hand as desired.
Brass, ½ inch and ¾ inch, iron weight.....$2 00
Nickel..... 2 75

DUPLEX GAUGE COCKS

The Duplex Gauge Cock has two seats, the packing can be renewed under full pressure of steam without inconvenience or danger of being scalded.

Sizes, inches,	⅜	½	¾
Prices, each,	$1 00	$1 00	$1 10

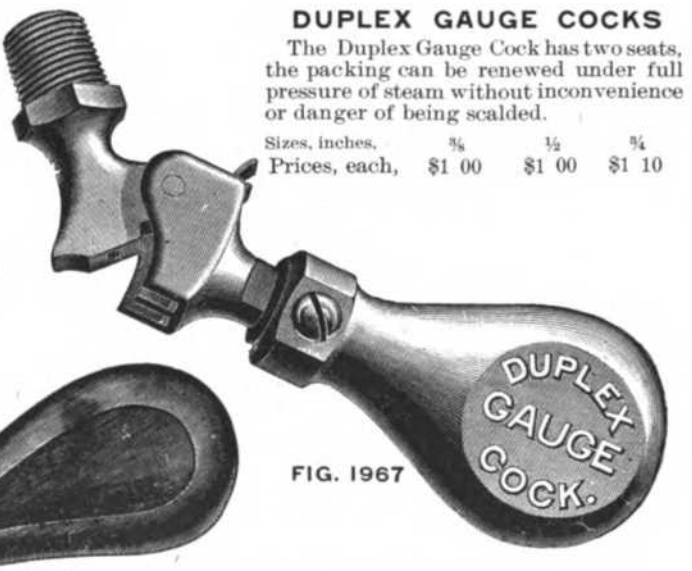


FIG. 1967

REGESTER GAUGE COCK



FIG. 1968

Sizes, inches,	⅜	½	¾
Iron weight, each,	$1 00	$1 00	$1 00

DUPLEX DOUBLE SEAT GAUGE COCK



FIG. 1969

⅜, ½ and ¾ inch shank, each, $0 75

REVERSE BALL GAUGE COCK

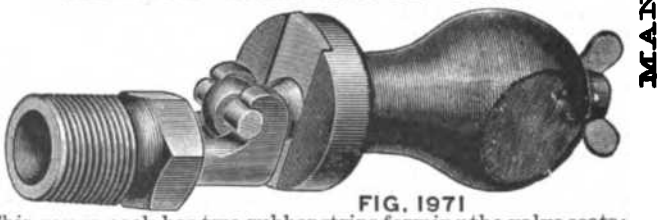


FIG. 1971

This gauge cock has two rubber strips forming the valve seats; when one is worn out, reverse the ball to the other seat; the worn out rubber can then be taken out and a new one replaced ready for use.

Prices for ½ inch or ¾ inch.....Each, $1 00

FELTHOUSEN IMPROVED BALL GAUGE COCK

Each one has four inches of patent packing, tested to resist the action of steam at 200 pounds pressure.

Prices, ⅜, ½ or ¾ gas pipe thread.....Each, $1 50

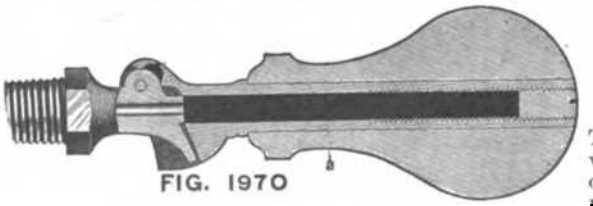


FIG. 1970

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GAUGE GLASSES

GENUINE SCOTCH GAUGE GLASSES, TOMEY'S BRAND

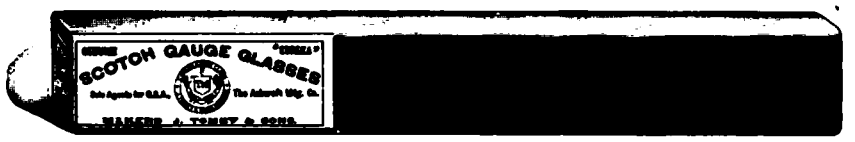


FIG. 1972

We warrant them genuine and fully equal to any on the market. They are all carefully wrapped in labeled packages, as shown above.

PRICES PER DOZEN

Length, Inches.	½	External Diameters. ⅝	¾	⅞	1
10		$3 00	$3 60	$5 04	$6 12
11		3 24	3 96	5 64	6 72
12		3 60	4 32	6 12	7 32
13		3 84	4 80	6 60	7 92
14	Same price	4 20	5 16	7 08	8 52
15	as corresponding	4 44	5 52	7 56	9 12
16	length of	4 80	5 88	8 16	9 72
17	⅝ glasses.	5 04	6 24	8 64	10 32
18		5 40	6 60	9 12	10 92
19		5 64	7 08	9 60	11 52
20		6 00	7 44	10 20	12 12
22		6 60	8 16	11 16	13 44
24		7 20	8 88	12 12	14 64
30		9 00	11 16	15 24	18 24
36		10 80	13 44	18 24	21 96
48		14 52	18 00	24 36	29 16
60		18 12	22 56	30 48	36 48
72		21 84	27 12	36 48	43 80

60 x 1¼ inches, $60 00

INDICATOR GAUGE GLASSES

Showing at a glance, in dark or light places, the exact amount of water in the boiler.

PRICES, FIG. 1973

Length, Inches.	Diameters, Inches. ⅝	Inches. ¾
10	$3 00	$3 60
11	3 24	3 96
12	3 60	4 32
13	3 84	4 80
14	4 20	5 16
15	4 44	5 52
16	4 80	5 88
17	5 04	6 24
18	5 40	6 60
19	5 64	7 08
20	6 00	7 44
22	6 60	8 16
24	7 20	8 88

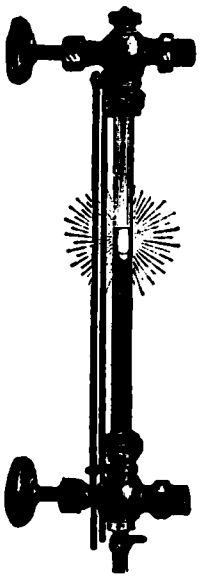


FIG. 1973

GAUGE GLASS CUTTER



FIG. 1974

RED REFLECTING GAUGE GLASSES

Length, inches	8	10	11	12	13	14	15	16
External diameter, ½ inch, per dozen		$4 80	4 80	5 40	5 40	6 00	6 60	7 20
External diameter, ⅝ inch, per dozen		4 80	4 80	5 40	5 40	6 00	6 60	7 20
External diameter, ¾ inch, per dozen	$6 00	6 00	6 60	6 60	6 60	7 20	7 20	7 80
Length, inches	**17**	**18**	**19**	**20**	**22**	**24**	**30**	**36**
External diameter, ⅝ inch, per dozen	$7 80	8 40	9 00	9 60	10 80	12 00	22 00	28 00
External diameter, ¾ inch, per dozen	8 40	9 00	9 60	10 20	11 40	12 60	24 00	32 00

Price, each $2 00

SIMPLEX GAUGE GLASS CUTTER



FIG. 1976

Numbers.		Inches.	Prices, each.
1.	Has a scale up to	5	$2 50
2.	" " "	7	3 00
Extra cutter wheels			10

GAUGE GLASS CUTTER



FIG. 1980

Cutters	Each,	$0 60
Extra cutter wheels	Per dozen,	2 40

RUBBER GAUGE GLASS WASHERS

Inch.	Per pound.
For ½ gauge glasses, each 2 cents	$3 00
" ⅝ " " " 4 "	3 00
" ¾ " " " 4 "	3 00

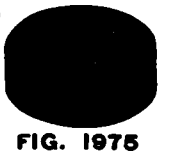


FIG. 1975

GAUGE GLASS CUTTER



FIG. 1977

Numbers.		Prices, each.
1.	Has a scale up to 5 inches,	$2 00
2.	" " " 7 "	2 50
Extra cutter wheels		10

GAUGE GLASS WASHERS

BLACK OR RED RUBBER

ROUND FLANGE



FIG. 1978

HALF ROUND FLANGE



FIG. 1979

For ½ inch, ⅝ inch, ¾ inch and 1 inch glass

Prices per pound, ...

SAFE WATER GAUGE

DESCRIPTION, FIG. 1981

In this water gauge both the upper and lower passages to the boiler are instantly and automatically closed by the ball valves on the sudden breaking of the glass, avoiding all danger to life and all inconvenience and waste of steam and water.

When the water gauge is open to the boiler the ball rests within the cage away from the valve seat, where it will remain until it is propelled to it by the sudden breaking of the glass.

When this happens, upon closing the water gauge the ball is pushed back into this cage by means of the pin in the end of the valve V (see cut). Care should be exercised upon again opening the water gauge that the valve V is turned out as far as it will go, in order to withdraw the pin from the seat, and not obstruct the ball valve from seating itself when called into use. Particularly serviceable on marine boilers.

Numbers.	Inch.		Each.
1.	½	Iron handle, unfinished	$4 00
2.	½	" " finished	5 00
3.	½	Patent wood handle, finished	6 00
3.	¾	" " " "	8 00
4.	½	" " " "	10 00
5.	½ or ¾	" " " "	13 00
6.	¾	" " " "	16 00
7.	¾	" " " specially heavy	22 00
8.	1	" " " " "	50 00

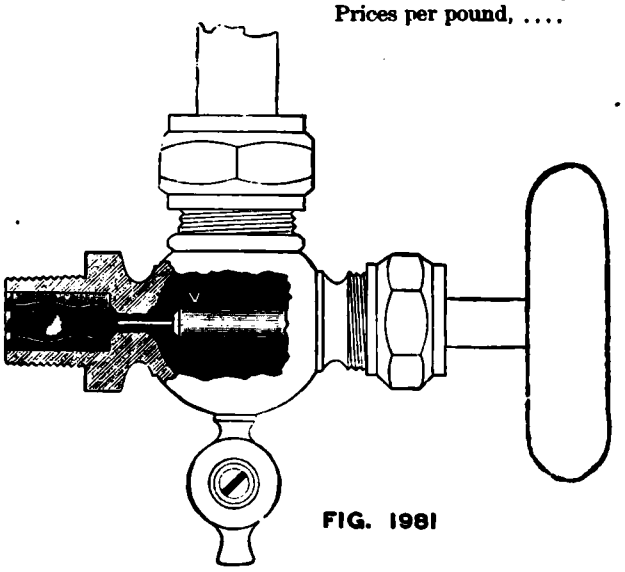


FIG. 1981

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WATER GAUGES

KEYSER AUTOMATIC SAFETY WATER GAUGE

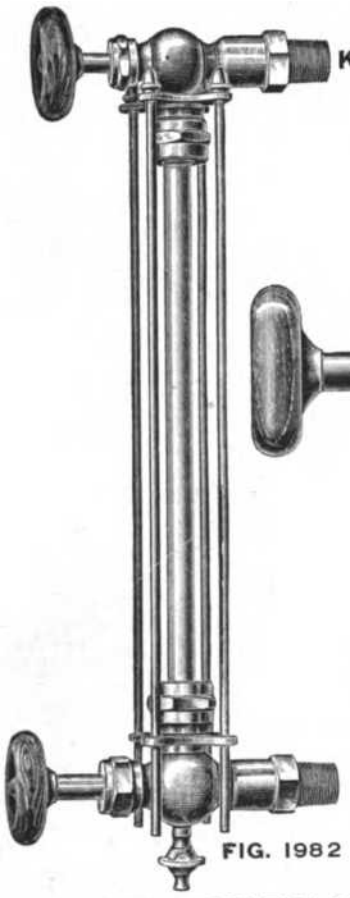


FIG. 1982

SECTIONAL VIEW OF COCK

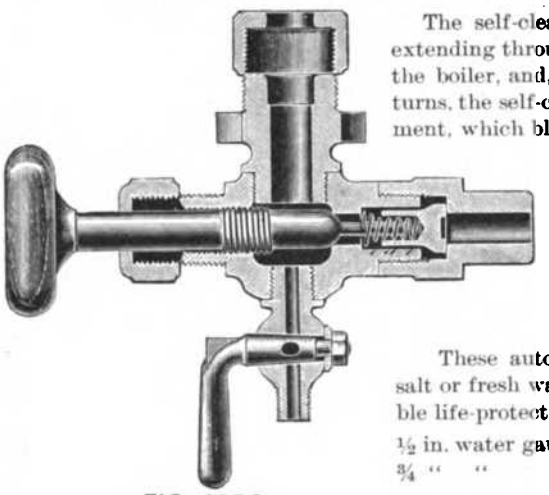


FIG. 1982

The self-cleaning attachment, A, is a flattened rod extending through the body of the gauge cock and into the boiler, and, being secured to the handle, when it turns, the self-cleaner turns and disturbs all accumulation of sediment, which blows out when cock is opened; thus a free passage for steam or water is always secured.

These water gauges are made from extra heavy patterns, have self-cleaners, and are warranted for high pressures.

¾ inch connection, with glasses and rods, 24 inches long, each..... $16 00

PRICES, FIG. 1982

These automatic self-closing water gauges can be used for salt or fresh water. They are fully guaranteed, and are a valuable life-protecting addition to any steam boiler.

½ in. water gauge, with glasses and rods, 20 in. long, each, $12 00
¾ " " " " " " 24 " " " 15 00

ASHCROFT SELF CLEANING WATER GAUGE

FOR HIGH PRESSURE WORK

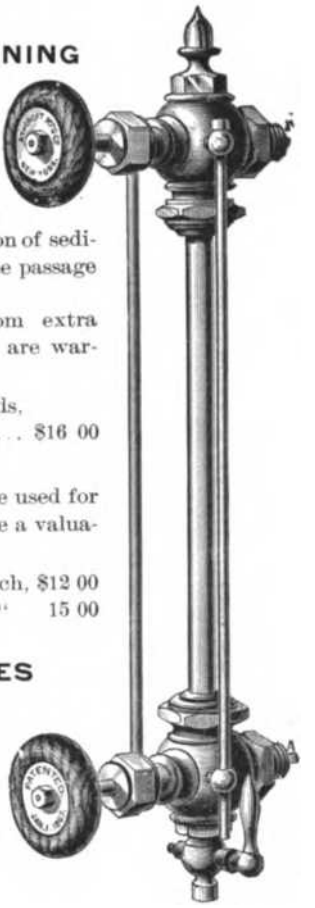


FIG. 1983

AUTOMATIC WATER GAUGE, WITH REGRINDING VALVES

DESCRIPTION, FIG. 1984

We call attention to the method of placing the valves, which are put at an off-set to the body, thus placing them out of the way, which permits of renewing glasses under full steam pressure. Another feature is the method of making the gauge either right or left hand, as may be desired. This is done by reversing the plugs at top and bottom of gauges, when the position of same can be changed.

While steam pressure is on to preserve the automatic feature, the valve stems of both gauges should be screwed back as far as they will go, so as to allow ball valves to act promptly when occasion requires.

This gauge is made of gun metal composition, carefully finished, and we can safely recommend it to our patrons as being thoroughly reliable in every way. The valves are of a regrinding type and can be easily kept tight. All gauges are carefully tested and fully warranted.

PRICES, FIG. 1984

3 Rod, part finished,	iron wheels,	¾ inch	glass	½ inch	pipe thread, each.	$12 00
3 " all "	wood "	¾ "	"	½ "	" " "	14 50
3 " part "	iron "	¾ "	"	¾ "	" " "	12 00
3 " all "	wood "	¾ "	"	¾ "	" " "	14 50

AUTOMATIC SELF CLOSING AMMONIA GAUGE

EXTRA HEAVY

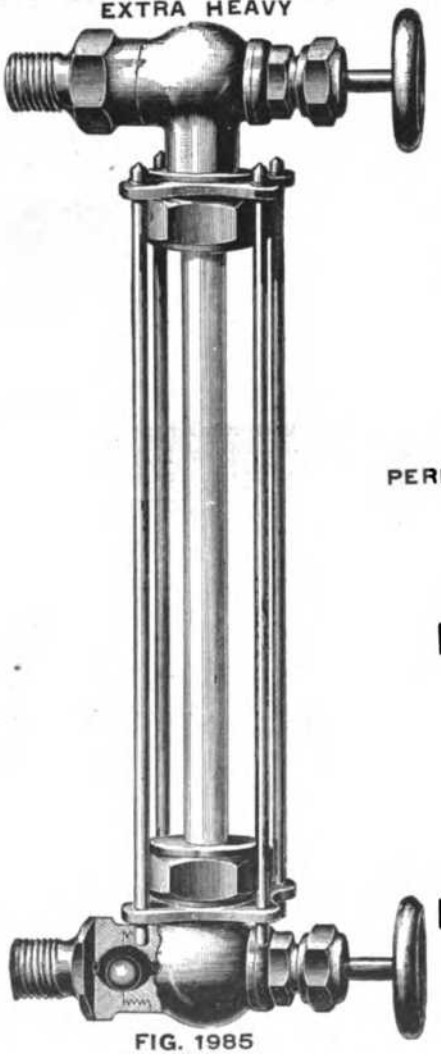


FIG. 1985

SECTIONAL VIEW OF UPPER GAUGE



FIG. 1984

PERPENDICULAR



FIG. 1986

Screwed for ½ inch pipe.....each. $10 00
" " ¾ " " ..... " 15 00

Note.—In ordering state center to center of connection, thus enabling us to furnish the proper length of glass.

L. AND N. AUTOMATIC WATER GAUGE

PRICES, FIG. 1986

Those made in plain style have bodies painted black with iron wheels. The finished and plated have wood wheels. The glass tube stuffing boxes are of the ordinary kind with space for gasket inside.

In packing the stuffing box of self-acting stems, do not screw them up too tight, as it will prevent the automatic action. Leave them free to act with about five pounds pressure.

¾ Glass, ¾ Shank,	finished....	$10 00
¾ " ¾ "	plated	12 00
⅝ " ½ "	finished....	9 00
⅝ " ½ "	plated	10 00

PRICES, FIG. 1987

Made in two sizes: One of them very heavy for locomotives, by special orders, the other for general purposes. These styles are all made with following glands on the water glass gaskets.

¾ Glass, ¾ Shank, plain..... $11 00
¾ " ¾ " finished.... 13 00

And the same design, specially made for locomotives, is very heavy, weighs 8½ pounds finished, handles of stems project from boiler front 8 inches; made for ¾ glass and ¾ shank, with following gland on glass gasket, with 4 guard rods; finished and wood handles.

$18 00

EXTERIOR OF COMPLETE GAUGE

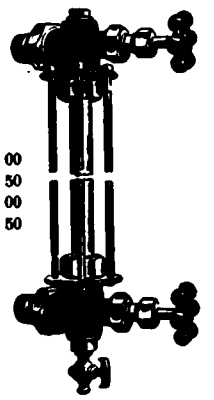


FIG. 1984

HORIZONTAL

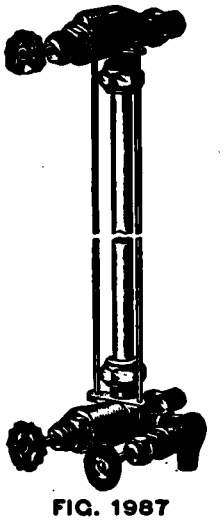


FIG. 1987

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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WATER GAUGES

AUTOMATIC WATER GAUGE

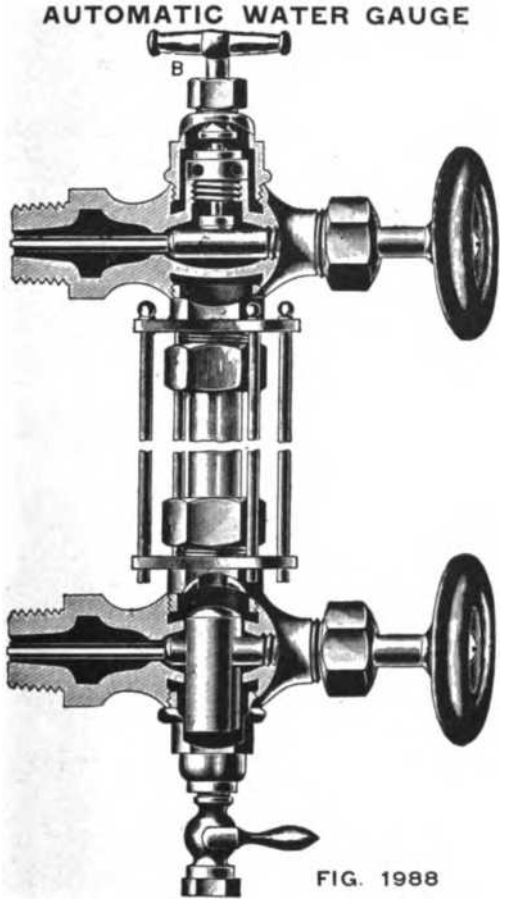


FIG. 1988

PRICES, FIG. 1988

Stem B holds automatic valve from seat when it is desired to flush glass tube with live steam.
Perfectly automatic in action, shutting off water and steam instantly should the glass break.
Automatic valves easily gotten at for cleaning, when desired, without detaching gauge from boiler.

Nos.	Sizes of Glass, Inches.	Round Body, Finish.	Square Body, Finish.	Nos. of Guards.	Wheel.	Shank, Inches.	Prices, Each.
21	⅝ x 12	bronzed		2	Iron	½	$10 40
27	⅝ 12	polished		2	Wood	½	11 40
28	¾ 16	"		2	Wood	¾	12 40
29	⅝ 12	"		4	Brass	½	14 20
30	⅝ 12	"		4	Wood	½	12 20
31	¾ 16	"		4	Brass	¾	14 80
32	¾ 16	"		4	Wood	¾	12 80
34	⅝ 12		polished	4	Wood	½	12 80
35	¾ 16		"	4	Wood	¾	16 00
36	¾ 16		"	4	Brass	¾	18 00

PRICES, FIG. 1989

Square body, extra heavy. This gauge is made extra heavy, of best steam metal, with view of furnishing a gauge that will meet all the requirements for use on locomotives.

The self-closing valves are perfectly automatic in action, shutting off water and steam instantly, should glass break. They can be easily gotten at for cleaning, when desired, without detaching gauge and while steam is on boiler.

Stem B holds automatic valve from seat when it is desired to flush glass tube with live steam.

No. 55. ⅝ in., or ¾ in. glass (specify length), 1⅛ in. dia. blank shank, finished brass, $25.00.

Shanks threaded when specified without extra charge.

LOCOMOTIVE AUTOMATIC

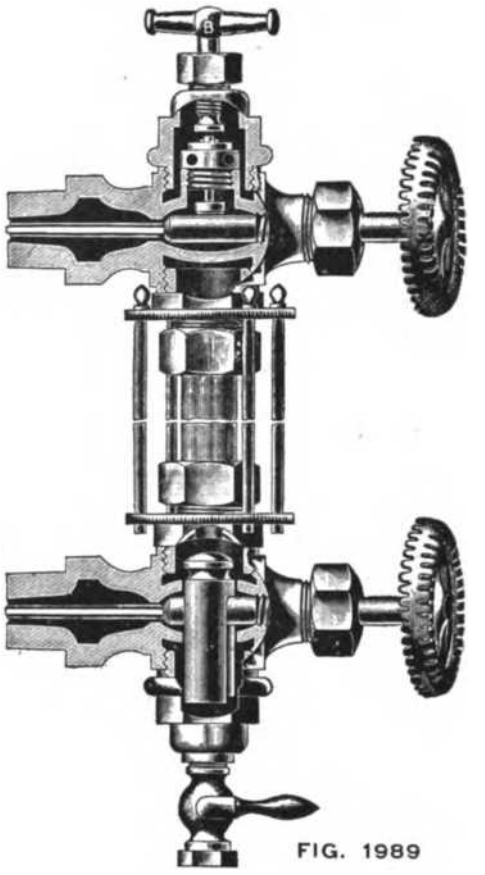


FIG. 1989

AUTOMATIC WATER GAUGE

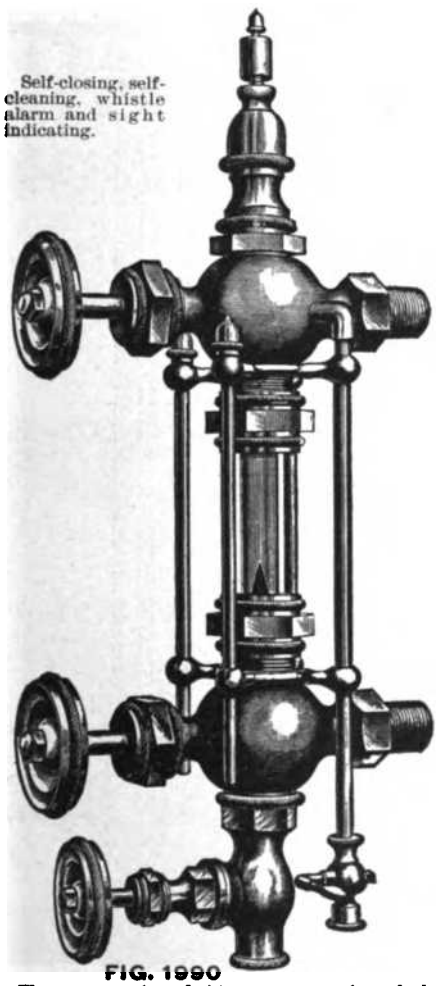


FIG. 1990

The construction of this water gauge is such that it has automatic self-closing valves that are entirely independent of and do not in any way conflict with the positive valves. There is an alarm whistle connected with the top valve, which acts for a double purpose, that of calling attention to the broken glass, should that be the case, or will sound an alarm should the valve attempt to move, as the valve cannot possibly leave its open position to interfere with the circulation without sounding an alarm.

Boiler connection, ¾ inch glass, ¾ x 16 inches. Price, $35.00.

WATER GAUGE

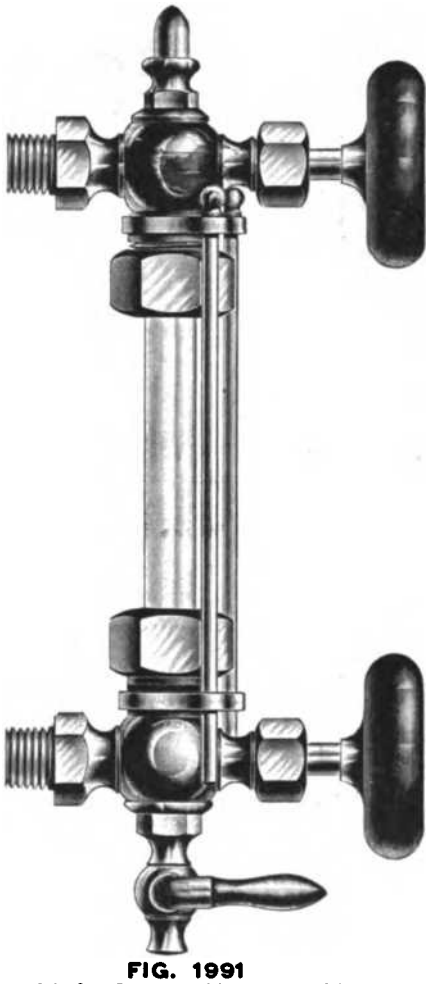


FIG. 1991

Large round body. Large packing nuts and heavy guard supports. Drain cock at bottom furnished like cut, or with ¼ inch female threaded cock to permit of connecting drain pipe.

Acorn plug on top arm permits of glass being inserted with steam on.

Nos.	Sizes of Glass, Inches.	Style of Finish.	Wheel.	Shank, Inches.	Guards.	Prices, Each.
104	⅝ x 12	Rough	Iron	½	Two	$6 50
105	⅝ 12	Polished	Wood	½	"	8 00
106	⅝ 12	"	"	½	Four	9 00

EXTRA LARGE BODY

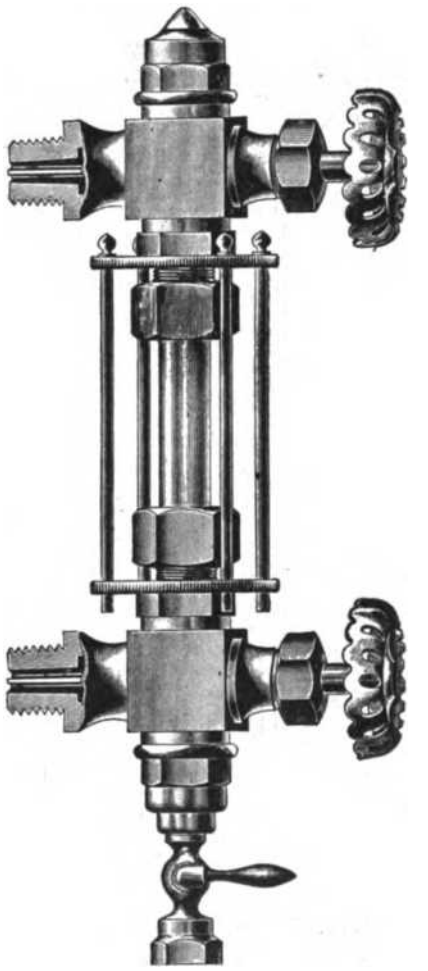


FIG. 1992

No. 48. Size of glass, inches, ¾ x 16. Style of finish, polished. Wheel, wood. Shank, ¾ inch. Prices, each, $16.00.

No. 49. Size of glass, inches, ¾ x 16. Style of finish, polished. Wheel, brass. Shank, ¾ inch. Prices, each, $18.00.

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WATER GAUGES

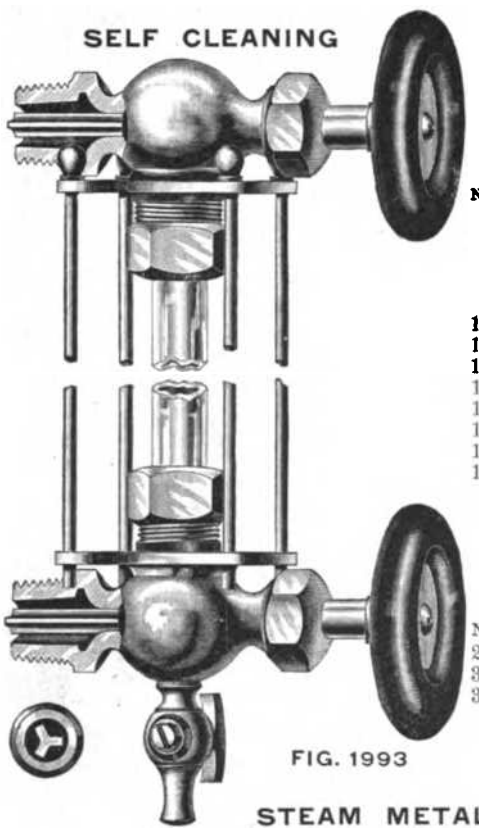


FIG. 1993

PRICES, FIG. 1993

Nos.	Sizes of Glass, Inches.	Round Body Finish.	Square Body Finish.	No. of Guards.	Wheel.	Shank, Inches.	Each.
4	½ x 12	Polished		Two	Iron	⅜	$3 50
4½	½ 12	"		Two	Wood	⅜	4 00
5	⅝ 8	"		Two	Iron	⅜	3 25
8	⅝ 10	"		Two	Wood	⅜	3 75
9	⅝ 12	"		Two	Wood	½	4 25
10	¾ 16	"		Two	Wood	¾	5 50
10½	¾ 16	"		Two	Iron	¾	5 00
11	⅝ 12	"		Four	Iron	½	4 50
12	⅝ 12	"		Four	Wood	½	5 25
13	¾ 16	"		Four	Iron	¾	5 25
14	¾ 16	"		Four	Wood	¾	6 00
15	⅝ 12		Polished	Four	Iron	½	5 25
16	⅝ 12		"	Four	Wood	½	6 00

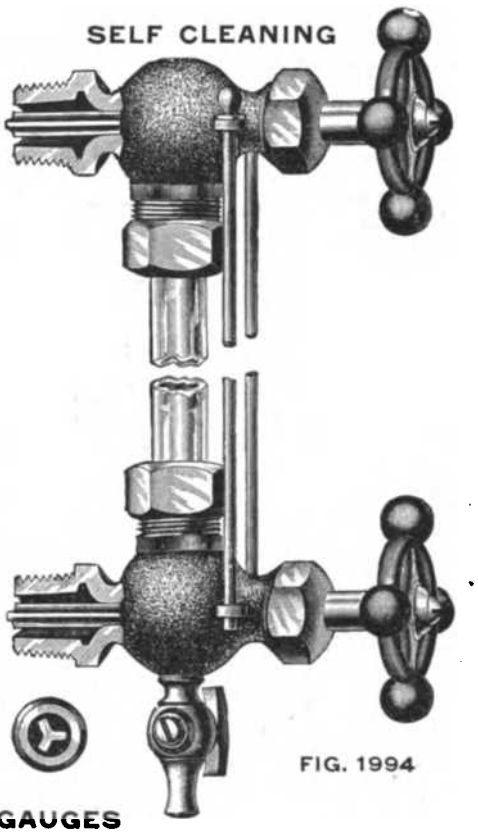


FIG. 1994

PRICES, FIG. 1994

Nos.	Sizes of Glass. Inches.	Style of Finish.	Wheel.	Shank, Inches.	Each.
2	⅝ x 10	Bronzed.	Iron	⅜	$2 75
3	⅝ 12	"	"	½	3 00
3½	¾ 16	"	"	¾	4 50

STEAM METAL, IRON AND WOOD WHEEL WATER GAUGES

No. 3¼

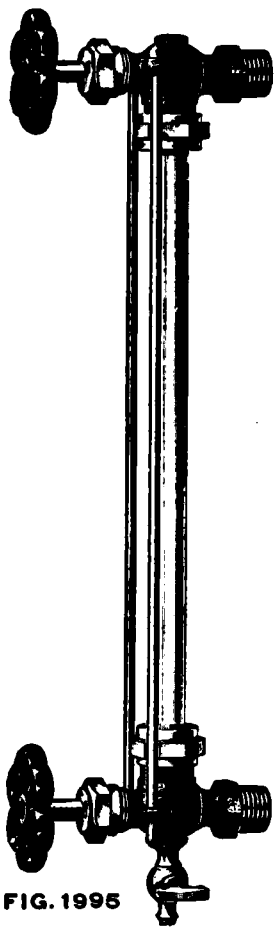


FIG. 1995

No. 3½

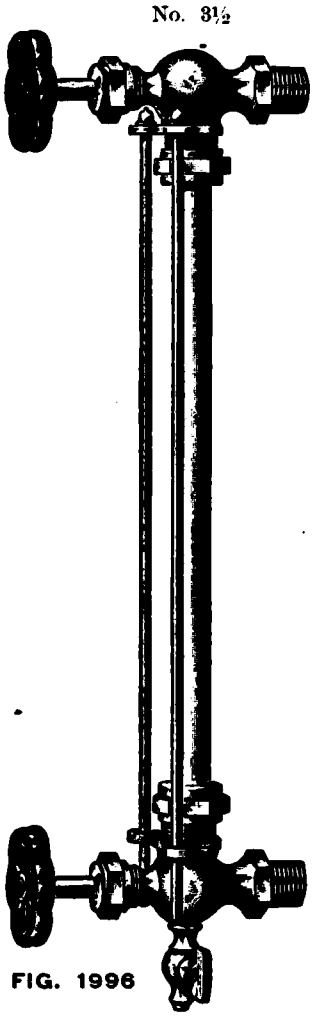


FIG. 1996

No. 4½

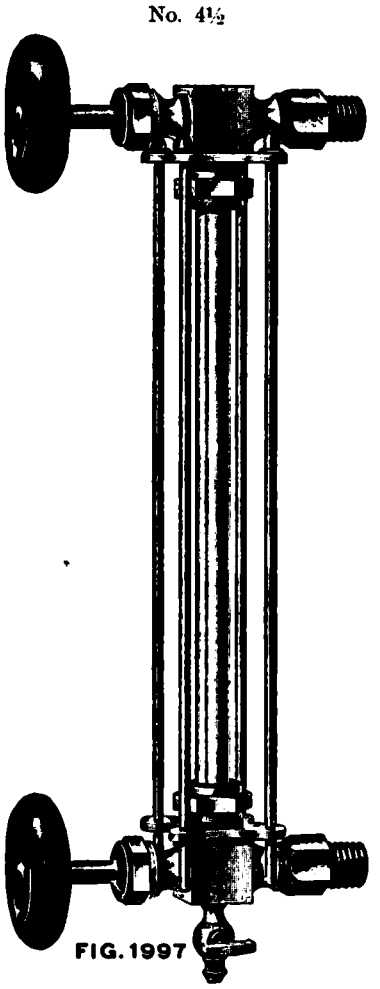


FIG. 1997

No. 7

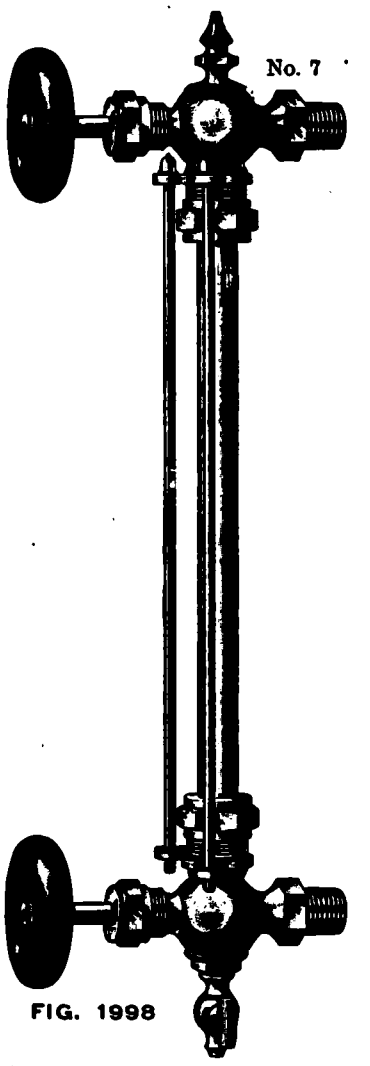


FIG. 1998

IRON WHEELS

Nos	Distance, Center to Center.	Threaded Iron Pipe. Sizes.	Sizes of Glass Tube.	Prices.
3¼ Rough	13½ inches	½ inch	⅝ x 12 inches	$3 00
3½ Finished	13½ "	⅜ "	½ 12 "	3 50
3½ "	14 "	½ "	⅝ 12 "	3 50
3½ "	14 "	¾ "	¾ 12 "	5 00
4 "	13½ "	½ "	⅝ 12 "	5 00

WOOD WHEELS

Nos.	Distance, Center to Center.	Threaded Iron Pipe. Sizes.	Sizes of Glass Tube.	Prices.
3¾ Finished	13½ inches	⅜ inch	½ x 12 inches	$4 25
3¾ "	14 "	½ "	⅝ 12 "	4 25
3¾ "	14 "	¾ "	¾ 12 "	5 75
4½ "	13½ "	½ "	⅝ 12 "	5 50
7 "	14 "	½ "	⅝ 12 "	6 00

In the No. 7 water gauge the glass may be adjusted through the top

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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WATER GAUGES

PRICES, FIGS. 1999 AND 2000

TWO-ROD

Two-rod part finished, bronzed body, ⅝ glass, ½ inch pipe	Each,	$3 00
" " " " " ¾ " ¾ "	"	6 00
" all " ⅝ glass, ½ inch pipe	"	3 75
" " " ¾ " ¾ "	"	8 00

THREE-ROD

Three-rod part finished, bronzed body, ½ glass, ⅝ inch pipe	Each,	$3 50
" " " " " ⅝ " ½ "	"	4 00
" all " ⅝ glass, ½ inch pipe	"	5 00
" part " bronzed body, ¾ glass, ¾ inch pipe	"	8 00
" all " ¾ glass, ¾ inch pipe	"	9 50

FOUR-ROD

Four-rod part finished, bronzed body, ⅝ glass, ½ inch pipe	Each,	$5 00
" all " ⅝ glass, ½ inch pipe	"	6 50
" part finished, bronzed body, ¾ glass, ¾ inch pipe	"	8 50
" all " ¾ glass, ¾ inch pipe	"	10 00

All these water gauges have a plug in top for replacing glass tube.

TWO-ROD

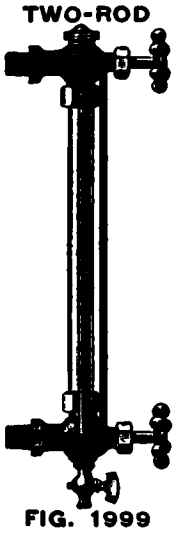


FIG. 1999

THREE-ROD
With regrinding valves.

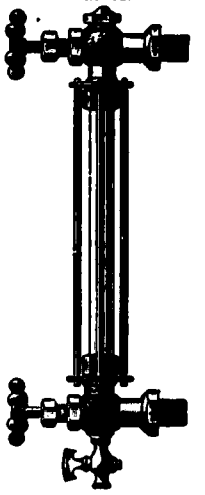


FIG. 2000

WATER AND AMMONIA GAUGES, WITH WOOD WHEELS AND FINISHED BODY

BRASS WATER GAUGE — IRON AMMONIA GAUGE

VULCANIZED ASBESTOS PACKED

These gauges are all fitted with automatic attachment, which consists of a ball valve in the bottom arm, and a spray valve in the top arm of the brass gauges and ball valves at the top and bottom of the iron ammonia gauges. On the breaking of the glass both these valves are carried to their seats by the sudden outward pressure, thereby preventing the loss usual in such cases.

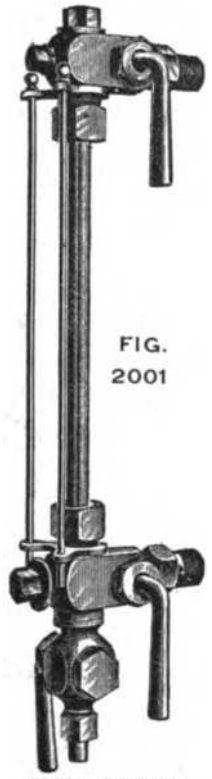


FIG. 2001

PRICES, FIG. 2001

Nos.	Boiler Connections.	Glass.	Each.
1	½ in.	⅝ in.	$19 00
2	¾	⅝	19 00
3	¾	¾	19 00
4	1	¾	19 00

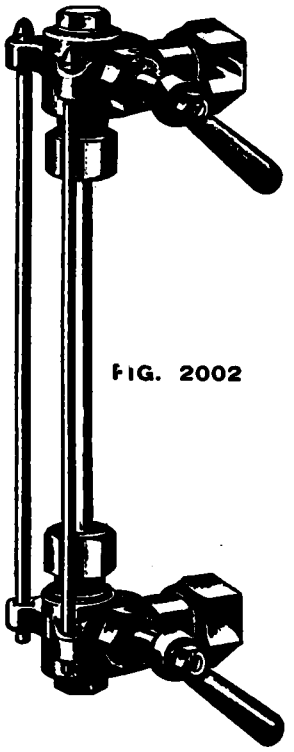


FIG. 2002

PRICES, FIG. 2002

Nos.	Tank Connections.	Glass.	Each. Plain.	Each. With Try Cock.
1	½ in.	⅝ in.	$12 00	$14 00
2	¾	⅝	12 00	14 00
3	¾	¾	12 00	14 00
4	1	¾	12 00	14 00

The above prices do not include glasses, which are not furnished unless ordered.

PRICES, FIG. 2003

This gauge is for purposes where valve stems are not necessary, such as expansion tanks of hot water heating appliances, etc., etc.

VALVELESS

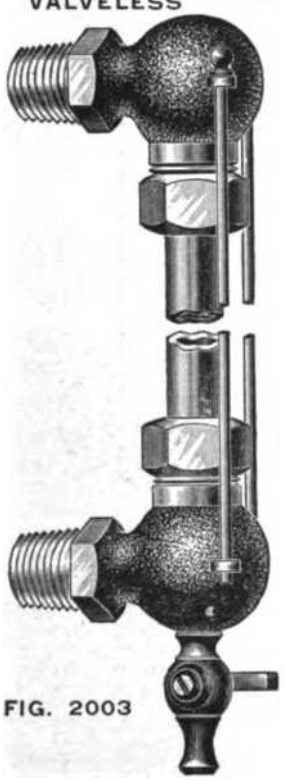


FIG. 2003

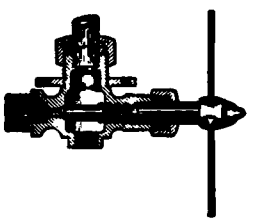
No. 0. Size of glass, inches, ⅝ x 12. Style of finish, bronzed. Shank, inches, ⅜, each, $2 00.

No. 00. Size of glass, inches, ⅝ x 12. Style of finish, bronzed. Shank, inches, ½, each, $2 25.

DESCRIPTION, FIG. 2004

This water gauge is quick closing. It has extra heavy body of best steam metal with extra large nuts for extra heavy rubber washers.

FIG. 2004 (Sectional view.)



PRICES, FIG. 2004

Size glass inches, ¾ diameter; any length up to 20 in. centers. Shank inches, ¾. Price polished brass, $12 00. Price nickeled, $15 00.

Sufficient brass safety chain furnished to operate gauge 10 feet from the floor—extra chain at extra cost.

CHAIN LEVER WATER GAUGE FOR HIGH LOCATION

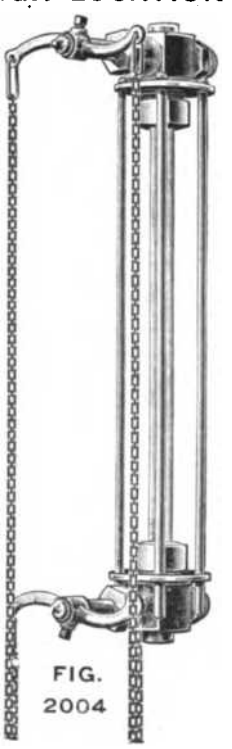


FIG. 2004

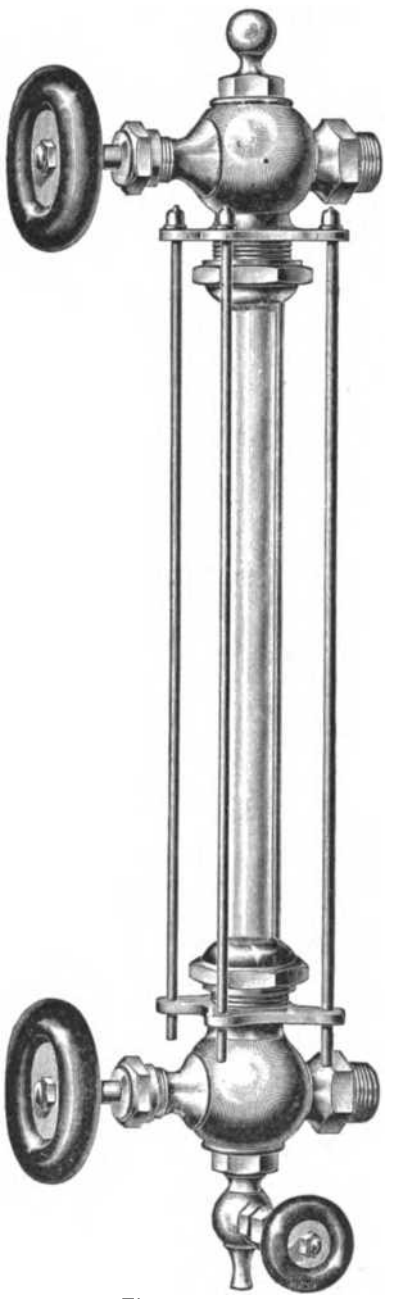


FIG. 2005

No. 10. Distance center to center, 19 inches. Threaded ¾ inch iron pipe size, size of glass tube, ¾ x 16 inches. Price each, $15 00.

The glass may be adjusted through the top.

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RELIABLE WATER GAUGE AND COLUMN

RELIABLE WATER GAUGE

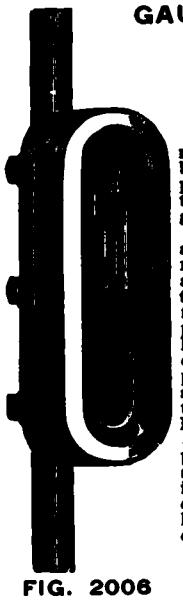


FIG. 2006

DESCRIPTION OF FIG. 2006

For use on marine and stationary boilers with high pressure, locomotives, traction engines, etc.

The gauge cases are made of solid metal, well finished and nickel-plated; the glass is the finest Scotch tempered article, one-half inch thick, securely held in position by lid and steel screws, and the finished gauge has been tested to 3,000 pounds of pressure to the square inch, causing not the slightest change, and lasting for an indefinite time.

PRICES, FIGS. 2006 AND 2007

No. of gauge.	Length of casing.	Length of glass view.	Length of gauge over all.	Prices single gauge.	Columns. Length.	Complete. Prices.
00	5¾	4½ inches.	8 inches....	$7 00	No. 1	$18 50
0	6⅝	5½ "	9 "	7 50	16½ inch.	
1	6⅝	5½ "	10 "	8 00	No. 2	23 00
2	7⅝	6½ "	11 "	8 50	18½ inch.	
3	8⅝	7½ "	12 "	9 00		
3½	9¾	8½ "	13 "	9 50		
4	11	9½ "	14 "	10 00		
5	12⅞	11½ "	16 "	10 50		
6	12⅞	11½ "	18 "	11 00		

We can furnish a complete assortment of the Reliable Water Gauges and Glasses, ranging from 7¾ inches up to 18 inches in length. Complete instructions sent with every shipment.

When ordering please state: First—Length present water glass. Second—Outside diameter of same. Third—Length between stuffing boxes.

RELIABLE WATER COLUMN

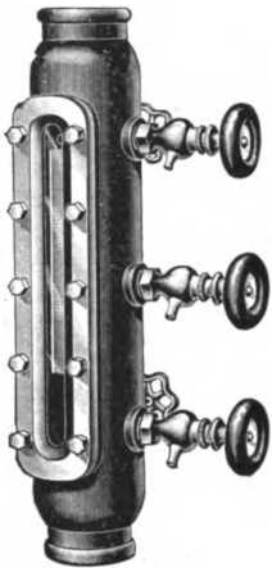


FIG. 2007

DESCRIPTION FIG. 2007

The column is of the finest gray casting, sufficiently strong for any pressure. Gauge chamber within column, inlet to same controlled by valves permitting of insertion of new glass under pressure, should by accident the glass be destroyed. The column is fitted with the usual compression cocks and is highly finished.

COMBINATION WATER COLUMNS

ASHCROFT SPECIALLY ADAPTED FOR HIGH PRESSURE WORK

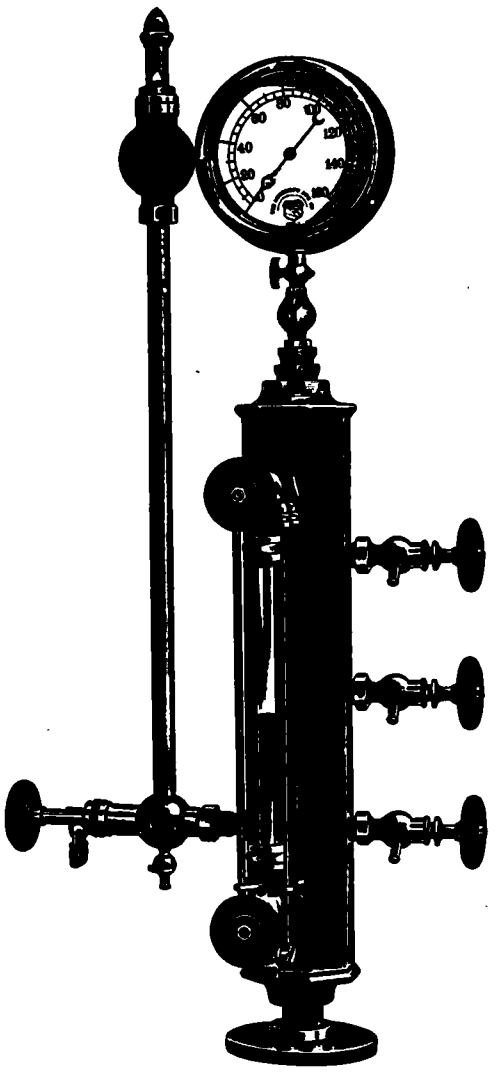


FIG. 2008

PRICES, FIG. 2008

Octagon Water Column, with 6¾ inch brass case, auxiliary spring, steam gauge, ¾ inch Keyser Automatic Water Gauge, Low Water Detector, ¾ inch self-cleaning gauge cocks, and siphon cock for steam gauge..... $50.00 each

COMBINATION WATER COLUMN

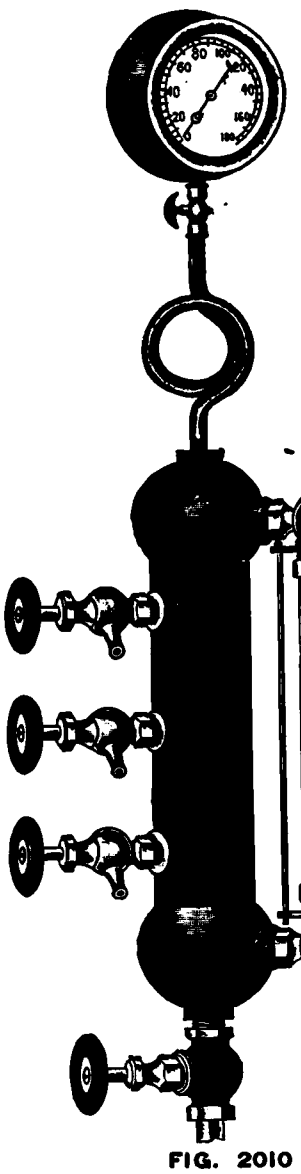


FIG. 2010

PRICES, FIG. 2010

Nos.		1	2	3	4	5
Diameter of iron columns,	inches.	2	2½	3	3½	4
Length of iron columns,	"	14¼	15⅝	18⅞	21	24½
Boiler connection, diameters,	"	½	½	¾	¾	1¼
Boiler connection between centers,	"		11¾	14⅛	16¼	18¼
Prices, complete.....		$20 00	26 00	35 00	48 00	64 00
Prices, without steam gauge, siphon, globe valve and nipple.....		$13 00	15 00	19 00	32 00	48 00

Nos. 1 and 2, part finished; Nos. 3, 4, and 5 full finished. All furnished complete with rods, water gauge, compression gauge cocks, steam gauge, syphon, globe, valve, and nipple.

No. 1 will be furnished with three gauge cocks, if specified.

Columns without steam gauge, syphon, globe, valve and nipple are furnished with plug top and bottom, at extra cost.

COMBINATION WATER COLUMN

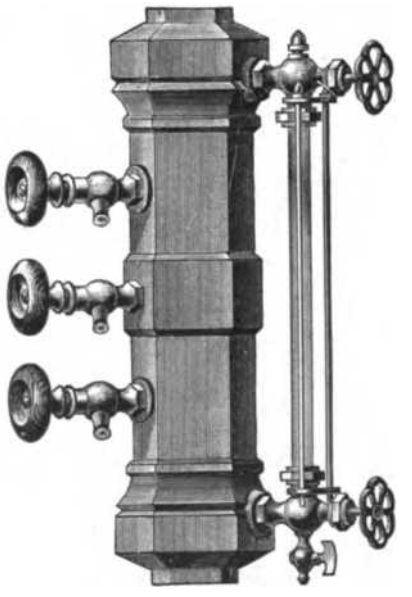


FIG. 2009

PRICES, FIG. 2009

Nos.	1	2	3
Sizes of water gauge openings	½ inch.	½ inch.	¾ inch
Sizes of gauge cock openings	⅜ "	½ "	¾ "
Size of boiler connection	¾ "	1 "	1¼ "
Length of column	15 "	18 "	24 "
Inside of body	2 "	4 "	4 "
Center to center of water gauge openings	11½ "	13¼ "	19 "
Prices, without trimmings....	$1 25	$2 50	$3 50

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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THE RELIANCE SAFETY WATER COLUMNS

The Reliance Safety Water Columns are of two kinds; those which whistle only when the water reaches the lower limit of safety, and those which whistle before the water gets either low enough to burn the boiler or high enough to flood the engine. Both columns are entirely automatic, requiring no re-adjustment. Whenever the water line comes back within the limits prescribed, the whistle ceases to blow. The Reliance water columns have a sediment chamber and patent solderless floats.

Sizes of Column, Nos.	Kinds and Sizes of Boiler, Inches.	Variation Between Alarms Inches.	Prices of Columns.	Prices of Water Gauge and Gauge Cocks.	Steam and Water Connections, Inches.	Blow Off, Inches.	Water Gauge, Inches.	Gauge Glass, Inches.	Gauge Cocks Centers, Inches.	Gauge Cocks Size, Inches.	Center of Water Connection to Top of Column, Inches.	Diameters of Col., Inches.	Lengths over all Inches.
COMBINED HIGH AND LOW WATER ALARMS.								GENERAL DIMENSIONS.					
1	36 to 54	6	$28 00	$7 00	1	½	½ x 14	⅝ x 12	3	½	16	3¾	23¼
1½	36 to 54	6	28 00	7 00	1¼	¾	½ x 14	⅝ x 12	3	½	19¾	5	28¼
5	54 to 72	8	30 00	10 00	1¼	¾	¾ x 18	¾ x 16	4	¾	20½	4¼	29½
7	Water Tube	12	35 00	10 00	1½	¾	¾ x 21	¾ x 19	6	¾	26	5¼	36
9	Vertical.	18	40 00	10 00	1½	1	¾ x 26½	¾ x 24	9	¾	33½	5¼	44
11	"	24	42 50	12 50	1½	1	¾ x 32½	¾ x 30	12	¾	46½	5	58
13	"	30	45 00	*20 00	1½	1	¾ x 38½	*¾ x 36	10	¾	52½	5	64
15	"	36	50 00	*20 00	1½	1	¾ x 44½	*¾ x 42	12	¾	58½	5	70
LOW WATER ALARMS.								GENERAL DIMENSIONS.					
2	36 to 54	...	$25 00	$7 00	1	½	½ x 14	⅝ x 12	3	½	16	3¾	23¼
6	54 to 72	...	28 00	10 00	1¼	¾	¾ x 16	¾ x 14	4	¾	18¼	4¼	27¼

*Two glasses joined at center with stuffing box. Four gauge cocks.

In ordering never fail to state whether the gauge cocks should be at the right or left of the water gauge. Columns with the cocks at the right of the water gauge are right hand columns, and those with the cocks at the left of the water gauge are left hand columns. The column shown in cut is a left hand column. Larger sizes made to order

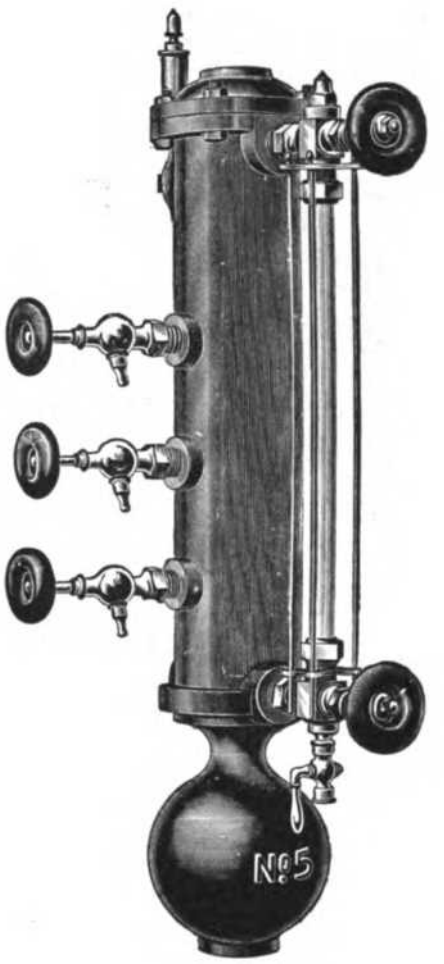


FIG. 2111

SAFETY WATER COLUMN

AN ALARM FOR HIGH AND LOW WATER

DESCRIPTION, FIG. 2012

As the water in boiler falls to level of bottom gauge cock, the float falls, and top knocker opens the valve, blowing alarm for low water.

In reverse manner, alarm for high water is sounded when water reaches level of top gauge cock.

Knockers can be adjusted to blow high and low water alarms with 2 inch or greater variation.

The Safety Columns are equipped with pure copper, seamless floats, guaranteed to 300 pounds, external pressure. Trimmings furnished with these safety columns are square body, wood handles, four heavy guards. The gauge cocks have wood handles.

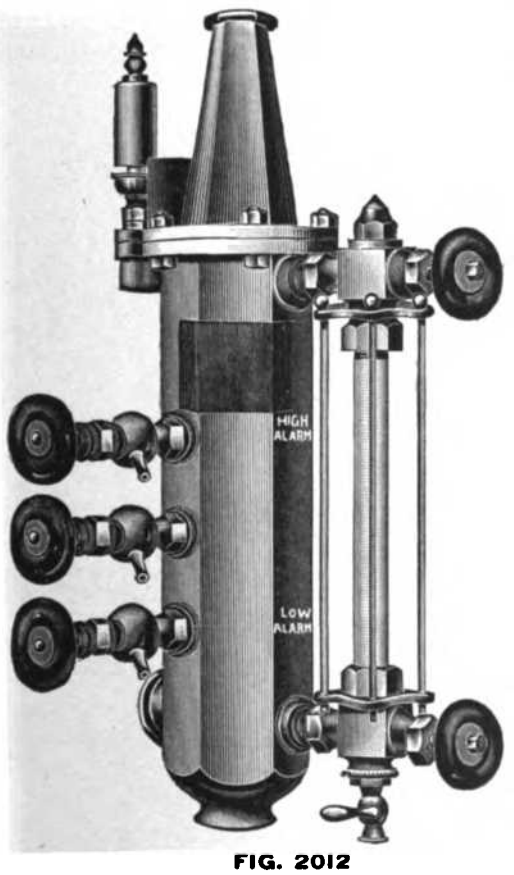


FIG. 2012

This is a left handed column with wood handled trimmings.

Nos.	Size of Boiler Connections, Inches.	Variation between Alarms, Inches.	Length Glass, Inches.	Distance between Gauge Cocks, Inches.	Size of Trimmings, Inches.	JAPANNED. Untrimmed, Without Gauge Cocks or Water Gauges.	JAPANNED. Wood Handle Trimmings, Water Gauge and Gauge Cocks Extra.
1	1¼	7	12	3½	½	$22 00	$5 00
2	1¼	9	16	4½	¾	24 00	7 00
3	1¼	12	20	6	¾	26 00	7 00

Finished brass, polished brass and nickel plated, prices on application. Assorted designs, round, octagon.

When not otherwise stipulated, we ship the columns trimmed, with gauge cocks and water gauge. A column having gauge cocks on the left hand side when looking at the glass, which is on the front, is a left hand column, and vice versa. The column shown in cut is a left hand column.

When these columns are provided with the rotating gauge cock, lever style, each column $3.00 extra.

In ordering please state whether right or left hand columns are desired.

PRICES, FIG. 2013

NO. 1

	Each
Tapped for ½ inch water gauge, 12 inches center to center	$2 50
" ⅜ inch gauge cocks	2 50
" ¾ inch boiler connection, 12 inches center to center	2 50

NO. 2

	Each
Tapped for ½ inch water gauge, 14⅛ inches center to center	$4 00
" ½ inch gauge cocks	4 00
" 1 inch boiler connection, 14⅛ inches center to center	4 00

These columns can be furnished tapped for other sizes, if desired.

HEXAGON, IRON COLUMN ONLY

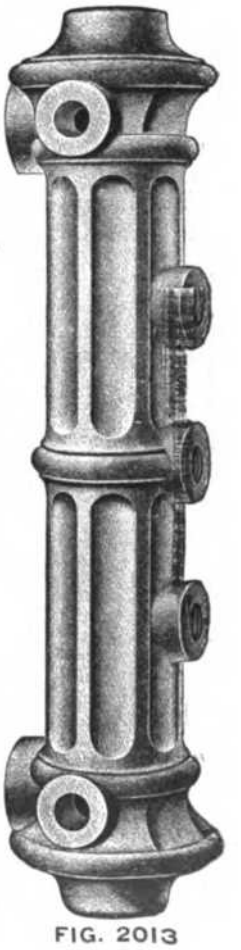


FIG. 2013

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ASHCROFT LOW WATER DETECTORS AND ALARMS

STYLE NO. 1 FOR HORIZONTAL BOILERS

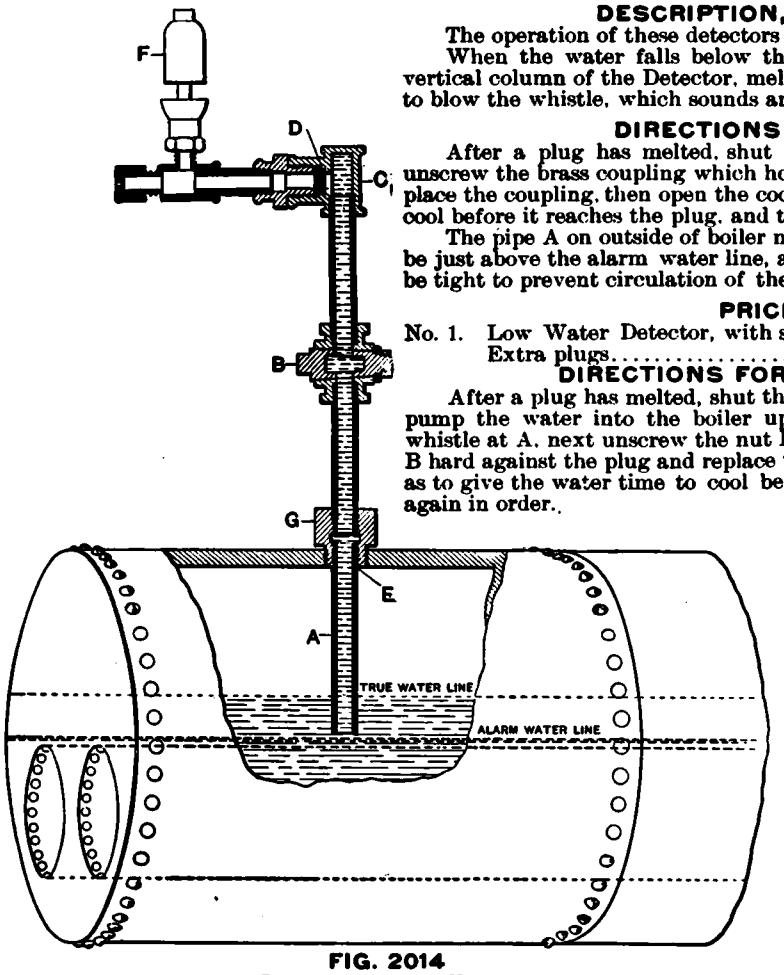


FIG. 2014

DESCRIPTION, FIGS. 2014 AND 2015

The operation of these detectors is as follows:

When the water falls below the proper level in the boiler, steam enters the vertical column of the Detector, melting the fusible plug, thus allowing the steam to blow the whistle, which sounds an alarm that there is low water.

DIRECTIONS FOR NO. 1, FIG. 2014

After a plug has melted, shut the cock B to stop the whistle blowing, then unscrew the brass coupling which holds the plug in place, insert new plug and replace the coupling, then open the cock B cautiously so as to give the water time to cool before it reaches the plug, and the detector is again in order.

The pipe A on outside of boiler must be long enough to allow its bottom end to be just above the alarm water line, and the connections, especially at E, must all be tight to prevent circulation of the water.

PRICES, FIG. 2014

No. 1. Low Water Detector, with six plugs.....each $15 00
Extra plugs.....per dozen 4 80

DIRECTIONS FOR NOS. 2 AND 3, FIG. 2015

After a plug has melted, shut the cock C to stop the whistle blowing. Then pump the water into the boiler up to the proper water line, then unscrew the whistle at A, next unscrew the nut B and put a plug in place, then screw the nut B hard against the plug and replace the whistle, then open the cock C cautiously so as to give the water time to cool before it reaches the plug, and the detector is again in order.

If water drips from the mouth of the whistle or from the cock, it will cause a circulation in the pipe, which would raise the temperature above 212 degrees Fahr., and melt the plug, so care must be taken to screw the nut B hard against the plug, and all joints must be tight.

The cock C should always remain open except when a plug is being renewed, and it can be locked open with a padlock at the will of the owner.

No lead or packing should be used about the plug, which should be blown out at least twice a year.

STYLES NOS. 2 AND 3 FOR VERTICAL BOILERS

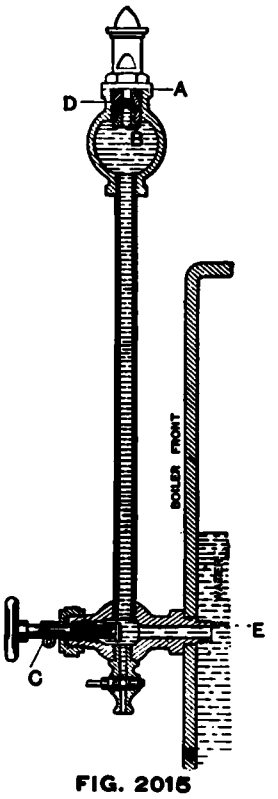


FIG. 2015

PRICES, FIG. 2015

No. 2. All brass with 6 plugs.....each $15 00
" 3. Iron pipe and ball brass cocks, with six plugs..... " 12 00
Extra disks.....per dozen 1 20

HIGH AND LOW WATER ALARM

DESCRIPTION, FIG. 2016

Adjustment of float can be made with steam on the boiler by simply removing cap at top of whistle and turning piston to right or left.

MADE ENTIRELY OF BRASS AND NEATLY FINISHED

Price Complete.....$15 00
Shank threaded 1 inch gas pipe tap

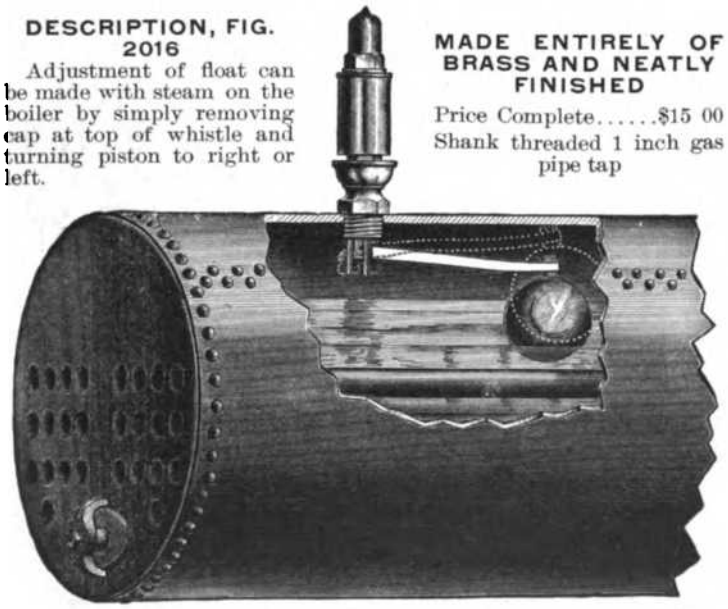


FIG. 2016

DESCRIPTION AND PRICES, FIG. 2017

This alarm is compact, well made and guaranteed in every way. The metal in the fusible disk A is so alloyed as to melt when the temperature exceeds 250 degrees. The plug A is easily removed by unscrewing the nut B which holds it in place. The device is provided with lock-up valves and key so that it can not be tampered with by unauthorized persons.

Price, complete with whistle, coupling, pipe and six extra fusible disks.....each $12 50
Extra fusible disks.....per dozen 3 50

ALARM APPLIED TO HORIZONTAL TUBULAR BOILER

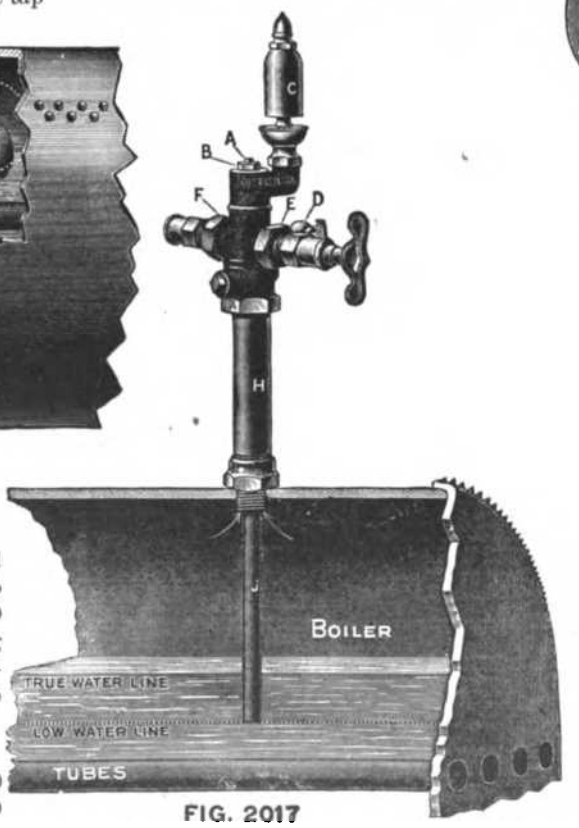


FIG. 2017

VIGILANT SAFETY LOW WATER ALARM

ALARM APPLIED TO ORDINARY WATER COLUMN

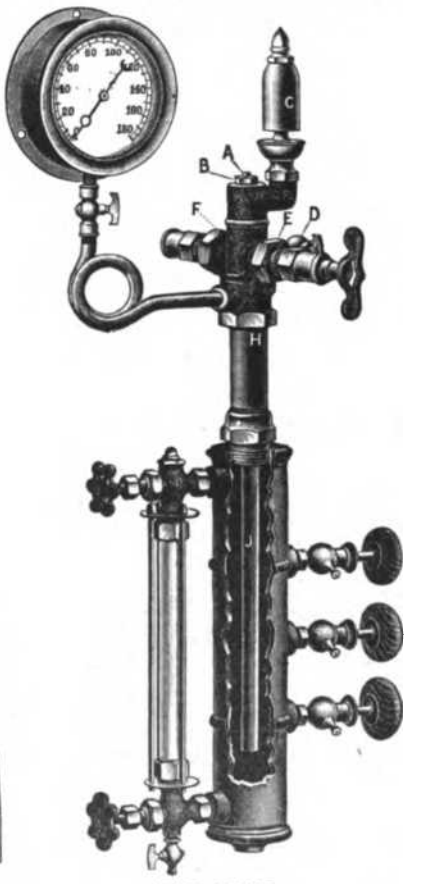


FIG. 2017

MANNING, MAXWELL, & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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BLACKALL RELIEF VALVE FOR USE ON LOCOMOTIVES

This valve is placed on a locomotive at any point between the throttle valve and slide valve, preferably upon the steam chest, where it will have a free and open communication with the steam pipes of the engine only. It is designed to prevent the accumulation of pressure in the pipes or boiler of a locomotive if engine is suddenly reversed while moving forward, as is frequently the case. The valve is adjusted to open at a slightly higher pressure than the maximum pressure carried on the boiler, but below the pressure required to produce a rupture of parts, and will permit the excess of air pressure to escape from the steam pipes, and thereby prevent any undue pressure being generated by the cylinders. A uniform pressure of air will be maintained within the limit of safety, which will supply resistance to the pistons and overcome the momentum of the train, and perform the functions of an automatic air brake on the drivers, and stop the train. By the use of this device engines can be reversed suddenly while running at a high rate of speed, without strain or damage to any portions of the machinery or boiler.

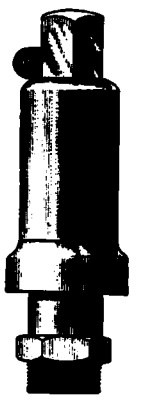


FIG. 2018

PRICE, FIG. 2018

1¼ inch or 1½ inch bottom discharge, all brass with steel spring.....$20 00

THE CONSOLIDATED PORTABLE BRASS POP SAFETY VALVE

FITTED WITH RICHARDSON'S ADJUSTABLE SCREW RING

These valves are made for use on portable boilers, hoisting engines, farm engines, steam fire engines, and steam launches. Great care is used in every detail of their construction, and each one is tested and adjusted under steam pressure before it leaves the works. The springs are heavily nickel-plated. The lever will lift the valve from its seat, but can not be used to hold the valve down.

PRICES, FIG. 2019—ALL BRASS WITH STEEL SPRING

Sizes. Inches.	Size of Steam Connection. Inches.	Height. Inches.	Largest Outside Diameter. Inches.	Horse-power.	Each.	
¾	¾ female	5½	2⅜	8	$ 8 00	upturned levers
¾	1 male	5½	2⅜	10	8 00	" "
1	1 "	6¼	2⅜	12	10 00	" "
1	1¼ "	6¼	2⅜	15	10 00	" "
1¼	1¼ "	6½	2⅞	18	15 00	" "
1¼	1½ "	6½	2⅞	20	15 00	" "
1½	1½ "	7½	3¼	20	20 00	" "
1½	2 "	7½	3¼	25	20 00	" "
2	2 "	9¾	4⅛	30	30 00	" "
2½	2½ female	12⅛	5¼	40	40 00	straight levers
3	3 "	13⅛	5⅝	60 to 75	60 00	" "

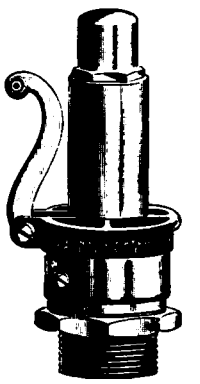


FIG. 2019

In ordering, always state highest working pressure.

THE CONSOLIDATED SIDE OUTLET POP SAFETY VALVES

FITTED WITH RICHARDSON'S ADJUSTABLE SCREW RING

WITH STATIONARY OUTLET



FIG. 2020

DESCRIPTION, FIG. 2020

The outlet on this type of valve is stationary on the valve case.

PRICES, FIG. 2020

ALL BRASS WITH STEEL SPRING

Diameters....	1 in,	1¼ in.	1½ in.	2 in.
Each.....	$18 00	$18 00	$23 00	$30 00

WITH SWINGING SIDE OUTLET

DESCRIPTION, FIG. 2021

The outside shell on this valve is so fitted on the valve case that the outlet can be turned in any circular direction for piping away the escaping steam.

PRICES, FIG. 2021

ALL BRASS WITH STEEL SPRING

Diameters..	¾ in.	1 in.	1¼ in.	1½ in.	2 in.
Each.....	$12 00	$15 00	$20 00	$25 00	$30 00

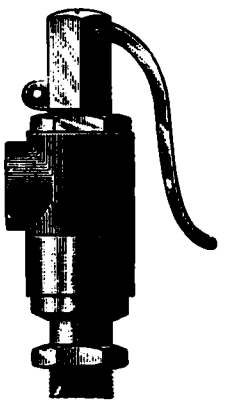


FIG. 2021

In ordering, always state highest working pressure.

THE CONSOLIDATED SNIFTING VALVE

RICHARDSON'S PATENT

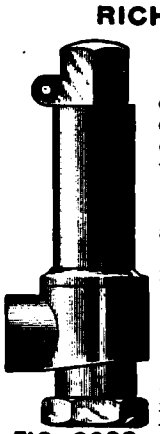


FIG. 2022

DESCRIPTION, FIG. 2022

This valve was particularly designed for use on the ends of the cylinders of all classes of steam engines, including locomotives, to provide an automatically operated outlet for the escape of the water of condensation, and to protect the cylinder against injury and the blowing off of its heads, due to overpressure.

Two of these valves should be connected to a double-acting cylinder, one on each end.

The outlet of the valve is below the valve seat, and is screw-threaded for pipe connections.

This valve can also be used for a water relief valve.

In ordering, always state highest working pressure.

PRICES, FIG. 2022

ALL BRASS WITH STEEL SPRING

Diameters.....	1 in.	1¼ in.	1½ in.	2 in.
Each.....	$12 00	$16 00	$20 00	$25 00

THE CONSOLIDATED PORTABLE MUFFLER POP SAFETY VALVE

FITTED WITH RICHARDSON'S ADJUSTABLE SCREW RING

DESCRIPTION, FIG. 2023

This valve was designed to meet the demand for a muffled valve for use on road rollers, where the sharp report of escaping steam from the plain type of portable pop valve is considered objectionable. We recommend it for use on any boiler when it is desired to muffle the noise of escaping steam to the lowest possible point.

PRICES, FIG. 2023

ALL BRASS WITH STEEL SPRING

Sizes.....	1 in.	1¼ in.	1½ in.
Each.....	$20 00	$25 00	$30 00

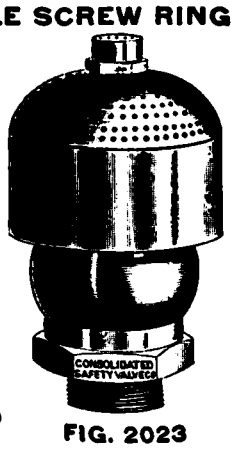


FIG. 2023

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THE CONSOLIDATED MUFFLING ATTACHMENT

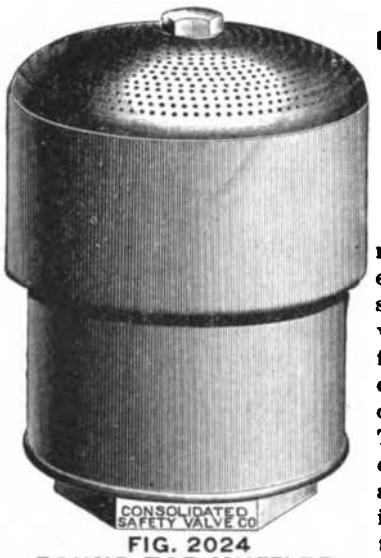


FIG. 2024
ROUND TOP MUFFLER
VALVE WITHOUT LEVER

FOR USE ON ESCAPE PIPE AND THE OUTLETS OF IRON BODY POP VALVES

DESCRIPTION, FIG. 2024

This Muffler was designed to meet the demand for a device to effectually muffle the noise of steam discharged from safety valves on stationary boilers. The frequent blowing of safety valves, especially in a large plant, is very often objectionable and annoying. These Mufflers can be connected direct to the outlet of the valve or at the end of a pipe leading from it, and will muffle the sound of the escaping steam to a point that is hardly noticeable.

Prices on Application.

THE CONSOLIDATED OPEN LOCOMOTIVE POP SAFETY VALVE

FITTED WITH RICHARDSON'S ADJUSTABLE SCREW RING

DESCRIPTION, FIG. 2025

These valves are made for 2⅛-inch, 2¼-inch, and 2½-inch opening.

In ordering, always state highest working pressure, and the outside diameter of the bush that presses into the dome cap.

PRICES, FIG. 2025—IRON BODY WITH STEEL SPRING

Valve including bush, spring, spindle, and cross bar	$20 00 each
Valve including bush, spring, spindle, and cross bar and nickel seat	25 00 "

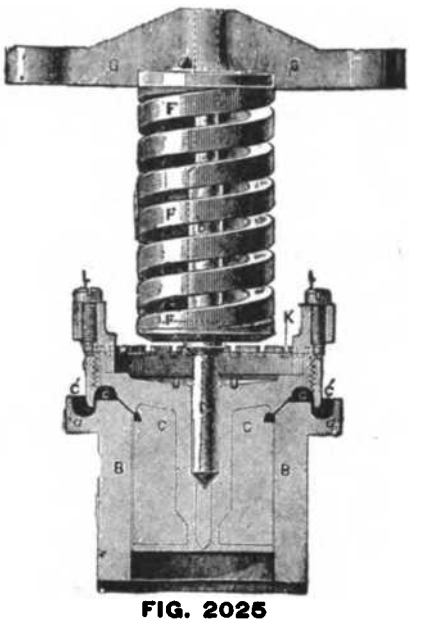


FIG. 2025

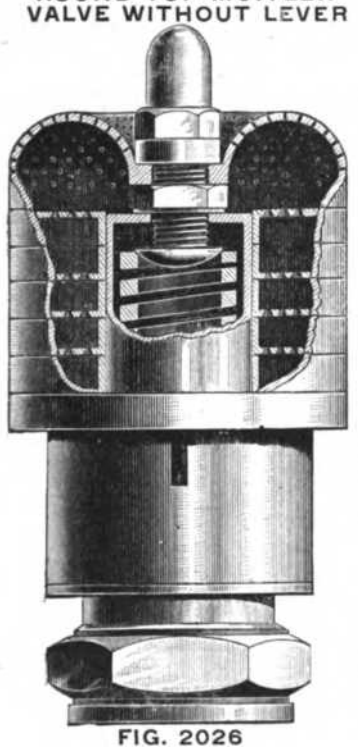


FIG. 2026

THE CONSOLIDATED ENCASED LOCOMOTIVE POP SAFETY VALVES WITH PATENT MUFFLER ATTACHED

FITTED WITH RICHARDSON'S ADJUSTABLE SCREW RING

DESCRIPTION, FIGS. 2026 AND 2027

The cuts represent two different types of Muffled Safety Valves as made especially for locomotive service.

The advantage to be derived from the use of these muffled valves in place of the ordinary "open" pop or "encased" pop valve is that the noise of the escaping steam is reduced to the lowest possible minimum; the steam is discharged directly upward, and with sufficient force to direct the current above the top of the cab, so that it does not trail on to the engine or in the train windows.

DIMENSIONS

	2¼ and 2½ inch valves.	3 inch valve.
Largest outside diameter	4½ inches.	6⁹⁄₁₆ inches.
Height over all without bushing	11 "	11¾ "
Bush to press into dome cap is made to finish in	3¼ in. diam. and 2⅛ in. long under shoulder	3⅝ inch diam. and 2 in. long under sh'lder.

Other sizes of bushings to order.

ALL BRASS WITH STEEL SPRING

PRICES, FIGS. 2026 AND 2027 COMPLETE WITH BUSH TO PRESS INTO DOME CAP

2¼ inch Valve and Muffler	$35 00 each
2½ " " " "	40 00 "
3 " " " "	50 00 "

The 3 inch size is large enough to take care of the excess steam in any locomotive boiler.

If the Round Top Muffler Valve is required it should be so stated, as otherwise we always furnish the Flat Top Valve.

In ordering, always state highest working pressure and the outside diameter of the bush that presses into the dome cap.

FLAT TOP MUFFLER
VALVE WITH LEVER

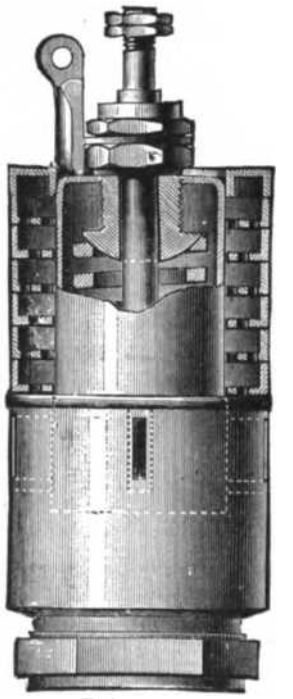


FIG. 2027

THE CONSOLIDATED ENCASED LOCOMOTIVE POP SAFETY VALVE

FITTED WITH RICHARDSON'S ADJUSTABLE SCREW RING

DESCRIPTION, FIG. 2028

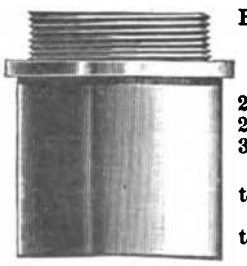
This valve is identical in construction and operation to the one shown in Fig. 2026 excepting that it is not equipped with a muffler. On some roads it has been found an economy to equip each engine with one encased and one muffler valve; in such a case the muffler valve is generally set at a lower pressure than the plain encased valve, and thus performs all the work required; the plain encased valve can thus be used as an auxiliary and to blow down the pressure when such is required.

DIMENSIONS

	2¼ and 2⅛ inch valves.	3 inch valve.
Largest outside diameter	4⅜ inches.	5¼ inches.
Height over all not including bushing	11 "	11¾ "
Bush to press into dome cap is made to finish,	3¼ in. diam. by 2⅛ in. long under shoulder.	3⅝ in. diam. by 2 in. long under shoulder.

Other sizes of bushing to order.

DOME BUSH



PRICES, FIG. 2028—ALL BRASS WITH STEEL SPRING

2¼-inch valve, complete, with bush to press into dome cap	$25 00 each.
2½ " " " " " " " " "	30 00 "
3 " " " " " " " " "	40 00 "

Pop Safety Valves are not made larger than 3 inches. The 3 inch size is large enough to take care of the excess steam in any locomotive boiler.

In ordering, always state highest working pressure and the outside diameter of the bush that presses into the dome cap.



FIG. 2028

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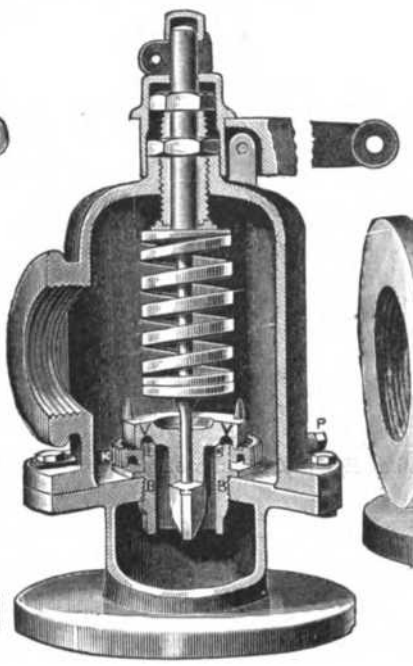
THE CONSOLIDATED NICKEL SEATED POP SAFETY VALVE

FITTED WITH RICHARDSON'S ADJUSTABLE SCREW RING

WITH OUTLET IN UPPER CASTING

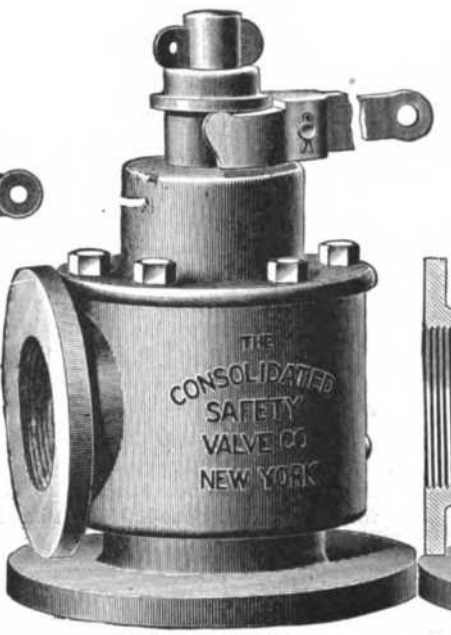


EXTERIOR VIEW
FIG. 2029

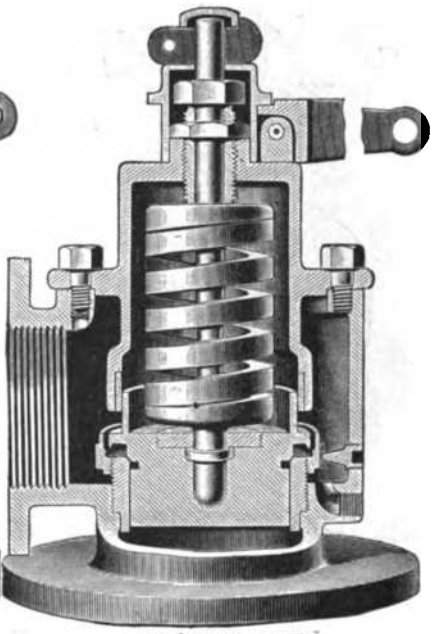


INTERIOR VIEW
FIG. 2029

WITH BASE OUTLET



EXTERIOR VIEW
FIG. 2030



INTERIOR VIEW
FIG. 2030

This valve, Fig. 2030, has its outlet in the base casting, which makes it very convenient to take the valve apart for cleaning, regrinding, or any other purpose, without being obliged to disconnect the pipe, that can be attached to the outlet for carrying the escaping steam outside of the boiler room.

DESCRIPTION, FIGS. 2029 AND 2030

These safety valves are particularly adapted for large boilers at electric light plants, mills, factories, pumping stations, manufacturing plants of all characters, and marine service.

They have beveled seats at an angle of 45 degrees to their center line of axis, and for marine boilers are so arranged that the valve can be lifted off its seat by means of the lever one-eighth the diameter of the valve opening, as required by the United States Board of Supervising Inspectors of Steam Vessels. These valves are allowed a Government rating 50 per cent. higher than the common ball and lever safety valve. The seats of the valves are of solid nickel, which can not corrode, and the valves are fitted with Richardson's Adjustable Screw Ring, so that the closing pressure can be altered without taking the valves apart. The lock-up attachment prevents the pressure adjustment of the valves from being tampered with. The spring, a vital factor, is carefully selected, and great care is used in its coiling, tempering and testing. It is nickel plated to prevent its rusting, and the points of bearing, top and bottom, are ball and socket. Working parts are all of best composition steam metal.

These valves never fail to open at the pressure at which they are set.

All flanged valves up to and including 4 inch have their inlets and outlets threaded regular gas pipe sizes of same diameter as valves. Above 4 inch, excepting 6 inch size, inlets are threaded for gas pipe sizes one-half inch smaller than diameter of valve. 6 inch size has inlet tapped 6 inches straight, 8 threads to the inch. All flanged bases are threaded for our own convenience in testing and setting the valves under steam pressure at factory only, and we recommend attaching all flanged valves to boilers by bolting through the flanges, and not by the screw connections

PRICES AND DIMENSIONS, FIGS. 2029 AND 2030. IRON BODY

Sizes.	Diameter of Base Flanges.	Diameter of Side Outlets.	Distance from Base Flange to Center of Side Outlets.	Total Height of Valves, Including Lock-up Cap.	Distance from Center of Valves to Outside of Outlets.	Largest Diameter of Valves or Space Occupied.	For Boilers, H. P.	Each.
2 inches	7 inches	2 inches, screwed	3 9/16 inches	12½ inches	3¼ inches	7 inches	35 to 50	$40 00
2½	9 "	2½ " "	4¼ "	14½ "	3⅞ "	9 "	60 " 75	55 00
3	9⅛ "	3 " "	4¾ "	16¼ "	4⅝ "	10 "	75 " 100	75 00
3½	10¼ "	3½ " "	5¾ "	18¾ "	5 "	11¼ "	100 " 125	87 00
4	11¼ "	4 " "	6⅜ "	20⅛ "	5½ "	13¼ "	125 " 150	100 00
4½	12⅛ "	8½ inches, flanged	5⅝ "	20⅛ "	6 "	14 "	150 " 175	125 00
5	13⅛ "	9 " "	6 "	20¼ "	6¾ "	16 "	175 " 200	150 00
5½	13⅛ "	10 " "	6⅜ "	23¾ "	7 "	17½ "	200 " 275	165 00
6	13⅛ "	10 " "	6⅜ "	23¾ "	7 "	17½ "	275 " 300	175 00

In ordering, always state highest working pressure.

We can furnish valves, Fig. 2030, with handles on the lock-up caps, if desired.

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THE CONSOLIDATED BRASS SEATED POP SAFETY VALVE

FITTED WITH RICHARDSON'S ADJUSTABLE SCREW RING



FIG. 2031, EXTERIOR VIEW

DESCRIPTION, FIG. 2031

This valve has beveled seats, at an angle of 45 degrees to its center line of axis, and for marine boilers is so arranged that the valve can be lifted off its seat by the lever one-eighth of the diameter of the valve opening, as required by the United States Board of Supervising Inspectors of Steam Vessels. This valve is allowed a Government rating 50 per cent. higher than the common ball and lever safety valve, and is fitted with Richardson's adjustable screw ring, so that the closing pressure can be altered without taking the valve apart. The lock-up attachment prevents the adjustment of the spring from being tampered with. The spring—a vital factor—is carefully selected, and great care is used in its coiling, tempering and testing. It is nickel plated to prevent its rusting, and the points of bearing, top and bottom, are ball and socket. The working parts are all of best composition steam metal. This valve never fails to open at the pressure for which it is set.

All flanged valves, up to and including 4 inch, have their inlets and outlets threaded regular gas pipe sizes of same diameter as valves; above 4 inch, excepting 6 inch size, inlets are threaded for gas pipe sizes one-half inch smaller than diameter of valve; 6 inch size has inlet tapped 6 inch straight threads, 8 threads to the inch. All flanged bases are threaded for our own convenience in testing and setting the valves under steam pressure at factory only, and we recommend attaching all flanged valves to boilers by bolting through the flanges, and not by the screw connections.

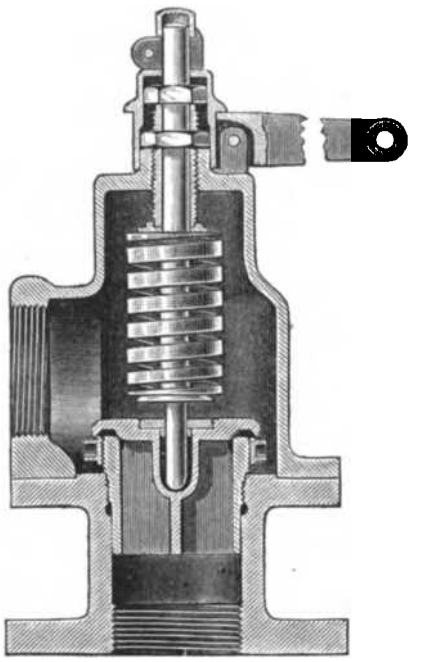


FIG. 2031, INTERIOR VIEW

DIMENSIONS AND PRICES, FIG. 2031--IRON BODY

Sizes, Inches.	Diameters of Base Flange, Inches.	Diameters of Side Outlet, Inches.	Center of Outlet to Bottom of Flange, Inches.	Total Height, Inches.	Center of Valve to End of Outlet, Inches.	Largest Diameters of Valve or Space Occupied, Inches.	For Boilers, H. P.		Each.
2	Screwed.	Screwed.	4⅞	13¾	3¼	6½	35 to	60	$35 00
2½	9⅛	"	7⅜	17¼	3¾	9⅜	60	75	45 00
3	9⅛	"	7⅞	18	4¼	9⅜	75	100	60 00
3½	10¼	"	8½	21⅛	4¾	10⅜	100	125	75 00
4	11⅜	"	9	21⅛	5⅜	11⅜	125	150	90 00
4½	12	9½	9¾	21⅛	5⅝	13½	150	175	95 00
5	13⅛	9⅛	10¼	21⅛	6¼	16½	175	200	100 00
5½	13⅛	10⅛	10¾	24	6⅞	17	200	275	125 00
6	13⅛	10⅛	10¾	24⅜	6⅞	17	275	300	150 00

In ordering, always state highest working pressure.

CONSOLIDATED NICKEL SEATED BOARD OF TRADE POP SAFETY VALVE

FITTED WITH RICHARDSON'S ADJUSTABLE SCREW RING

This valve derives its name from the fact that it has been constructed to comply with the rules made by the Board of Trade of Great Britain.

DESCRIPTION, FIG. 2032

These valves are made particularly strong and heavy for use under modern high steam pressures now carried on steam vessels and ocean steamers. The nickel plated springs are of extra length, and are incased to prevent contact with the escaping steam. The entire construction of the valve conforms to the requirements of the United States Board of Supervising Inspectors of Steam Vessels, also the English Board of Trade rules, and includes the following details: Valve is guided by wings below, and in an approved manner above, and has a projecting lip; valve seats of nickel, beveled on an angle of 45 degrees to center line of axis; adjustable ring for regulating the closing pressure; valve stem a loose fit in valve bottoming below level of seat, and so secured that valve head can be turned on its seat by the two handled lock-up cap on top of cover of valve; outlet nozzle in base casting, to avoid breaking joint of escape pipe when taking valve apart; spring case so fitted that valve can be removed without slacking or changing the adjustment of spring; springs with spherical bearings at ends; drain pipe connection in valve base casting, below the level of the valve seat; lever arranged to lift valve off its seat one-eighth of the diameter of the valve opening. This valve is allowed a Government rating of 50 per cent. higher than the common ball and lever safety valve.

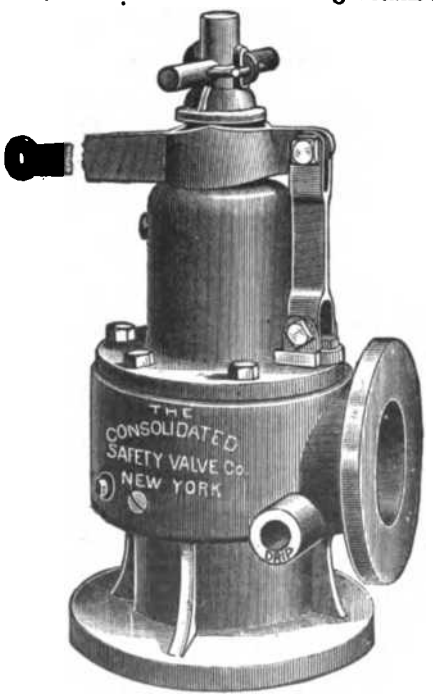


FIG. 2032

DIMENSIONS AND PRICES, FIG. 2032--IRON BODY

Sizes, Inches.	Diameters of Base Flange, Inches.	Diameters of Outlet Flange, Inches.	Distance from Base Flange to Outlet, Inches.	Height, Inches.	Distance from Center of Valve to End of Lever, Inches.	Each.
2½	9 9/16	8	5⅜	19	16	$55 00
3	10¼	9⅛	6	22¾	15	75 00
3½	10¼	9⅛	6	22¾	15	87 00
4	12	9⅛	7¾	25	16½	100 00
4½	12	9⅛	7¾	25	16½	125 00
5	13	10	7¾	31	22	150 00
5½	13¼	11⅛	8¼	31	22	165 00
6	13¼	11⅛	8¼	31	22	175 00

The following table is arranged to show the size of the Consolidated Marine Valve required for square feet of grate surface of marine boilers, according to Amended Rule 36 of the United States Board of Supervising Inspectors of Steam Vessels:

1 inch	Consolidated	Safety	Valve	Co.'s	Valve for	2.35 square feet of grate surface.
1¼	"	"	"		3.68	" "
1½	"	"	"		5.30	" "
2	"	"	"		9.42	" "
2½	"	"	"		14.72	" "
3	"	"	"		21.20	" "
4	"	"	"		37.69	" "
5	"	"	"		58.9	" "
6	"	"	"		84.82	" "

MANNING, MAXWELL, MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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THE CONSOLIDATED DUPLEX, TRIPLEX AND QUADRUPLE POP SAFETY VALVES

FITTED WITH RICHARDSON'S ADJUSTABLE SCREW RING

DESCRIPTION, FIG. 2033

These valves are especially adapted for marine service on the largest steamships, steam yachts, etc., and they are in use on all of the cruisers and battleships of the United States Navy, the Revenue Cutters of the United States Revenue Cutter Service, as well as the large ocean steamships "St. Paul" and "St. Louis," of the American Line, running from New York to Southampton. The entire construction of the valves conforms to the requirements of the United States Board of Supervising Inspectors of Steam Vessels and the English Board of Trade rules. The casings of these valves are made of Government composition, but they can be furnished in cast iron when required. The lifting levers of the valves, as shown in this illustration, are each connected to the horizontal rocker-shaft with the projecting end, so that by means of a suitable lever attached to that shaft the valves can be lifted in succession from any desired location. Straight, independent levers can be furnished for each valve if desired. Among the other details of construction are included nickel plated springs, with spherical bearings at ends, so incased as to prevent the escaping steam from coming in contact with them; the valves are guided by wings below and in an improved manner above, and each has a projecting lip; the valve seats are of nickel, beveled on an angle of 45 degrees to their center line of axis; adjustable rings for regulating the closing pressure of each valve; valve stems fitted loosely in the valves, bottoming below the level of the seats, and so secured that the valve heads can be turned on their seats by means of the lockup caps with handles located on top of the valve covers; the outlet nozzle is in the base casting to avoid breaking joint of escape pipe when taking valves apart; the spring cases are so fitted that valves can be removed without slacking or changing the adjustment of the springs; there is a drain pipe connection in the base casting of the valve below the level of the valve seats; levers are arranged to lift the valves off their seats one eight of the diameter of the valve openings.

This valve is allowed a Government rating of 50 per cent. higher than the common ball and lever safety valve. Prices on application.

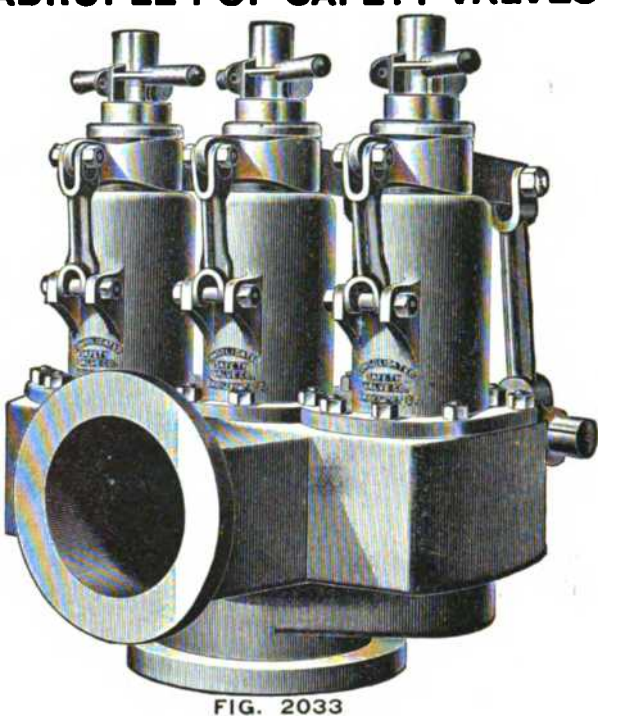


FIG. 2033

STANDARD BRASS SAFETY VALVES

GLOBE PATTERN, SCREWED — ANGLE PATTERN, SCREWED

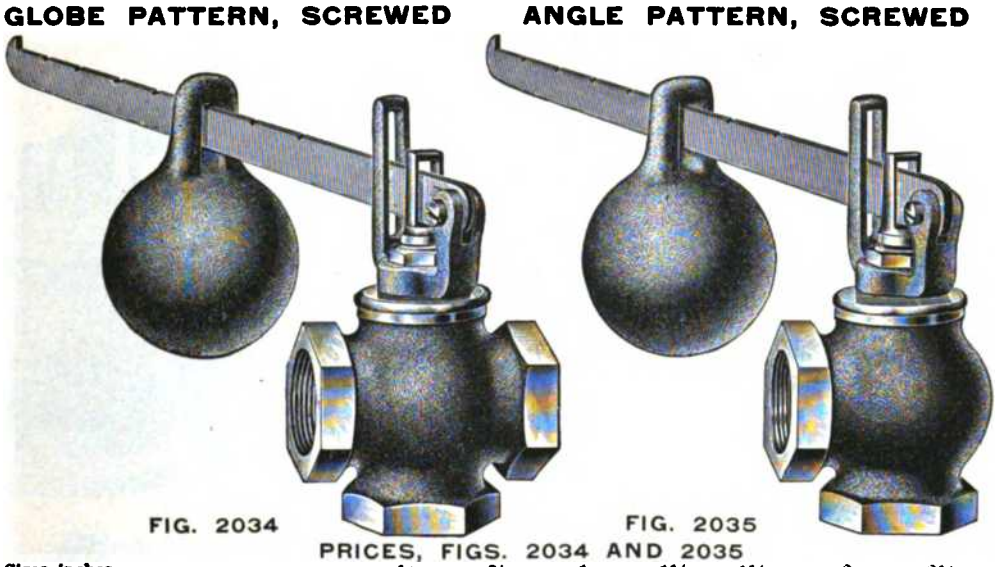


FIG. 2034 — FIG. 2035

PRICES, FIGS. 2034 AND 2035

Sizes, inches	½	¾	1	1¼	1½	2	2½	3
Fig. 2034, Globe, screwed, each	$3 25	3 90	4 70	7 15	9 00	12 50	22 50	33 50
" 2035, Angle, " "	3 25	3 90	4 70	7 15	9 00	12 50	22 50	33 50

GLOBE PATTERN, FLANGED — ANGLE PATTERN, FLANGED

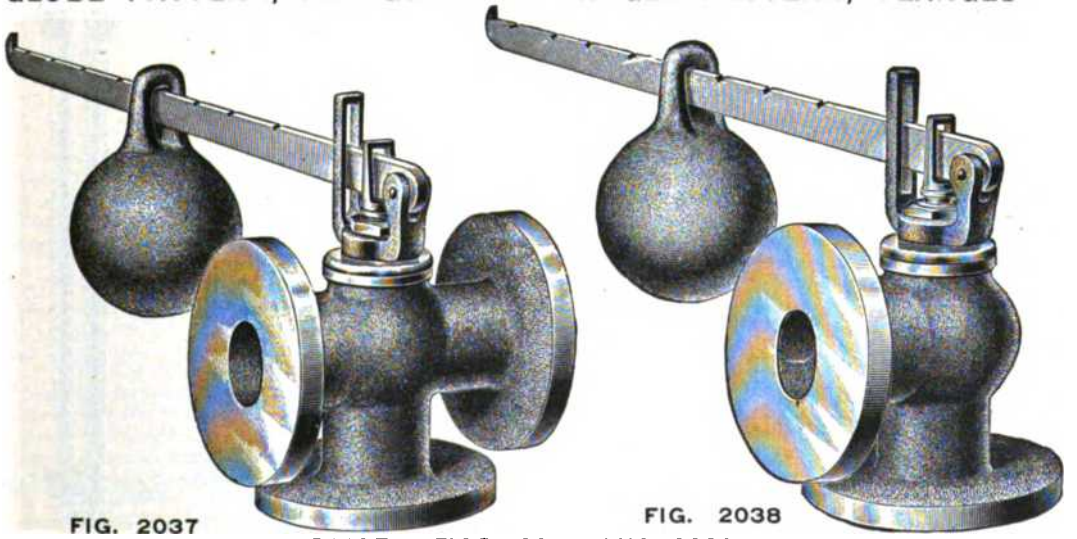


FIG. 2037 — FIG. 2038

PRICES, FIGS. 2037 AND 2038

Sizes, inches	½	¾	1	1¼	1½	2	2½	3
Fig. 2037, Globe, flanged, each	$7 00	8 90	11 20	15 50	19 75	26 50	39 50	54 50
" 2038, Angle, " "	6 75	7 65	9 65	13 15	16 00	23 30	35 50	53 00
Diameter of Flanges, inches	3	3½	4	4½	5	6	7	7½

LOW PRESSURE SAFETY VALVES

BRASS

PRICES
FIG. 2036

Sizes, inches.	Each.
½	$1 50
¾	2 25
1	3 00
1¼	4 00
1½	5 50



FIG. 2036

BRASS

PRICES
FIG. 2039

Sizes, inches.	Each.
½	$2 25
¾	2 60
1	3 30
1¼	4 50
1½	6 35
2	8 65

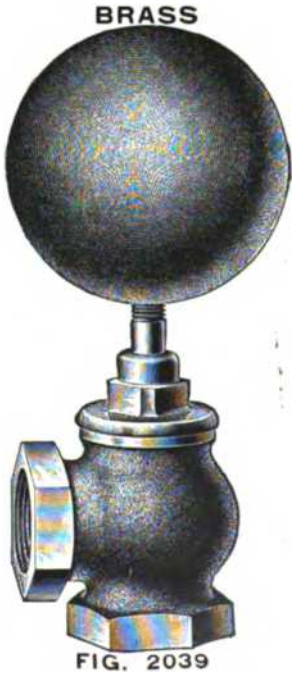


FIG. 2039

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SAFETY VALVES

LOW PRESSURE, BRASS

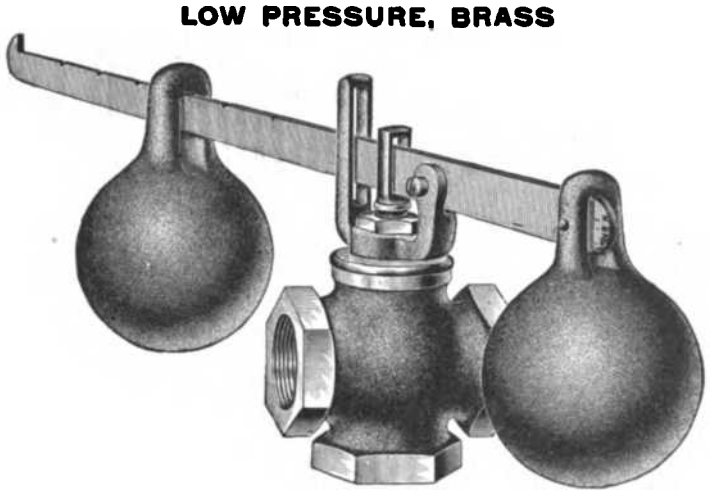


FIG. 2040

Sizes, inches,	½	¾	1	1¼	1½	2
Each	$3.00	$3.75	$5.50	$7.75	$9.50	$12.35

STANDARD IRON BODY

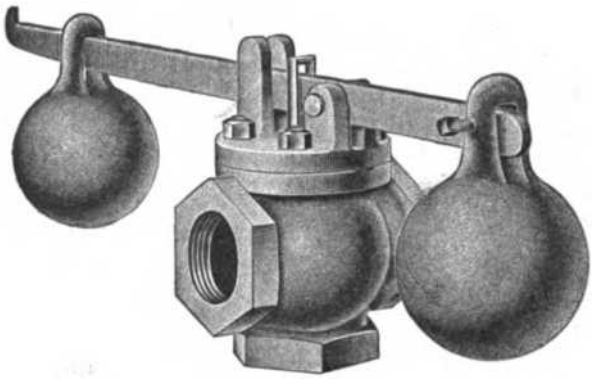


FIG. 2041

Sizes, inches	1	1¼	1½	2	2½	3
Globe, or Angle Pattern, each	$3.75	$5.25	$6.50	$8.50	$14.00	$19.00

STANDARD IRON BODY BRASS MOUNTED SAFETY VALVES

GLOBE, SCREWED

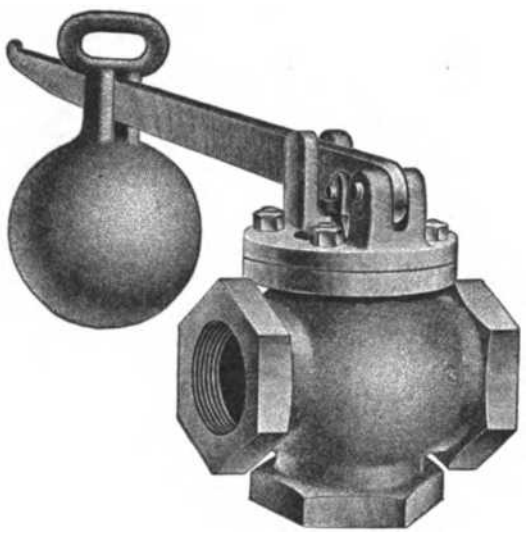


FIG. 2042

PRICES, FIG. 2042—SCREWED

Sizes, inches	¾	1	1¼	1½	2	2½	3
Each	$3 50	4 00	5 00	5 80	7 80	13 25	17 25
Sizes, inches	3½	4	4½	5	6	7	8
Each	$23 00	28 75	34 50	41 50	57 75	93 50	132 00

FLANGED

Sizes, inches	1	1¼	1½	2	2½	3
Each	$5 50	6 75	7 75	10 25	16 00	21 50
Diam. flanges inches	4½	5	5½	6	7	7½
Sizes, inches	3½	4	4½	5	6	7	8
Each	$27 50	34 00	40 00	48 00	65 00	100 00	140 00
Diam. flanges inches	8½	9	9¼	10	11	12½	13½

PRICES, FIG. 2043—SCREWED

Sizes, inches	¾	1	1¼	1½	2	2½	3
Each	$3 50	4 00	5 00	5 80	7 80	13 25	17 25
Sizes, inches	3½	4	4½	5	6	7	8
Each	$23 00	28 75	34 50	41 50	57 75	93 50	132 00

FLANGED

Sizes, inches	1	1¼	1½	2	2½	3
Each	$5 50	6 75	7 75	10 25	16 00	21 50
Diam. flanges inches	4½	5	5½	6	7	7½
Sizes, inches	3½	4	4½	5	6	7	8
Each	$27 50	34 00	40 00	48 00	65 00	100 00	140 00
Diam. flanges inches	8½	9	9¼	10	11	12½	13½

3 inch and larger have iron top bolted on. 2½ inch and smaller have swivel top.

ANGLE, FLANGED

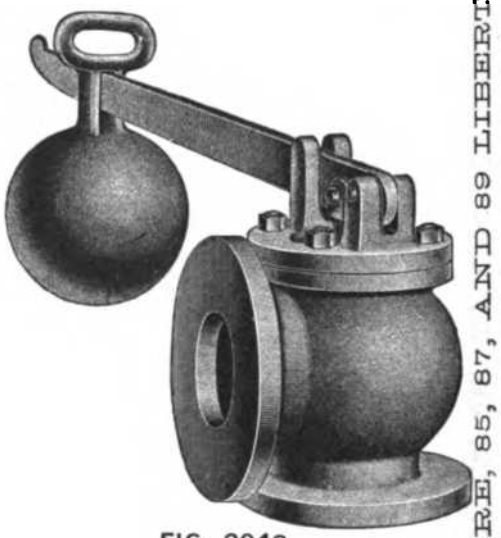


FIG. 2043



FIG. 2044

McCRACKEN STEAM TRAP

This trap is positive in action, durable, and simple in construction; the parts are easily replaced and adjusted, and they are all interchangeable; it occupies but little space and can be set in any position. It has no diaphragm, float, cock, or spring, but depends for its action upon the alternate expansion and contraction of a piece of straight brass tubing secured at one end, closing and opening on a soft metal seat at the other end, thus allowing the water of condensation to escape, and close the outlet when the steam enters the brass tube.

DIRECTIONS FOR SETTING AND WORKING

To the steam pipe to be drained attach the trap by the tapped hole in the upper ball. The outlet may discharge into the air, into a closed vessel, or under water, as desired.

To adjust the trap, remove the brass cap and open the adjusting screw, which has a hole in the head, until the steam blows freely from the outlet, thus giving the brass tube running through the inside of the trap an opportunity to expand; then turn the adjusting screw down until the outflow of steam is stopped, and secure the screw in this position with the jamb nut. As the water of condensation accumulates in the brass tube, the water, being cooler than the steam, will cause the brass tube to contract and open the outlet, allowing the water to escape, and as the steam follows it will again close and be securely trapped. The adjustment admits of variation in the temperature of the water delivered from 140 degrees to 210 degrees.

To test the trap when the outlet discharge is not visible, put a drop of water on discharge pipe close to the trap, and if it boils, the adjusting screw needs to be set down, as the trap is letting steam escape. If, after long use, the adjusting screw fails to close the trap, cut off the steam and unscrew the chamber holding the soft metal seat in front of the adjusting screw. The seat will then drop out and can be reversed, and after both sides are cut it may be refaced with a file. Under ordinary conditions one adjustment should answer for a long time.

The opening in the side of the first ball is intended to give access to the interior for the removal of any foreign substance that may pass the strainer. If desired, a blow off valve may be used in place of the plug sent with each trap to stop the opening.

PRICES, FIG. 2044

Nos.	Number of feet of 1 inch pipe it will drain.	Size of Inlet pipe, Inch.	Size of Outlet pipe, Inch.	Length Over all, Inches.	Diameter of Largest part, Inches.	Each.
1	2,000	¾	½	27	3¼	$16 00
2	4,000	1	¾	33¼	3⅞	20 00
3	8,000	1¼	1	40¾	4½	30 00

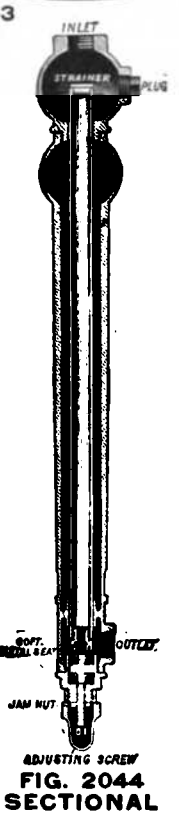


FIG. 2044 SECTIONAL

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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COLUMBIA EXPANSION TRAP

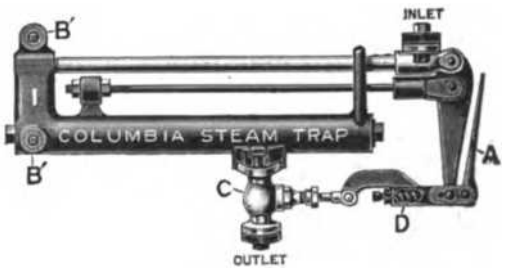


FIG. 2045

DESCRIPTION, FIG. 2045

In the Columbia the brass tube expands and contracts without the least bit of damage to itself.

This desirable result is attained by a coiled spring, letter D, which is set in the lower rod that leads to the valve.

This spring is so arranged that when the valve stem, which controls the valve, receives sufficient pressure, caused by the expansion of the brass tube, it closes the valve, and as the surplus pressure is taken up by the spring, the tube is saved from crushing and destroying its action.

Always open when water is at the discharge valve.

Always closed when steam is at the discharge valve.

The discharge valve is the same size as the drain pipe. There is a rapid and continuous discharge of the water of condensation. Never backs up water—if you use the full size trap—it works at any steam pressure from "O" to 150 pounds.

The Blow off Attachment.—Notice the cut. The letter "A" indicates a lever, which if pulled to the right allows the steam to blow through the valve and cleans out any deposit that may have collected in the lower tube or valve seat. You can always have a clean trap and valve.

An excellent trap for marine and navy use.

MEASUREMENTS OVER ALL

Nos.	Lengths, Inches.	Heights, Inches.	Widths, Inches.
0	19	10¼	3
1	24	11¼	3½
2	27	13	3½
3	31	14	3⅞
4	32	15	4½
5	32	15¾	5¼
6	33	19	5⅝

SIZES AND PRICES, FIG. 2045

Nos.	Sizes, Inches.	Capacity—Feet.	Capacity—Pipe.	Each.
0	¼	4,000	1 inch	$16 00
1	½	6,500	"	24 00
2	¾	8,000	"	32 00
3	1	16,000	"	40 00
4	1¼	20,000	"	50 00
5	1½	30,000	"	60 00
6	2	50,000	"	90 00

THE GUARANTEE EXPANSION STEAM TRAP

DESCRIPTION FIG. 2046

Natural expansion; positive in its workings; removes the water of condensation from steam pipes. It opens when there is water and closes when there is steam; it is not liable to get out of order.

It occupies very little space and can be placed in any position.

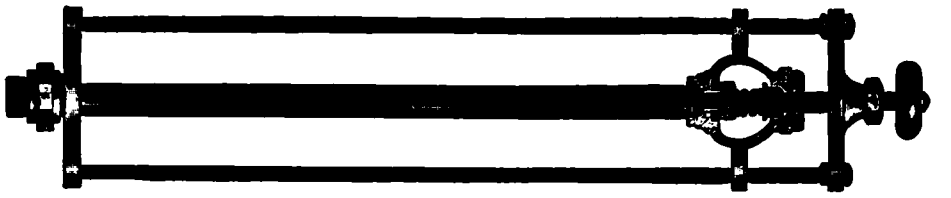


FIG. 2046

PRICES

No. 1 trap, 27 inches long, 5 inches wide, 3 inches deep, ½ inch tube; for 500 feet 1 inch pipe.....$7 50
" 2 " 46 " " 5 " " 3 " " ¾ " " " 6,000 " " " 12 00
" 3 " 47 " " 6 " " 3 " " 1¼ " " " 10,000 " " " 20 00

GEIPEL'S NON-RETURN STEAM TRAP

WORKS EQUALLY WELL WITH HIGH OR LOW PRESSURE STEAM

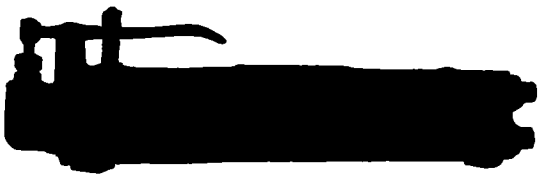


FIG. 2047

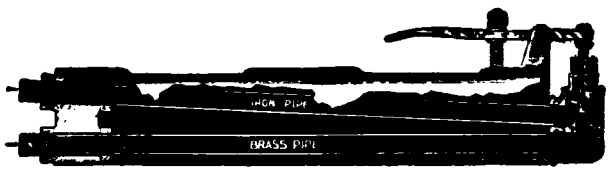


FIG. 2048

DESCRIPTION, FIGS. 2047 AND 2048

The leading features of this steam trap are: No internal levers or working parts boxed in and exposed to the action of the steam and water. Will work equally well on cylinder or steam pipe, and in any position.

No faced joints to maintain steam tight.

Valve always open to atmosphere, except when steam is passing, therefore water drains away from steam pipes as fast as it collects, even before steam is turned on.

Valve can be opened by hand to blow through, and it can be left open if desired.

Valve easily examined and replaced.

Compactness and suitability for fixing on wall of boiler room or on bedplate of engines without disfiguring same.

PRICES, FIGS. 2047 AND 2048

These prices are for pressures of 200 lbs. or less.

Nos.	Number of lineal feet of 1 inch pipe that the trap will drain easily	Sizes inlet and outlet	Each.
0	2,700	⅜ inch	$9 50
1	4,600	½ "	15 00
2	6,500	½ "	20 00
3	10,500	¾ "	36 00
4	15,500	1 "	44 00
5	26,000	1½ inches	66 00

State steam pressure when ordering.

Will discharge a continuous stream of water the full bore of the pipe.

ROYLE STEAM TRAP

DESCRIPTION, FIG. 2049

A is a cast iron reservoir with outlet at side. B is a loose cover. C is a plug cock on one side, steam jacketed to secure equal expansion and easy working of same. This cock is connected with inlet and leads into and is operated by D, an open bottomed copper float. E is an air or slide valve, held in place with an arm connected to side wall of traps and adjusted by a regulating set screw.

Directions.—Blow out all dirt from the new pipes, connect inlet with pipes or apparatus to be trapped, setting trap level, so that water will gravitate into it freely. The outlets must be free, and with no back pressure. For use: fill reservoir with water to level of outlet, raise air valve and let the confined air in float escape, till edge of float rests on the bottom.

When float D rests on the bottom the cock C is open, and condensed water will flow freely and escape at outlet until steam comes to fill and raise the float which closes the cock C and also the air valve on top of the float confining steam within the float; as this steam slowly condenses, D falls and C opens, and so on, constantly discharging all water of condensation and keeping live steam behind the trap. Movement of the adjusting screw connected to E makes action of trap more or less rapid.

To know when working, lift cover B and raise air valve E from its seat. If steam then escapes there is no water behind trap. Should float D be raised, lift air valve E till float D settles to the bottom.

The cock C, the only wearing part, is adjustable, and can be turned to present a fresh wearing surface. It is easily removed for regrinding, and, should it ever wear out, can be replaced.

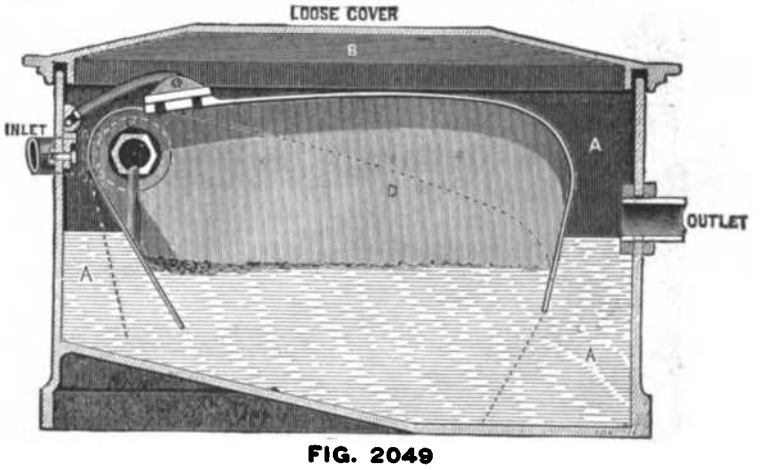


FIG. 2049

PRICES

Nos.	Sizes of Pipe Connections, Inlet.	Outlet.	Number of feet of 1-inch pipe each trap will drain.	Each.
1	⅛ inch	¾ inch	3,000	$18 00
2	1 "	1¼ "	5,000	25 00
3	¼ "	2 "	8,000	36 00

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STEAM TRAPS

CURTIS EXPANSION TRAP

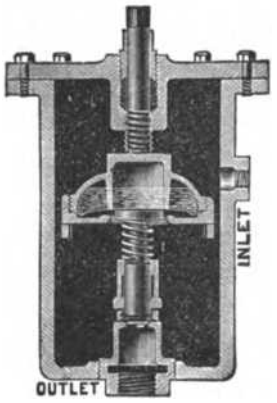


FIG. 2050

DESCRIPTION, FIG. 2050

The flexible surface is a sheet of phosphor bronze metal, the most durable and elastic article manufactured, and the vessel itself is made of fine grained steam metal.

The phosphor bronze diaphragm is compressed between the cap and body of the vessel to such a degree that a perfect metallic contact is made, and the vessel thus hermetically sealed without the intervention of any perishable packing and the joint is warranted never to leak.

The temperature at which the contents of the trap are discharged is regulated by turning in or out on the stem of the vessel, which passes through a gland to the outside and is provided with a screw thread which engages with a thread in the cover of the trap. The contents can be discharged at a temperature above 212° as well as below.

In the slight difference of temperature between steam and water condensed from it completely controls the valve, so that when the expansion vessel is in contact with steam it instantly closes the valve and when water covers it the valve is instantly opened and the water discharged, whether at a low or a high pressure of steam.

The operation of the trap is as follows: So long as the contents of the trap are cold, the valve is wide open, the stiff spring forcing it from its seat, and pushing the flexible surface of the expansion vessel back to its full extent. Steam being let on, all the air and water in the pipes pass out freely until the temperature in the trap approaches the point at which it is set to close.

PRICES

Condensing capacity in feet of 1 inch pipe.

No. 000	200 feet	tapped for	½	inch pipe	Each,	$10	00
" 00	500 "	" "	½	"	"	13	00
" 0	1,000 "	" "	½	"	"	18	00
" 1	3,000 "	" "	¾	"	"	25	00
" 2	7,500 "	" "	1	"	"	35	00
" 3	20,000 "	" "	1½	"	"	50	00
" 4	30,000 "	" "	2	"	"	75	00

JONES' SELF REGULATING STEAM TRAP

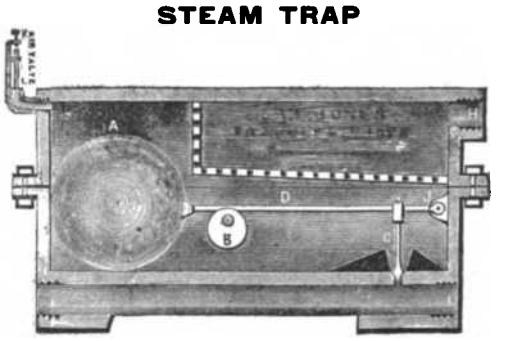


FIG. 2051

PRICES

Nos.	Will drain feet 1 inch pipe.	Each.
1	1,500	$35 00
2	3,000	40 00
3	7,000	60 00
4	10,000	75 00

RELIABLE STEAM TRAP FOR SMALL DRAINAGE

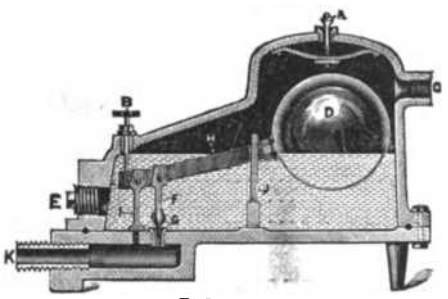


FIG. 2052

In the No. 0 and No. 00 letter E shows a blowoff—to clean by hand if not connected to waste, and by steam if connected to waste pipe, by putting a valve between the trap and waste, to be opened only when cleaning out the trap.

No. 0 and No. 00 reliable traps discharge continuously. The No. 0 weighs but 35 lbs., while the No. 00 weighs but 30 lbs., and occupy a very small space. They are the traps required for small buildings, or where there is but a small coil or a few radiators to be drained.

PRICES

No. 0	$12 00
" 00	8 00

CAPACITY

No. 0 drains 1,000 feet of 1 inch pipe.
" 00 " 450 " 1 " "

No. 00 has no wheel valve at B. No. 0, inlet and outlet, ¾ inch. No. 00, inlet and outlet, ½ inch.

Both sizes work at from 1 lb. to 100 lbs. steam pressure only, and no higher.

ACME STEAM TRAP

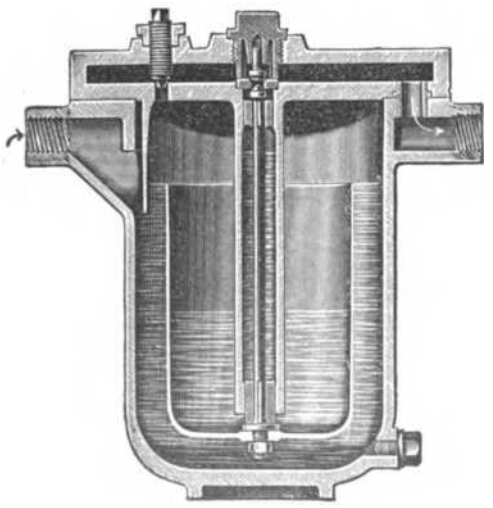


FIG. 2055

CHAPMAN SELF REGULATING STEAM TRAP

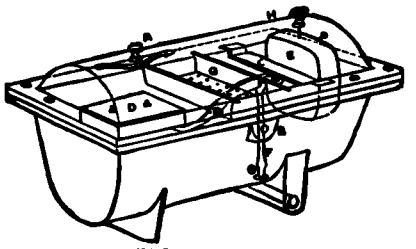


FIG. 2053

PRICES

No. 1 will drain	1,500 feet 1 inch pipe					$25 00
" 2 "	3,000 "	1	"			35 00
" 3 "	7,000 "	1	"			60 00
" 4 "	10,000 "	1	"			70 00

The inlet and outlet of the sizes are as follows:

No. 1,	inlet and outlet,	standard	gas	thread,	1	inch.
" 2,	"	"	"	"	1¼	inches.
" 3	"	"	"	"	1½	"
" 4,	"	"	"	"	2	"

Regular pressure Chapman traps are made to work from 1 lb. up to 75 lbs. steam pressure. No. 1 size can only be made to work up to 75 lbs. and no higher. Nos. 2, 3 and 4 regular sizes can be made to work up to 100 lbs., but must be specially ordered, stating pressure wanted. Prices same as regular. Low pressure Chapman traps are made to work from 1 lb. up to 20 lbs. only. For extra high pressure traps to work above 100 lbs. steam pressure, see below. It is best to use McDaniel traps for extra high pressures, as you can use a much larger outlet valve seat in them than the Chapman, because the copper float has more lifting power than the soap stone float.

McDANIEL SPECIAL STEAM TRAP

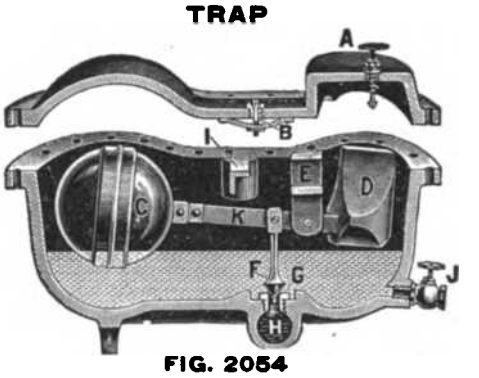


FIG. 2054

Adapted to use in sugar refineries, breweries, distilleries paper mills, canneries, heating apparatus, etc.

PRICES

No. 1, inlet and outlet; 1 inch standard gas thread; drains 3,500 feet of 1 inch pipe..... $30 00

No. 2, inlet and outlet; 1¼ inch standard gas thread; drains 7,000 feet of 1 inch pipe..... 40 00

No. 3, inlet and outlet; 1½ inch standard gas thread; drains 14,000 feet of 1 inch pipe..... 65 00

No. 4, inlet and outlet; 2 inch standard gas thread; drains 20,000 feet of 1 inch pipe..... 75 00

No. 5, inlet and outlet; 2½ inch standard gas thread; drains 25,000 feet of 1 inch pipe.....100 00

Low pressure traps, all sizes, made to work from 1 to 20 lbs. steam pressure. Regular pressure traps, all sizes, made to work from 1 to 100 lbs. steam pressure. When not otherwise ordered, regular pressure traps will be sent. For extra high pressure traps, see below.

EXTRA HEAVY STEAM TRAPS

FIGS. 2053 AND 2054

For working steam pressures above 100 lbs. to 150 lbs. per square inch. They are made from special patterns and tested to a pressure of 250 lbs.

CHAPMAN, FIG. 2053

Nos. of Steam Traps.	Sizes of Inlet and Outlet, Standard Pipe Size, Inches.	Drainage per Lineal Foot of 1 Inch Pipe, Feet.	Drainage per Sq. Ft. of Heating Surface, Square Feet.	Prices.
2	1¼	3,000	1,000	$50 00
3	1½	7,000	2,333	75 00
4	2	10,000	3,333	90 00

McDANIEL, FIG. 2054

Nos. of Steam Traps.	Sizes of Inlet and Outlet, Standard Pipe Size, Inches.	Drainage per Lineal Foot of 1 Inch Pipe, Feet.	Drainage per Sq. Ft. of Heating Surface, Square Feet.	Prices.
0	¾	1,000	333	$24 00
1	1	3,500	1,166	40 00
2	1¼	7,000	2,333	55 00
3	1½	14,000	4,666	80 00
4	2	20,000	6,666	90 00
5	2½	25,000	8,333	100 00

In ordering extra heavy steam traps, we should know the highest boiler pressure at which the trap will be used, as that determines the size of valve outlet; otherwise we will send it made to work from 1 lb. up to 150 lbs. working pressure.

DESCRIPTION, FIG. 2055

The Acme Steam Trap discharges automatically the water of condensation without loss of steam contained in pipes, etc. The air in the trap may be discharged by screw plug in cover if necessary.

PRICES

Numbers of trap		2	3	4	5
Sizes of pipe connections	inches	¾	1	1¼	1½
Entire height of trap	"	9½	12	14	17
Entire width of trap	"	10	12½	15	18
Will drain lineal feet of 1 inch pipe		3,000	4,500	7,000	10,800
Will drain square feet of surface		1,000	1,500	2,400	3,600
Each		$20 00	$27 50	$42 50	$70 00

We can furnish the Acme Trap with bypass if desired. Prices on application.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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STEAM TRAPS

BALANCE VALVE STEAM TRAP

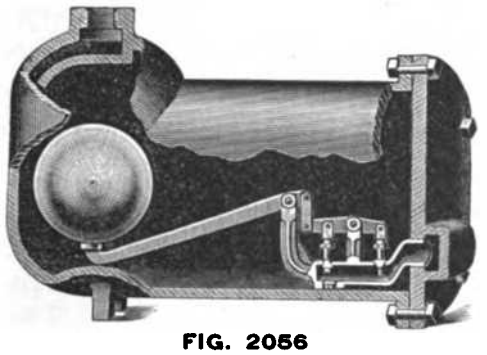


FIG. 2056

This trap will continuously and noiselessly discharge the condensation as fast as it runs into it, and will lift that condensation two feet to every pound pressure. This trap is a continuous discharge trap, with the outlet full area of inlet. Seamless copper floats. All parts made in duplicate. Steam metal seats and valves. For use in high or low pressure systems and all places where steam is to be trapped and condensation discharged, such as steam heating coils, steam pumps, separators, headers, etc. Trap will not return direct to the boiler. When possible give working pressure of trap when ordering.

Nos.	00	0	1.	2	3
Inlet	½ inch	¾ inch	1 inch	1¼ inch	1½ inch
Outlet	⅜ "	½ "	¾ "	1 "	1¼ "
Capacity, lineal ft. of 1 in. pipe..	1,500	3,000	6,500	15,000	20,000
Weight	20 lbs.	35 lbs.	50 lbs.	65 lbs.	100 lbs.
Each	$15 00	$20 00	$30 00	$45 00	$60 00

FLINN STEAM TRAP

Complete with Water Gauge Fittings.



FIG. 2059

The Flinn Trap is simple in construction, having only three moving parts, and is positive, handling water at any temperature as soon as it comes to the trap.

It is durable, being made of the best materials, and is small and therefore weighs little, and for this reason can be easily connected up or disconnected for inspection or repair.

PRICES, FIG. 2059

Standard new pattern traps, with ¾ inch inlet and outlet openings, for any working pressure up to 200 lbs. per square inch, complete with water gauge fittings, boxed for shipment.... each, $40 00
Without water gauge fittings..... each, 37 00

When ordering, state highest working pressure for which trap is to be used.

DESCRIPTION. FIG. 2057

They are made for very high as well as low steam pressures. The inside parts are made of different materials and proportions in accordance with the pressures for which they are intended to be subjected; consequently, it is necessary that we should know what that pressure will be, in case it is more than 80 lbs. per square inch, in order to furnish a trap that will be satisfactory.

We furnish to order all traps for pressures exceeding 80 lbs. and up to 300 lbs. per square inch. All traps will work at any lower pressure, but will not work if subjected to a higher pressure than made for. Traps made for marine use have feet cast on chamber, and bolt holes for fastening to place. Nos. 3 and 4 high pressure traps have hubs cast on chambers and tapped. This provision is for attaching a water gauge, if parties so desire.

DINKEL STEAM TRAP

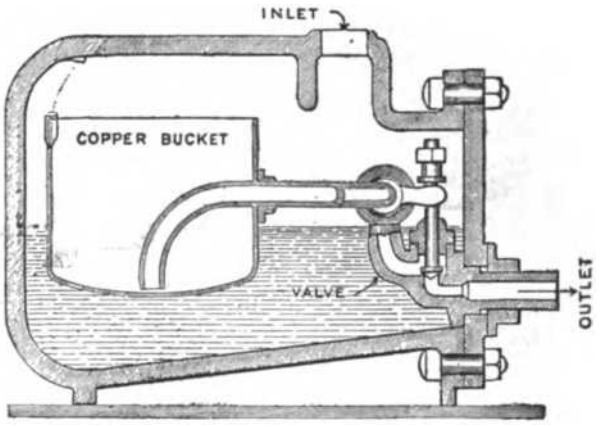


FIG. 2057

Prices for regular make stationary traps for pressures not exceeding 80 pounds.

Numbers	1	2	3	4
Water delivered at each discharge, quarts	1¼	4	10	27
Time required for each discharge, seconds	14	20	28	33
With 10 pounds pressure per square inch.				
With 30 pounds pressure per square inch, seconds	8	11	15	20
" 60 " " " " " " "	6	8	11	18
" 80 " " " " " " "	5	7	10	12
Size of inlet pipe	¾ inch	1 inch	1½ inch	2 inch
Size of outlet "	½ "	¾ "	1 "	1½
Price, each	$18 00	$25 00	$45 00	$65 00

An extra charge is made for traps for marine use, also for stationary traps for pressures in excess of 80 lbs. Prices for these furnished on application, stating for what use and pressure required.

CURTIS BALANCED STEAM TRAP

DESCRIPTION, FIG. 2058

This is a perfectly balanced valve and absolutely frictionless.

The valve can be removed for cleaning without breaking a joint, starting a gasket, or taking out a bolt, and being frictionless and balanced, the whole power of the float is available for opening and closing the valve.

The aluminum float is perfectly spherical, hard, as hermetically sealed as a glass globe, is of uniform thickness, and warranted strong and tight at 200 lbs. pressure and cannot collapse.

It has a pass-by valve to insure constant operation.

Each trap will operate perfectly on pressures varying from 1 to 200 lbs.

The discharge valve, being below water line of trap, effectually prevents any escape of steam.

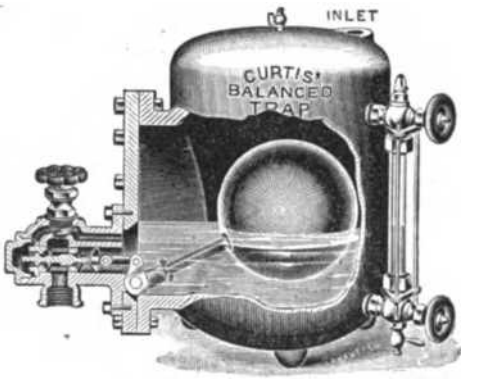


FIG. 2058

PRICES WITHOUT WATER GAUGE

Size and condensing capacity in feet of one inch pipe

No. 000.	For	1,500	feet	½	inch	inlet and outlet		$15 00
" 00.	"	2,500	"	½	"	" "		20 00
" 0.	"	4,000	"	½	"	" "		25 00
" 1.	"	6,000	"	¾	"	" "		30 00
" 2.	"	9,000	"	1	"	" "		40 00
" 2½.	"	18,000	"	1¼	"	" "		55 00
" 3.	"	28,000	"	1½	"	" "		75 00
" 4.	"	40,000	"	2	"	" "		100 00
" 5.	"	55,000	"	3	"	" "		125 00
Glass water gauge								$2 50 extra.

HAWES STEAM TRAP

DESCRIPTION, FIG. 2060

It prevents the snapping noise of pipes and it insures absolute circulation.

By connecting outlet E to another coil, the heat in the water is utilized and utterly exhausted when leaving the pipes. Not a unit of heat is lost.

There is no loss of steam under high or low pressure.

When at rest the outlet is always open, thus damage by freezing is avoided, as it leaves no water in the pipe.

If placed in the open air it will not freeze.

Small size occupies 5 inch space; largest size, which will drain 40,000 feet 1 inch pipe, is only 10 inches in diameter.

A sediment trap is attached to each steam trap. This improvement is of the greatest consequence, as it prevents scales and sediment entering or obstructing the valve seat.

PRICES, INCLUDING SEDIMENT TRAP

Nos.								
1	is tapped for	½	inch	pipe; it drains	500	feet 1 inch pipe.		$11 00
2	"	¾	"	"	1,000	" "		16 00
3	"	1	"	"	2,000	" "		21 00
4	"	1¼	"	"	4,000	" "		26 00
4½	"	1¼	"	"	10,000	" "		35 00
5	"	1½	"	"	20,000	" "		50 00

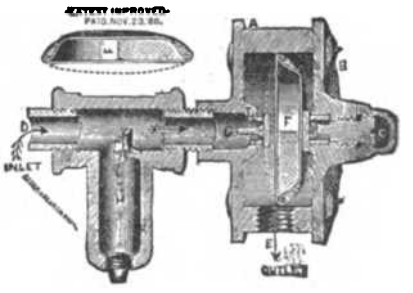


FIG. 2060

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HEINTZ STEAM TRAP

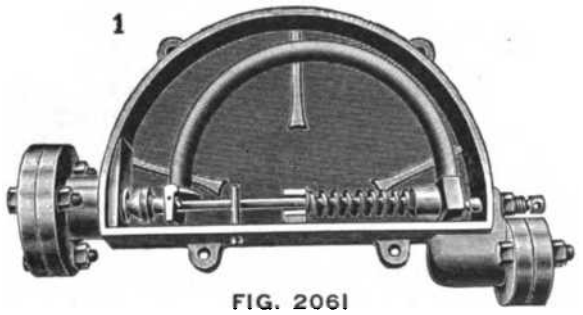


FIG. 2061

DESCRIPTION, FIG. 2061

The water is drained off automatically, at all pressures, or variations of pressure, without any loss of steam, and without regulation.

Hammering is effectually prevented by the fact that the trap is open full bore at starting when cold.

No part of the trap is subject to rapid wear, or to derangement.

The force available to open and close the valve is positive, direct, and practically irresistible.

The size of the trap is exceedingly small, and it can be placed in any position.

PRICES

Nos.	00	0	1	2	3	4	5	6
Sizes of valve	¼	⅜	½	¾	1	1¼	1½	2
" pipe connections,	¾	¾	¾	1	1¼	1½	1½	2
Gallons per minute at 194° temp. 100 lbs. pressure,	....	....	15	31	60	94	135	240
Iron	$8 00	$12 00	$18 50	$32 50	$45 00	$60 00	$75 00	$105 00
Brass	10 65	16 00	24 75	43 50	60 00	80 00	100 00	140 00
Nickel	11 50	17 00	26 00	45 00	62 50	85 00	108 00	150 00

00 for 25 pounds pressure; 0 for 50 pounds pressure; all others for 200 pounds pressure.

STANDARD STEAM TRAPS

MEDIUM HIGH AND LOW PRESSURE

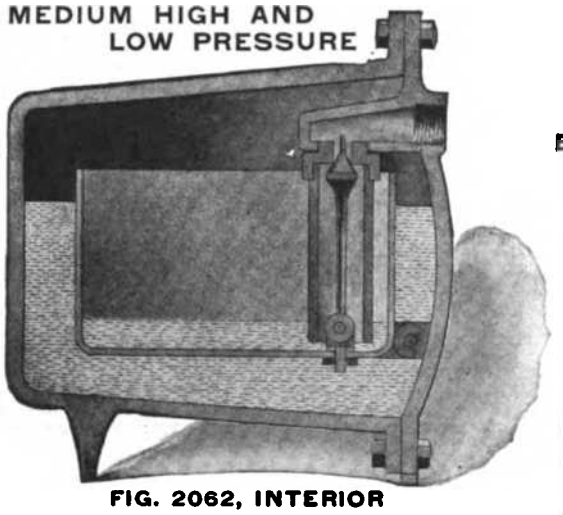


FIG. 2062, INTERIOR

The regular Standard Steam Traps are made in two classes, Medium High Pressure for service on pressures ranging from 30 to 125 pounds; Medium Low Pressure for pressures from 1 to 30 pounds.

A few features: Positively non-collapsable floats. These floats are suspended and attached to body of trap at extreme end, close to point at which valve stem is pivoted. This affords a leverage sufficiently effective to overcome a high resisting pressure.

PRICES

Sizes, Nos.	Each.	Size Inlet and Outlet Connections.	Capacity Lineal Feet 1 in. Pipe.	Capacity Sq. Feet Radiation.	Capacity Pounds Water per Hour.
1	$25 00	¾	4,000	1,300	500
2	35 00	1	6,000	2,000	725
3	45 00	1¼	10,000	3,300	1,200
4	60 00	1½	15,000	5,000	2,000
5	80 00	2	25,000	8,300	3,000
6	100 00	2½	35,000	11,500	4,000
7	125 00	3	50,000	16,500	6,000

In selecting and ordering take into consideration cold and exposed situations or any circumstance that would add to their duties. Order traps large enough and it is especially important that you inform us range of steam pressures you wish traps to operate on.

EXTRA HEAVY MARINE PATTERN

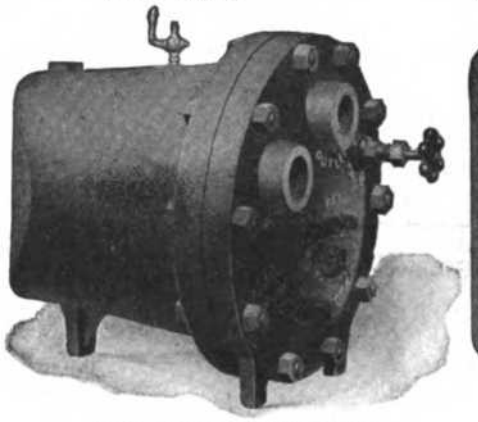


FIG. 2063, EXTERIOR

A very desirable steam trap for electric light and electric street railway companies, high speed engine builders, and for all who use modern extreme high steam pressures. Especially adapted for marine use.

PRICES

For pressures ranging from 125 to 250 pounds per square inch.

Sizes, Nos.	Each.	Size Inlet and Outlet Connections.	Capacity Lineal Feet 1 in. Pipe.	Capacity Sq. Feet Radiation	Capacity Pounds Water per Hour.
1	$25 00	¾	4,000	1,300	500
2	35 00	1	6,000	2,000	725
3	45 00	1¼	10,000	3,300	1,200
4	60 00	1½	15,000	5,000	2,000
5	80 00	2	25,000	8,300	3,000
6	100 00	2½	35,000	11,500	4,000
7	125 00	3	50,000	16,500	6,000

In selecting and ordering take into consideration cold and exposed situations or any circumstance that would add to their duties. Order traps large enough and it is especially important that you inform us range of steam pressures you wish traps to operate on.

SPECIAL LOW PRESSURE WITH BALANCE VALVE

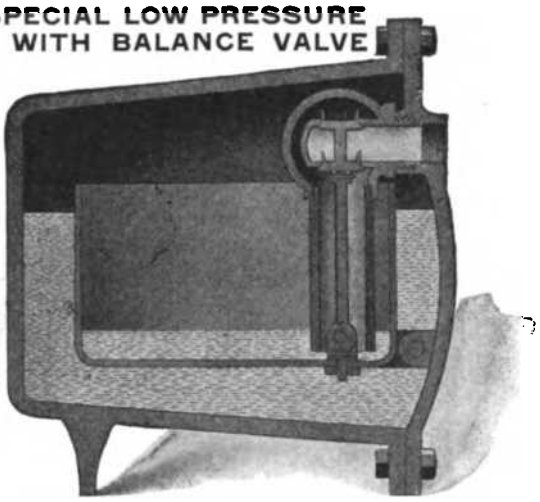


FIG. 2064, INTERIOR

This trap is not intended for high pressure service, being designed especially for low pressure service in situations where very rapid condensation takes place and large quantities of water must be discharged in shortest possible time against practically no pressure.

PRICES

Sizes, Nos.	Each.	Sizes Inlet and Outlet Connections.	Capacity Pounds Water per Hour.
2	$35 00	1	3,100
3	45 00	1¼	4,700
4	60 00	1½	6,300
5	80 00	2	8,000
6	100 00	2½	9,500

In ordering be particular to give us the highest limit of steam pressure and all other details of service upon which steam trap is to operate. It is especially important that we have this information.

NASON STEAM TRAPS

NASON TRAP, NO. 1



FIG. 2065

For pressures of 80 pounds or less.

DESCRIPTION, FIGS. 2065 AND 2066

The Nason traps have been divided into two groups: One for ordinary working steam pressures of 80 pounds and less; the other for pressures above 80 and less than 150 pounds. For the lower pressures (Fig. 2065) no change of design has been made. These traps will continue to be known and specified as the Nason Steam Traps.

The higher pressure traps, Fig. 2066, have reinforced joints at the point of inlet and outlet where the steam ports pass from pots to covers, thus preventing leaks near these places; there being no possibility of the gaskets blowing out. These traps are known as the Nason Sidelug Traps, and should be specified in all cases where they are to be used in connection with pressure exceeding 80 pounds.

PRICES, FIGS. 2065 AND 2066

Nos.	1	2	3	4	5
Sizes of pipe connections, inches	½	¾	1	1¼	1½
Maximum discharge lbs. water per min.	2	5	8	12	20
Greatest number of square feet of surface to which it should be applied	350	900	1400	2000	3500
Greatest number of lineal feet of 1 in. pipe surface to which it should be applied	1050	2700	4200	6000	10500
Weight, pounds, Nason, Fig. 2065	40	80	113	176	336
" " Sidelug, Fig. 2066	47	92	125	212	343
Prices, Nason, Fig. 2065	$16 00	$20 00	$27 50	$42 50	$70 00
" Sidelug, Fig. 2066	16 85	21 30	29 25	45 50	74 75

SIDELUG TRAP, NO. 1



FIG. 2066

For pressures ranging from 80 to 150 pounds.

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BUNDY STEAM TRAPS

SEPARATING OR TANK STEAM TRAP

50 AND 75 SERIES

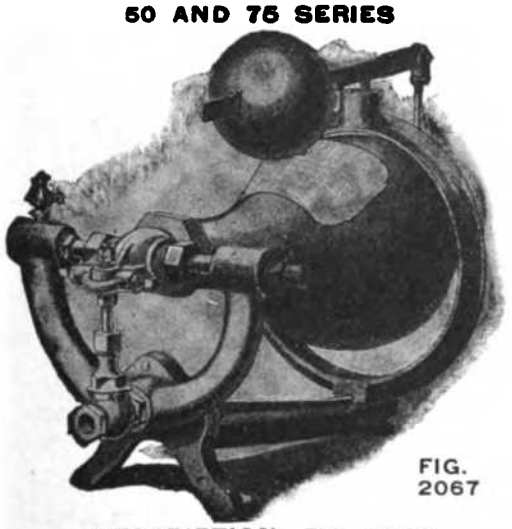


FIG. 2067

DESCRIPTION, FIG. 2067

This trap will automatically discharge into a tank, hot well, sewer or the atmosphere, all the condensation from any steam apparatus, allowing no steam to escape. It has no concealed working parts or contracted openings to retard the discharge of the water. It does not depend upon the buoyancy principle of a hollow float. It is not dependent upon the expansion or contraction of any of its parts, and consequently will discharge water at any temperature.

PRICES, FIG. 2067. 50 SERIES

Steam traps of the 50 series are guaranteed to work under any steam pressure up to 80 pounds to the square inch.

Nos.	Shipping Weight, Pounds.	Pipe Connections. Inlet. Inches.	Outlet. Inches.	Capacity. Water discharged per hour. Pounds.	Gallons.	1 inch pipe drained. Lineal feet.	Each.
50	40	¼	¼	300	36	1,800	$15 00
51	100	⅜	⅜	500	60	3,500	25 00
52	125	½	½	1,000	120	7,500	35 00
53	175	¾	¾	2,000	240	15,000	55 00
54	200	1	1	3,333	400	25,000	85 00
55	275	1¼	1¼	4,166	500	32,000	115 00
56	325	1½	1½	5,000	600	40,000	150 00
57	500	2	2	6,000	720	60,000	200 00
58	800	2½	2½	7,500	900	90,000	300 00
59	1,100	3	3	10,000	1,200	120,000	425 00

The above capacities are figured on a basis of 50 pounds pressure per square inch.

PRICES, FIG. 2067. 75 SERIES

Steam traps of the 75 series are guaranteed to work under any steam pressure up to 250 pounds to the square inch.

Nos.	Shipping Weight, Pounds.	Pipe connections. Inlet. Inches.	Outlet. Inches.	Capacity in water discharged per hour. Pounds.	Gallons.	Drainage capacity in 1 inch pipe, lineal feet.	Each.
75	120	⅜	⅜	850	102	6,000	$50 00
76	140	½	½	3,700	444	25,000	70 00
77	200	¾	¾	8,150	978	50,000	100 00
78	240	1	1	14,575	1,749	100,000	130 00
79	280	1¼	1¼	23,738	2,849	150,000	160 00
80	320	1½	1½	32,900	3,948	200,000	225 00
81	520	2	2	70,500	8,460	423,000	300 00
82		2½	2½	133,000	15,960	798,000	450 00

The above capacities are figured on a basis of 150 pounds pressure per square inch.

100 SERIES

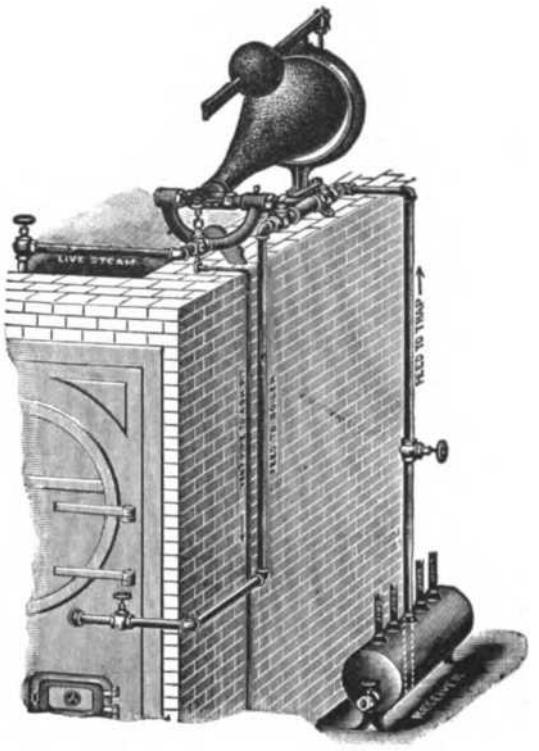


FIG. 2068

GRAVITY RETURN STEAM TRAP

200 SERIES

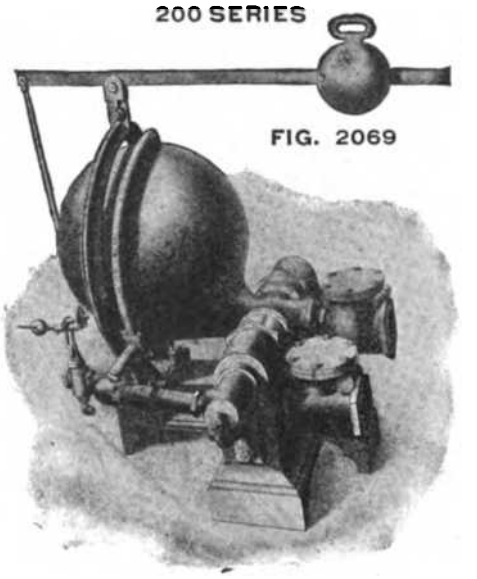


FIG. 2069

DESCRIPTION, FIGS. 2068 AND 2069

The Bundy return steam trap will return to the boiler the condensed water from all apparatus using live or exhaust steam for power, heating, drying, cooking, or other purposes. The trap is placed over the boiler at least three feet above the water line. When returning condensation from apparatus using live steam, sufficient pressure must always be carried to raise the water into the trap, as the trap is open to the atmosphere and consequently has no power to draw the water up to itself. The Bundy return trap does not create a vacuum; therefore a pressure above atmosphere is always required to raise the water to the trap. To estimate this pressure, measure the distance from the lowest point of supply to the trap in a vertical line and figure one pound pressure for each two feet of elevation.

PRICES, FIG. 2068. 100 SERIES

Steam traps of the 100 series are guaranteed to work under any steam pressure up to 100 pounds to the square inch.

Nos.	Shipping Weight, Pounds.	Pipe connections. Water inlet and outlet, Inches.	Steam inlet, Inches.	Capacity in water delivered to boiler per hour. Pounds.	Gallons.	Drainage capacity in 1 inch pipe, lineal feet.	Capacity in H. P.	Each.
101	175	1	1	1,250	150	6,000	up to 40	$100 00
102	250	1¼	1¼	2,000	240	10,000	40 " 65	150 00
103	300	1½	1½	4,000	480	20,000	65 " 125	200 00
104	500	2	1½	6,000	720	40,000	125 " 200	300 00
105	775	2½	2	15,000	1,800	70,000	200 " 400	400 00
106	1,150	3	2	24,000	2,880	100,000	400 " 600	500 00
108	3,000	4	2½	32,000	3,840	150,000	600 " 1,000	750 00

PRICES, FIG. 2069. 200 SERIES

Steam traps of the 200 series are guaranteed to work under any steam pressure up to 250 pounds to the square inch.

Nos.	Shipping Weight, Pounds.	Pipe connections. Water inlet and outlet. Inches.	Steam inlet. Inches.	Capacity in water delivered to boiler per hour. Pounds.	Gallons.	Drainage capacity in 1 inch pipe, lineal feet.	Capacity in H. P.	Each, including check valves.
205	390	1	1	1,250	150	6,000	up to 40	$120 00
206	460	1¼	1	2,000	240	10,000	40 " 65	180 00
207	530	1½	1¼	4,000	480	20,000	65 " 125	240 00
208	600	2	1¼	6,000	720	40,000	125 " 200	360 00
209	1,250	2½	1½	15,000	1,800	70,000	200 " 400	480 00
210	1,500	3	1½	24,000	2,880	100,000	400 " 600	600 00
211	1,750	4	1½	32,000	3,840	150,000	600 " 1,000	900 00

CURTIS AUTOMATIC RETURN STEAM TRAP

DESCRIPTION, FIG. 2070

This return trap takes the water from the condensing surface, whether the returns are above or below the water level, and returns it into the boiler at a temperature always above 212 degrees and often up to 275 degrees or 300 degrees, and will effect a saving of 20 per cent. in fuel. Works automatically, without attention, day and night, summer and winter, and returns pure distilled water, in the most perfect condition to benefit the boiler, and is useful and used wherever steam is condensed under pressure, whether coils are above or below the level of the boiler.

PRICES, FIG. 2070

Nos.		Steam Pipe.	Inlet Pipe.	Outlet Pipe.
1	Size of pipe connections.....	1	1	1¼
2	" "	1	1¼	1½
3	" "	1¼	1½	2
4	" "	1¼	2	2½

Nos.		Each.
1	will drain 4,000 to 5,000 feet, 1 inch pipe..	$100 00
2	" 8,000 " 10,000 " " ..	150 00
3	" 15,000 " 20,000 " " ..	200 00
4	" 30,000 " 40,000 " " ..	300 00

Receivers and check valves not included in price of trap.

PRICES OF RECEIVERS

Nos.		Each.
1	Size of pipe connection, 2 inlets, each 1 inch...	$12 00
2	" " 4 " 1 ...	15 00
3	Size, of pipe connection, 6 inlets, each 1 inch...	$20 00
4	.....	35 00

In all cases the middle pipe is the outlet.



FIG. 2070

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ALBANY STEAM TRAPS

RETURN STEAM TRAP



FIG. 2071

DESCRIPTION, FIG. 2071

This trap is specially adapted for returning the condensed water from steam jacketed cylinders. Also from steam supplying pipes to steam engines using high pressures. The traps are all tested before leaving works under a pressure of 150 lbs., and if a higher pressure than this is desired we can furnish special traps for such desired pressures. These traps are fitted with a double or exhausting equalizing valve, and the traps can be used when constantly under pressure, or a part of time under pressure and a part of the time open to the atmosphere, as the circumstances may require. The only change necessary is to remove the ⅜ plug that will be found screwed into the side of the valve, near its bottom, and insert in its place a pipe to convey the exhaust steam to any place most convenient.

PRICES, FIG. 2071

Size Trap.	Capacity in Lineal Feet of 1 inch Pipe.	Inlet, Inches.	Outlet, Inches.
No. A 1	15,000 to 30,000	1½	2½
" 1	8,000 12,000	1½	2

Gals. Capacity per Minute.	Each.	Size Trap.	Capacity in Lineal Feet of 1 inch Pipe.	Inlet, Inches.	Outlet, Inches.	Gals. Capacity per Minute.	Each.
10 to 15	$200 00	No. 2	4,000 to 8,000	1	1½	3 to 6	$100 00
4 " 8	150 00	" 0	500 1,000	½	1	½ 1	50 00

Bottom of trap should set about three feet or more above water line in boiler.

NON-RETURN HIGH PRESSURE

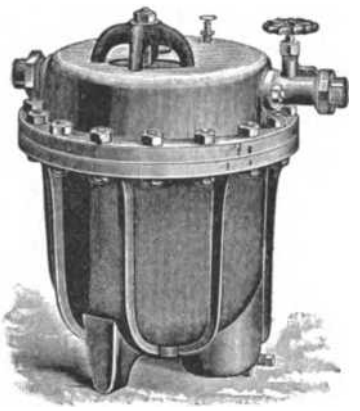


FIG. 2072

NON-RETURN LOW PRESSURE

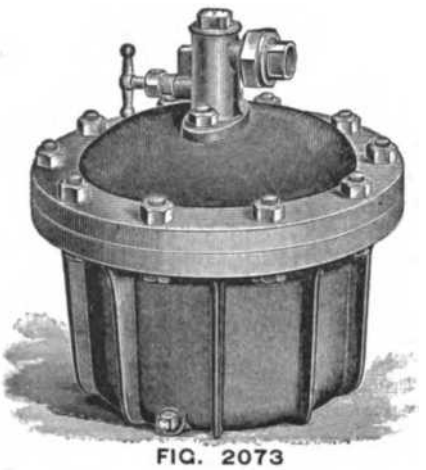


FIG. 2073

DESCRIPTION, FIGS. 2072 AND 2073

Are specially adapted for use on steam jacketed cylinders, steam separators, steam pipes to engines and pumps, dryers in cotton, woolen and paper mills; brewers' kettles, evaporating and vacuum pans, dry kilns in lumber and brick yards, and steam heating apparatus in general.

PRICES, FIG. 2072

For pressures from 100 to 175 lbs.

Nos.	For Lineal Feet of 1 inch Pipe.	Shipping Weight.	Each.
1	1,000 to 5,000	250 lbs.	$75 00
2	5,000 10,000	400 "	100 00

When ordering, state what pressure traps will be required.

PRICES, FIG. 2073

For pressures under 100 lbs.

Numbers....	1	2	3	4	5
Inlet and discharge, inches....	½	¾	1	1¼	1½
For lineal feet of 1 inch pipe.	1,000	3,000	4,500	7,000	12,000
Shipping weight, lbs.	50	80	125	200	350
Each.....	$10 00	$12 00	$17 00	$26 00	$42 00

CHAMPION RETURN STEAM TRAP AND BOILER FEEDER

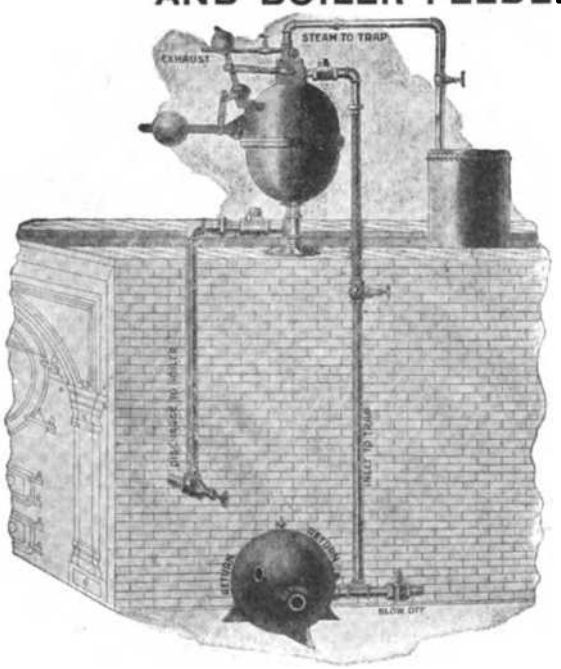


FIG. 2074

For automatically returning water of condensation from steam heating systems or steam appliances of any description directly back into boilers at the highest attainable temperature due to the pressure under which steam was condensed.

PRICES, FIG. 2074

Size Nos.	Capacity 1 inch Pipe.	Lineal Feet	Inlet Conn., Inches.	Discharge Conn., Inches.	Prices Traps Only.	Extra for Receivers, Each.	Outlet of Receivers, Inches.
1	4 to 6,000		1	1½	$100 00	$10 00	1
2	8	10,000	1¼	2	150 00	16 00	1¼
3	15	20,000	1½	2½	200 00	24 00	1½
4	30	40,000	2½	3 or 4	300 00	40 00	2½

Receivers are extra and not furnished with traps unless so ordered.

PRATT'S RETURN STEAM TRAP

DESCRIPTION, FIG. 2075

For automatically draining the water of condensation from steam radiators, drying pipes, drying cylinders, boiling pans, etc., or wherever condensation occurs in steam pipes under pressure, and returning the same to boiler. All the possible waste of steam and heat that would otherwise occur is avoided, as there is no outlet for the steam or water from the pipes, etc., except back again to boilers, therefore there is no loss; and heating, drying, etc., can be done at a low expenditure of steam. This return trap will work on reduced steam pressure and maintain its full capacity.

SIZE OF PIPE CONNECTIONS

Sizes.	Inlet, Inches.	Outlet, Inches.	Steam, Inches.
No. 1	1	1½	¾
2	1¼	2	1
3	1½	2	1¼
4	2	2½	1½

PRICES, FIG. 2075

Size Nos.	Will Drain Water 1 inch Pipe. Feet.		Delivery per Hour. Gallons.	Each.	Receivers Extra.
1	4,000 to 5,000		200	$100 00	$12 00
2	8,000	10,000	350	150 00	15 00
3	15,000	20,000	550	200 00	18 00
4	30,000	40,000	800	300 00	

Check gate and globe valves extra.

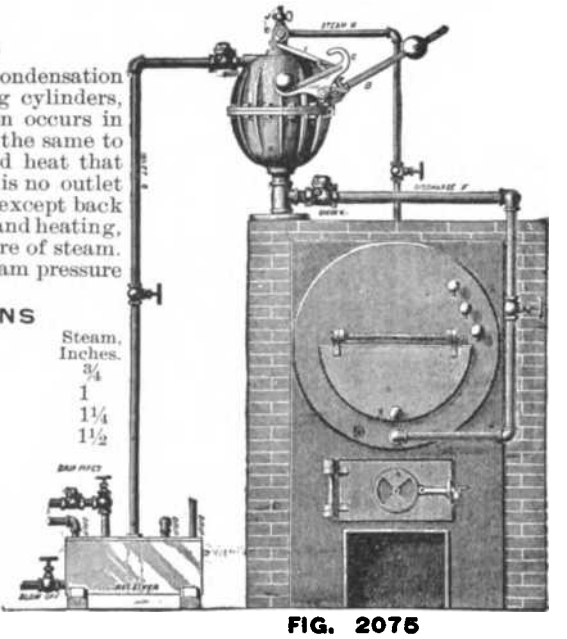


FIG. 2075

STRAINER CONNECTION

FOR ALL MAKES OF STEAM TRAPS

DESCRIPTION AND PRICES, FIG. 2076

This Strainer Connection prevents obstacles from entering steam traps which clog and cut the valves and other interior parts, thus hindering them from working properly. They are provided with a finely perforated copper basket with handle, which can be readily removed, together with its accumulation of foreign substances, by taking out the plug at top of strainer attachment.

Sizes, Inches.	Each.	Sizes, Inches.	Each.
¾	$2 00	2	$4 50
1	2 25	2½	6 00
1¼	2 50	3	7 50
1½	3 50		

Made screw ends only.

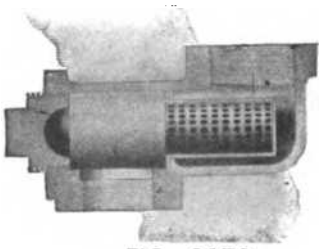


FIG. 2076

MANNING, MAXWELL, & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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BICKEL THERMOSTATIC STEAM TRAP

DESCRIPTION, FIG. 2077

It will work equally well under high or low pressure, and it will discharge against any pressure less than the head pressure.

It can be placed on a line of pipe like an ordinary valve, and requires no extra support.

It has a removable seat, and the valves can be reground without removing the body of the trap from the pipe.

All internal parts can be removed without taking the body of the trap from the pipe, and it requires no joints to be made. The thermostatic bars being compounded render the trap extremely sensitive, and when set it acts promptly, discharging condensation at the temperature desired and checking steam without waste.

Condensation enters the body of the trap A at the side marked Inlet, and passes through a small opening in piston valve C into cylinder D, and thence through opening in E into the thermostatic chamber, which is drained into the body of the trap.

If the small opening through the piston valve C is insufficient to carry off the condensation, the valve itself C will rise and discharge to its full limit, if necessary allowing the condensation to pass directly through the body of the trap.

When the thermostatic bars H become expanded, either through the entrance of steam or water at a higher temperature than which it is set to discharge, the expansion will cause the pilot valve F to close, thus shutting off all escape from cylinder D and forcing piston valve C to close down tightly on the removable seat B.

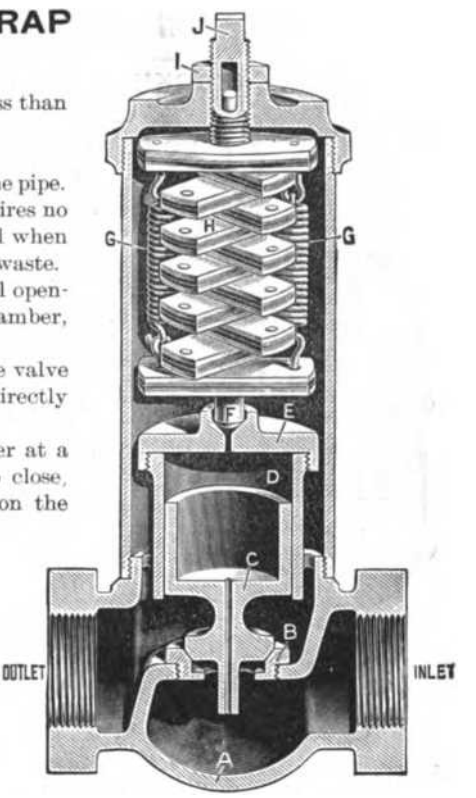


FIG. 2077

PRICES, FIG. 2077

Nos.	Sizes of Connections, Inches.	Greatest Number of Square Feet of Heating Surfaces.	Greatest Number of Lineal Feet of One Inch Pipe.	Height over all, Inches.	Length over all, Inches.	Weight Lbs.	Each.
1	½	600	1500	8¾	3⅝	3¾	$18 00
2	¾	1000	3000	9¼	3⅞	5	25 00
3	1	1500	6000	9½	4⅛	6¼	35 00
4	1¼	3000	11500	10¾	4¾	10¾	45 00
5	1½	4000	19000	11¾	5	13½	60 00
6	2	6000	40000	13⅞	6¼	28¾	80 00

Every trap is thoroughly tested under both high and low pressure before shipment.

TRAP RECEIVERS

PRICES, FIG. 2078

Nos.	Weight, Lbs.	Length, Inches.	Height, Inches.	Diameters, Inches.	No. of Inlets.	Sizes of Inlets, Inches.	Sizes of Outlets, Inches.	Size of Blow off, Inches.	Each.
1	120	33	10	7½	4	1	1	1	$12 00
2	140	33	11	8½	4	1¼	1¼	1	14 00
3	160	33	12	9½	4	1½	1½	1	16 00
4	180	33	13	10½	4	2	2	1	18 00

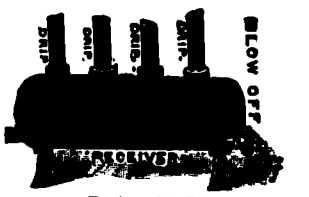


FIG. 2078

BRASS STEAM WHISTLES

WITHOUT VALVE


FIG. 2079

PRICES, FIG. 2079

Diameters of Bell, Inches.	For Pipe Sizes, Inches.	Each.
1	½	$2 20
1¼	½	2 75
1½	½	3 00
2	½	4 35
2½	¾	5 25
3	1	7 25
3½	1	9 50
4	1¼	12 00
5	1½	19 00
6	2	24 00
8	2½	70 00
10	3	175 00
12	3	350 00

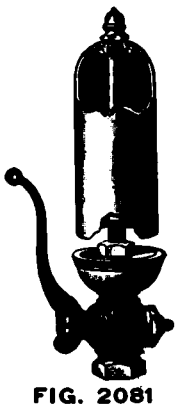
WITH VALVE


FIG. 2080

PRICES, FIG. 2080

Diameters of Bell, Inches.	For Pipe Sizes, Inches.	Each.
1	½	$3 10
1¼	½	3 75
1½	½	4 00
2	½	5 50
2½	¾	6 50
3	1	8 50
3½	1	11 50
4	1¼	15 00
5	1½	22 50
6	2	33 00
8	2½	95 00
10	3	225 00
12	3	425 00

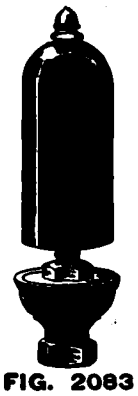
WITH ADJUSTABLE LEVER


FIG. 2081

WITHOUT VALVE


FIG. 2082

WITHOUT VALVE


FIG. 2083

IRON BASE STEAM WHISTLES

PRICES, FIG. 2083

Diameters of Bells, Inches.	Sizes of Pipe Connection, Inches.	Iron Base Whistles, without Valves, Each.	Iron Base Whistles, Long Bell, without Valves, Each.	All Iron Whistles, extra Long Bell, without Valves, Each.
3	¾	$5 50	$7 00	.....
3½	1	7 25	9 00	.....
4	1¼	10 00	12 50	.....
5	1½	16 00	20 00	.....
6	1½	23 00	30 00	.....
8	2	55 00	70 00	$50 00
10	2½	100 00	120 00	75 00

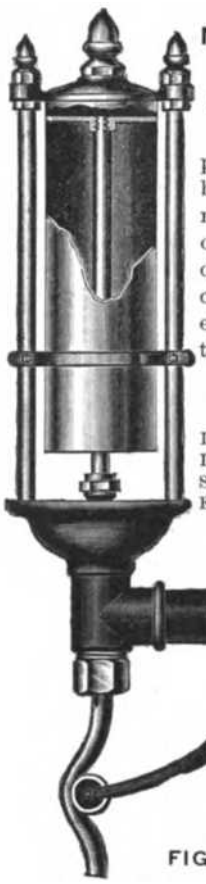
PRICES, FIGS. 2081 AND 2082

Diameters of Bells, Inches.	Sizes of Pipe Connection, Inches.	Brass Whistles, with Adj. Lever, Each.	Brass Whistles, without Valve, Each.	Brass Whistles, without Valve, Long Bell, Each.
1	¼	$3 10	$2 20	.....
1¼	¼	3 75	2 75	.....
1½	⅜	4 00	3 00	.....
2	½	5 50	4 35	.....
2½	¾	6 50	5 25	$6 40
3	¾	8 50	7 25	8 00
3½	1	11 50	9 50	11 00
4	1¼	15 00	12 00	14 20
5	1½	22 50	19 00	22 50
6	1½	33 00	24 00	33 00
8	2	95 00	70 00	90 00
10	2½	160 00	133 00	150 00

The lengths of bells on above whistles range about as follows: Regular size, twice; long bell, three times, and extra long bell, four times the diameter.

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STEAM WHISTLES, WHISTLE VALVES AND WHISTLE CHIMES



MOCKING BIRD STEAM WHISTLE

DESCRIPTION, FIG. 2084

This improved piston whistle is particularly adapted for river boats, fog signals, fire alarms, etc., making a different sound from the ordinary steam whistle, being so constructed that the sound can be changed instantly, whereby boats, etc., using them can be easily distinguished at a long distance.

PRICES, FIG. 2084

Diameters of bell, in.,	3	4	5	6
Lengths of bell, "	9	12	15	18
Sizes of pipe, "	1	1¼	1½	2
Each	$40 00	53 00	70 00	95 00

FIG. 2084

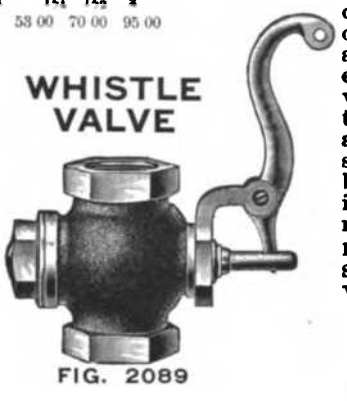


FIG. 2089

WHISTLE VALVE

MOCKING BIRD STEAM WHISTLE

DESCRIPTION, FIG. 2085

This is a simple and practical variable sound steam whistle, especially adapted for traction engines, locomotives, steamboats, factory and mill use. It makes an excellent fire alarm, and is attached like any ordinary whistle. The bell is provided with a piston, which is pulled downward by a chain running between pulleys, and, when not in use, is always at the top, being drawn upward by means of a spring. To change the sound, pull the chain.

Diameters of bells..inches,	2½	3	3½	4	5	6
Size of pipe connections..in.,	¾	¾	1	1¼	1½	1½
All brass, with valve, each,	$10 50	14 00	20 00	28 00	40 00	56 00
" without valve, "	9 00	12 00	17 50	25 00	37 00	50 00
Iron base, " "		11 50	16 50	23 00	34 00	46 00

ALL BRASS WITH VALVE

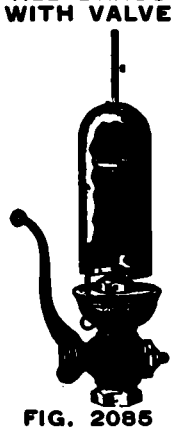


FIG. 2085

IMPROVED COMBINATION OR FIRE ALARM WHISTLE

DESCRIPTION AND PRICES, FIG. 2086

This whistle is designed to answer both the purposes of an ordinary whistle as well as that of a fire alarm. It is provided with a piston that can be moved up or down within the bell or tube, thus changing the interior length of same and, consequently, also the sound of the whistle. When the piston is not operated the whistle gives but one sound, like any ordinary whistle, but when pulled up and down, a howling, penetrating noise is produced. When placed above the roof of a building, an extension rod should be coupled to the piston stem and a rope or wire to the whistle valve lever. The bell is raised or lowered to suit steam pressure by screwing it up or down, and when properly set, is fastened by jamb nut E.

Diameters of bells, inches.....	2½	3½	5	8
Size pipe connection, "	¾	1	1½	2
With whistle valve complete, each.....	$24 00	$31 00	$40 00	$100 00

COMPLETE WITH VALVE



FIG. 2086

COMPOUND AUTOMATIC WHISTLE VALVE

DESCRIPTION, FIG. 2087

For fire department purposes this compound automatic whistle valve is especially designed and adapted to whistles. It is easily operated by the usual electric apparatus of fire alarm systems. It is also used with large whistles for steamers, factories, etc., by means of which they are easily sounded even under the highest pressures.

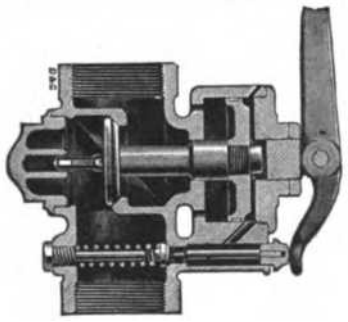


FIG. 2087

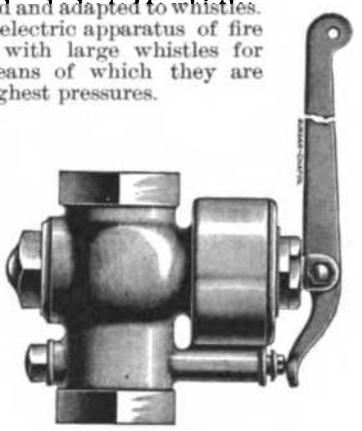


FIG. 2087

SECTIONAL VIEW

Sizes.....	1¼ inch,	1½ inch,	2 inch,	2½ inch,	3 inch,
Prices.....	$16 00	$20 00	$25 00	$35 00	$45 00

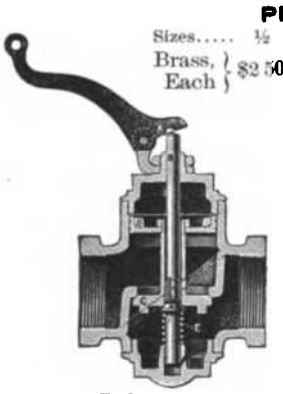


FIG. 2088

AUTOMATIC BALANCED WHISTLE VALVE

DESCRIPTION, FIG. 2088

These whistle valves are made of gun metal composition. They are made in all sizes from one to three inches, inclusive, with screw, flange, or screw and flange ends, and are guaranteed for 175 lbs. working pressure.

PRICES, FIG. 2088

Sizes of valve, inches		1	1¼	1½	2	2½	3
Screw ends.....	Each	$18 00	22 20	26 60	35 50	44 40	62 20
" and flange ends.....	"	21 40	26 00	31 80	41 80	51 00	74 80
Flange ends.....	"	22 20	27 50	33 60	43 80	53 20	77 00
Distance, face to face screw or flange ends	Inches,	3¾	4⁵⁄₁₆	4⅞	6⁷⁄₁₆	7⅛	7¾
Diameters of flanges	"	4	4½	5	6	7	7½

Extra heavy pattern for 350 lbs. working pressure can also be furnished.

Prices upon application.

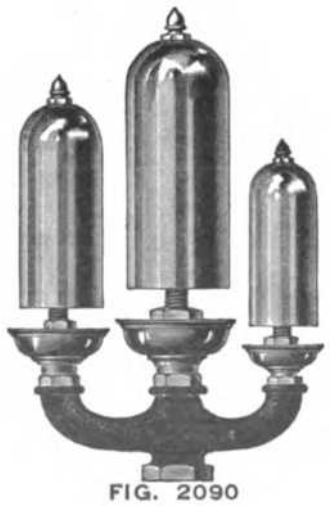


FIG. 2090

THREE WHISTLE CHIMES

PRICES, FIG. 2090

	Each
No. 1. Composed of one each, 1½, 2 and 2½ inch whistles.... Size pipe connection, 1 inch.	$22 00
No. 2. Composed of one each, 3½, 4 and 5 inch whistles..... Size pipe connection, 1½ inch.	40 00
No. 3. Composed of one each, 5, 6 and 8 inch whistles..... Size pipe connection, 3 inch.	109 00

Whistle valves for above are extra and chimes will be sent complete with valve unless otherwise ordered.

PRICES, FIG. 2091

These chimes are made to order, of any number or sizes of bells.
Prices quoted on application, with specifications.

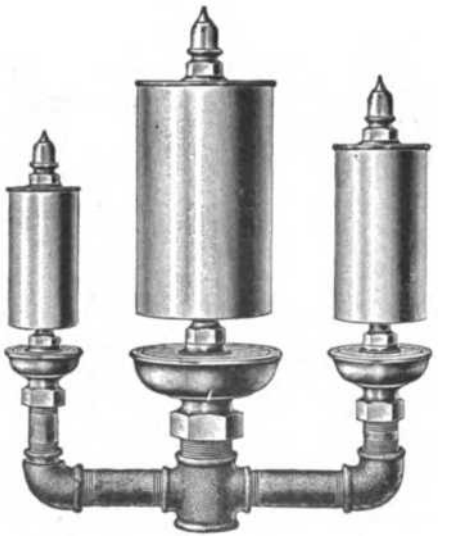


FIG. 2091

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CHIME STEAM WHISTLES, AIR WHISTLES AND STEAM GONGS

SINGLE BELL CHIME STEAM WHISTLES

NO. 1. WITHOUT VALVE



FIG. 2092

NO. 2. WITH UP-RIGHT VALVE

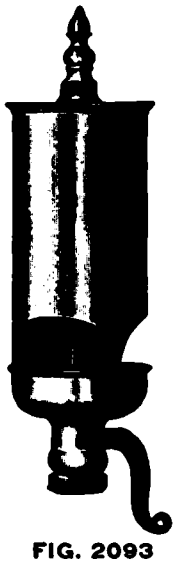


FIG. 2093

NO. 3. WITH SIDE VALVE

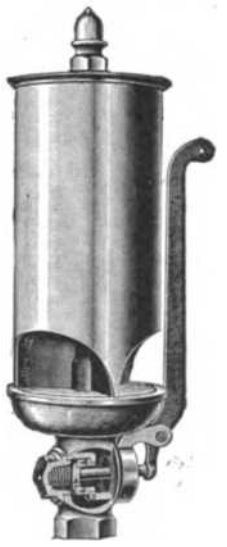


FIG. 2094

PRICES, FIGS. 2092 TO 2094

Diameters of Bell.	Size of Steam Pipe.	No. 1. Fig. 2092.	No. 2. Fig. 2093.	No. 3. Fig. 2094.
1½ inches	⅜ inches.	$4 50	....	$6 00
2 "	½ "	5 00	....	7 00
3 "	¾ "	8 00	....	11 00
4 "	1 "	14 00	$18 00	18 00
5 "	1¼ "	28 00	35 00	35 00
6 "	1½ "	38 00	45 00	45 00
8 "	2 "	85 00	....	100 00
10 "	2½ "	150 00	....	180 00
12 "	3 "	260 00	....	300 00

ADJUSTABLE SINGLE BELL QUARTET CHIME STEAM WHISTLES

NO. 1, WITH VALVE AND REVERSIBLE LEVER

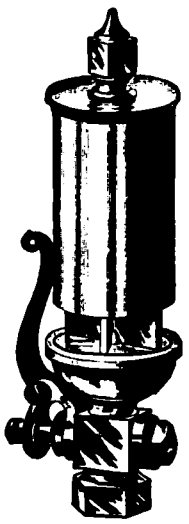


FIG. 2095

NO. 2, WITHOUT VALVE

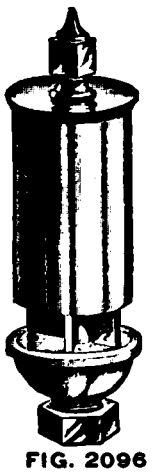


FIG. 2096

DESCRIPTION FIGS. 2095 AND 2096

Produces four tones, pitched to a musical scale, giving an agreeable and melodious sound.

The bell is seamless brass tubing, readily raised or lowered to conform to any pressure used.

Specially adapted to blow by air.

PRICES, FIGS. 2095 AND 2096

Diameters of Bell.	Size of Pipe Connection.	No. 1, with Adjustable Lever Valve, Fig. 2095, each.	No. 2, without Valve, Fig. 2096, each.
2 inches	½ inch	$7 00	$5 00
2½ "	½ "	9 00	7 00
3 "	¾ "	11 00	8 00
4 "	1 "	18 00	14 00
5 "	1¼ "	28 00	22 00
6 "	1½ "	42 00	38 00
8 "	2 "	100 00	85 00
10 "	2½ "	180 00	150 00
12 "	3 "	300 00	260 00
14 "	3 "	Prices on application.	
16 "	3 "		
18 "	4 "		
20 "	4 "		

PRICES, 2102, 2103, 2104, 2105

Fig. 2102, 6 inch, 1½ inch supply pipe, 3 feet high, each..... $60 00
" 2103, 8 " 2 " " " 4 " " " 75 00
" " 10 " 2½ " " " 6 " " " 100 00
" 2104, 12 " 3 " " " 6 " " " 115 00
" 2105, 12 " 3 " " " 8 " " 3 bells, each..... 150 00

SINGLE BELL CHIME STEAM WHISTLES

WITH ADJUSTABLE LEVER

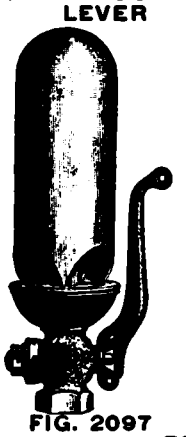


FIG. 2097

WITHOUT VALVE



FIG. 2098

LOCOMOTIVE STYLE WITH UPRIGHT VALVE



FIG. 2099

PRICES, FIGS. 2097 TO 2099

Diameter of Bells, inches.	Size of Pipe Connection.	Fig. 2097, all Brass with Adjustable Lever.	Fig. 2098, all Brass without Valve.	Fig. 2098, Iron Base without Valve.	Fig. 2099, all Brass Locomotive Style.
1½	⅜	$7 00	$5 50	.....	.....
2	½	10 00	8 50	.....	.....
2½	¾	13 00	10 50	.....	.....
3	¾	16 00	13 50	$12 00	.....
3½	1	22 00	18 50	16 50	.....
4	1¼	28 00	24 00	22 00	$27 50
5	1½	44 00	37 00	33 00	43 00
6	1½	60 00	49 00	45 00	59 00
8	2	145 00	120 00	108 00	.....
10	2½	235 00	188 00	155 00	.....



FIG. 2100

For Hand Air Pump. Without Lever and Valve.

SPECIAL AIR WHISTLES

This Quartet Chime Whistle is specially constructed to blow by air. The bell is easily raised or lowered, enabling one to adjust the whistle to blow from 5lb. to 100lb. pressure. Can be operated by hand air pump or air supplied from tank. These are particularly adapted for naphtha and electric launches. We furnish a hand air pump when required of sufficient capacity to blow a 1½ inch whistle to 3 inch. Whistles and pump highly finished in brass. Nickel plated if desired.

PRICES

Size bell diam., inches.	1½	2	2½	3
Connections, "	¼	½	½	¾
Fig. 2100, each	$3 00	$4 00	$5 00	$6 50
" 2101, "	4 00	5 00	6 00	7 50

Hand Air Pump, $7.00, extra. Nickel plating, extra.

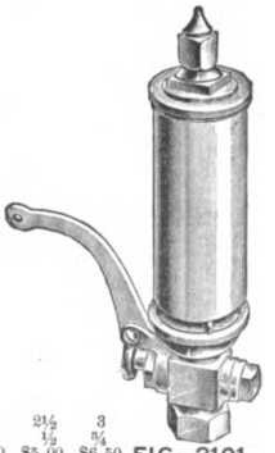


FIG. 2101

For Air Tank. With Lever and Valve.

STEAM GONGS

DESCRIPTION, FIGS. 2102 TO 2105

The patent steam gong is used for fire alarm and fog signals, and as a call to the factory. It has two bells instead of one, as in the steam whistle. These bells are so adjusted and tuned as to produce a musical fifth chord; or, with the addition of a third bell, a fifth and eighth. The different sizes are toned to different notes of the musical scale, and by various combinations may be varied in pitch to a limited extent. They have been heard thirty miles, thus showing their vast powers of sound. It can be applied to any common boiler, as the quantity of steam required to sound it is trifling.

6 inch.



FIG. 2102

8 inch.



FIG. 2103

12 inch.



FIG. 2104

12 inch, 3 bells.

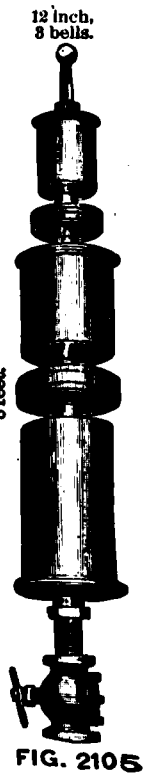


FIG. 2105

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STEAM SIRENS

FIXED COWL

BELL MOUTH

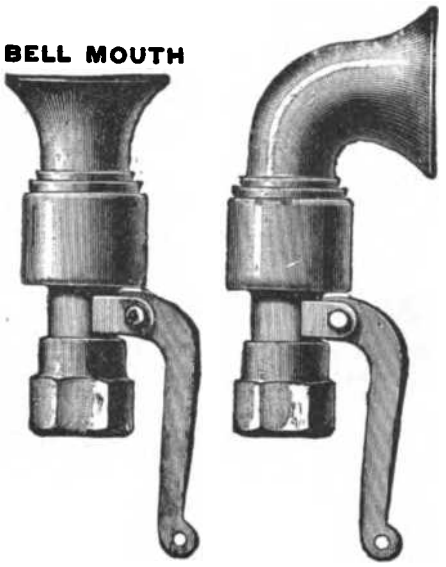


FIG. 2106 FIG. 2107

PRICES, FIGS. 2106 TO 2109

Size Nos.	Connection, Inches.	Bell Mouth, Fig. 2106.	Fixed Cowl, Fig. 2107.	Movable Cowl, Fig. 2108.	Geared Cowl, Fig. 2109.
1	¾	$15 00	$20 00	25 00	
2	1	22 00	27 00	32 00	
3	1¼	30 00	35 00	40 00	
4	1½	40 00	45 00	50 00	$60 00
5	2	65 00	75 00	85 00	100 00
6	2½	110 00	125 00	145 00	175 00

MOVABLE COWL GEARED COWL

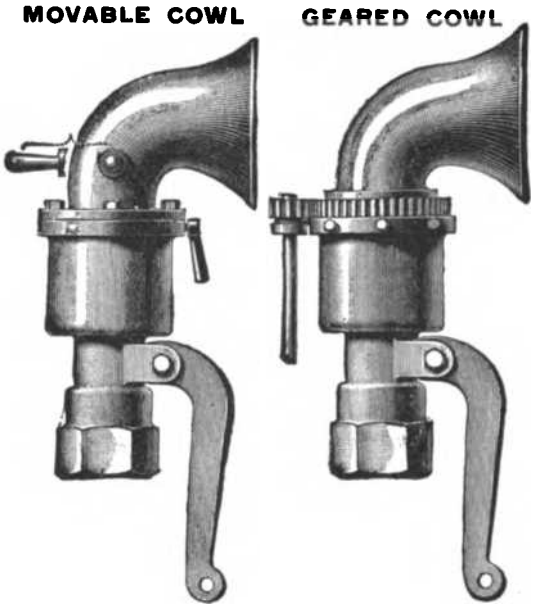


FIG. 2108 FIG. 2109

STENTOR MEGAPHONE

DESCRIPTION, FIG. 2111

These megaphones are intended for and used largely on sailing vessels, merchant vessels, steamers, pilot boats, tow boats and barges and on decks; also used largely in signal towers and freight yards of railroads, also for fire departments, contractors, mines, quarries, and, in fact, anywhere that conversation must be carried on or orders given at long distances. For marine use, sizes Nos. 2, 2½ and 3.

Stentor Megaphones are made from the best quality of chemical and fiber boards, and are finished with two coats of spar varnish, making them impervious to moisture. All metal parts are brass, nickel plated, so that they can be carried in the wheel house of a vessel without danger of attraction to the compass. (Megaphones having iron parts are objectionable on this account.) The mouthpiece is seamless and is attached by a patented process. The color of the smaller sizes is a rich mahogany, of sizes five and seven, light terra cotta. Aluminum Stentor Megaphones are aluminum throughout, and have a fine satin finish with polished mouthpiece and handle.

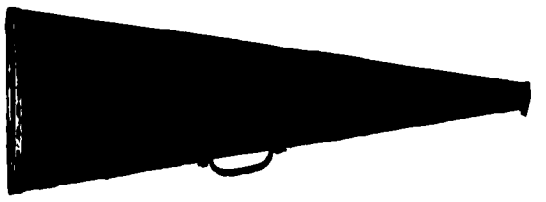


FIG. 2111

PRICES, FIG. 2111

Size Nos.	Inches.	Each.
1	15	$1 50
2	30	2 50
2½	34	3 00
3	40	3 50
5	48	5 00
7	60	8 00

Rope, pulley, and cleat for suspending No. 3 or 5 ..... $0 75
Stand for No. 3, 5 or 7 (No. 7 to order only) . 2 50
18 inch aluminum megaphone 3 00
34 " " " 8 00
12 " junior " 25
20 " " " 50

GONG WHISTLE



FIG. 2110

DESCRIPTION FIG. 2110

This gong whistle is made entirely of iron, and never wears out; can be heard 6 to 8 miles.

The gong consists of two separate bells, that can be adjusted so as to give any sound wanted.

PRICES

Diameters of Gong, Inches.	Sizes of Steam Inlet, Inches.	Each.
4	1¼	$12 00
6	1½	14 00
8	2	20 00
10	2½	30 00

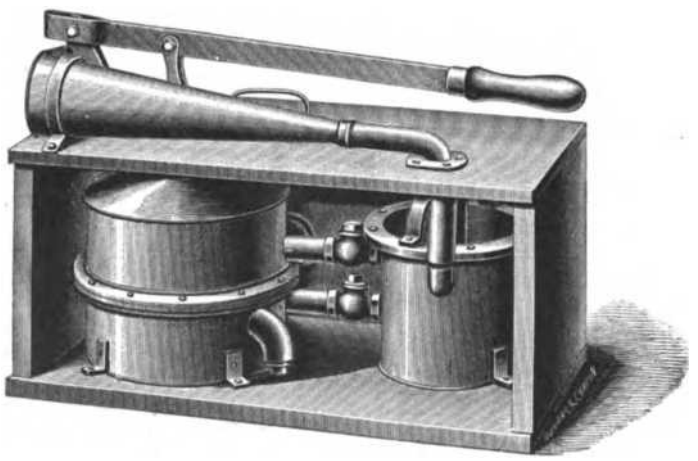


FIG. 2112

PRICES

Size, 23 x 11½ x 11½; weight, 39 lbs; length of horn, 14¼ inches ..... Each, $15 00

The horn may be detached from machine and blown as a common horn, by using a special mouthpiece (30 cents extra). Price of horn with mouthpiece for hand use, $1.20.

KING MECHANICAL FOG HORN

DESCRIPTION, FIG. 2112

A double acting diaphragm air pump and air receiver. Simple, compact and durable in all its parts, with elastic connection between air chamber and pump. Made for service, and not liable to get out of order. It has great advantages over bellows or piston pump fog horns, as there is less friction, it works easier, always the same, and is not affected by changes of temperature, dry or moist atmospheres.

All working parts are reached by taking off one side of the case. The valves are accessible through the foot rest hole.

Chambers are made of heavy galvanized iron, giving extra strength and durability.

Best rubber diaphragm takes the place of leather.

Flexible connections between cylinder and air chamber prevent undue strain on any one part.

In case of accident, can be repaired by any ordinary mechanic.

Is always ready for use, even if it has been laid away for a long time or after being submerged.

To operate the horn give sharp, quick strokes for short blasts, and pump steadily for a prolonged blast.

Use no oil or grease on any part of the machine except the lever bearings.

MANNING, MAXWELL, & MOORE, 85, 87, & 89 LIBERTY STREET, NEW YORK

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WEST'S LOCOMOTIVE STEAM BELL RINGER

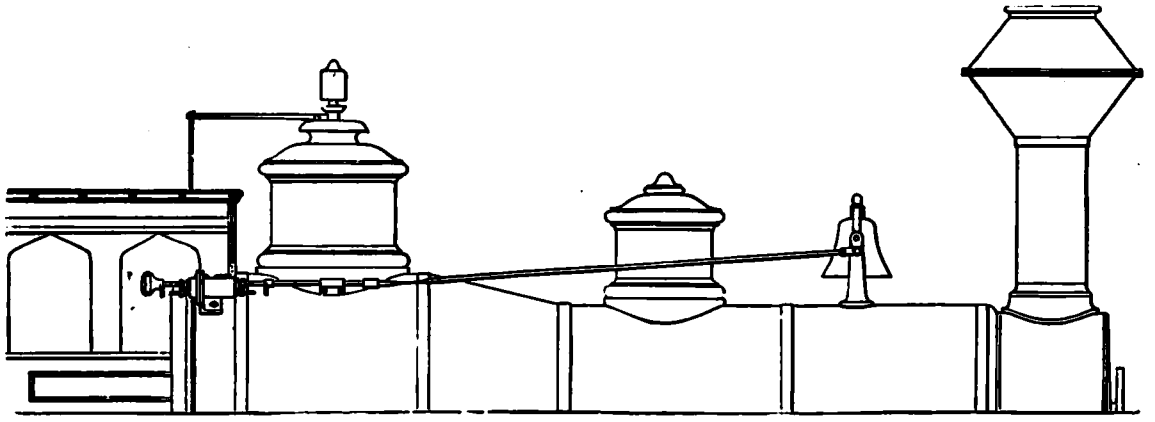


FIG. 2113, SHOWING FIG. 2115 ATTACHED

SECTIONAL CUT

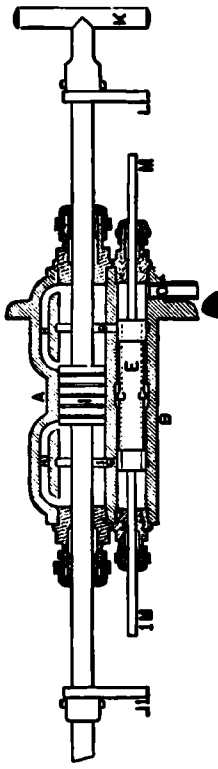


FIG. 2114

RINGER



FIG. 2115

The object of this invention is to ring a bell by steam, without any rigidity of moving parts, allowing the bell to oscillate freely, the same as if operated by hand with a cord, and to impart an easy and uniform motion to the bell under any variation of steam pressure.

The ringer consists of a steam cylinder A, steam chest B, with balanced valve E, operated by the tablets L L, on the piston rod. The bell rod is a continuation of the piston rod, and attached to bell crank. The valve E receives steam in the center and exhausts at the ends. H H are relief passages, allowing the air or vapor in the end of cylinder to escape around the piston I, and, by removing the resistance, allow the piston freedom to follow the momentum of the bell until it stops.

PRICE, $35.00 EACH

COOK'S AUTOMATIC BELL RINGER FOR LOCOMOTIVES

DIRECTIONS FIG. 2117

Fasten angle iron to boiler on right side of bell frame. Place the ringer as low as possible and in direct line with the center of bell yoke. Place the lower end of the crank three-eighths of an inch out of line with center of bell yoke and center of piston when the bell stands plumb, thereby starting bell without using bell rope. Key and pin the crank to prevent working loose. The connection should be as long as possible, the inside piece not less than five inches inside of hollow part of connection. The nuts are used to adjust the stroke of the bell. If the ringer works too strong, shorten the connection by lowering the nuts; if not strong enough, lengthen by raising the nuts. Use a three-eighths inch globe valve for a throttle, placed so it will be handy for the engineer. The steam must be shut off to stop the bell. Where steam is used a small lubricator must be used, as it is necessary to keep the ringer well oiled. Let the exhaust pipe go down outside of the boiler, below the frame. It will stop up if put in smoke arch. Where the engines have air, would use that in preference to steam. When using air a small oil cup can be placed near the ringer; when using steam, would be best placed in cab.

PRICE, $12.00 EACH

SHOWING RINGER APPLIED

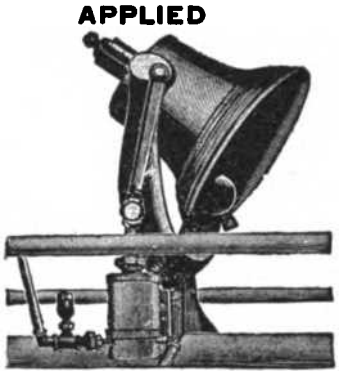


FIG. 2117

METHOD OF ATTACHING TO OLD BELL FRAME

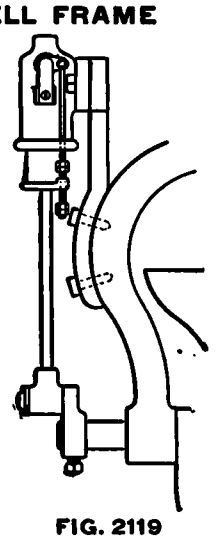


FIG. 2119

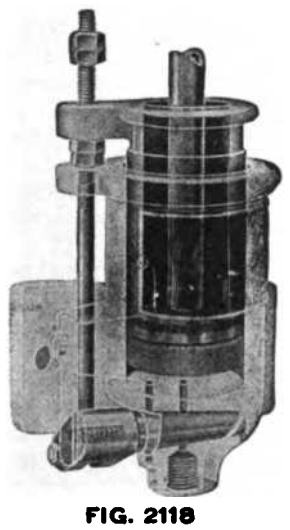


FIG. 2118

SANSOM BELL RINGER

DESCRIPTION, FIGS. 2118 TO 2120

It is a good accident "preventer," because the bell rings all the time till it's shut off.

Has no packed joints except the piston, which has heavy leather packing.

Valve is a plug cock held to seat by a coiled spring and cannot cramp or bind.

Economical of air, because weight of bell compresses air in the cylinder almost to lifting point before admission.

Easily regulated to ring at any speed simply by control of air supplied.

Won't turn the bell over.

Easily attached to bell bracket alone.

Nothing to wear out. No ball joints. No toggles. No slip couplings.

PRICE, $10.00 EACH

METHOD OF ATTACHING TO NEW BELL FRAME



FIG. 2120

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PNEUMATIC LOCOMOTIVE SANDERS

LEACH "D" SANDER

Showing adjustable air nozzle with check valve.

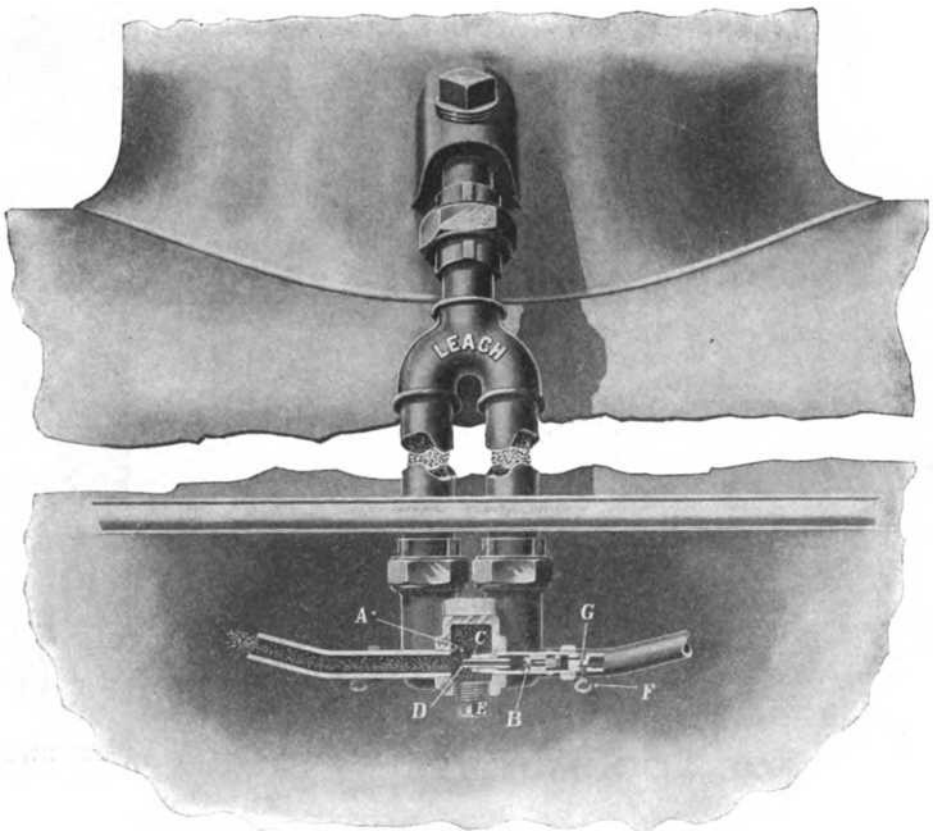


FIG. 2121

DESCRIPTION, FIG. 2121

We believe that this device has some features which tend to make it somewhat better than other devices, and recommend it in preference to the others.

Some of the reasons why we recommend this device, are:

It is outside of sand box, accessible at all times for inspection or when making repairs, and where enginemen and shopmen can, at a glance, understand its operation.

The resistance of the column of sand always above the trap prevents air pressure from escaping up through sand box; and, therefore, a high pressure is available through discharge pipes for removing obstructions at their lower ends.

The adjustable air nozzle used with this style device can be so adjusted as to regulate the amount of sand discharged to the rail. This nozzle is fitted with a small check valve, preventing air passages from becoming plugged with sand.

Discharge pipes bent up 15° to prevent sand from jarring out of traps when engine is running.

1 inch plug at E to remove small stones, etc., which may get into traps.

To regulate amount of sand delivered increase or decrease distance A by loosening jamb nut C, and moving adjusting tube D in or out. The greater the clearance A, the greater the sand delivery.

Care should be taken to have nozzles on opposite sides of engine adjusted alike.

When these nozzles leave the shops they are adjusted to deliver sufficient sand to prevent the average locomotive from slipping.

LEACH "A" SANDER

With this type, the blast is used simply for economy in the use of sand and for convenience in operating. The sand traps are attached to the sand box in the most convenient manner, the sand is supplied thereto through independent outlets from the box, and is discharged therefrom into and through the usual hand lever controlled pipes to the rail, the lever attachments being available for use as desired.

The discharge pipes, usually 1¼ inch, must be fitted at such a pitch that sand will flow through them by gravity when the lever is used. The amount of sand discharged is controlled by the adjustment of cab valve. Hardened caps receive the wear of the sand blast.

Being easily applied and maintained, conveniently located for cleaning and very economical in the use of air, they are deservedly popular on many roads where the service conditions do not require the special features peculiar to the D type.

If 4-pipe sanders are to be used on engines having two sand boxes, order accordingly.

"A" SANDER--APPLICATION

To New Sand Boxes.

Cast the sand box lug to fit pattern of trap. Provide valves with necessary hand lever attachments, for outlets to discharge pipes, and 1 inch or 1¼ inch pipe plug openings—for a piece of waste to stop the flow of sand from the box when cleaning out the traps, for all outlets which supply sand to the blast. These auxiliary outlets may be either front or back of the discharge pipes, as will best clear the valves and connections. Traps for 2-pipe sanders are rights and lefts, but for 4-pipe sanders they are not.

To Old Sand Boxes.

The auxiliary outlets for sand supply to blast are cast iron pipes, fitted by templet and fastened to under side of sand box base, either front or back of discharge pipes, as will best clear the valves and connections. Traps vary in shape to fit the various sand box lugs in use. Outline shapes of traps for which patterns have been made will be mailed as desired.

GENERAL DESCRIPTION, FIG. 2121

Heretofore the matter of sanding has received but scant attention; any gravity system which would deliver sand somewhere on the rail seemed to be equal to all needs

Gravity sanding devices have no part in to-day's progressive railroading, for the following reasons: Such systems are unreliable; they will not deliver sand promptly and at the point where it will be of the utmost use; they are wasteful of sand, fully 50 per cent. of the sand leaving the rail before the driving wheels reach it, and at times so seriously as to interfere with the working of the present interlocking switch system. The use of more sand than is absolutely necessary tends to excessive tire and rail wear; they are wholly out of the line of progressive railroad improvements.

The gains sought and accomplished by the pneumatic sanders are: An economy in the quantity of sand used, amounting to something like a saving of 60 per cent.; the use of just enough sand to bring the best results and no more; the placing of the sand where it is most needed and so that each grain does its share of the work; the instantaneous application of sand when needed; the automatic application of the sand when needed without [illegible] effort on the part of the engineer, allowing his attention to other duties when sander is in operation; a great reduction of tire and rail wear and an increased hauling capacity for the locomotive.

We can furnish these sanders to suit any conditions. Write for full particulars and prices.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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ELECTRIC GONGS

DESCRIPTION AND PRICES, FIG. 2126

They are especially adapted for hotels, fire alarms, railroad signals, public buildings, etc., as they have a powerful blow and clear, ringing tone.

The frame is well japanned and beautifully striped. All the parts are heavily nickel plated.

They have improved non-turning binding and contact posts.

Frame No. 1	2½ inch	$1 60
1	3 "	1 65
1	3½ "	1 75
2	4 "	1 90
2	5 "	2 25
3	5 "	2 65
3	6 "	2 90
4	6 "	3 20
4	7 "	3 60
4	8 "	5 90
5	9 "	7 20
5	10 "	9 50
5	12 "	11 00

DESCRIPTION AND PRICES, FIG. 2127

These gongs are adapted for railroads, factories, fire alarms, etc.

The hammer rod has a short leverage but a long sweep, thus enabling it to give rapid and powerful blows; a stiff, flat spring causes the striker to instantly leave the gong after making the blow, making the signals perfectly distinct, no matter how rapidly given. These gongs will be wound for direct incandescent circuit. Price according to resistance required. The length of stroke and tension are adjustable.

Sizes, inches,	3	4	5	6	8	10	12	14
Prices, each,	$5 00	6 00	6 50	8 00	10 00	13 50	16 00	25 00

SKELETON GONG
PIVOTED ARMATURE

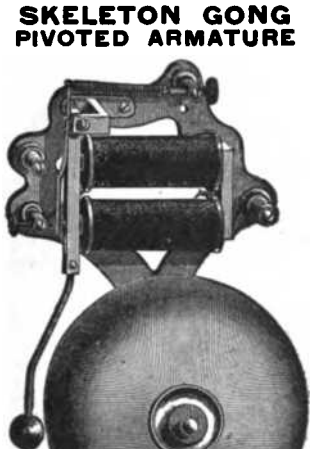


FIG. 2126

SINGLE STROKE ELECTRIC GONG

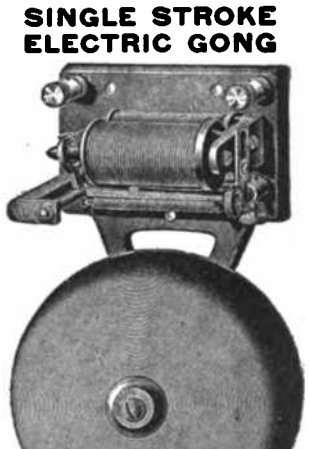


FIG. 2127

TRIP GONG

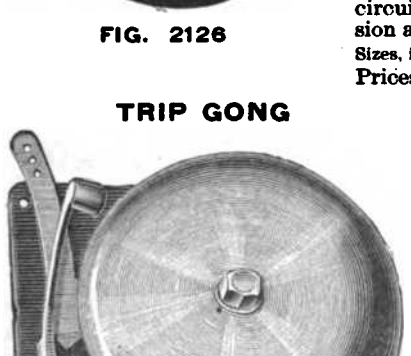


FIG. 2128

Inches.	Each.
3	$1 20
4	1 30
5	1 75
6	2 50
7	3 50
8	4 50
9	5 50
10	6 50

LOCOMOTIVE GONG

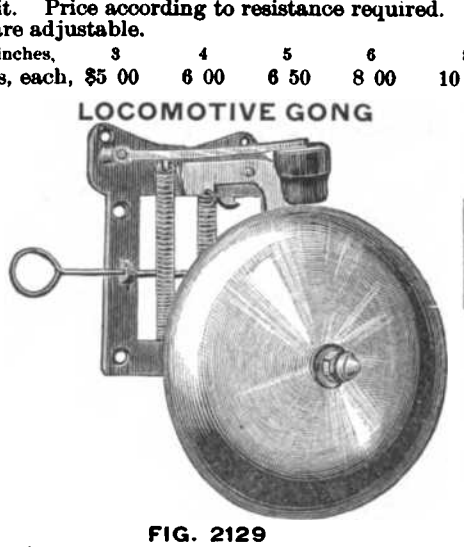


FIG. 2129

Inches.	Each.
6	$2 50
7	3 50
8	4 50
9	5 50
10	6 50

COMMON GONG



FIG. 2130

Inches.	Each.	Inches.	Each.
3	$1 00	9	$5 00
4	1 15	10	5 85
5	1 50	13	14 40
6	2 25	15	19 80
7	3 15	18	27 00
8	4 00	25	to order.

DOUBLE HAMMER GONG

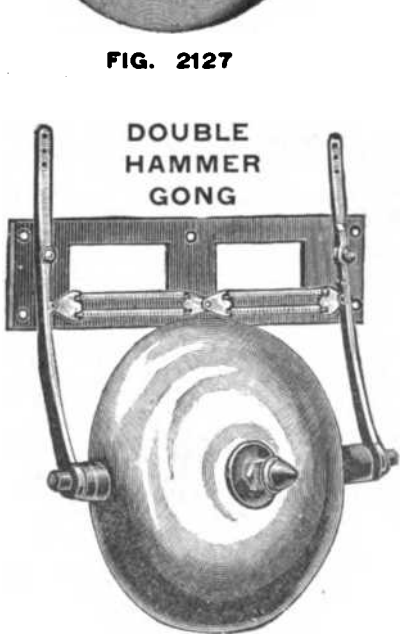


FIG. 2131

Inches.	Each.
8	$5 88
9	7 50
10	8 35
12	17 50
13	20 65
15	26 05
18	33 25

OUTSIDE STRIKE TRIP GONG

PRICES, FIG. 2132

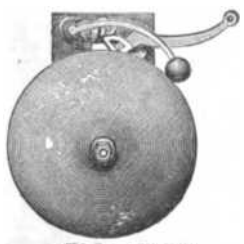


FIG. 2132

Sizes, inches	6	7	8	9	10	11	12
Plain, each	$2 80	3 60	4 50	5 50	6 50	8 00	9 50
Polished, each,	3 60	4 50	5 50	6 50	8 00	9 50	11 00

Sizes, inches	13	14	15	16	18	20
Plain, each	$11 00	13 00	15 00	18 00	22 00	27 00
Polished, each,	13 00	15 00	18 00	22 00	27 00	33 00

INDESTRUCTIBLE STEEL TRIP AND LOCOMOTIVE GONG

Nickel plated Shell, Copper plated Base, Polished Brass Attachments

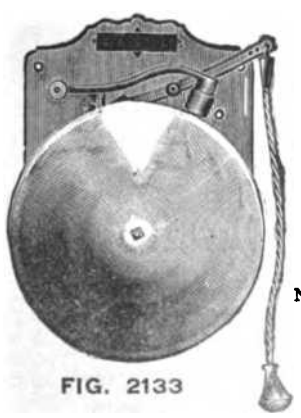


FIG. 2133

PRICES, FIG. 2133

			Per Doz.
No. 350	6 inch	diameter,	$30 00
351	8 "	"	32 00
352	9 "	"	34 00
353	10 "	"	36 00
354	11 "	"	39 00
355	12 "	"	42 00
356	14 "	"	54 00

POLISHED BELL METAL SIGNAL TRIP GONGS, FIG. 2134

No. 230	10 inch	lignumvitae	hammer,	per doz.,	$66 00
230	12 "	"	"	"	123 00
230	14 "	"	"	each,	14 00
230	16 "	"	"	"	18 00
230	18 "	"	"	"	22 00

INSIDE STRIKE TRIP GONG

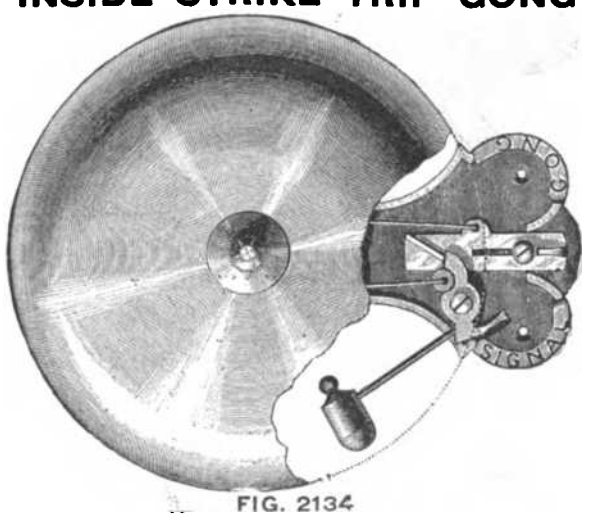


FIG. 2134

POLISHED BELL METAL

No. 230	5 inch	per dozen,	$13 00
230	6 "	"	19 00
230	7 "	"	27 00
230	8 "	"	37 00

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PULL GONGS FOR STREET CARS



FIG. 2135

PRICES, FIG. 2135

	Each.		Each.
6 inch	$3 00	10 inch	$6 50
7 "	3 75	11 "	7 50
8 "	4 50	12 "	8 50
9 "	5 50	Used at front, side or top.	

SPECIAL FOOT POWER, TREADLE, GONG



FIG. 2137

DESCRIPTION, FIG. 2137

This gong has been designed especially for position on dash boards, either vertical or oblique, any angle from 30° up. It can not be used under the wagon; only on dash boards. The dash board has a small slot cut in it to project the treadle through, and just beneath the slide hammer of gong. The blow is made by the foot. The treadle should be placed in position first, and the gong then placed to fit the movement of the treadle, and bolted to dash board by screw head bolts.

PRICES

	Bright Finish.	Polished.
11 inches diameter, each	$8 00	$9 50
12 " " "	9 50	11 50
13 " " "	11 50	14 00

TREADLE FOR FOOT POWER GONGS



FIG. 2139. PRICE, $1.25

This treadle is a specially designed one, and is to be used with the gong Fig. 2137 mainly, though it can also be used on Fig. 2138. Be sure to state in order for which gong it is to be used.

ROOF OR HOOD GONGS FOR STREET CARS

DESCRIPTION, FIG. 2136

These gongs have indestructible steel nickel plated shells and malleable strikers. They are manufactured in two grades, tone No. 500 and tone No. 200. Tone No. 500 produces a more resonant sound than tone No. 200.

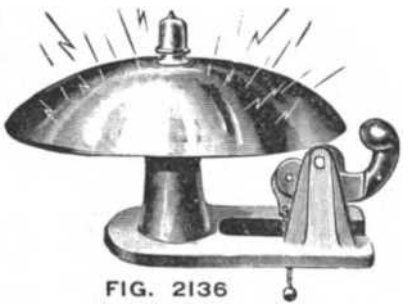


FIG. 2136

PRICES, FIG. 2136

Complete, with attachments.

TONE NO. 200

Sizes, in...	8	9	10	11	12
Each.....	$1 40	$1 45	$1 55	$1 60	$1 65

TONE NO. 500

Sizes, in.	8	9	10	11	12	14
Each....	$2 15	$2 50	$2 90	$3 05	$3 25	$4 30

INSIDE STRIKER TRIP GONG

For straight up dash boards only. For patrol wagons, H. & L. trucks, salvage corps wagons, hose reels, hose wagons, etc.

PRICES, FIG. 2138

Larger sizes made to order.

	Plain.	Polished.
11 inch, each	$9 00	$11 00
12 " "	11 00	14 00
15 " "	18 00	22 00
17 " "	22 00	27 00

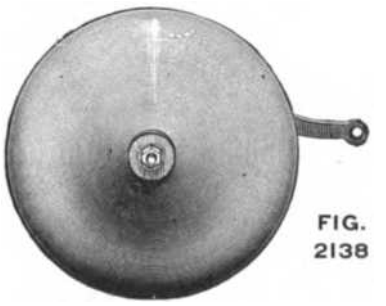


FIG. 2138



FIG. 2140. PRICE, $1.25 EACH

TREADLE FOR TRIP GONGS

To be used when bell is put under the foot board of the wagon or on the front of dash board.

FOOT GONGS FOR STREET CARS

DESCRIPTION, FIGS. 2141 AND 2142

These gongs have indestructible steel nickel plated shells. They are manufactured in two grades, tone No. 500 and tone No. 200. Tone No. 500 produces a more resonant sound than tone No. 200.

PRICES, FIGS. 2141 AND 2142

Complete, with attachments.

TONE NO. 200

Nos.....	257	258	259	260	261
Sizes, inches.....	8	9	10	11	12
Each.....	$1 25	$1 30	$1 40	$1 45	$1 50

TONE NO. 500

Nos	557	558	559	560	561	562
Sizes, inches...	8	9	10	11	12	14
Each.....	$2 00	$2 35	$2 75	$2 90	$3 10	$4 15

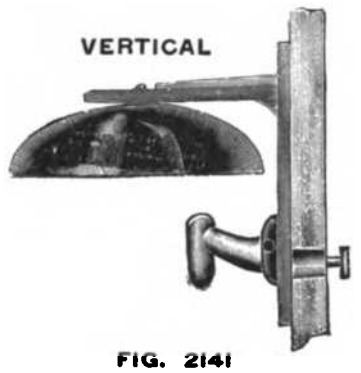


FIG. 2141



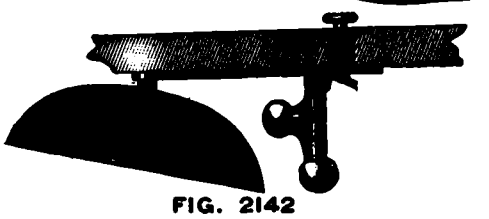


FIG. 2142

BELL CRANK SIDE

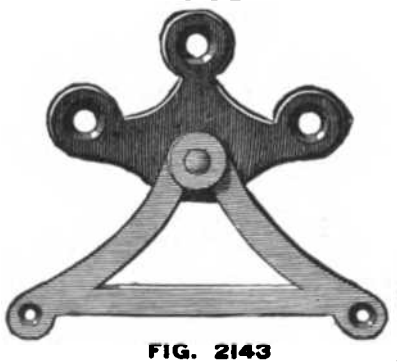


FIG. 2143

BELL CRANK END

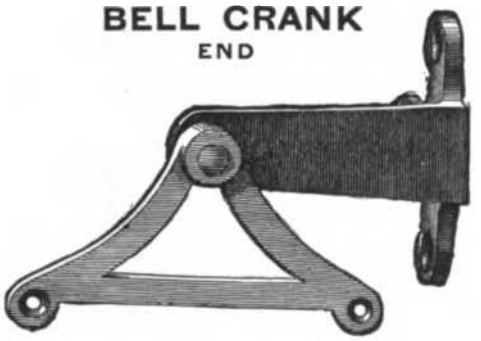


FIG. 2144

PRICES

	Per Dozen.		Per Dozen.
Small	$2 00	Small	$2 00
Large	3 00	Large	3 00
Extra, to order	5 00	Extra, to order	5 00

ENGINE BELL



FIG. 2145

PRICES, FIG. 2145

Diam., Inches.	Plain, with Spring, Each.	Diam., Inches.	Plain, with Spring, Each.
3½	$1 75	6½	$4 50
4	2 00	7	5 75
4½	2 25	8	7 00
5	2 50	9	8 50
5½	3 00	10	10 00
6	3 75		

PRICES, FIG. 2146

Sizes, Inches.	Each.
3	$2 25
3½	2 50
4	2 75
4½	3 50
5	4 50
6	6 50

JINGLE BELL

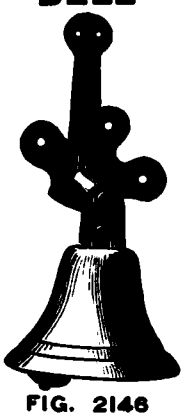


FIG. 2146

GONG PULL

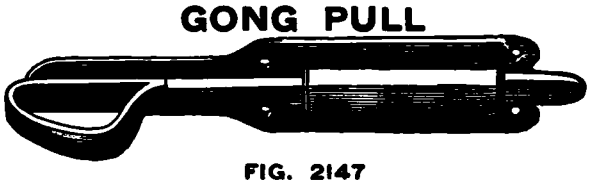


FIG. 2147

PRICES

	Each.		Each.
Small pulls	$0 40	Large pulls	$0 85
Medium "	1 75	Extra large pulls	2 25



FIG. 2148

POLISHED BELL, WITH COIL SPRING

PRICES, FIG. 2148

5 inches diam.,	$2 50;	with springs,	$3 50
6 " "	3 60	" "	5 00
7 " "	5 75	" "	7 50
8 " "	7 00	" "	9 00

For hose carts and hose wagons.

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LARGE BELL METAL BELLS AND MOUNTINGS

PRICES, FIG. 2149

Prices are for mountings only; prices bells on application.

BELLS. Weights.	Tones.	Diameters.	MOUNTINGS. Sizes of Frames, Outside.	Diameters of Wheels.	Prices of Mountings
400	C sharp	27 inches	3 feet 4 inches	3 feet 6 inches	$28 00
450	C "	28 "	4 "	4 " 4 "	30 00
500	C	29 "	4 "	4 " 4 "	32 00
550	C	30 "	4 "	4 " 4 "	35 00
600	B	31 "	4 "	4 " 4 "	35 00
650	B	32 "	4 " 5 "	4 " 4 "	35 00
700	B flat	33 "	4 " 5 "	4 " 9 "	40 00
750	B "	33 "	4 " 5 "	4 " 9 "	40 00
800	A	34 "	4 " 5 "	4 " 9 "	40 00
900	A	35 "	4 " 5 "	4 " 9 "	45 00
1000	A flat	36 "	4 " 9 "	5 " 6 "	45 00
1100	G sharp	37 "	4 " 9 "	5 " 6 "	45 00
1200	G	38 "	4 " 9 "	5 " 6 "	50 00
1300	G	39 "	4 " 11 "	5 " 6 "	50 00
1400	F sharp	40 "	4 " 11 "	6 " 3 "	60 00
1500	F "	41 "	4 " 11 "	6 " 3 "	60 00
1600	F "	42 "	5 " 4 "	6 " 3 "	70 00
1800	F	44 "	5 " 4 "	6 " 3 "	80 00
2000	E	46 "	5 " 8 "	7 "	90 00
2200	E	48 "	5 " 8 "	7 "	100 00
2500	E flat	50 "	6 " 1 "	7 "	100 00
2800	E "	52 "	6 " 1 "	7 " 6 "	110 00
3000	D	54 "	6 " 8 "	7 " 6 "	120 00
3400	C sharp	56 "	6 " 8 "	7 " 6 "	130 00
3600	C "	57 "	7 "	7 " 6 "	140 00
4200	C	59 "	7 "	8 "	140 00
5000	B	62 "	7 " 6 "	8 "	160 00
5500	B flat	64 "	7 " 6 "	8 "	160 00
6200	A	66 "	7 " 6 "	8 " 6 "	180 00

The weight named in the above table indicates the pattern used in making that size bell, but the bell so made invariably weighs from two to three per cent. more than the pattern.

Larger size bells made to order.



FIG. 2149

We can furnish these bells, ranging in weight from 400 pounds to 10,000 pounds, as noted in the table to the left; hung with improved rotary yoke, which permits the bell to be turned in the yoke at pleasure, so as to prevent the liability to break; a detached arm which secures ease in ringing; steel springs which hold the clapper from the bell after it has been struck, and prolong and improve the sound; wooden frame and iron stands or uprights for supporting the bell, wheel, tolling hammer fitted in a clevis. For bells of less than 400 pounds see "Academy and Factory Bells," Fig. 2150.

ACADEMY, FACTORY AND DEPOT BELLS

Bell metal.



FIG. 2150

These bells, ranging in weight from 100 to 350 pounds, are suitable for schools, colleges, factories, small churches, chapels, etc., and are mounted with improved rotary yoke, which permits the bell to be rotated (in a moment) to allow the clapper to strike in a new place. Frame, timbers, iron stands, wheel and clapper springs attached, being as full mountings in every respect as large bells, except the tolling hammer, which is never put on bells smaller than 400 pounds pattern.

STEAMBOAT AND SHIP BELLS

Bell metal.



FIG. 2151

These bells are made in weight from 100 to 700 pounds and mounted with rotary yoke arm, lever, and spar bracket; or with pair of uprights to connect iron base, made to bolt on deck. The latter is designed for river steamboats and can be rung from either lower deck or pilot house.

Prices are for mountings only; prices bells on application.

BELLS. Weights.	Tones.	Diameters.	MOUNTINGS. Sizes of Frames, Outside.	Diameters of Wheels.	Prices of Mountings.
100	A	17 in.	2 ft. 1 in.	2 ft.	$13 00
125	G	18 "	2 " 7 "	2 "	13 00
150	F sharp	20 "	2 " 10 "	2 "	15 00
175	F	21 "	3 "	2 "	18 00
200	E	22 "	3 "	2 "	20 00
225	D sharp	23 "	3 "	2 "	20 00
250	D "	24 "	3 " 2 "	2 " 10 ins.	23 00
300	D	25 "	3 " 4 "	2 " 10 "	23 00
350	C sharp	26 "	3 " 4 "	3 " 6 "	25 00

These prices are for mountings only; prices of bells on application.

Weight of Bells.	Diameters of Bells.	Prices of Mountings.
100	17 in.	$6 00
150	20 "	7 00
175	21 "	8 00
200	22 "	12 00
250	24 "	15 00
300	25 "	17 50
350	26 "	20 00
400	27 "	22 50
450	28 "	25 00
500	29 "	27 50
600	31 "	30 00
700	33 "	32 50

For other ship bells, see Page 284.

LARGE STEEL AMALGAM BELLS

With hangings and frames complete.



FIG. 2152

These steel amalgam bells are desirable for churches, factories, seminaries, engine houses, etc. They are all richly bronzed. Tolling attachments put on when ordered.

Prices include bells with hangings and frames complete.

No.	Diameter, Inches.	Weight Bells, Pounds.	Weight Bells and Standard, Pounds.	Size Frames, Inches.	Without Tolling Attachment. Prices.	With Tolling Attachment. Prices.
6	25	139	230	40 x 40	$25 00	$29 00
6½	27	210	340	40 x 40	36 00	40 00
7	30	260	490	40 x 48	50 00	56 00
8	34	418	730	48 x 54	75 00	81 00

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PLANTATION AND FARM BELLS

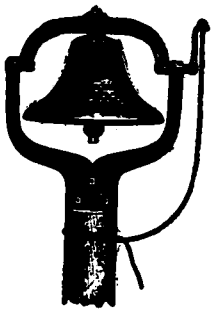


FIG. 2153

PRICES, FIG. 2153

STEEL AMALGAM BELL COMPLETE, WITH STANDARD

Numbers	1-0	2-0	3-0	4-0	5-0	6-0	7-0
Diameters, inches	13	15	15½	16½	17	19½	21½
Weight, pounds	44	52	63	79	89	125	181
Each	$4 75	$6 50	$7 50	$9 75	$11 00	$15 00	$20 00

BELL METAL PLANTATION AND FARM BELLS

Weighing from 15 to 100 pounds, mounted with yoke and lever tail and pair of brackets.

PRICES

Prices are for mountings only. Prices of bells on application.

Weight of bell, lbs.	15	20	25	30	40	50	60	70	80	100
Dia. of bell, inches	8½	10½	11	11½	13	13½	14	15	16	17
Prices of mountings	$2 50	2 50	2 50	3 00	3 25	3 50	4 25	5 00	6 00	7 00

SWINGING BELLS

For use on small locomotives, dummy engines, etc.

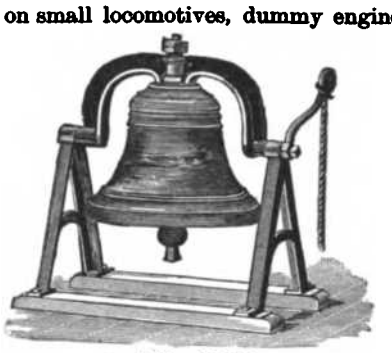


FIG. 2154

PRICES, FIG. 2154. COMPLETE

Diam. of bell, inches	8½	9½	10½	11	11½
Weight, pounds	13	16	20	25	30
Each	$6 00	$7 00	$8 50	$10 00	$12 00

STEAMSHIP BELLS



FIG. 2155

These bells are for use on steamships, and all manner of vessels.

PRICES OF BELL AND HANGINGS COMPLETE

Diameter of Bell, Inches.	Weight of Bell only, Pounds.	Good Bright Finish, Each.	Highly Polished, Each.
11½	30	$14 00	$18 00
13	40	18 00	22 50
14	50	22 50	28 00
15	60	28 00	35 00
15½	70	35 00	42 00
16½	80	42 00	50 00
17½	100	50 00	60 00

LOCOMOTIVE BELLS

Of weight from 60 pounds to 125 pounds, either plain or polished, constructed with shank of any size or shape. Prices on application.

SMALL SIGNAL BELLS

These bells are for use on tugs, yachts, small sailing vessels, and in engine rooms, etc. Furnished without hangings as in illustration.



FIG. 2156

PRICES, EACH

Diameter of Bell, Inches.	Weight, Pounds.	Bright Finish.	Polished.
8½	10	$5 00	$7 00
9½	15	7 00	9 00
10½	20	9 00	11 00
11	25	11 00	14 00
11½	30	14 00	18 00
13	40	18 00	22 00

FOG SIGNAL OR ALARM BELLS

WITH BRACKET



FIG. 2157

DESCRIPTION, FIG. 2157

These bells are for use on sailing vessels of all kinds, and on steam yachts, tugs, barges, ferries, etc. Bells hung in this bracket can be bolted to mast, side of cabin, or any other convenient place.

PRICES OF BELL AND BRACKET COMPLETE, EACH

Diameter of Bell, Inches.	Weight of Bell only, Pounds.	Good Bright Finish, Iron Nut and Bracket.	Highly Polished, Brass Nut and Bracket.
11½	30	$12 00	$18 00
13	40	16 00	22 00
14	50	20 00	27 00
15	60	24 00	32 00
15½	70	28 00	38 00
16½	80	32 00	42 00
17½	100	40 00	52 00

WITHOUT BRACKET OR STAND



FIG. 2158

PRICES, FIG. 2158

BELLS AS ILLUSTRATED, EACH

Diameter of Bell, Inches.	Weight, Pounds.	Bright Finish.	Polished.
11½	30	$11 00	$14 00
13	40	14 00	18 00
14	50	18 00	22 00
15	60	22 00	27 00
15½	70	27 00	32 00
16½	80	32 00	38 00
17½	100	38 00	45 00
18½	130	45 00	52 00
19½	150	52 00	60 00

Weight of bell always includes clapper and bolt and nut.

FIRE ALARM BELLS

WITH STRIKING APPARATUS AND TWO PULLEYS



FIG. 2159

This shows a fire alarm bell bolted to cross beam in belfry or tower, with apparatus ready for use. The alarm can be struck upon both sides of the bell, instead of on one side, as in other alarms, and with more ease and rapidity. The force of the blow can also be regulated to a nicety, thereby reducing any chance of breakage to the minimum. The different sizes are fitted with striking apparatus corresponding to the size and weight of the bell. All these bells are richly gilded.

PRICES, STEEL AMALGAM BELL

Number.	Diameter of Bell, Inches.	Weight of Bell, Pounds.	Each.
6	25	140	$20 00
6½	27	210	30 00
7	30	260	40 00
8	34	418	60 00

The above prices include two pulleys and yoke as shown in cut. We can furnish above bells of bell metal if desired. Prices on application.

BEST BELL METAL SHIPS' BELLS

SUPPORT BELOW



FIG. 2160

PRICES

Bell No.	Cat. No.	Diam. at Largest Part, Inches.	Each.
1	778	5¾	$4 75
2	779	6¾	6 50
3	780	8½	9 00
4	781	10¼	14 00
5	782	11¼	20 00

SUPPORT ON BOTH SIDES



FIG. 2161

PRICES

Bell No.	Cat. No.	Diam. at Largest Part, Inches.	Each.
1	783	5¾	$5 80
2	784	6¾	7 80
3	785	8½	10 80
4	786	10¼	16 80
5	787	11¼	22 40

SUPPORT ABOVE



FIG. 2162

PRICES

Bell No.	Cat. No.	Diam. at Largest Part, Inches.	Each.
1	788	5¾	$4 75
2	789	6¾	6 50
3	790	8½	9 00
4	791	10¼	14 00
5	792	11¼	20 00

BELL CASTINGS IN ROUGH BELL METAL, WITHOUT HANGERS

Number of bell	1	2	3	4	5
Catalogue number	793	794	795	796	797
Diameters at largest part, inches	5¾	6¾	8½	10¼	11¼
Each	$2 40	$3 75	$5 50	$9 25	$13 00

For other ships' bells, see page 283.

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THE ALLIS STANDARD 1890 TYPE ENGINE

This 1890 engine is intended for all purposes, but is especially adapted to heavy and continuous work and where the conditions call for an engine capable of working under high steam pressure.

Prices, sizes, and particulars as to speed, power, etc., furnished on application.

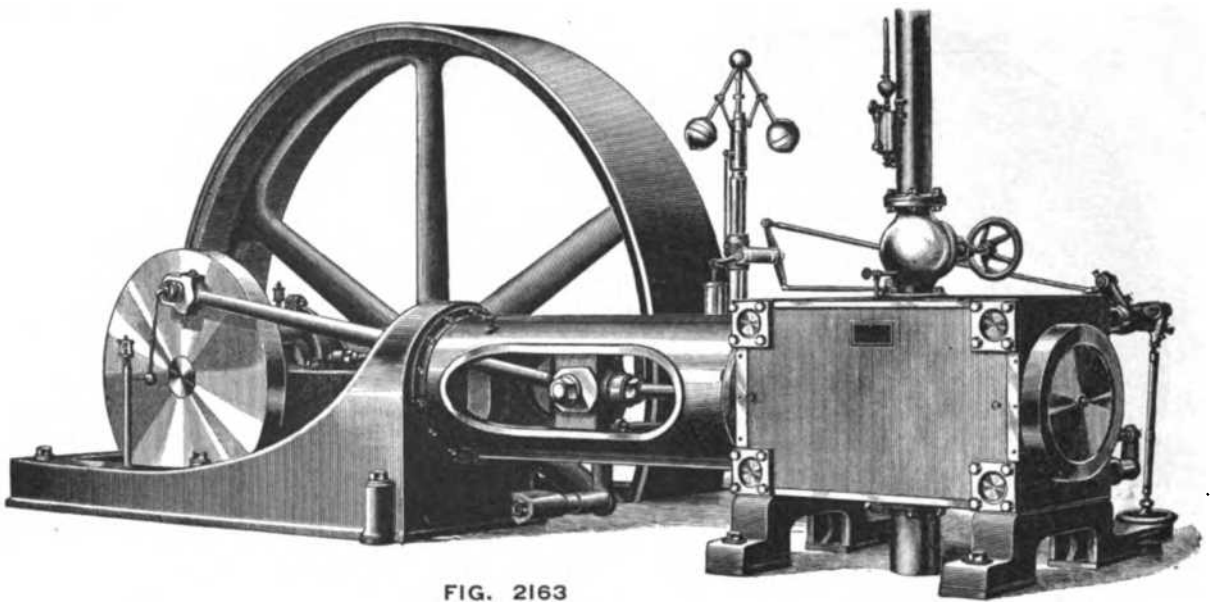


FIG. 2163

SINGLE CYLINDER AUTOMATIC ENGINES

GOVERNOR SIDE OF ENGINE

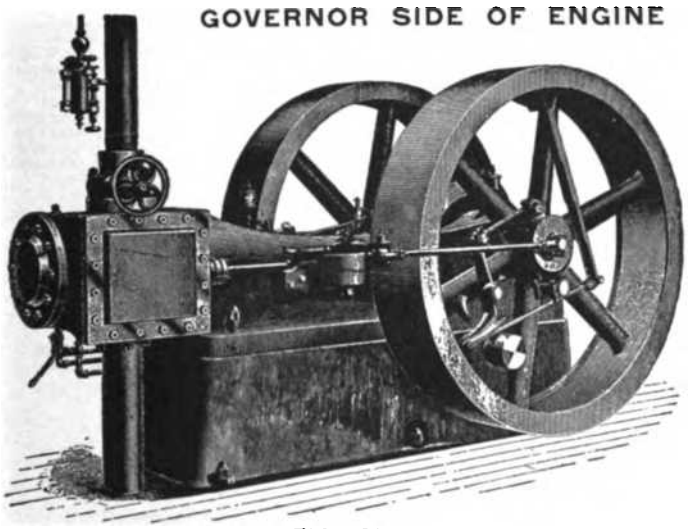


FIG. 2164

ENGINE DIRECT CONNECTED WITH WESTINGHOUSE GENERATOR

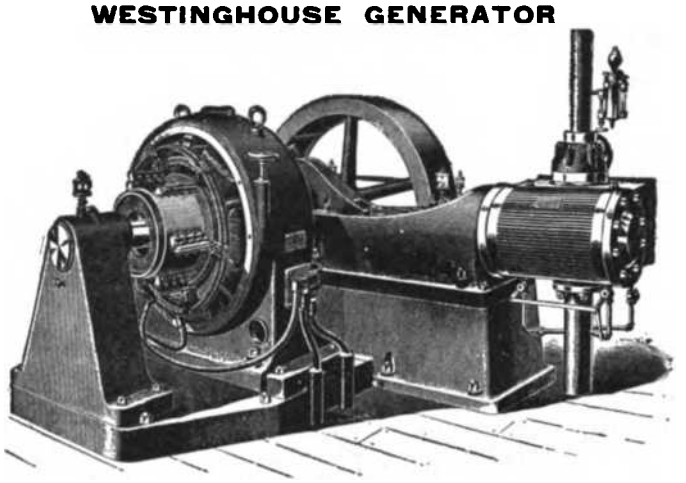


FIG. 2165

DESCRIPTION, FIGS. 2164 AND 2165

The requirements of the electrical trade have within the past few years developed a class of engines characterized by high rotative speed, relatively short stroke, self-contained construction, and the use of a fly wheel governor actuating a single balance valve. Engines of this type can be made to regulate much closer than is possible with those of slower speed; they can be belted to dynamos without intervening countershafting, or may be coupled direct to the armature shafts. They occupy but little space, are moderate in first cost, do not require large and expensive foundations, and provided due attention is given to the details of design and construction, will run as smoothly for as long a time and with a few repairs as the best of the long stroke automatics. In many classes of work they can also be made to give as good or better results in fuel economy than the slow speed four valve engines, partly because they dispense with intermediate shafting to get up speed, and partly because they have a larger economical range.

VIM ENGINES, THROTTLING TYPE

When ordered complete, fixtures include two pulleys, governor, governor belt, throttle valve, oil cups, sight feed lubricator, and cylinder drip cocks operated by a single lever. Sub-base, foundation bolts and washers are subject to order as extras at an additional charge. All foundation bolts for these engines, unless otherwise ordered, are 3 feet to 5 feet in length (depending on size of engine) suitable for brick, stone or cement foundation.

SIZES AND DIMENSIONS. FIG. 2166

Nos. of Sizes.	Cylinder. Diam., Inches.	Cylinder. Stroke, Inches.	Horse-power as Usually Rated.	Revolutions per Minute.	Pulleys. Diam., Inches.	Pulleys. Face, Inches.	Diam. Steam Pipe.	Diam. Exhaust Pipe.	Diam. Crank Pin.	Length Crank Pin.
3	7	8	10- 15	240-300	20-34	9½	2	2½	2⅞	2¼
5	8	8	15- 20	240-300	20-34	9½	2	2½	2⅞	2¼
6	8	10	20- 25	230-285	28-40	10½	2	2½	3⅜	3
7	9	10	25- 30	225-270	28-40	10½	2	2½	3⅜	3
8	10	12	30- 35	185-215	36-54	11½	2½	3	4⅜₁₆	3½
9	11	12	35- 40	175-200	36-54	12½	2½	3	4⅜₁₆	3½
10	12	15	40- 55	135-185	40-66	13½	3	3½	4⅞	3⅞
11	13	15	50- 65	140-185	40-66	15½	3	3½	4⅞	3⅞
12	14	18	70-100	125-180	72-48	16½	4	5	5⅝	4¼
13	16	18	85-125	120-175	72-48	20½-16½	4	5	5⅝	4¼

Diam. Cross-head Pin.	Length Cross-head Pin.	Diam. Shaft Bearings.	Length Shaft Bearings.	Length Over All, Including Pulleys. Feet.	Length Over All, Including Pulleys. Inches.	Width Over All, Including Pulleys. Feet.	Width Over All, Including Pulleys. Inches.	Weight with Sub-base.	Weight without Sub-base.
1¾	2¼	2¾	6	5	10½	3	8½	1750	1475
1¾	2¼	2¾	6	5	10½	3	8½	1775	1500
2	3	3⅛	7½	6	11	3	10	2900	2500
2	3	3⅛	7½	6	11	3	10	2950	2550
2⅛₁₆	3½	3⅞	8½	8	7	4	7	4400	3750
2⅛₁₆	3½	3⅞	8½	8	7	4	7	4500	3850
2⅛	3⅞	4⅝	10	10	4	5	6	6800	5750
2⅛	3⅞	4⅝	10	10	4	5	9	6900	5850
2⅝	4¼	5½	11½	11	11	6	6	9550	8050
2⅝	4¼	5½	11½	11	11	6	10	9700	8200

These engines can be set to run either "over" or "under" as desired. Unless otherwise ordered, they will always be arranged to run "over" and at the lowest number of revolutions given above. Prices on application.

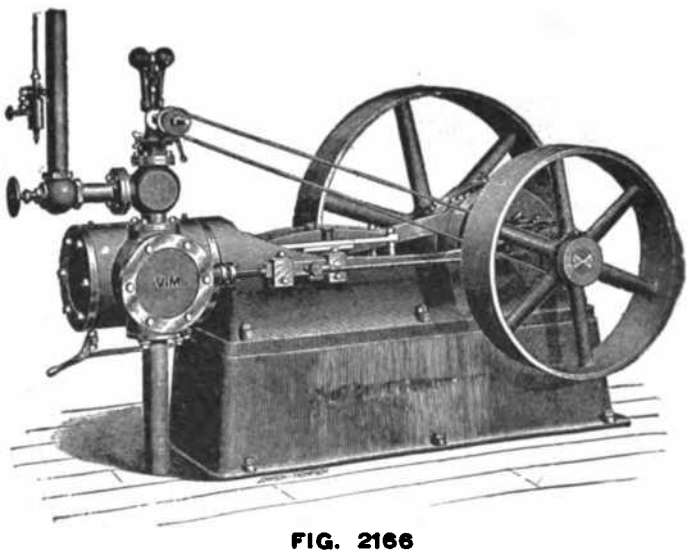


FIG. 2166

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REGAL ENGINES

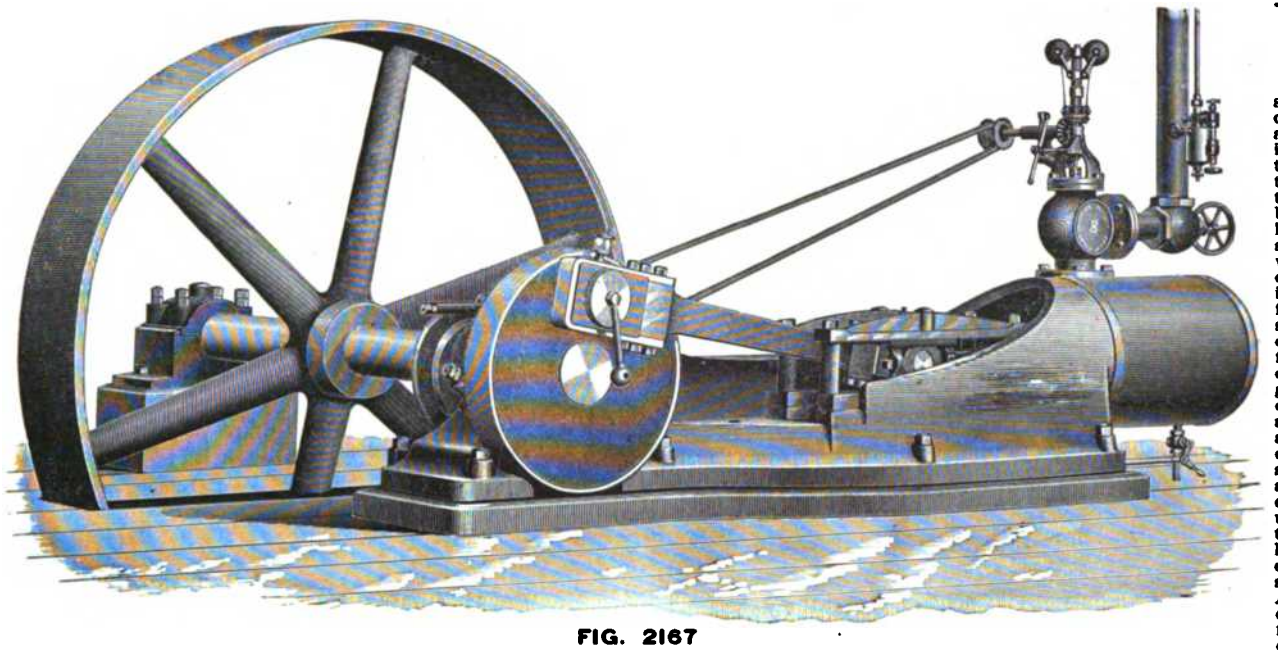


FIG. 2167

THROTTLING TYPE

DESCRIPTION, FIG. 2167

This engine has balanced slide valve, consisting of a flat casting working between seat and pressure plate (this plate is maintained at proper distance by strips of iron slightly thicker than the valve, and the wear of valve is corrected by scraping these strips), locomotive guides, forged-steel connecting rod fitted with cast iron, babbitted, crank pin boxes. The bearings are large, wearing surfaces very liberal, and construction first class throughout. When ordered complete, fixtures include one pulley, outboard bearing, governor, governor belt, throttle valve, oil cups, sight feed lubricator, and cylinder drip cocks operated by single lever. Foundation bolts and washers are subject to order as extras at an additional price. All foundation bolts for these engines, unless otherwise ordered, are three feet to five feet in length (depending on size of engine), suitable for brick, stone or cement foundation. Anything ordered, not included in the above list of fixtures will be charged as an extra.

SIZES AND DIMENSIONS, FIG. 2167

Nos. of Sizes.	Cylinder. Diam., Inches.	Cylinder. Stroke, Inches.	Horse power as Usually Rated.	Revolutions per Minute.	Pulley. Diam., Inches.	Pulley. Face, Inches.	Diam. Steam Pipe.	Diam. Exhaust Pipe.	Diam. Crank-pin.	Length Crank-pin.	Diam. Crosshead Pin.	Length Crosshead Pin.	Diam., Shaft.	Length Main Bearing.	Length Over All, Including Pulley. Feet.	Length Over All, Including Pulley. Inches.	Width Over All, Including Pulley. Feet.	Width Over All, Including Pulley. Inches.	Weight Complete.
3	12	15	40-55	135-185	72	12½	3	3½	4⅞	3⅞	2⅞	3⅞	5½	11	10	7	6	8	4800
4	13	15	50-65	140-185	72	14½	3	3½	4⅞	3⅞	2⅞	3⅞	5½	11	10	7	6	8	5000
5	14	18	70-100	125-180	84	17½	4	5	5⅝	4¼	3⅝	4¼	6½	13	12	5	8	7	8100
6	16	18	85-125	120-175	84	22½	4	5	5⅝	4¼	3⅝	4¼	6½	13	12	5	8	7	8500

PRICES ON APPLICATION

When so ordered, we can furnish an adjustable sole plate for outboard bearing at an extra price. These engines can be set to run either "over" or "under" as desired. Unless otherwise ordered, they will always be arranged to run "over," and at the lowest number of revolutions given above. We can furnish right hand engines, as shown by engraving, only.

VIM PORTABLE AND AGRICULTURAL THROTTLING TYPE ENGINE

VIM PORTABLE

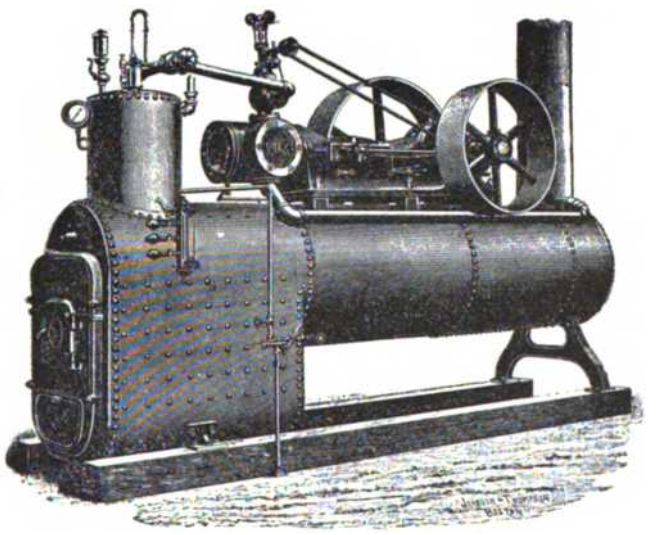


FIG. 2168

Nos. 10 and up have an additional leg under shell of boiler. When ordered complete, all sizes are furnished with two pulleys, governor, governor belt, throttle valve, oil cups, including sight feed lubricator, smokestack with guys, grates, injector, steam gauge, water-gauge fitted with stand pipe, three gauge cocks, whistle pop safety valve, feed valve, check valve and blow off cock, with piping to attach these fittings in the usual manner. These boilers are all first tested to 150 pounds hydrostatic pressure per square inch, and afterward under steam pressure of 100 pounds per square inch, and the engine run for several hours.

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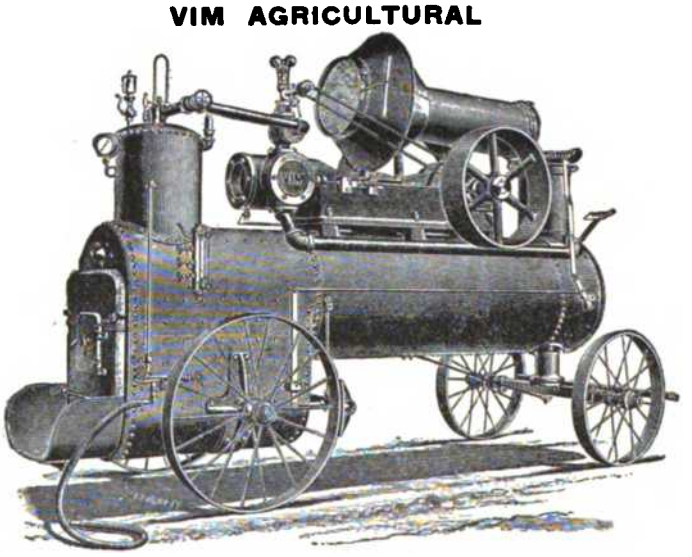


FIG. 2169

Engine and boiler are the same as furnished with portable outfit, except mounted on iron wheels. These outfits, if ordered complete, are furnished with two pulleys, governor, governor belt, throttle valve, oil cups, including sight feed lubricator, short hinged smokestack with spark arrester, grates, injector, steam gauge, water gauge fitted with stand pipe, three gauge cocks, whistle, pop safety valve, feed valve, check valve, blow off cock, with piping to attach these fittings in the usual manner, stack-blower, suction hose, pole and brake. Neckyoke, evener and whiffletrees are subject to order as extras at an additional price. Previous to shipment these outfits are all thoroughly tested, the engines being run for several hours. All spark arresters, in addition to the interior deflectors, have a screen top, hinged and arranged with lever for opening and closing.

Anything ordered, not included in the above list of fixtures, will be charged as an extra.

SIZES AND DIMENSIONS FIGS. 2168 AND 2169.

Nos. of Sizes.	Horse power as Usually Rated.	Engine. Cylinder. Revolutions.	Cylinder. Diam., Inches.	Cylinder. Stroke, Inches.	Pulleys. Diam., Inches.	Pulleys. Width Face, Inches.	Boiler. Shell, Diam., Inches.	Furnace. Length, Inches.	Furnace. Width, Inches.	Furnace. Height, Inches.	Tubes. Nos.	Tubes. Diam., Inches.	Tubes. Length, Inches.	Smokestack. Diam., Inches.	Smokestack. Length, Feet, for Boiler, on Skids.	Weight Complete for Portable.	Weight Complete for Agricultural
3	10	240	7	8	20-34	9½	29	36	24	34	22	3	76	12	19	5175	6175
5	15	240	8	8	20-34	9½	32	38	26	37	27	3	80	14	19	5900	7150
6	20	230	8	10	28-40	10½	33	52	27	37	30	3	88	16	24	7800	8950
7	25	225	9	10	28-40	10½	35	52	29	38	34	3	94	16	24	8800	9900
8	30	185	10	12	36-54	11½	37	52	31	41	39	3	100	17½	24	10550	11650
10	40	135	12	15	40-66	13½	39	52	33	49	45	3	124	18	24	13050	14800
11	50	140	13	15	40-66	15½	44	61	38	50	48	3	132	22	28	17500	17200

PRICES ON APPLICATION

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AJAX CENTER CRANK ENGINE

ON SILLS

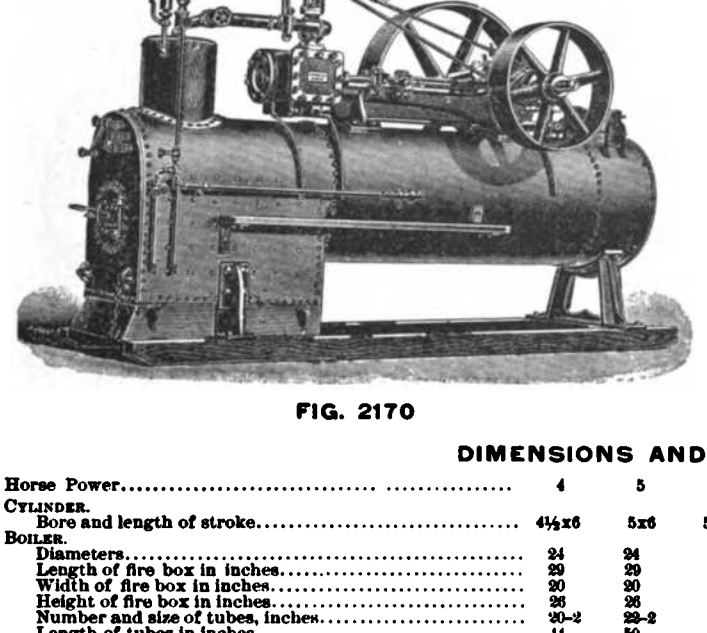


FIG. 2170

This engine is especially adapted for driving saw mills, cotton gins, etc. Engines are shipped with the large wheel on the left hand side, as shown in cut, suited for right hand saw mills, unless ordered otherwise.

DESCRIPTION, FIGS. 2170 AND 2171

The dimensions below are for center crank engines mounted on the boiler, with boiler on sills or wagon, with all fixtures and fittings complete, ready for firing up. Ash pans are put under all mounted engines on locomotive boilers, and under engines on locomotive boilers on sills up to and including twelve horse power. Smoke stacks are furnished on all mounted engines on locomotive boilers, and spark arresters up to and including eighteen horse power; over eighteen horse power they are extra. Smoke stacks are furnished with all engines on locomotive boilers on sills, and spark arresters up to and including twelve horse power; over twelve horse power they are extra. Engines are furnished with injector. If two are wanted an extra charge will be made. To avoid possible failure of water supply it is often a good plan to use two injectors. It is better to use iron or lead pipe for the suction where practicable.

We can furnish it with straw burning fire box if desired.

ON WHEELS

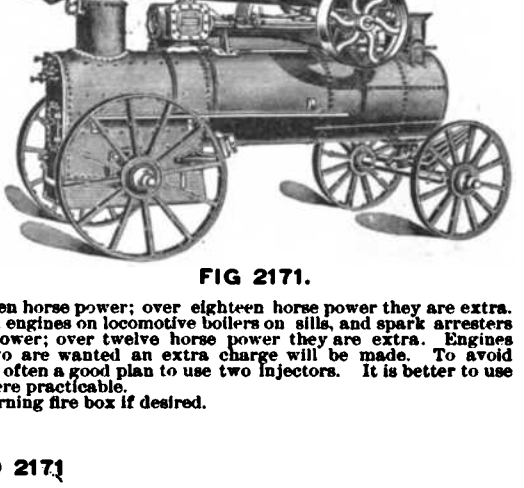


FIG 2171.

DIMENSIONS AND SIZES, FIGS. 2170 AND 2171

Horse Power	4	5	6	8	10	12	15	18	20	25	30	35
CYLINDER.												
Bore and length of stroke	4½x6	5x6	5½x8	6¼x8	7x10	7¾x10	8½x11	9x11	9¼x12	10x12	10x15	11x15
BOILER.												
Diameters	24	24	26	26	26	30	33	33	36	36	39	39
Length of fire box in inches	29	29	29	31	37	41	41	41	49	49	52	52
Width of fire box in inches	20	20	22	22	22	25	28	28	31	31	34	34
Height of fire box in inches	26	26	29	29	29	30	34	34	36	36	40	40
Number and size of tubes, inches	20–2	22–2	24–2	28–2	32–2	36–2	28–3	32–3	32–3	35–3	40–3	40–3
Length of tubes in inches	44	50	52	55	63	68	76	76	90	99	102	120
STACK.												
Diameter of stack in inches	8	8	10	10	10	12	15	15	18	18	20	20
Length of stack in feet	8½	8½	8½	8½	8½	10	12	14	14	16	16	16
FLY WHEEL.												
Diameters in inches	30	33	36	36	40	44	48	48	60	60	72	72
Width of face in inches	5	5	6	6	7	8	10	12	12	13	14	15
SMALL PULLEY.												
Diameters in inches	16	16	16	16	18	18	30	30	36	48	48	48
Width of face in inches	6	6	6	8	8	8	8	8	10	10	12	12
Revolutions per minute	225	215	200	200	190	180	175	170	150	150	130	130
Estimated weight on sills	2,500	2,800	3,300	3,600	3,800	5,200	6,500	7,500	8,200	9,500	10,300	11,400
Estimated weight on wagon	3,500	3,800	4,400	4,700	4,900	6,600	8,000	9,000	9,900	11,100	12,500	13,000

GREENFIELD IMPROVED VERTICAL ENGINE

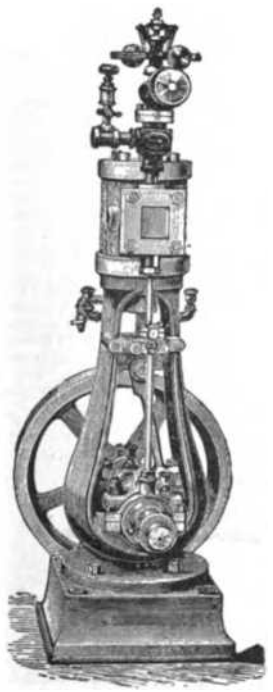


FIG. 2172

DESCRIPTION, FIG. 2172

In these engines the parts are carefully fitted. The steam joints are scraped and ground to a perfect bearing, thus obviating the use of gum or paper joints. The shaft, piston rod, valve rod and crosshead pin are made of forged steel. The crosshead is fitted with composition gibs that are adjustable (to take up the wear). The piston is fitted with spring rings.

The engines are finely finished; the parts are made interchangeable and easy of access for adjustment or repairs. The engine is furnished with boiler on same bases when called for. The Wright, Waters, Gardner or Judson governor is furnished with the engine.

These engines are adapted for any manufacturing purpose, and are especially adapted to electric lighting or quiet running and good governing, or where floor space and room is an object.

STEAM LAUNCH ENGINE

DESCRIPTION, FIG. 2173

This engraving represents a marine engine adapted to furnishing power to pleasure yachts, tug boats, canal and other small steamers. The construction of the engine is such that the action of the piston rod is exactly central, and all overhanging stains and unevenness of wear are avoided. The bearings are large, and are cast on the frame, as are also guides. These engines are furnished with the link motion for reversing, and are provided with notches for working expansively. A plain slide valve is used, and all the steam joints are ground, thus dispensing with the annoyance of rubber or gum packing. The shaft, piston rod, valve rod and crosshead pin are of steel, and the connecting rod of the best refined iron. The cylinder has a black walnut jacket to prevent condensation. All the wearing parts are provided with proper adjustments to take up the wear. A critical steam test of every engine is made before it leaves the shop. We furnish an eccentric pump at a small additional cost. Every engine is furnished with a pry over wheel, cylinder lubricator, drip cocks, oil cups, wrenches, etc., ready to place in boat.

Prices of shafting, propeller and other machinery furnished on application.

Horse Power.	Size of Cylinder.	Prices.	Horse Power.	Size of Cylinder.	Prices.
3 to 5	3¼ x 5	$150 00	12 to 16	7½ x 8	$330 00
4 " 6	3¾ x 5	160 00	15 " 20	8 x 8	365 00
5 " 8	4 x 6	190 00	18 " 25	9 x 9	450 00
6 " 9	5 x 6	215 00	25 " 30	10 x12	600 00
7 " 10	5¾ x 6	250 00	35 " 40	11 x12	670 00
10 " 14	7 x 7	290 00	45 " 50	12 x12	780 00

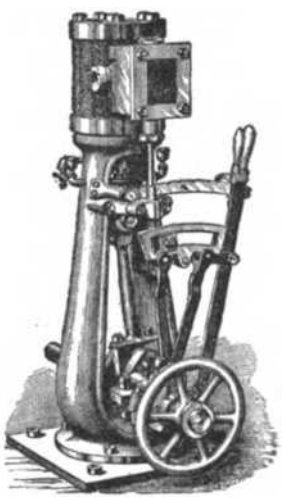


FIG. 2173

DIMENSIONS AND PRICES, FIG. 2172

Numbers	1	2	3	4	5	6	7	8	9	10	11	12	13
Size of cylinder	3¼x5	3¾x5	4x6	5x6	6x6	7x7	7½x8	8x8	9x9	10x12	11x12	12x12	13x13
Horse Power	3	4	5	6	8	10	12	15	20	25	35	50	65
Diameter of wheel	20	20	24	24	24	30	36	36	36	48	48	60	60
Face of wheel	3½	3¾	4½	5	5½	7	7½	8	9½	11	12	12	14
Weight of wheel, pounds	100	120	175	200	225	375	475	525	625	900	1,100	1,500	1,800
Size of base in inches	16x16	16x16	21x21	21x21	21x21	24x24	30x30	30x30	34x34	40x40	42x42	42x42	44x44
Floor space in inches	20x26	20x26	24x29½	24x29½	24x29½	30x51	36x58	36x58	36x62	48x79	48x83	60x85	60x87
Size of exhaust	1	1	1	1¼	1½	2	2	2	2½	3	3	3½	4
Size of steam	¾	¾	¾	1	1¼	1¼	1½	1½	2	2½	2½	3	3
Revolutions	300	300	275	275	275	250	225	225	200	175	175	175	175
Weight of engine	425	460	585	655	780	1,250	1,650	1,765	2,200	4,100	4,800	5,500	6,000
Each	$150 00	$160 00	$190 00	$215 00	$250 00	$290 00	$330 00	$365 00	$450 00	$600 00	$670 00	$780 00	$900 00

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VERTICAL CENTER CRANK ENGINE WITH DETACHED VERTICAL BOILER

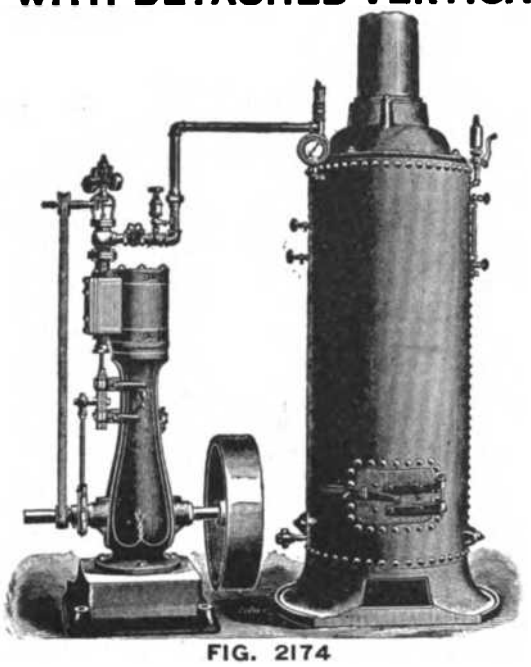


FIG. 2174

DESCRIPTION, FIG. 2175

The engines are furnished with an injector. The boilers are made of 60,000 pounds tensile strength steel, with steel fire box, and are tested at 150 pounds pressure. The engines are made of the best iron and steel, with adjustable brass boxes for crank and cross head wrists, and every part can readily be removed for repairs in case of accident. They are furnished with first class steam gauge, governor, safety valve and other necessary attachments, and are complete, ready to run. Smoke stack, spark arrester and exhaust pipe running into stack are included. The engines are shipped with one pulley only. If small pulley is wanted price will be extra.

DIMENSIONS, FIG. 2175

ENGINE				BOILER			
Horse Power.	Size of Cylinder.	Size of Fly Wheel.	Revolutions per Minute.	Height of Boiler.	Diam.	No. and Size of Tubes.	Weight, Complete, Lbs.
4	4 x 5	24	175 to 225	4 ft.	24	30—2 in.	2100
5	4½ x 7	30	175 " 220	5 "	26	30—2 "	2500
6	5 x 8	33	160 " 200	5 ft. 6 in.	28	36—2 "	3000
8	6 x 8	36	150 " 180	6 ft.	28	44—2 "	3100
10	6½ x 9	42	130 " 160	6 "	32	56—2 "	3800
12	7 x 10	46	120 " 150	6 "	34	66—2 "	4400

PRICES ON APPLICATION

ENGINE ON VERTICAL TUBULAR BOILER

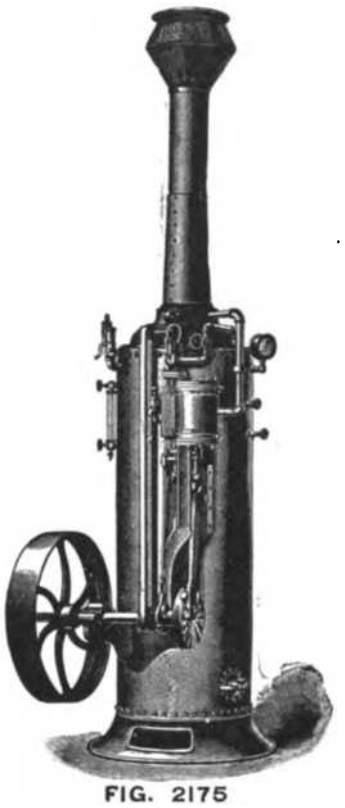


FIG. 2175

DIMENSIONS, FIG. 2174

Complete with stack, injector and all fittings and fixtures.

Horse power	3	4	5	6	8	10
Diameter of cylinder and length of stroke	3½ x 5½	4 x 5½	5 x 5½	5½ x 7	6½ x 7	7 x 7
Diameter of boiler in inches	24	24	26	28	28	32
Height of boiler in feet	4	4	5	5½	6	6
Estimated weight	2050	2075	2475	2800	3125	3700

PRICES ON APPLICATION

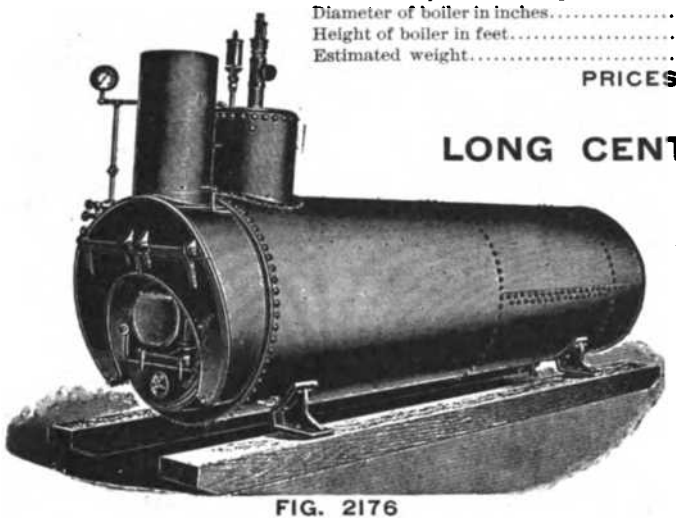


FIG. 2176

LONG CENTRAL FIRE BOX OR CORNISH BOILER

PORTABLE

This boiler is especially adapted to saw mills and other situations where the fuel is cut in long lengths. It steams remarkably well. The fire box extends through the lower center of boiler and is, of course, entirely surrounded by water. No foundation required.

Horse power	12	15	20	25	30	35	40	50
Diameter of boiler in inches	36	36	42	42	48	48	54	54
" flue "	21	21	24	24	28	28	32	32
Length of flue and tubes in inches	84	99	102	126	120	144	120	144
Number of tubes	20	20	27	27	35	35	48	48
Diameter of tubes in inches	3	3	3	3	3	3	3	3
" smoke stack in inches	12	12	14	14	20	20	22	24
Length of smoke stack in feet	20	25	30	35	40	40	40	40
Estimated weight	3000	3400	4300	5000	7000	7900	8800	10700

PRICES ON APPLICATION

STANDARD RETURN TUBULAR PORTABLE BOILER

This boiler has the advantages of the internally fired type without the use of the brick lined furnace. A water space entirely surrounds the furnace on the sides and bottom, giving the greatest possible effective heating surface; the furnace is large, with corresponding ample grate surface, and the proportions throughout are designed with special reference to securing efficiency and economy. The crown sheet of furnace is convex, making a very strong construction. Sizes No. 11 and up have manhole in back head over tubes. These boilers are all thoroughly tested previous to shipment, being subject to a hydrostatic pressure of 150 lbs. and a steam pressure of 90 to 100 lbs. to the square inch. When ordered complete, fixtures include sheet iron smoke box with hinged door and smoke stack base, smoke stack with wire rope guys (four times the length of the stack), and band, front, grates (see note below), grate bearer, back head, corrugated flame plate, steam gauge, water gauge fitted with stand pipe, three gauge cocks, whistle, pop safety valve, check valve, feed valve and blow off cock, with piping to attach these fittings in the usual manner. Boiler on skids without fixtures includes sheet iron smoke box with hinged door and smoke stack base, front, back head, corrugated flame plate and grate bearer only. All sizes have a fusible plug in back head. Anything ordered, not included in the above list of fixtures will be charged as an extra. If customers prefer, we can build these boilers with water front and water bottom, or with water front and open bottom fire box, at an additional price.

Number of sizes	3	4	5	6	7	8	9	10	11	12	13	14
Horse power as usually rated	10	15	20	25	30	35	40	50	60	70	80	100
Diameter of boiler, inches	30	30	34	34	40	40	46	46	54	60	60	66
Length of smoke box, "	12	12	14	14	16	16	18	18	20	20	20	20
" furnace inside, inches	36	36	42	52	52	52	52	56	61	64	72	76
Width of " " "	25	25	29	29	35	35	41	41	49	55	55	61
Height " " "	34	34	38	38	42	42	46	46	50	54	54	62
Thickness of shell, inches	¼	¼	¼	¼	No. 3	No. 3	No. 3	No. 3	5/16	11/32	11/32	3/8
Thickness of wagon top and furnace	¼	¼	¼	¼	No. 3	No. 3	No. 3	No. 3	5/16	11/32	11/32	3/8
Thickness of furnace tube sheet, inches	3/8	3/8	½	½	½	½	½	½	½	½	½	½
Number of three inch tubes	14	16	22	22	28	28	38	38	50	60	60	74
Length of " " inches	64	87	82	104	97	113	98	125	16	116	131	136
Number of four inch tubes	8	9	12	12	16	16	21	21	28	32	32	40
Length of " " inches	31	54	43	55	48	64	49	72	58	55	62	63
Diameter of smoke stack, "	12	12	14	14	16	16	18	18	20	22	22	25
Length of smoke stack, feet	25	30	30	35	35	40	40	45	45	50	50	50
" over all, inches	90	114	115	135	132	148	137	164	158	159	178	179
Width " "	42	42	46	46	52	52	58	58	66	72	72	78
Height " "	60	60	67	67	79	79	83	83	91	100	100	120
Square feet heating surface, about	111	151	199	251	298	352	399	502	600	703	800	997
Weight of boiler without fixtures	3050	3800	4400	5000	6200	6600	7600	8400	11100	13400	14200	17350
Weight of boiler complete	3550	4100	5100	5750	7100	7600	8800	9600	12700	15400	16250	19900

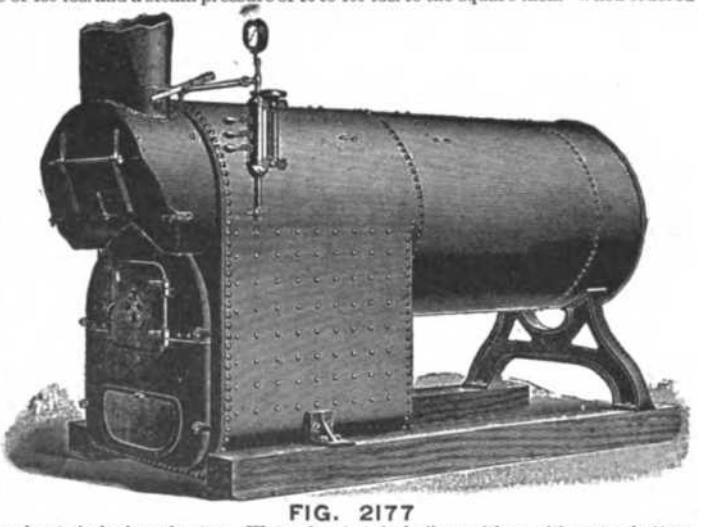


FIG. 2177

When built with water front, fire box is about three inches shorter outside, making the grates about six inches shorter. Water front style boilers, either with water bottom or open bottom fire box, are built on special order only and at an extra price. Grates suitable for saw dust or coal dust, when ordered, will be substituted for regular grates without extra charge. Shaking grates can be furnished, when desired, instead of regular or stationary grates, at an additional charge. Shaking grates are recommended for use in open bottom style of boilers only, owing to limited depth of ash pit in water bottom style. All smoke stacks are made of No. 16 gauge; if heavier gauge is desired, a proportionate extra charge will be made. If so ordered, these boilers will be built with either dry pipe or dome, as preferred, at additional price.

PRICES ON APPLICATION

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STANDARD PORTABLE BOILERS ON SKIDS OR WHEELS

PORTABLE BOILER ON SKIDS

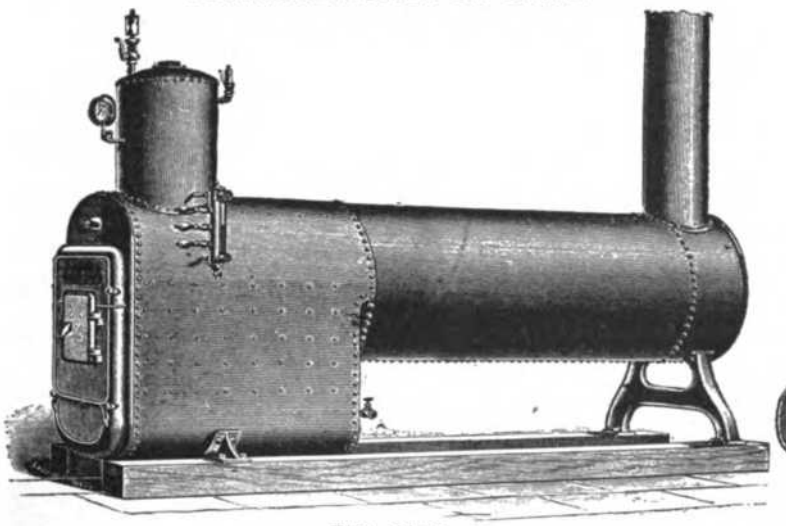


FIG. 2178

Standard Portable Boilers on Skids. When ordered complete, Portable Boilers on Skids, shown in cut above, are furnished with front, back head, grates, grate bearer, smokestack with wire rope guys, four times the length of smokestack, and band, steam gauge, water gauge fitted with stand pipe, three gauge cocks, whistle, pop safety valve, feed valve, check valve and blow off cock, with piping to attach these fittings in the usual manner. When boilers on skids are ordered without fixtures, we include front, back head, smoke pipe base and grate bearer only.

PORTABLE BOILER ON WHEELS

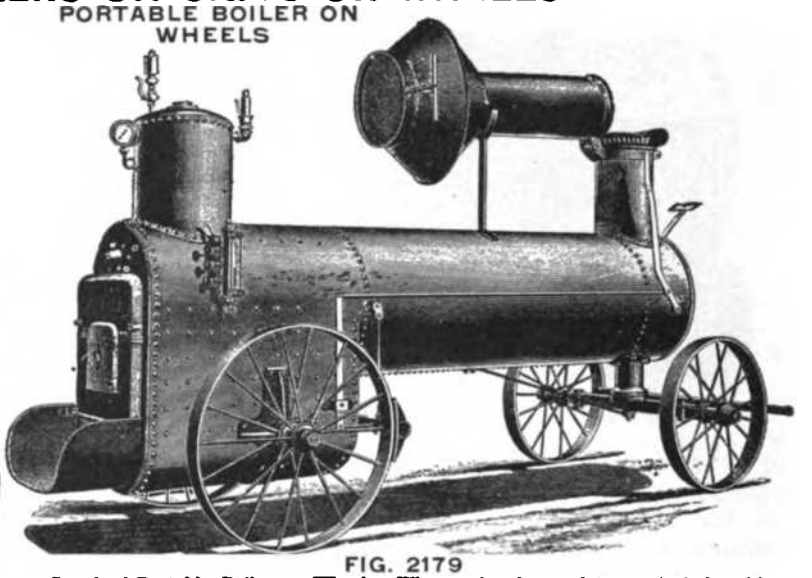


FIG. 2179

Standard Portable Boilers on Wheels. When ordered complete, we include with Portable Boilers on Wheels, Fig. 2179, fixtures as follows: Front, with apron for ash door, back head, grates, grate bearer, short hinged smokestack with spark arrester and stand, seat, foot rest, steam gauge, water gauge fitted with stand pipe, three gauge cocks, whistle, pop safety valve, feed valve, check valve and blow off cock, with piping to attach these fittings in the usual manner, stack blower, pole and brake. Neck-yoke, evener and whiffletrees are subject to order at an extra charge.

Anything ordered, not included in the above list of fixtures, will be charged as an extra.

DESCRIPTION, FIGS. 2178 AND 2179

These boilers are of the well known water bottom style, a water space of ample size extending around the furnace, forming an ash pan and allowing the water to circulate freely, thus preventing sediment from accumulating and adhering as it does in the ordinary form of locomotive boiler (open bottom) in that part of the furnace below the grate. The front of cast iron can be easily detached from the boiler, leaving a large entrance to get at the furnace, should any repairs be necessary. They are all built of open hearth homogeneous steel plate, thoroughly braced and stayed. No. 12 has a manhole in back head over tubes. All sizes have a fusible plug in crown sheet. If customers prefer, we can furnish these boilers with water front and water bottom, or with water front and open bottom fire box at an additional price.

When built with water front, fire box is about three inches shorter outside, making grates about six inches shorter. Water front style boilers, either with water bottom or open bottom fire box, are built on special order only, and at an extra price.

Grates suitable for sawdust or coal dust, when ordered, will be substituted for regular grates without extra charge. Shaking grates can be furnished, when desired, instead of regular or stationary grates, at an additional charge. Shaking grates are recommended for use in open bottom style of boilers only, owing to limited depth of ash pit in water bottom style.

All smokestacks are No. 16 gauge; if heavier gauge is desired, a proportionate extra charge will be made. Prices on application.

SIZES AND DIMENSIONS, FIGS. 2178 AND 2179

Number of Size	3	5	6	7	8	10	11	12
Horse Power as usually rated	10	15	20	25	30	40	50	60
Diameters Shell, inches	29	32	33	35	37	39	44	48
Length Furnace, "	36	38	52	52	52	52	61	64
Width Furnace, "	24	26	27	29	31	33	38	42
Height Furnace, "	34	37	37	38	41	49	50	52
Number Tubes	22	27	30	34	39	45	48	52
Diameters Tubes, inches	3	3	3	3	3	3	3	3
Lengths Tubes, "	76	80	88	94	100	124	132	144
Diameters Smokestack, inches	12	14	16	16	17½	18	22	22
Lengths Stack, feet, boiler on skids	19	19	24	24	24	24	30	40
Square feet heating surface, about	144	183	226	260	316	426	506	591
Thickness Shell, outside fire box and furnace plate, inches	¼	¼	¼	¼	¼	5/16	5/16	5/16
Thickness Furnace Tube Sheet, inches	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8
Thickness Back Head, inches	5/16	5/16	5/16	5/16	5/16	3/8	3/8	3/8
Diameters Dome, inches	16	18	19	20	22	23	24	26
Heights Dome, "	22	24	26	27	29	30	32	33
Weights Boiler on Skids, without fixtures	3150	3900	4550	5350	5900	8900	10350	11600
Weights Boiler on Skids, complete	3600	4300	5200	6100	6700	9150	11400	13200
Weights Boiler on Wheels, complete	4600	5550	6350	7200	7900	8900	11100	13600

STANDARD HORIZONTAL TUBULAR BOILERS

These Horizontal Tubular Boilers are made of open hearth homogeneous flange steel plate, 60,000 pounds tensile strength per square inch of section, an elongation of 20 to 25 per cent. and a reduction of area of 45 to 50 per cent.; can be turned over and closed down solid without fracture when cold, and does not blister. The shells of Nos. 1, 2 and 3 are formed of a single plate; larger sizes up to and including No. 15½ have one plate in bottom and one in top; Nos. 16 and 17 have one plate in the bottom and two or more in the upper section. The longitudinal seams of the shells in all sizes larger than 30 inches in diameter are double riveted and the dome to shell is also double riveted on all domes larger than 22 inches in diameter. No manholes in boilers less than 42 inches in diameter, an extra large handhole being placed in front head above the tubes on the smaller sizes to take the place of manhole for the purpose of cleaning. Boilers 42 inches and up have manhole, Eclipse style, in front head above tubes. Boilers 54 inches in diameter and larger have a circulating space of two inches or more left vertically through center line of tubes, and no tubes are nearer the shell than three inches.

These Flush Front Horizontal Tubular Boilers, if ordered complete, are furnished with heavy cast front (as shown in cut, with the exception of fronts for Nos. 1, 2, 3 and 4, which have single furnace and ash pit doors), back door and frame for rear of arch, arch bars for rear of boiler, grates, grate bearers, pop safety valve, steam gauge, water gauge fitted with stand pipe, three gauge cocks, whistle, feed valve, check valve and blow off cock, with piping to attach these fittings in the usual manner, smokestack, galvanized wire rope guys, four times the length of smokestack, and band. Wall plates and rollers, backstays and rods, anchor and tie bolts are all subject to order as extras. Anything ordered, not included in the above list of fixtures, will be charged as an extra.

Previous to shipment every boiler is tested with water and steam, and is subjected to a hydrostatic pressure of 150 pounds and a steam pressure of 90 to 100 pounds to the square inch.

Independent dome, attached by a nipple to shell of boiler, will be substituted for regular dome, when so ordered, without extra charge.

The regular grates are all the straight bar pattern with one-half inch air space, suitable for ordinary coal and wood. Special grates for burning pea coal, straight bar pattern with three-eighths inch air space, can be furnished at slight additional charge. Shaking grates can also be supplied at an additional price when ordered.

Grates suitable for burning sawdust, inverted V section with round perforations, or for coal dust, flat section with round perforations, will be substituted for regular grates, when ordered, without extra charge. The width of the grate surface in all cases is the same as the diameter of the boiler.

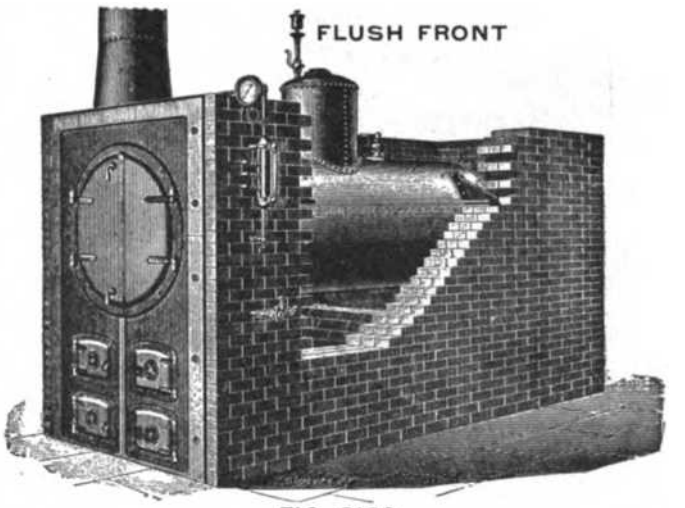


FIG. 2180

Prices for above boiler without fixtures include, if ordered for arch front setting, naked boiler with loop (No. 9 and up), manhole and handhole plates, smokestack base and flue doors and frame; if for flush front setting, nothing but naked boiler with four lugs, manhole and handhole plates and smokestack base.

All smokestacks under 28 inches diameter are made of No. 16 gauge; 28 inch, 31 inch and 32 inch diameter, of No. 14; heavier gauge, if required, will be extra. Dampers are not furnished with stacks for single boilers, unless ordered, and at an extra price. When two or more Standard Boilers are to be set in battery, the fronts, smoke connection, etc., are arranged for a 26 inch division wall, in all cases, unless otherwise specified. Prices on application.

SIZES AND DIMENSIONS

Number of Sizes	1	2	3	4	5	6	7	8	9	10	10½	11	12	12½	15½	16	17
Horse Power as usually rated	10	12	15	20	25	30	35	40	45	50	60	60	70	80	100	125	150
Diameters of Boilers, inches	30	30	36	36	42	44	44	44	48	54	54	60	60	60	66	72	72
Thickness of Shell	¼	¼	¼	¼	No. 3	No. 3	No. 3	No. 3	5/16	5/16	5/16	11/32	11/32	11/32	⅜	7/16	7/16
Thickness of Boiler Heads	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	7/16	7/16	7/16	7/16	½	½
Thickness of Dome Shell	¼	¼	¼	¼	No. 3	No. 3	No. 3	No. 3	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16
Thickness of Dome Head	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16
Length of Tubes, feet	7	8	8	10	10	10	12	14	14	12	16	12	14	16	16	16	18
Number of Tubes (three inches in diameter)	20	20	28	28	38	46	46	46	52	64	60	82	82	82	98	120	130
Square feet heating surface, about	151	185	220	288	376	440	526	611	687	708	885	885	1028	1172	1377	1660	2000
Diameter of Dome, inches	18	18	20	20	22	22	22	22	26	30	30	32	32	32	36	36	36
Height of Dome, inches	20	20	22	22	24	24	24	24	28	34	34	36	36	36	40	40	40
Diameter of Smokestack, inches	13	13	15	15	17	19	19	19	20	22	22	25	25	25	28	31	32
Length of Smokestack, feet	26	28	28	30	35	35	40	45	45	40	50	40	50	60	60	60	70
Weight Boiler without fixtures (arch front)	1700	1900	2700	2800	3800	4200	4800	5400	6700	7200	8700	9000	10000	11000	13200	16100	18300
Weight Boiler without fixtures (flush front)	1700	1800	2700	2800	3800	4200	4800	5400	6600	7000	8500	8700	9800	10800	12900	15800	18000
Weight Boiler complete (arch front)	2900	3100	4100	4400	5800	6300	7000	7700	9200	9900	11700	12100	13400	14600	17400	20600	23000
Weight Boiler complete (flush front)	3300	3500	4700	5000	6300	6800	7500	8200	9700	10300	12100	12500	13800	15000	18000	21500	23800

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RETURN TUBULAR BOILERS

OVERHANGING FRONT

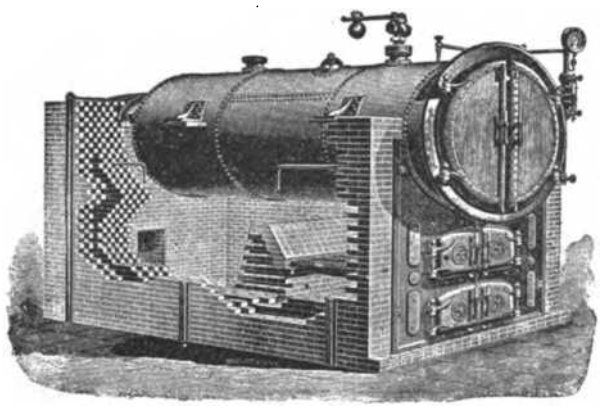


FIG. 2181

The cut illustrates a circular seam return tubular boiler, made either of iron or steel, set with the overhanging front. In sizes above 40 horse power a large manhole is placed in the front head under the tubes, as well as one on top of the shell, and a handhole in the rear head. This enables one to get inside of the boiler under the tubes, as well as on top, whereby it can be more readily kept clean, as well as giving an opportunity to examine the tubes and other points inside. The three or four tubes taken out at the bottom to make room for this manhole do not in any way detract from the steaming qualities of the boiler, as these tubes are so low down the heat that would naturally pass through them would be of very little benefit, and by removing them it leaves a solid body of water directly over the fire where the most intense heat comes. In smaller sizes we have to put a handhole in each head, as is customary. Great care is taken in the bracing so that the strain on each brace will be of an equal tension. They have what is called the solid crow foot bracing. All plates are nicely planed on the edges before being bent, and calked with a round nose tool of Connery's patent.

We furnish with these boilers overhanging front of the design shown in cut, with anchor bolts for same, grates and bearers, square cleaning door and frame, rear arch T bars, binder bars and bolts, steam gauge, glass water gauge, gauge cocks, with cast iron column and pipe connections from same to boiler, and safety valve.

With boilers 50 horse power and larger we furnish six binder bars with bolts, as shown in cut, and on smaller sizes only four.

Boilers are furnished with dome instead of steam nozzles, when desired, for which we charge extra.

All boilers tested to 150 pounds hydrostatic pressure before leaving the works. Smoke stacks charged extra.

SPECIFICATIONS, FIG. 2181

Number of sizes	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Horse power	15	20	25	30	35	40	45	50	60	70	75	80	90	100	125	150	175	200
Heating surface, in square feet	232	290	370	429	506	568	618	684	800	944	1010	1080	1249	1350	1674	1829	2115	2511
Diameter of boiler, in inches	36	36	42	42	44	48	50	54	54	60	60	60	66	66	72	72	78	84
Length of boiler, in feet and inches	8'11"	10'11"	11'	13'	13'	13'2"	14'2"	14'2"	16'2"	15'4"	16'4"	17'4"	16'5"	17'5"	17'6"	19'6"	19'6"	19'8"
Thickness of shell	¼	¼	5/16	5/16	5/16	5/16	5/16	5/16	5/16	⅜	⅜	⅜	⅜	⅜	7/16	7/16	7/16	½
Thickness of head	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	7/16	7/16	7/16	7/16	7/16	½	½	½	9/16
Length of tubes, in feet	8	10	10	12	12	12	13	13	15	14	15	16	15	16	16	18	18	18
No. of tubes 3 inches in diameter	30	30	38	38	46	52	52	58	58	76	76	76	96	96	122	.....	.....	.....
" " 3½ inches in diameter	.....	.....	.....	.....	.....	.....	42	50	50	60	60	60	72	72	96	96	112	136
" " 4 inches in diameter	.....	.....	.....	.....	.....	.....	37	40	40	50	50	50	60	60	74	74	90	108
Diameter of nozzles, in inches	3	3	3	3	3	4	4	4	4	5	5	5	6	6	6	6	7	8
Length of furnace, in feet	3	3½	3½	4	4	4	4	4½	5	5	5	5	5½	5½	6	6'6½"	6'6½"	7
Diameter of stack required, in inches	18	18	20	20	22	24	24	26	26	28	28	28	32	32	36	38	40	42
Weight of bare boiler, about, pounds	2950	3500	4400	5000	5500	6400	6800	7300	8550	10000	10500	11200	13300	14000	17500	18500	21000	25000
Weight of boiler and fixtures complete, with overhanging front, pounds	5350	5900	7100	7800	8700	10000	10600	11300	12750	14800	15300	16100	18900	19600	24000	25000	30000	34000

The heating surface in the above boilers is figured with 3 inch tubes up to and including size No. 15. In sizes 16, 17 and 18 the heating surface is figured with 3½ inch tubes. When larger tubes are used, the heating surface is not quite as much as with the smaller tubes.

If domes instead of nozzles are desired with boilers, sizes of same can be found in table of dimensions, Fig. 2182, up to and including size No. 15. On all larger sizes the domes are 42 inches by 42 inches.

RETURN TUBULAR BOILERS

FLAT FRONT

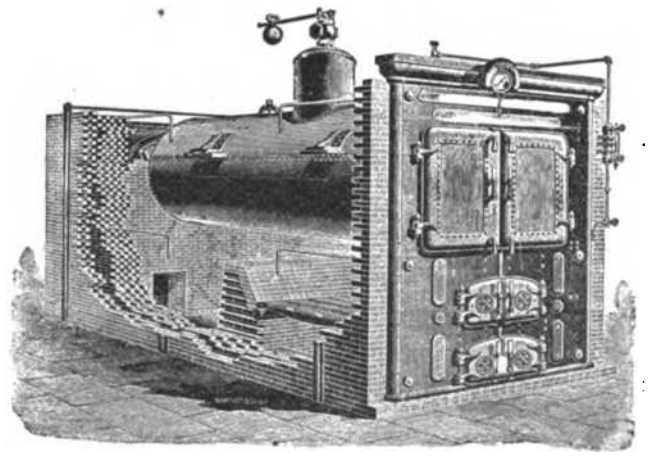


FIG. 2182

On sizes up to and including No. 14 these boilers are made with a single plate top and bottom, while size No. 15 is made with one plate on the bottom and three plates on the top. This new pattern front is made in six separate pieces, besides the doors, bolted together on the back with angles and plate iron, room being left for expansion and contraction, so that it is an impossibility for it to crack or break after being properly set. When desired in boilers above 40 horse power a large manhole is placed in the front head under the tubes, as well as one on top of the shell, and a handhole in the rear head. This enables one to get inside of the boiler under the tubes as well as on top, whereby it can be more readily kept clean, as well as giving an opportunity to examine the tubes and other points inside. The three or four tubes taken out at the bottom to make room for this manhole do not in any way detract from the steaming qualities of the boiler, as these tubes are so low down the heat that would naturally pass through them would be of very little benefit, and by removing them it leaves a solid body of water directly over the fire where the most intense heat comes. In smaller sizes we have to put a handhole in each head, as is customary. Great care is taken in the bracing so that the strain on each brace will be of an equal tension. They have what is called crow foot bracing. All plates are nicely planed on the edges before being bent, and calked with a round nose tool of Connery's patent.

We furnish with these boilers flush fronts of three designs, with anchor bolts for same, grates and bearers, square cleaning door and frame, rear arch T bars, binder bars and bolts, steam gauge, glass water gauge, gauge cocks, with cast iron column and pipe connections from the same to boiler, and safety valve.

With boilers 50 horse power and larger we furnish six binder bars, with bolts, as shown in cut, but on all smaller sizes only four.

All boilers tested to 150 pounds hydrostatic pressure before leaving the works. Stacks charged extra.

SPECIFICATIONS, FIG. 2182

Number of sizes	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Horse power	15	20	25	30	35	40	45	50	60	70	75	80	90	100	125
Heating surface, in square feet	232	290	370	429	506	568	618	684	800	944	1010	1080	1249	1350	1674
Diameter of boiler, in inches	36	36	42	42	44	48	50	54	54	60	60	60	66	66	72
Length of boiler, in feet and inches	8'11"	10'11"	11'	13'	13'	13'2"	14'2"	14'2"	16'2"	15'4"	16'4"	17'4"	16'5"	17'5"	17'6"
Thickness of shell	¼	¼	5/16	5/16	5/16	5/16	5/16	5/16	5/16	⅜	⅜	⅜	⅜	⅜	7/16
Thickness of heads	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	⅜	7/16	7/16	7/16	7/16	7/16	½
Length of tubes, in feet	8	10	10	12	12	12	13	13	15	14	15	16	15	16	16
No. of tubes 3 inches in diameter	30	30	38	38	46	52	52	58	58	76	76	76	96	96	122
" " 3½ inches in diameter	....	....	....	....	....	....	42	50	50	60	60	60	72	72	96
" " 4 inches in diameter	....	....	....	....	....	....	37	40	40	50	50	50	60	60	74
Diameter of dome, in inches	20	20	24	24	24	24	30	30	30	30	30	30	36	36	36
Height of dome, in inches	20	20	24	24	26	28	30	30	30	30	30	36	36	36	36
Length of furnace, in feet	3	3½	3½	4	4	4	4	4½	5	5	5	5	5½	5½	6
Diameter of stack required in inches	18	18	20	20	22	24	24	26	26	28	28	28	32	32	36
Weight of bare boiler, about, pounds	2950	3500	4400	5000	5500	6400	6800	7300	8550	10000	10500	11200	13300	14000	17500
Weight of boiler and fixtures complete, with flush front, pounds	5550	6100	7400	8200	9100	10500	11200	12000	13450	15600	16000	16900	19800	20500	25000

The heating surface in the above boilers is figured with 3 inch tubes. When 3½ or 4 inch tubes are used, the heating surface is not quite as much as with the 3 inch tubes.

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HIGH PRESSURE RETURN TUBULAR BOILERS

The cut represents a high pressure Return Tubular Boiler adapted for compound engines where working pressures of 125 to 150 pounds are required. It represents the three course boiler, which can be built of any size. The horizontal seams are made with the triple riveted butt strap joint, which is a strap inside and out, and so constructed that it gives nearly 90 per cent. of the strength of the solid metal. Heads are all braced with solid crowfoot bracing made of the very best Burden iron, great care being taken as to position and location of these braces, so that they will all bear an equal tension. The nozzles are extra heavy; the manholes are solid wrought iron, extra heavy, with flanges sufficiently wide to double rivet to the shell, together with dogs, rings, and bolts for the plates. In fact, every detail pertaining to these boilers is made to meet the requirements of extreme high pressures.

These boilers are tested to 200 pounds hydrostatic pressure before leaving the works.

Prices and specifications furnished on application.

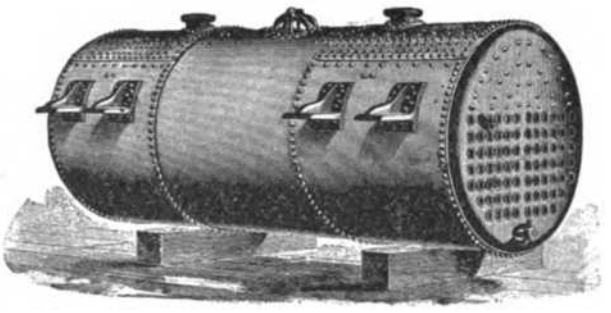


FIG. 2183

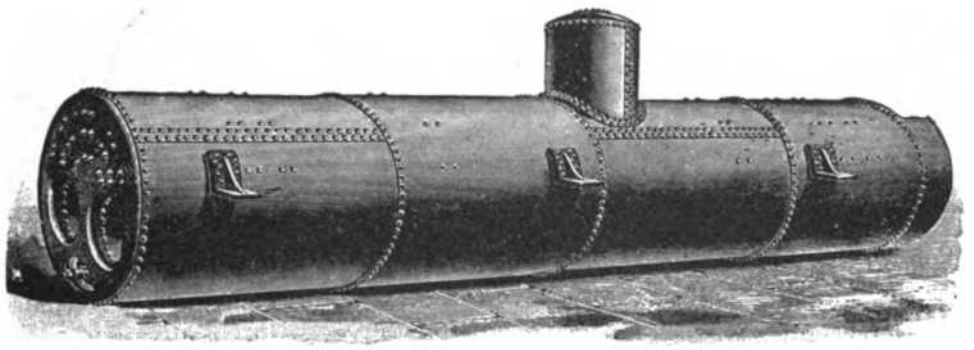


FIG. 2184

TWO FLUE HORIZONTAL BOILER

All these boilers are made in a thorough manner. Longitudinal seams and dome saddle double riveted.

The fixtures are overhanging front complete with anchors, grate bars, grate rests, cleaning door, rear arch T bars, binder bars with anchor bolts, steam gauge, glass water gauge, gauge cocks with cast iron column and pipe connection from same to boiler, and safety valve.

Smoke stacks charged extra.

SPECIFICATIONS, FIG. 2184

Number of sizes	1	2	3	4	5	6	7	8	9	10
Horse power	15	20	25	30	35	40	45	50	60	70
Heating surface, in square feet	206	253	285	338	393	415	478	542	610	663
Diameter of boiler, in inches	36	36	42	42	44	48	48	50	54	60
Length of boiler, in feet and inches	21	26	21	25	27	27	31-2	33-2	35-2	34-4
Length of flues, in feet	18	22	20	24	26	26	30	32	34	33
Diameter of flues, in inches	12	12	14	14	15	16	16	17	18	20
Thickness of shell	¼	¼	5/16	5/16	5/16	5/16	5/16	5/16	5/16	3/8
Thickness of flues	¼	¼	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16
Thickness of heads	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	3/8	7/16
Diameter of dome, in inches	20	20	24	24	24	24	24	30	30	30
Height of dome, in inches	20	20	24	24	24	24	24	30	30	30
Diameter of smoke stack required, in inches	18	18	20	20	22	24	24	26	28	30
Length of furnace for grates, in feet	4½	4½	5	5	5	5	5½	5½	5½	5½
Weight of boiler, without fixtures.....pounds.	5,500	6,500	6,600	7,700	8,000	8,800	9,900	12,500	13,800	17,000
Weight of fixtures, about..... "	2,500	2,600	2,800	2,900	3,300	3,450	3,550	3,700	4,300	4 700
Weight of boiler and fixtures, complete..... "	8,000	9,100	9,400	10,600	11,300	12,250	13,450	16,200	18,100	21,700

PRICES ON APPLICATION

SHAPLEY SPARKLESS BOILER

DESCRIPTION, FIGS. 2185 AND 2186

Figs. 2185 and 2186 represent the Shapley Sparkless Boiler. It is very durable, on account of the crown sheets and tubes being entirely covered by water, the same as in the submerged head boiler. Then, too, the tubes are very easily cleaned by removing the jacket that surrounds the boiler between upper and lower sections. It is strictly a sparkless boiler, as the draft is drawn down through the tubes on the side into the base, thence through the stack. This base can be filled with water, which necessarily receives every spark, making it impossible for one to escape through the stack.

We furnish with these boilers cast iron base, with smoke bonnet attached to same, grates, steam gauge, glass water gauge, gauge cocks, with cast iron column, and pipe connections from same to boiler and safety valve.

All boilers tested to 150 pounds hydraulic pressure.

These boilers are made of best open hearth steel throughout.

SECTIONAL VIEW

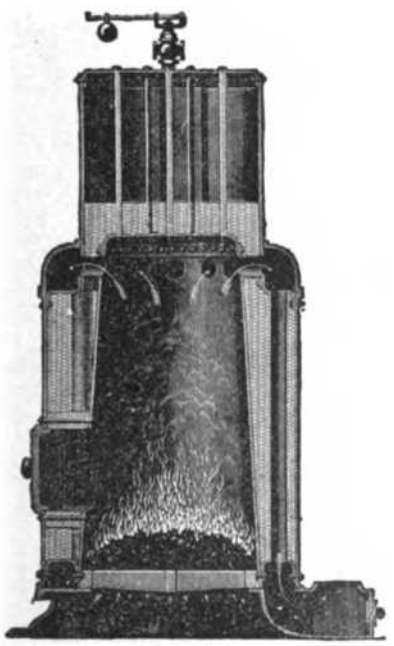


FIG. 2185

SPECIFICATIONS, FIGS. 2185 AND 2186

Number of size	1	2	3	4	5
Horse power	3	5	8	12	15
Diameter of lower section, inches	24	28½	32	44½	45
Height of lower section, inches	24	32	38	39	44
Diameter of upper section, inches	17	20	24	36	36
Height of upper section, inches	24	26	29	34	39½
Diameter of conical fire box at base, in.	17	20	24	36	36
Diameter of conical fire box at top, in.	12	14	17½	28	28
Height of conical fire box, inches	32	40	48	50	54
Thickness of shell	¼	¼	¼	5/16	5/16
Thickness of furnace	¼	¼	¼	5/16	5/16
Thickness of heads	5/16	5/16	5/16	3/8	3/8
Number of vertical tubes, 2 in. diam.	18	23	26	38	43
Length of vertical tubes, inches	24	30	36	38	42
Number of cross tubes	8	11	13	20	14
Diameter of cross tubes, inches	3	3	3	3	4
Weight complete, about, pounds	1,290	1,625	2,200	3,825	4,100
Diameter of stack required	8	10	11	14	14

PRICES ON APPLICATION

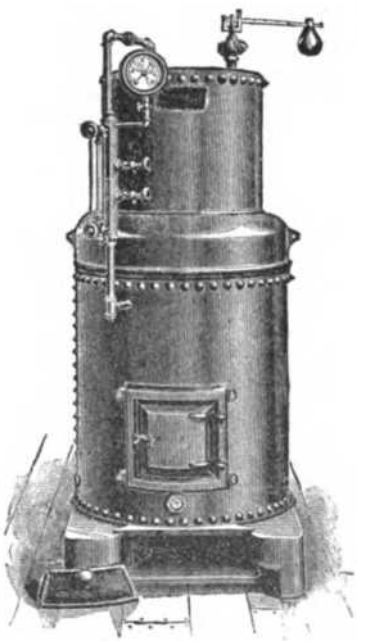


FIG. 2186

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UPRIGHT TUBULAR BOILERS

PLAIN

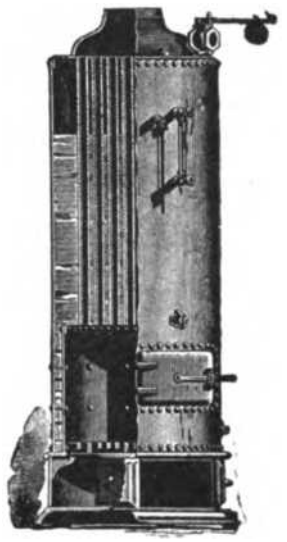


FIG. 2187

WITH SUBMERGED HEAD

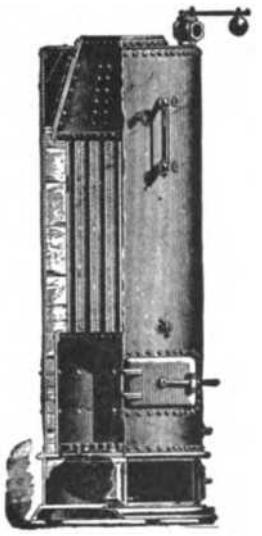


FIG. 2188

PLAIN OR WITH SUBMERGED HEAD MOUNTED ON WHEELS

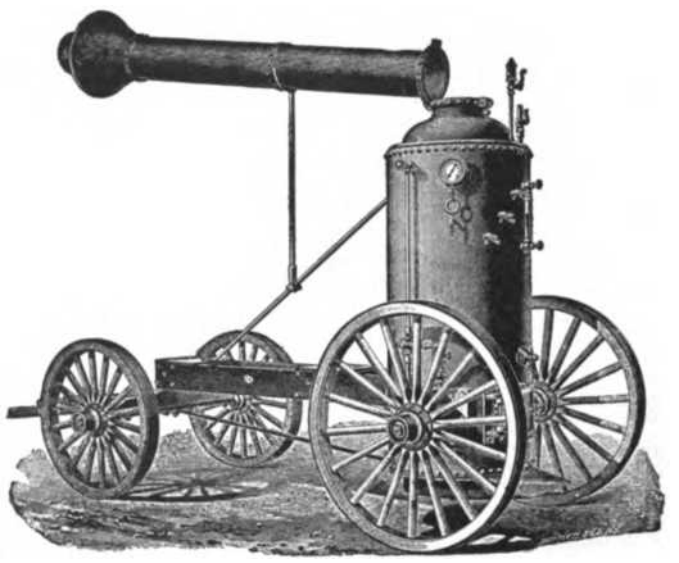


FIG. 2189

DESCRIPTION, FIGS. 2187 TO 2189

The upright seams on all boilers 30 inches diameter and larger are double riveted. Sizes 1, 2, 3, 4 and 5 have two handholes in the water leg and 2 just above the crown sheet. All other sizes have 3 in the water leg and 2 above the crown sheet. These boilers have an improved cast iron base, smoke bonnet, grates, safety valve, steam gauge, glass water gauge and 3 gauge cocks. The base is heavy, having sliding draft doors and a cast iron bottom raised from the floor to admit of a circulation of air. With the mounted boilers we furnish in addition to the above, 6 feet of smoke stack, injector, all piped off, with feed, check and blow off valves, and ash pan instead of base. Also wheels, axles, pole, evener, neckyoke and whiffletrees, complete. With the submerged head boiler no smoke bonnet is required.

SPECIFICATIONS FOR UPRIGHT TUBULAR BOILER FIGS. 2187 AND 2189

Number of sizes	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Horse power	3	5	6	7	8	10	12	15	18	20	25	30	35	40	50	8	10	12	15	18	20	25	30	35	40	50
Heating surface, in square feet	39	58	72	84	100	120	144	180	212	238	292	358	412	480	578	96	110	130	165	204	224	272	330	376	420	578
Diameter of boiler, inches	21	24	27	30	30	32	34	36	40	40	44	48	48	48	54	30	32	34	36	40	40	44	48	48	48	54
Height of boiler, feet	5	5	5	5	6	6	6½	7	7½	7½	8	8	8	9	9	7	7	7½	8	8½	8½	9½	9½	9½	10	10½
Diameter of furnace, inches	16	19	22	25	25	27	28½	30½	34½	34½	38½	42½	42½	42½	48½	25	27	28½	30½	34½	34½	38½	42½	42½	42½	48½
Height of furnace, inches	24	24	24	24	24	24	24	24	30	30	30	30	30	30	36	24	24	24	24	24	30	30	30	30	30	36
Height of cone, inches	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	24	24	24	24	24	30	30	30	30	30	30
Thickness of shell	¼	¼	¼	¼	¼	¼	¼	¼	5/16	5/16	5/16	5/16	5/16	5/16	5/16	¼	¼	¼	¼	5/16	5/16	5/16	5/16	5/16	5/16	5/16
Thickness of furnace	¼	¼	¼	¼	¼	¼	¼	¼	No. 2	No. 2	No. 2	No. 2	No. 2	No. 2	No. 2	..	..	..	..	..	..	..	..	..	..	..
Thickness of furnace and cone plates	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	¼	¼	¼	¼	No. 2	No. 2	No. 2	No. 2	No. 2	No. 2	No. 2
Thickness of heads	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16
Number of 2 inch tubes	20	31	39	46	46	51	56	64	74	84	95	118	138	138	178	45	51	56	64	74	84	95	118	138	138	178
Length of tubes, inches	36	36	36	36	48	48	54	60	60	60	66	66	66	78	72	36	36	42	48	48	48	54	54	54	60	60
Diameter of bottom of base, inches	27	31	35	37	37	39	41	43	47	47	50	54	54	54	60	37	39	41	43	47	47	50	54	54	54	60
Height of base, inches	11	11	13	13	13	13	13	13	13	13	13	13	13	13	13	12	13	13	13	13	13	13	13	13	13	13
Height of bonnet, inches	8	9	10	11	11	12	13	13	13	13	16	16	16	16	18	..	..	..	..	..	..	..	..	..	..	..
Height of boiler, bottom of base to top of cone, inches	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	96	97	103	109	115	115	127	127	127	133	139
Height of boiler, bottom of wheels to top of cone, inches	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	103	109	115	121	127	127	139	139	139	145	151
Height of boiler bottom of base to top of bonnet, inches	79	80	83	84	96	97	104	110	116	116	125	125	125	137	139	..	..	..	..	..	..	..	..	..	..	..
Height of boiler, bottom of wheels to top of bonnet, inches	91	92	95	96	108	109	116	122	128	128	137	137	137	149	151	..	..	..	..	..	..	..	..	..	..	..
Diameter of opening at top of cone, inches	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	16	16	16	18	18	18	20	20	20	20	22
Diameter of smoke stack required, inches	7	8	9	10	10	11	12	14	16	16	17	18	18	18	22	10	11	12	14	16	16	17	18	18	18	22
Weight of boiler without fixtures	750	900	1100	1300	1450	1540	1750	2100	2600	2700	3500	4000	4250	4850	5550	1400	1480	1670	2020	2500	2600	3350	3800	4050	4650	5350
Weight of fixtures	300	400	425	500	500	600	650	700	900	900	1000	1050	1050	1050	1200	450	550	580	630	800	800	825	850	850	850	1000
Weight of boiler and fixtures complete	1050	1300	1525	1800	1950	2140	2400	2800	3500	3600	4500	5050	5300	5900	6750	1850	2030	2250	2650	3300	3400	4175	4650	4900	5500	6350
Weight of boiler and fixtures, complete mounted on wheels	1350	1600	1825	2100	2350	2540	2800	3300	4000	4100	5000	5650	6000	6600	7550	2150	2330	2650	3050	3800	3900	4675	5250	5500	6300	7150

Boilers tested to 150 lbs. hydrostatic pressure before leaving the works. All boilers made of open hearth steel throughout.

SPECIFICATIONS FOR UPRIGHT TUBULAR SUBMERGED HEAD BOILER FIGS. 2188 AND 2189

Number of sizes	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26
Horse power	3	5	6	7	8	10	12	15	18	20	25	30	35	40	50	8	10	12	15	18	20	25	30	35	40	50
Heating surface, in square feet	39	58	72	84	100	120	144	180	212	238	292	358	412	480	578	96	110	130	165	204	224	272	330	376	420	578
Diameter of boiler, inches	21	24	27	30	30	32	34	36	40	40	44	48	48	48	54	30	32	34	36	40	40	44	48	48	48	54
Height of boiler, feet	5	5	5	5	6	6	6½	7	7½	7½	8	8	8	9	9	7	7	7½	8	8½	8½	9½	9½	9½	10	10½
Diameter of furnace, inches	16	19	22	25	25	27	28½	30½	34½	34½	38½	42½	42½	42½	48½	25	27	28½	30½	34½	34½	38½	42½	42½	42½	48½
Height of furnace, inches	24	24	24	24	24	24	24	24	30	30	30	30	30	30	36	24	24	24	24	24	30	30	30	30	30	36
Height of cone, inches	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	24	24	24	24	24	30	30	30	30	30	30
Thickness of shell	¼	¼	¼	¼	¼	¼	¼	¼	5/16	5/16	5/16	5/16	5/16	5/16	5/16	¼	¼	¼	¼	5/16	5/16	5/16	5/16	5/16	5/16	5/16
Thickness of furnace	¼	¼	¼	¼	¼	¼	¼	¼	No. 2	No. 2	No. 2	No. 2	No. 2	No. 2	No. 2	..	..	..	..	..	..	..	..	..	..	..
Thickness of furnace and cone plates	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	¼	¼	¼	No. 2	No. 2	No. 2	No. 2	No. 2	No. 2	No. 2	No. 2
Thickness of heads	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16	5/16
Number of 2 inch tubes	20	31	39	46	46	51	56	64	74	84	95	118	138	138	178	45	51	56	64	74	84	95	118	138	138	178
Length of tubes, inches	36	36	36	36	48	48	54	60	60	60	66	66	66	78	72	36	36	42	48	48	48	54	54	54	60	60
Diameter of bottom of base, inches	27	31	35	37	37	39	41	43	47	47	50	54	54	54	60	37	39	41	43	47	47	50	54	54	54	60
Height of base, inches	11	11	13	13	13	13	13	13	13	13	13	13	13	13	13	12	13	13	13	13	13	13	13	13	13	13
Height of bonnet, inches	8	9	10	11	11	12	13	13	13	13	16	16	16	16	18	..	..	..	..	..	..	..	..	..	..	..
Height of boiler, bottom of base to top of cone, inches	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	96	97	103	109	115	115	127	127	127	133	139
Height of boiler, bottom of wheels to top of cone, inches	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	103	109	115	121	127	127	139	139	139	145	151
Height of boiler bottom of base to top of bonnet, inches	79	80	83	84	96	97	104	110	116	116	125	125	125	137	139	..	..	..	..	..	..	..	..	..	..	..
Height of boiler, bottom of wheels to top of bonnet, inches	91	92	95	96	108	109	116	122	128	128	137	137	137	149	151	..	..	..	..	..	..	..	..	..	..	..
Diameter of opening at top of cone, inches	..	..	..	..	..	..	..	..	..	..	..	..	..	..	..	16	16	16	18	18	18	20	20	20	20	22
Diameter of smoke stack required, inches	7	8	9	10	10	11	12	14	16	16	17	18	18	18	22	10	11	12	14	16	16	17	18	18	18	22
Weight of boiler without fixtures	750	900	1100	1300	1450	1540	1750	2100	2600	2700	3500	4000	4250	4850	5550	1400	1480	1670	2020	2500	2600	3350	3800	4050	4650	5350
Weight of fixtures	300	400	425	500	500	600	650	700	900	900	1000	1050	1050	1050	1200	450	550	580	630	800	800	825	850	850	850	1000
Weight of boiler and fixtures complete	1050	1300	1525	1800	1950	2140	2400	2800	3500	3600	4500	5050	5300	5900	6750	1850	2030	2250	2650	3300	3400	4175	4650	4900	5500	6350
Weight of boiler and fixtures, complete mounted on wheels	1350	1600	1825	2100	2350	2540	2800	3300	4000	4100	5000	5650	6000	6600	7550	2150	2330	2650	3050	3800	3900	4675	5250	5500	6300	7150

Boilers tested to 150 lbs. hydrostatic pressure before leaving the works. All boilers made of open hearth steel throughout.

LOCOMOTIVE BOILER MOUNTED ON WHEELS

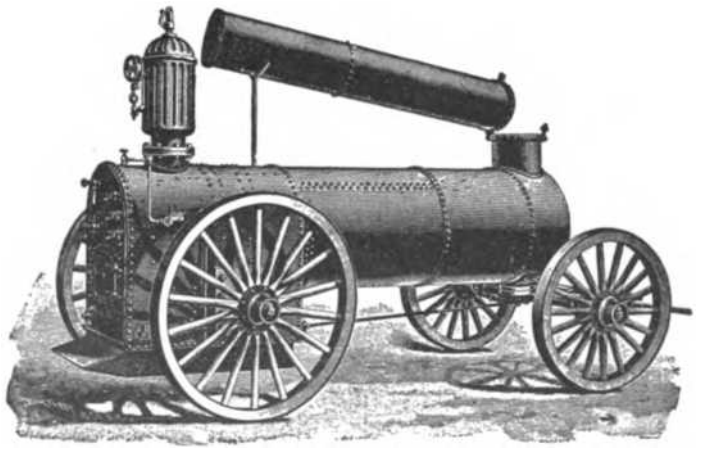


FIG. 2190

SPECIFICATIONS, FIG. 2190

Number of sizes	1	2	3	4	5	6
Horse power	6	8	10	12	15	20
Heating surface, in square feet	78	108	128	150	188	240
Diameter of waist, inches	27	27	30	32	34	36
Length of furnace, inches	36	36	39	39	42	48
Width of furnace, inches	22	22	24	26	28	30
Height of furnace, inches	28	28	30	33	34	37
Thickness of shell and front plate	¼	¼	¼	¼	¼	¼
Thickness of sides and top of furnace	¼	¼	¼	¼	¼	¼
Thickness of front end of furnace	5/16	5/16	5/16	5/16	5/16	5/16
Thickness of tube sheets	5/16	5/16	5/16	5/16	5/16	5/16
Number of tubes, 3 inches diameter	13	13	18	23	26	30
Length of tubes, inches	60	90	84	78	90	102
Diameter of dome, inches	10	10	10	12	12	12
Height of dome, inches	28	28	28	32	32	32
Diameter of stack required, inches	12	12	13	14	15	15
Length of boiler over all, in feet	9¼	12	12	11¾	13	14½
Height of boiler, bottom of skids to top of dome, inches	78	78	82	89	92	95
Height of boiler, bottom of wheels to top of dome, inches	90	90	94	101	104	107
Weight of boiler, without fixtures, on skids	2700	2900	3200	3600	4000	4500
Weight of fixtures	350	350	450	475	500	600
Weight of boiler and fixtures complete, on skids	3050	3250	3650	4075	4500	5100
Weight of boiler and fixtures complete, mounted on wheels	3350	3550	4050	4475	4900	5600

PRICES ON APPLICATION

We also furnish these boilers mounted on skids when desired. When mounted on skids we furnish the following articles: brackets, skids, cast iron dome, ash pan, grate bars, safety valve, steam gauge, glass water gauge and gauge cocks. Smoke stacks and injectors charged extra.

When mounted on wheels we furnish exactly the same articles as mentioned above, except skids, also the wheels, axles, pole, neck yoke, eveners and whiffletrees, together with 10 feet of smoke stack, and injector all piped off.

The dome on this boiler is bolted on so it can be removed if necessary.

All boilers tested to 150 lbs pressure. Horizontal seams on all sizes double riveted. All boilers made of the best open hearth steel throughout. Leg ring and door ring are of wrought iron.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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MANNING PATENT VERTICAL TUBULAR BOILER

The Manning Patent Vertical Tubular Boiler has been designed to fulfill the following requirements:

A boiler that can be safely run at high pressure, erected on a small floor space, and one that will give economy in the consumption of fuel.

Being an internally fired boiler, there is no brick work coming in contact with the fire.

The boilers are very economical, having large grate surface in proportion to the heating surface, and sufficient height from grate to crown sheet to insure perfect combustion. Diameter and length of tubes are proportioned so that all the heat, except that absolutely necessary for the proper stack temperature, is absorbed, and as these tubes pass through steam space, the steam is superheated from 25 to 40 degrees. The boilers are tested to 225 pounds hydrostatic pressure for 150 pounds running pressure.

We furnish with these boilers cast iron base plate, grates, fire door and frame, ash pit door and frame, smoke bonnet, cast iron top, double doors arranged to be removed for cleaning tubes, steam gauge, glass water gauge, gauge cocks, water column pipe connections from same to boiler, and pop safety valve.

Further information and prices on application.

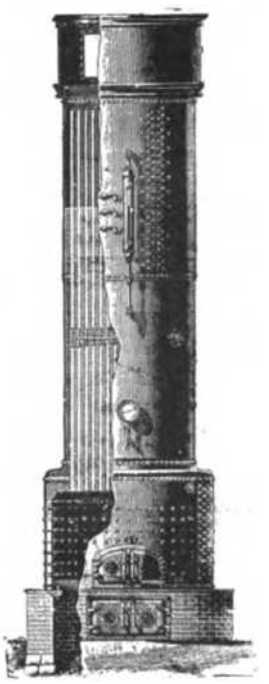


FIG. 2195

CAHALL VERTICAL WATER TUBE BOILER

DESCRIPTION FIG. 2196

This type of construction presents a form of boiler which, while from its free, direct circulation gives large capacity per square foot of heating surface, at the same time, owing to the direction of the gases over the tubes and the consequent rapid absorption of the heat therefrom, gives a very economical performance.

Prices and particulars on application.

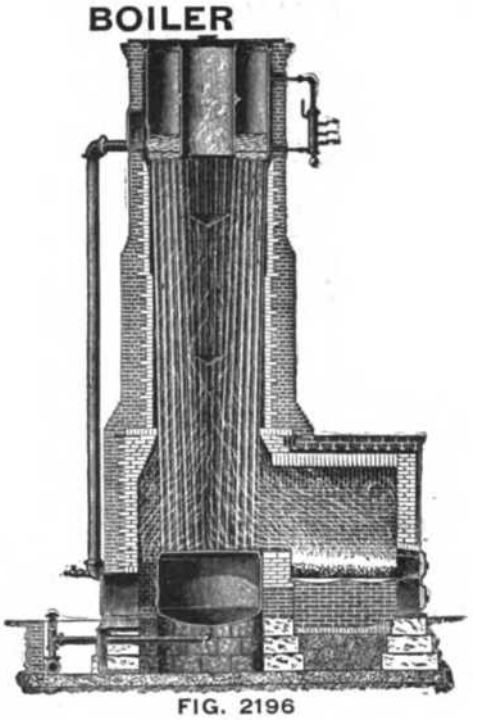


FIG. 2196

BABCOCK AND WILCOX WATER TUBE BOILER

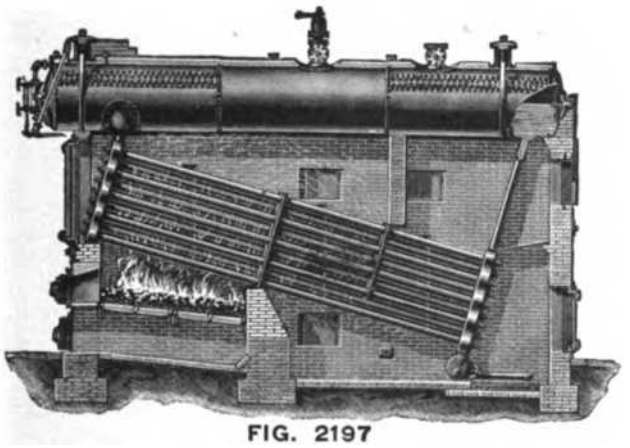


FIG. 2197

This boiler is composed of lap welded wrought iron tubes, placed in an inclined position and connected with each other, and with a horizontal steam and water drum, by vertical passages at each end, while a mud drum is connected to the rear and lowest point in the boiler. The end connections or headers are in one piece for each vertical row of tubes, and are of such form that the tubes are staggered, or so placed that each row comes over the spaces in the previous row. The tubes are expanded into the headers, and the sections thus formed are connected with the drum, and with the mud drum also, by short tubes expanded into bored holes, doing away with all bolts, and leaving a clear passageway between the several parts. The openings for cleaning opposite the end of each tube are closed by hand hole plates, the joints of which are made in the most thorough manner by milling the surfaces to accurate metallic contact, and are held in place by wrought iron forged clamps and bolts. The steam and water drums are made of flange steel, of extra thickness, and double riveted. They can be made for any desired pressure, and are always tested to 50 per cent. above the pressure for which they are constructed. The boiler is suspended at front and rear from wrought iron supporting frames, entirely independent of the brick setting, to allow for contraction and expansion without straining either the boiler or the brickwork, and also to allow of repairs or renewal of the latter without disturbing the boiler or its connections. Further information and prices furnished on application.

STIRLING WATER TUBE SAFETY BOILER

The Stirling Boiler consists of three upper or steam drums and one lower or mud drum connected by tubes, which are bent slightly so as to allow them to enter the drums normal to their periphery. The steam spaces of all the upper drums are connected, while the water spaces of only the front and middle drums communicate. The drums are made of the very best flange steel, while the tubes are either lap welded mild steel, or charcoal iron, tested at 1,500 pounds pressure per square inch. These drums and tubes form the boiler, hence the very acme of simplicity has been attained in its construction.

The boiler is, by its very design, a safety boiler; all parts are of wrought metal, and either spherical or cylindrical in form; thus all tendency to distortion under pressure is avoided; cast iron has been eliminated, and the absence of flat surfaces renders stay bolts and braces unnecessary. Ample provision has been made for unequal expansion and contraction, and all resulting strains therefrom are avoided.

SECTIONAL VIEW, SIDE ELEVATION

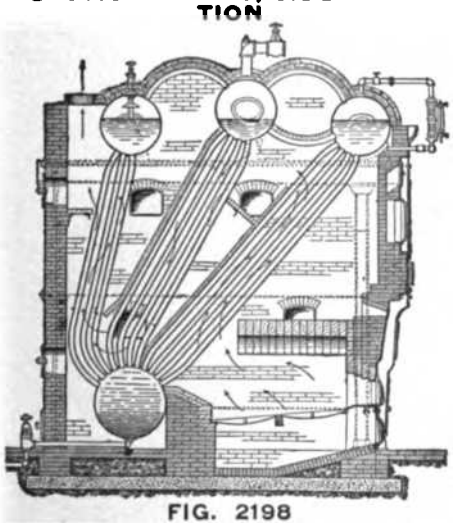


FIG. 2198

The feed water enters the rear upper drum, the coolest part of the boiler, and as it descends to the mud drum is gradually heated by the gases on their final passage to the chimney to a sufficient extent to render insoluble much of the sedimentary matter that it contains, which is deposited in the mud drum in the form of mud or sludge, from which it may be blown off as frequently as may be found necessary. The mud drum is protected from the intense heat of the furnace by an ample bridge wall, and acts as an excellent settling chamber, the circulation in that portion of the boiler being comparatively sluggish.

Further information and prices furnished on application.

HEINE BOILER

The Heine Boiler is built wholly of specially tested steel. No cast iron is used in any parts subject to tensile stress. The setting is arranged so the gases of combustion do not reach the main shell until their heat has been largely absorbed in the water tubes. The contraction and expansion of the boiler due to temperature changes is provided for by resting the rear end on rollers, thus preventing any undue stresses. The hand hole plates close the openings from within the water leg, and are made tight by the steam pressure, and not against it by means of screw pressure. The main boiler shells are heavily built. The water legs, also, are of heavy plate steel, flanged to fit the shells. A soot blower can be used from either end of the boilers, and every inch of the tube surface can be reached while the boiler is steaming. Tubes are reached for internal cleaning by removing the hand hole plate, opposite the ends of the tubes. The patent internal mud drum, surrounded as it is by water at a temperature of about 350 F., forms a sort of live steam purifier in which a large part of the scale forming salts are precipitated. It is largely on this account that the Heine Boiler is able to work satisfactorily with the most impure waters. Because of the presence of this mud drum the temperature of the feed water has absolutely no effect on the metal of the boiler, for the reason that it is heated up to the temperature of the circulating water before passing from the drum.

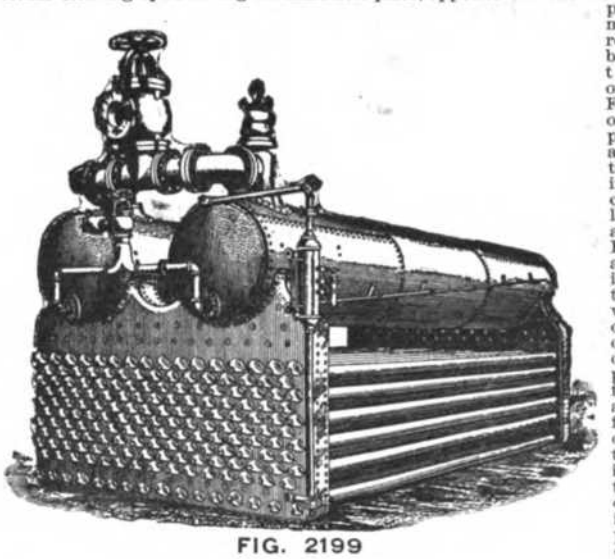


FIG. 2199

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BOILER AND PIPE COVERINGS

ASBESTOS SHEET FIRE FELT

DESCRIPTION, FIG. 2200

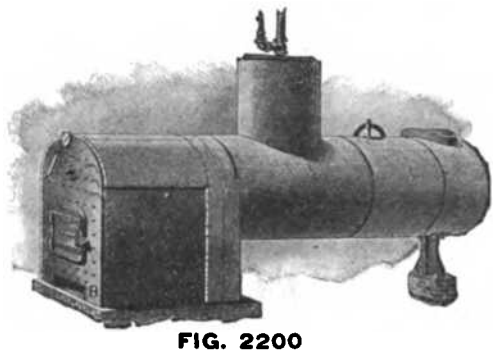


FIG. 2200

Sheet Fire Felt is a firm, even block of fibrous asbestos. It is very light in weight, is singularly adapted to all conditions of heat insulation and will remain intact and effective. It does not sag, settle, or powder. For large pipes, boilers, drums and other large surfaces Fire Felt is furnished in sheets, flat or curved, which can be removed and replaced without injury. It is especially valuable for marine and other high pressure surfaces. Asbestos Cement Felting adheres very readily to Sheet Fire Felt, and can be used over sheets with excellent results in place of canvas if so desired. This cut illustrates a boiler covered with 1½ inch Fire Felt, over which is a jacket of canvas duck sewed and banded on.

PRICES, FIGS. 2200 AND 2201

In sheets 2x3 ft., ¼ inch thick, per sq. ft. 18 cts. In sheets 2x3 ft., 1¼ inch thick, per sq. ft. 30 cts.
" 2x3 " 1 " " " " 25 " " 2x3 " 2 " " " " 35 "
Special thicknesses and irregular shapes and sizes made to order.

HAIR FELT

FOR COVERING STEAM PIPES, BOILERS, WATER PIPES, REFRIGERATORS, REFRIGERATOR CARS, ICE HOUSES, ETC.

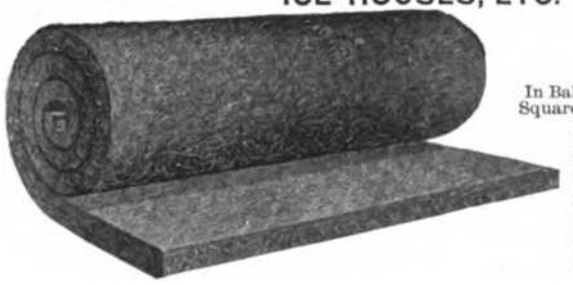


FIG. 2202

PRICES

In Bales Square Ft.	Thickness, Inches.	Per Square Feet.
300	¼	3½ cts.
300	½	4 "
300	¾	4¾ "
300	1	5½ "
300	1¼	6¾ "
150	1½	8 "
150	2	10½ "

ASBESTOS CEMENT FELTING

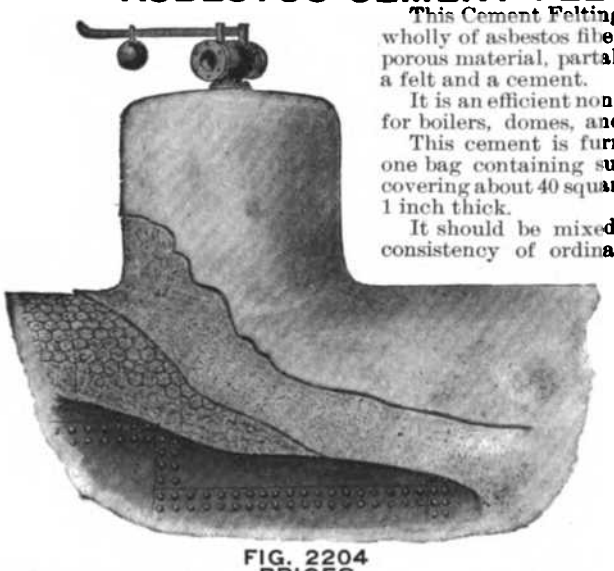


FIG. 2204

This Cement Felting is composed almost wholly of asbestos fibers and forms a light, porous material, partaking of the nature of a felt and a cement.

It is an efficient non-conducting covering for boilers, domes, and irregular surfaces.

This cement is furnished dry, in bags; one bag containing sufficient material for covering about 40 square feet of flat surface, 1 inch thick.

It should be mixed with water to the consistency of ordinary stiff mortar by working it thoroughly with a hoe until the whole mass is perfectly amalgamated.

Apply with a trowel.

Hexagonal wire as shown in cut is often used and sometimes is a necessity, especially on vertical boilers and large heated surfaces subject to vibration.

PRICES

Per bag, weighing about 120 lbs.....$3 75

ASBESTOS HOT BLAST CEMENT FELTING

This Cement is specially prepared for superheated and hot blast work, and for covering surfaces liable to become red hot.

It is composed entirely of fire proof materials specially prepared for high temperatures.

It is furnished dry in bags to be applied the same as Asbestos Cement Felting, from two to three inches thick, according to the degree of heat. Wire should always be used in the application of this cement.

PRICES

Per bag, weighing about 140 lbs.....$4 50

ASBESTOS SHEET FIRE FELT

FOR FLUES, BREECHINGS, BULKHEADS, ETC.

DESCRIPTION, FIG. 2201

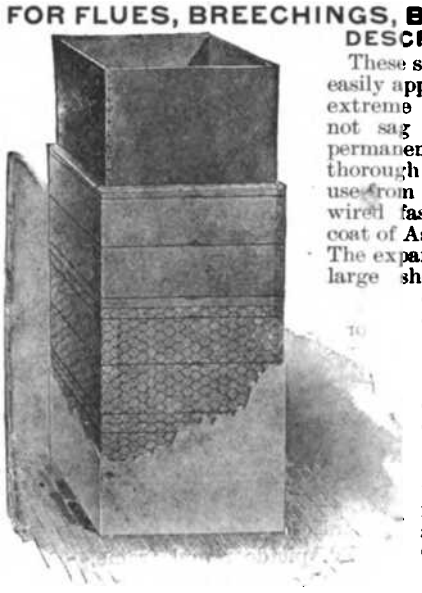


FIG. 2201

These sheets, 24 x 36 inches, are easily applied, and owing to their extreme lightness in weight do not sag the iron, and remain permanently in place. Where thorough insulation is looked for, use from 1½ inch to 2 inch sheets; wired fast and finished with a coat of Asbestos Cement Felting. The expansion and contraction of large sheet metal surfaces are often so great as to injure cement coverings. In placing Sheet Fire Felt next to the iron this difficulty is entirely overcome. Dry houses, ceilings, etc., can be lined in this way.

This cut represents a flue covered with 1½ inches of Sheet Fire Felt and Hexagonal Wire Cloth, finished with Asbestos Cement Felting.

ASBESTOS SHEET MILL BOARD

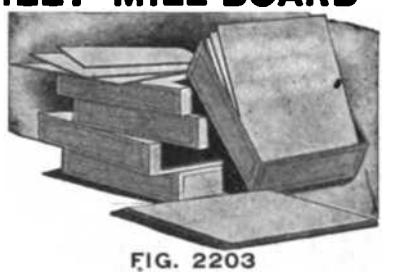


FIG. 2203

This Mill Board is fire and acid proof, and is valuable for packing joints in contact with fire, oils, and is unequaled for hydraulic work, withstanding over 15,000 lbs. pressure to the square inch. It is also used for fire screens, partitions, linings for ranges, stoves, grates, etc. In sheets 40x40 inches, from 1/32 to ½ inch thick. Greater thicknesses and other sizes to order.

Approximate weight per sheet 40x40 inches:

1/32 inch thick	2 to 2½ lbs.	3/16 inch thick	11½ to 12 lbs.
3/64 " "	3 " 3½ "	¼ " "	13½ " 14½ "
1/16 " "	3¾ " 4¼ "	5/16 " "	23 " 25 "
5/32 " "	5½ " 6 "	½ " "	27 " 30 "
⅛ " "	7½ " 8 "		

Case lots, per lb.....7 cents. } Cases weigh about 250 lbs.
Broken cases, per lb...10 " }

We carry in stock hard, medium, and soft Mill Board. We send medium unless otherwise specified.

ASBESTOS ROLL MILL BOARD

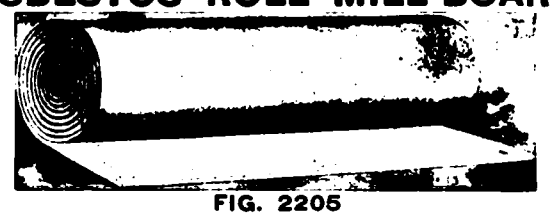


FIG. 2205

Composed of Fibrous Asbestos, taking the place of Asbestos Sheathing where a heavier material is desired; also suitable for joint packing, partition linings, etc. Put up in rolls 36 inches wide, approximating 100 lbs. each, 1/16 inch thick, weight about 35 lbs. to 100 square feet; ⅛ inch thick, weight about 65 lbs. to 100 square feet.

PRICES

Full rolls, per lb.....7 cents.
Broken rolls, per lb.....10 "

Special widths made to order in quantities only.

ASBESTOS MAGNESIA BLOCK COVERING

FOR LARGE STEAM PIPES, BOILERS, DOMES, DRUMS, ETC.

BLOCK COVERING HOOK



FIG. 2206

This covering is made of a very high non-conducting efficiency. It is molded into sections of various lengths, widths and thicknesses, as are required to cover any surfaces.

Regular 1½ inch thickness by 3 or 6 inch widths and 30 inch lengths are used mostly. Other sizes made on order.

They are made to fit any circle, from 10 inches diameter to the largest, as also for flat or any irregular surface.

By means of patented hook (see Fig. 2206) it has become practicable to apply a Sectional Covering of this class to any surface. By the use of this hook any block can be removed and reapplied without injury or even disturbing any of the other sections or blocks. The cut illustrates the sections as applied and the hooks in position for other blocks. Also a portion of the work as completed, with wool felt applied, and another portion finished with canvas cover.

We furnish canvas, felt, wire and hooks in sufficient quantity for the complete application of same.

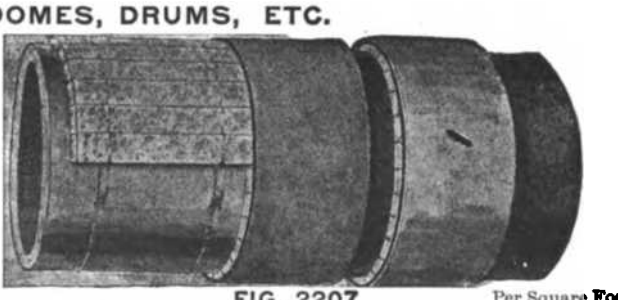


FIG. 2207

PRICES

	Per Square Foot Surface Cov. Measurement.
Any thickness up to and including 1½ inches	23 cents.
" " over 1½ inches up to and including 2 inches	28 "
" " " 2 " " " " 2½ "	33 "
" " " 2½ " " " " 3 "	38 "

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MINERAL WOOL

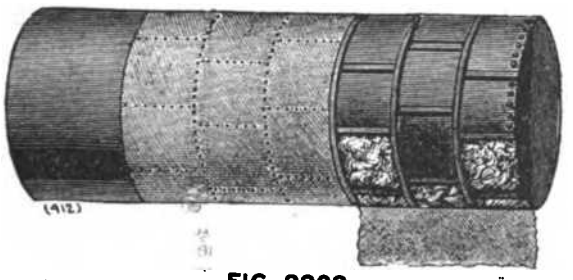


FIG. 2208

Heavy sail duck is tacked on wooden studs, 2 inches high, forming sections about 1½ feet square; for boilers in machine shops common burlaps are used to hold the mineral wool and sheet iron jackets cover the whole.

Mineral wool is essentially a vitreous substance converted to a fibrous condition. In appearance it consists of a mass of very fine fibers interlacing each other in every direction, thus forming an innumerable number of minute air cells. The resemblance of these fibers to those of wool or cotton has given to the material the name of mineral wool in this country and of silicate cotton elsewhere, but it is only in appearance and softness that any similarity exists between the mineral and organic fibers. Mineral wool appears in a variety of colors, principally white, but often yellow or gray and occasionally quite dark. The quality of the wool is not at all dependent upon, or affected by, its color, as all the peculiar properties which constitute its value are present in equal proportions in any of the shades. Mineral wool partakes of the nature of glass without its brittleness, the fibers being soft, pliant and inelastic. They are of irregular thickness and cross each other in all possible directions. It is made by converting scoria and certain rocks while in a melted condition to a fibrous state.



FIG. 2209

Strips of black walnut are screwed on transverse wooden collars, two inches high, the mineral wool then filled between, and the whole bound with brass bands, forming a neat and substantial jacket.

PRICES, MINERAL WOOL

Average.	Lbs. per Cubic Foot.	Square Foot 1 inch thick.	Cubic Feet to Ton.	Cost per 100 lbs. (in ton lots) at Factory.*	Cost per Cubic Foot at Factory, in ton lots.
Ordinary slag wool,	12	1 lb.	166	$1 00	12c.
Selected " "	9	¾ "	223	1 67	15c.
Extra " "	6	½ "	333	4 00	24c.
Ordinary rock "	12	1 "	166	2 00	24c.
Selected " "	8	⅔ "	250	4 00	32c.
Extra " "	6	½ "	333	7 00	42c.

*NOTE.—In less than ton lots add 25c. per 100 lbs. to factory prices.

We can make quick shipments of small lots. For price, ex. store, add 25 cents per 100 lbs. to above list, in ton lots, or 50 cents in less than ton lots.

The material is packed in three bushel burlap bags, for which a uniform price of 10 cents each is made. If returned to us free of all expenses (freight prepaid) and in good order, we credit them at full price charged. This privilege of allowance for empty bags is open only for thirty days after receipt of goods.

ASBESTOS AND MINERAL WOOL BLOCKS

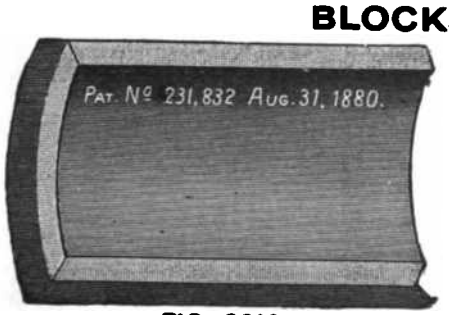


FIG. 2210

Made in blocks 18 x 12 x 1½ inches of thick asbestos sheeting and filled with mineral wool.

In ordering covering for boilers, domes, etc., simply give the number of square feet which are to be covered.

For boilers, drums, etc.

PRICE, 25 CTS. per sq. ft.

"ASBESTOCEL" SECTIONAL PIPE COVERING



FIG. 2212

In this covering the corrugated layers of paper are put on so that the corrugations run concentrically around the pipe, each channel forming a closed loop in which the air is effectually imprisoned. The structure partakes of the principle of the arch, and thereby is exceedingly strong and will withstand great pressure and abrasion.

It comprises practically all of the insulating properties which are so well known to be found in abestos.

"Asbestocel" Covering is supplied in sections three feet long and approximately one inch thick. We can furnish it ½ inch and ¾ inch to order.

Inside Diameter of Pipe, Inches.	Covering per Foot.	Elbows, each.	Tees, Each.	Valves, Each.
½	$0 22	$0 27	$0 35	$0 27
¾	23	27	35	27
1	24	27	35	27
1¼	26	27	35	27
1½	27	27	35	27
2	32	32	40	30
2½	36	36	45	45
3	41	41	55	55
3½	43	45	60	60
4	48	50	65	65
4½	52	60	74	74

Inside Diameter of Pipe, Inches.	Covering per Foot.	Elbows, Each.	Tees, Each.	Valves, Each.
5	$0 54	$0 69	$0 80	$0 80
6	68	82	92	92
7	70	95	1 05	1 05
8	77	1 18	1 25	1 25
9	83	1 25	1 50	1 50
10	90	1 40	1 75	1 75
12	1 08	1 75	2 10	2 10
14	1 20			
15	1 28			
16	1 35			

"ASBESTOCEL" FIRE PROOF SHEETS

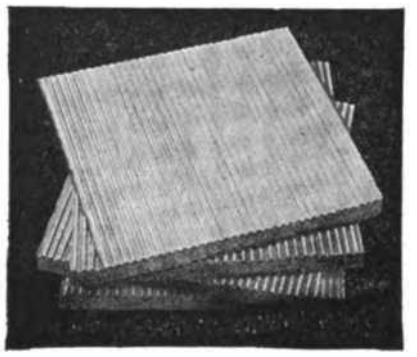


FIG. 2211

"Asbestocel" Sheets are adapted for all classes of heat resisting and heat retaining work such as for steam boilers, flues, breechings, shaftways, ceilings, etc.

PRICES

In sheets 3x3 feet.

½	inch	thick,	per	sq. ft.,	17c.
¾	"	"	"	"	22c.
1	"	"	"	"	27c.
1½	"	"	"	"	35c.
2	"	"	"	"	45c.

Special thicknesses and irregular shapes and sizes made to order.

AIR CELL PIPE COVERING

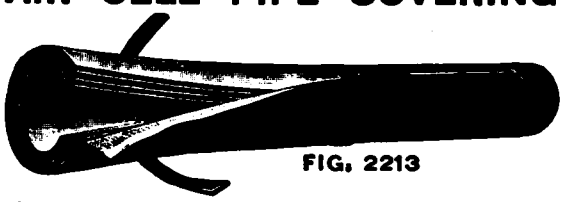


FIG. 2213

In sections three feet long, canvas cased, with metal bands, moulded fittings.

Inside Diam. of Pipe, Inches.	Per Lin. Ft. Canvas Jacketed.	Elbows 90°—45°	Tees, Valves.	Crosses.
½	$0 15	$0 16	$0 24	$0 28
¾	16	20	26	34
1	18	20	26	34
1¼	20	20	26	34
1½	22	20	26	34
2	24	22	29	38
2½	27	25	33	42
3	30	29	38	48
3½	34	32	42	54
4	38	35	47	60
4½	42	40	52	64
5	46	46	60	72
6	50	52	72	80
7	55	66	96	88
8	60	80	1 08	96
9	65	88	1 20	1 08
10	75	1 00	1 40	1 20
12	90	1 40	1 75	1 50

Can be made for pipes 24 inches diameter.
Class A, 1 inch thick, for high pressure.
" B, ¾ inch thick, for low pressure.
" C, ½ inch thick, for hot water.

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PIPE COVERINGS

MINERAL WOOL SECTIONAL COVERING

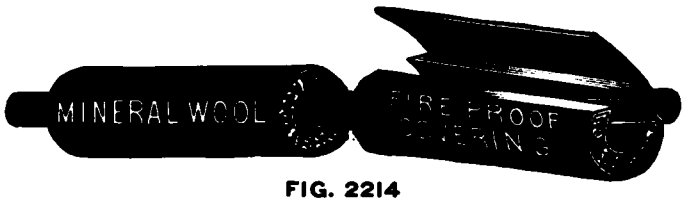


FIG. 2214

Rock wool sectional covering is made in sections three feet long to fit any size pipe. With heavy canvas casing with laps and metal bands, as shown in cut, with fittings to match.

PRICES

Sizes, Inches.	Per Foot. Cents.	Ells.	Tees.	Valves.
½	16	$0 24	$0 30	$0 24
¾	16	24	30	24
1	18	25	32	25
1¼	20	25	32	25
1½	22	26	34	26
2	24	30	38	30
2½	27	34	40	40
3	30	38	46	46
3½	34	42	50	50
4	38	46	58	58
4½	42	50	64	64
5	46	54	72	72
6	50	65	85	85
7	55	80	1 10	1 10
8	60	95	1 25	1 25
9	65	1 10	1 40	1 40
10	75	1 20	1 60	1 60
12	90			

ASBESTOS MAGNESIA MOLDED COVERING

FOR HIGH PRESSURE STEAM PIPES

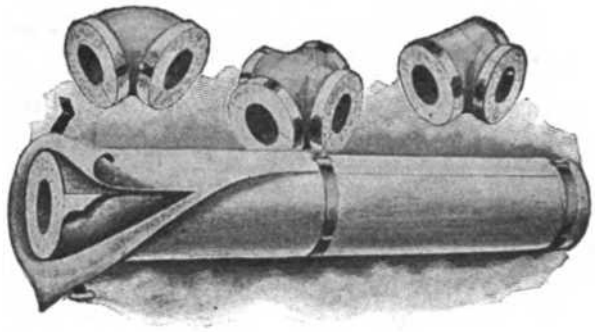


FIG. 2216

Asbestos magnesia sectional steam pipe covering is composed of asbestos fiber, magnesia and other absolutely fire proof, non-conducting materials, molded into sections three feet long, forming a light porous composition, containing an infinite number of minute dead air cells, which are the basis of heat insulation. The sections are cut open lengthwise, so as to be readily placed on the pipe, and are furnished with canvas jackets and brass lacquered bands to hold them in place.

Molded coverings are also made for all regular fittings, including ells, tees, globe valves and crosses.

PRICES, FIGS. 2216 AND 2217

Size Inside Diameters of Pipe, Inches.	Prices per Lineal Foot.	Elbows, Regular and 45° Each.	Tees, Each.	Globe Valves, Each.	Crosses, Each.
½	$0 22	$0 24	$0 36	$0 36	$0 45
¾	24	30	39	39	51
1	27	30	39	39	51
1¼	30	30	39	39	51
1½	33	30	39	39	51
2	36	33	44	44	57
2½	41	38	49	49	63
3	45	44	57	57	72
3½	51	48	63	63	81
4	57	52	70	70	90
4½	63	60	78	78	96
5	69	69	90	90	1 08
6	75	78	1 08	1 08	1 20
7	82	99	1 44	1 44	1 32
8	90	1 20	1 62	1 62	1 44
9	98	1 32	1 80	1 80	1 62
10	1 14	1 50	2 10	2 10	1 80
12	1 50				

ASBESTOS FIBROID SECTIONAL COVERING

FOR STEAM PIPES, HOT AIR AND HOT BLAST PIPES AND HEATED SURFACES



FIG. 2215

PRICES, WROUGHT IRON PIPE SIZES

Inside Diameters of Pipe, Inches.	Per Lineal Foot.	Elbows, Each.	Tees, Each.	Globe Valves, Each.
½	$0 20	$0 20	$0 30	$0 25
¾	20	25	33	25
1	22	25	33	25
1¼	25	25	33	25
1½	26	25	33	25
2	29	29	38	29
2½	34	34	44	44
3	39	39	54	54
3½	44	44	58	58
4	47	50	65	65
4½	52	60	73	73
5	56	68	80	80
6	62	82	90	90
7	69	95	1 20	1 20
8	74	1 10	1 25	1 25
9	84	1 20	1 50	1 50
10	94	1 35	1 75	1 75
12	1 14	1 50	2 25	2 25

Made in canvas finished sections 36 inches in length, with bands.

Asbestos fibroid sectional blocks, ½ inch to 3½ inches thick, for boilers, drums and large surfaces, special prices.

PERFECTO WOOLEN FELT AND ASBESTOS COVERING

FOR LOW PRESSURE STEAM AND HOT WATER PIPES



FIG. 2217

Perfecto covering is composed of successive layers of woolen felt, lined with asbestos sheathing, and furnished with canvas jacket and brass lacquered bands. This covering is made for and especially adapted to low pressure steam pipes. It is made in three standard thicknesses of one-half inch, three-quarter inch and one inch. We do not furnish sectional coverings for fittings of the same material as Perfecto, but for this purpose recommend the use of asbestos magnesia molded coverings, or asbestos cement felting (plastic). Prices same as Fig. 2216.

Note.—Unless otherwise specified in order, coverings one-half inch thick will be furnished.

85 PER CENT. MAGNESIA COVERING

FOR STEAM PIPES

Is made in sections three feet long, cut into halves lengthwise, and furnished with heavy duck jackets and brass lacquered bands. Made to fit standard pipe from ½ in. to 10 in. inside diam., and also regular ells, tees, valves and crosses

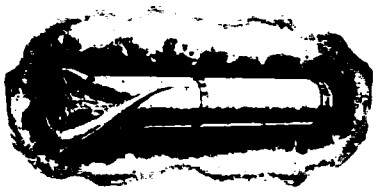


FIG. 2218

PRICES, MAGNESIA SECTIONAL PIPE COVERINGS

Inside Diameters of Pipe, Inches.	Per Lineal Foot, Canvas Jacketed.	Elbows, Each.	Tees, Each.	Valves, Each.	Crosses, Each.
½	$0 15	$0 16	$0 24	$0 24	$0 30
¾	16	20	26	26	34
1	18	20	26	26	34
1¼	20	20	26	26	34
1½	22	20	26	26	34
2	24	22	29	29	38
2½	27	25	33	33	42
3	30	29	38	38	48
3½	34	32	42	42	54
4	38	35	47	47	60
4½	42	40	52	52	64
5	46	46	60	60	72
6	50	52	72	72	80
7	55	66	96	96	88
8	60	80	1 08	1 08	96
9	65	88	1 20	1 20	1 08
10	75	1 00	1 40	1 40	1 20

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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GRAPHITE PIPE JOINT COMPOUND

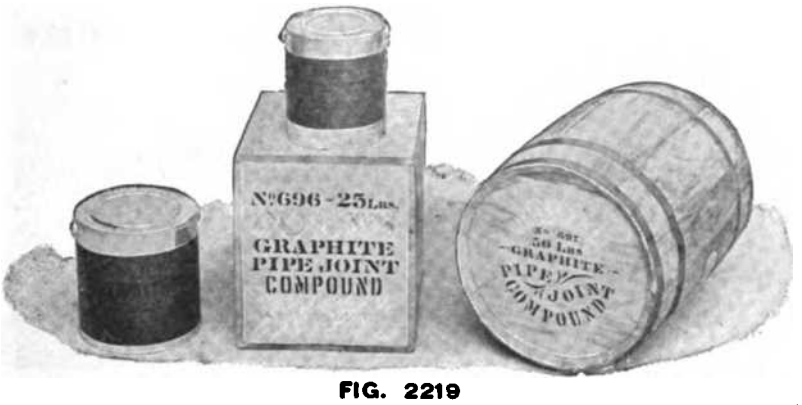


FIG. 2219

Invaluable for the joints of radiators, for steam and hot water apparatus, for gas pipes in streets or buildings, for bolts or screws, and for the various uses of gas fitters, steam fitters, plumbers and machinists.

	Cents per lb.		Cents per lb.
1 lb. cans (36 in case)	20	25 lb. cans (1 in case)	14
5 " " (12 ")	18	50 " kegs	13½
10 " " (6 ")	15	100 " "	13

Special circulars and pamphlets with detailed information sent on request.

CALLAHAN'S STEAM JOINT CEMENT

For flange joints, tank joints, piping, any kind of screw joints, man-holes, hand-holes or any places difficult to keep from leaking.

Packages put up in pails of 25 and 50 lbs., kegs of 75 and 150 lbs., in barrels of 600 lbs., and in casks of 1,200 lbs.

PRICES

In kegs or pails	Per pound $0 20
In barrels and casks	" 18



FIG. 2220

GUMBO CEMENT

Gumbo Cement is a mineral compound, and comes in cans in a powder form (not a liquid) and is to be mixed with boiled linseed oil, and applied to the threads of pipes, like red or white lead. It makes a perfectly tight non-rusting joint on all steam, gas, water and compressed air pipe joints.

PRICES

2 lb. can	$0 25	8 lb. can	$1 00	50 lb. can	$6 25
4 "	50	25 "	2 75	100 lb. and upwards, per lb.	10

ASBESTOS FURNACE CEMENT

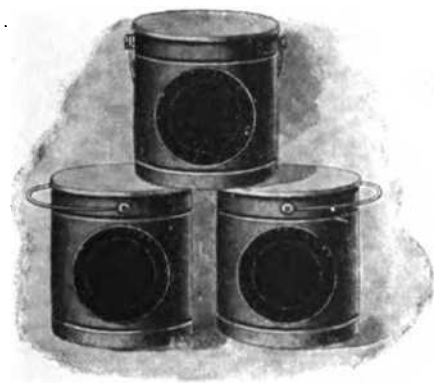


FIG. 2221

Furnace cement is used for repairing broken joints in stoves, ranges, heaters and furnaces, as well as making the most desirable substitute for stove linings. It is furnished ready for use; adheres readily to the surface to which it is applied; sets quickly and vitrifies without shrinking under the most intense heat.

The only precaution necessary in applying this cement is to see that the surface to which it is to be applied is perfectly clean and free from dust and dirt.

PRICES

	Per pound.
500 to 800 lb. barrels	$0 04
300 to 400 " kegs	04½
100 to 200 " pails	05
50 " "	06
	Per dozen.
10 " cans	$10 50
5 " "	6 75
2 " "	3 75
1 " "	2 25

ASBESTOS RETORT CEMENT

This retort cement is composed of asbestos fiber, together with fire and acid proof cementing compounds, and is universally used by gas and chemical works for repairing broken clay and iron retorts and pipes, as well as for cementing fittings and sealing joints. It adheres readily, and when subjected to intense heat vitrifies without shrinking. It is put up in packages of various sizes ready for use and applied with a trowel.

PRICES

	Per lb.
500 to 800 lb. barrels	$0 04
300 " 400 " kegs	04½
100 " 200 " pails	05
50 " "	06



FIG. 2222

ASPHALT VARNISH SPECIAL

This asphalt varnish is an especially prepared material for coating pipe and boiler coverings exposed to the weather, or in damp places. It not only renders the coverings impervious to moisture, but also adds to their efficiency by hermetically sealing seams and joints.

For painting smoke stacks, boiler fronts and other heated iron work. It is also extensively used for painting pipes, iron railings, fences and similar purposes.

Price, per gallon.....$1 00.

SMOOTH-ON COMPOUND



FIG. 2223

An iron cement for leaks or fractures in steam or hydraulic work. Withstands heat, steam, water or oil when hardened. Used for flanged connections, steam boiler patches, and for covering the seams and rivets of leaky steam boilers. Can be applied with a brush. For cast iron or steel cylinder imperfections, coat inside with a brush and force the plastic material into defects filling them with iron.

PRICES

1 pound cans	Per pound, $0 75
5 " "	" 60
25 " "	" 50

SMOOTH-ON CASTINGS

An iron cement for iron founders, repairs blemishes in cast iron. Color the same. Withstands red heat, steam, water or oil.

PRICES

5 pound can	Per pound, $0 25
25 " "	" 25
100 " "	" 20

BOILER CLEANSING COMPOUNDS

WARLEY'S AND LORD'S

Patent improved.

These compounds are prepared in powdered form and sold in the following sized packages:

Kegs	100 to 150 lbs.
Half barrels	150 " 250 "
Barrels	250 " 700 "
Casks	700 " 2500 "

PRICES

Warley's	Per pound, $0 12
Lord's	" 10

Litofarge prevents and removes scales in stationary, marine and locomotive boilers. Packed in 4 pound boxes for stationary and marine boilers and 6½ pound boxes for locomotive boilers (standard gauge) per pound.

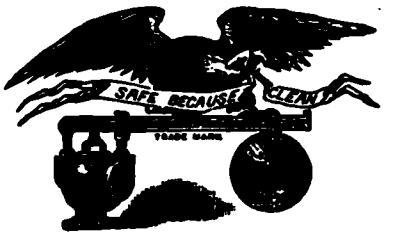


FIG. 2224

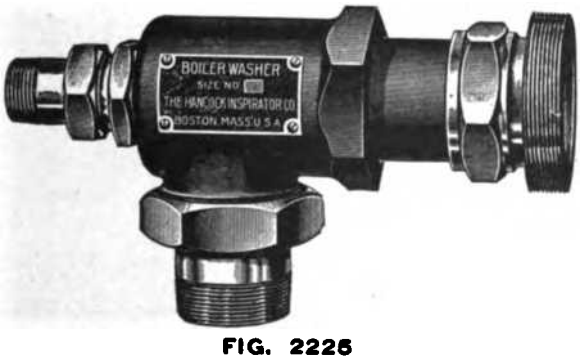


FIG. 2225

THE HANCOCK BOILER WASHER

A perfectly simple and durable apparatus for washing boilers.

Will either lift water from 15 to 20 feet or take it under a head.

At a steam pressure of 100 pounds the temperature of the delivery water will be about 190 degrees Fahrenheit, or as hot as it can be conveniently handled.

The hose or delivery end of the boiler washer is left blank to be threaded to fit hose couplings in use or will be threaded as desired.

PRICES, FIG. 2225

Sizes.	Capacity per Hour. Steam Pressure, 60 lbs.	Pipe Connections. Steam.	Suction and Delivery.	Discharge Nozzle. For End of Delivery Hose.	Each.
Small	2,200 gals.	¾ inches	1½ inches	¾ inches	$35 00
Medium	3,900 "	1 "	2 "	1 "	40 00
Large	6,000 "	1¼ "	2½ "	1¼ "	50 00

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BOILER TEST PUMPS AND BOILER WASHING AND TESTING APPARATUS

PORTABLE TESTING PUMP

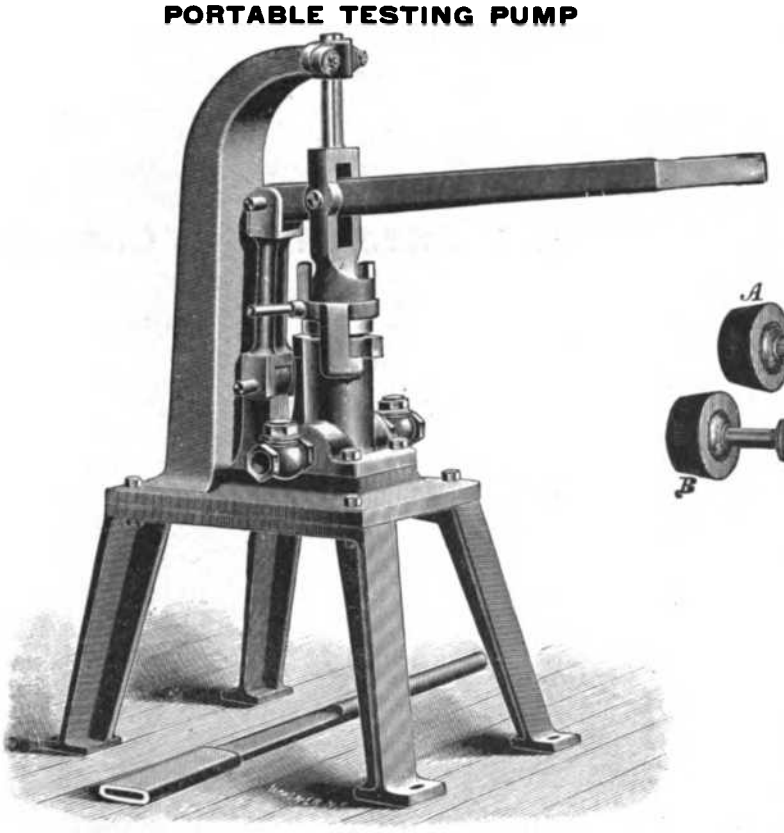


FIG. 2226

This pump was designed for low pressure work not exceeding 800 lbs. pressure per square inch, and is fitted with a double piston, the larger having a diameter of three inches, and a stroke of 4 inches, and is capable of giving a pressure of 200 lbs. to the square inch, while the smaller one (1¾ inches) can give the maximum pressure—800 lbs.

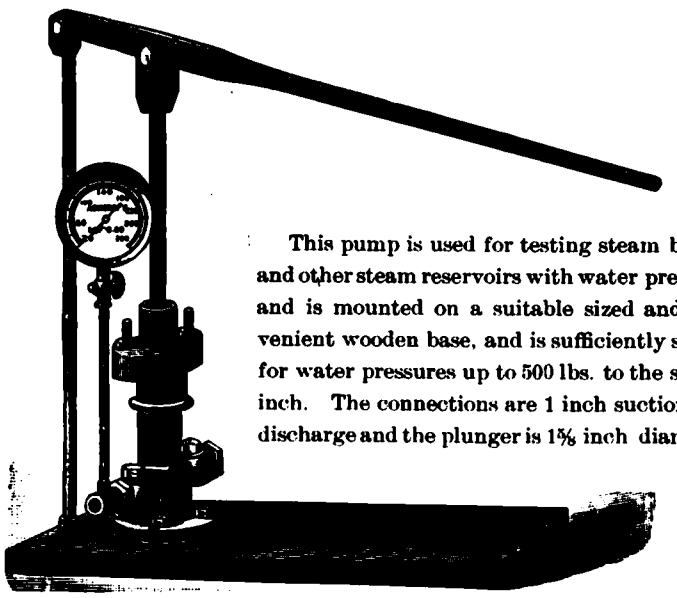
The pump is fitted for ordinary steam pipe connections, 1 inch in diameter, and is mounted on a platform having four legs or wheels of good size as desired, making it convenient in moving and firm while pumping. The change from large to small piston is made by throwing a latching clutch.

The valves are conveniently placed and of the best construction.

PRICES

Double Piston Pump.....each, $125 00
Single Plunger Pump, 3 inch piston..... " 100 00

ASHCROFT BOILER TEST PUMP AND GAUGE



This pump is used for testing steam boilers and other steam reservoirs with water pressure, and is mounted on a suitable sized and convenient wooden base, and is sufficiently strong for water pressures up to 500 lbs. to the square inch. The connections are 1 inch suction and discharge and the plunger is 1⅝ inch diameter.

FIG. 2228

PRICES

Pump, complete with 5 inch dial iron case test gauge.....each, $35 00
" no gauge..... " 30 00

BOILER WASHING AND TESTING APPARATUS

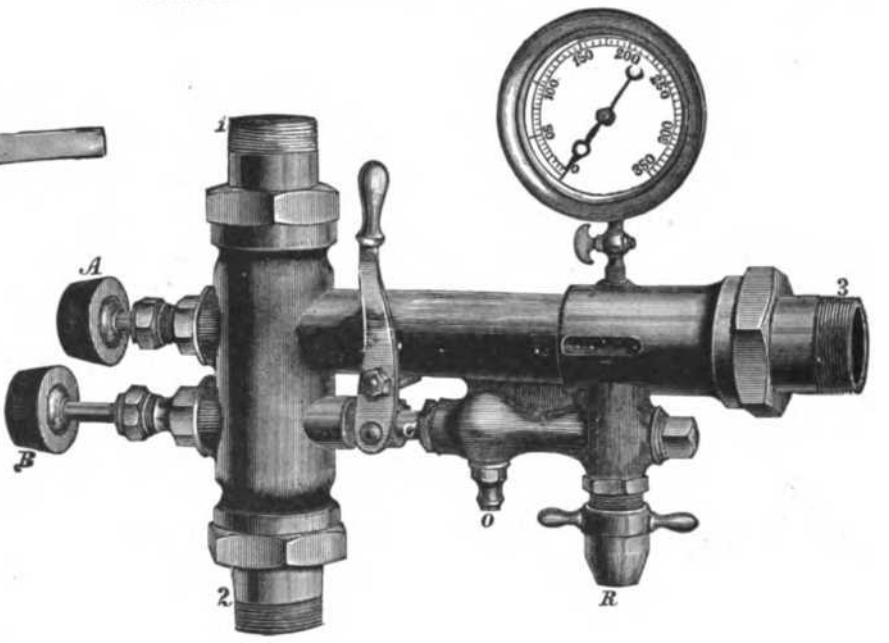


FIG. 2227

This Washing and Testing Apparatus will wash out, fill, and apply pressure to a boiler, with hot water. It has a capacity of 5,000 gallons per hour.

When it is used, the boilers are washed much more effectually than can be done with cold water, and their temperature is not materially reduced.

It enables one to blow out, wash, and fill with hot water and have engine ready for service within one hour, without injury to the boiler.

When applying pressure it will produce and maintain from three to five times the amount of steam pressure used in operating it.

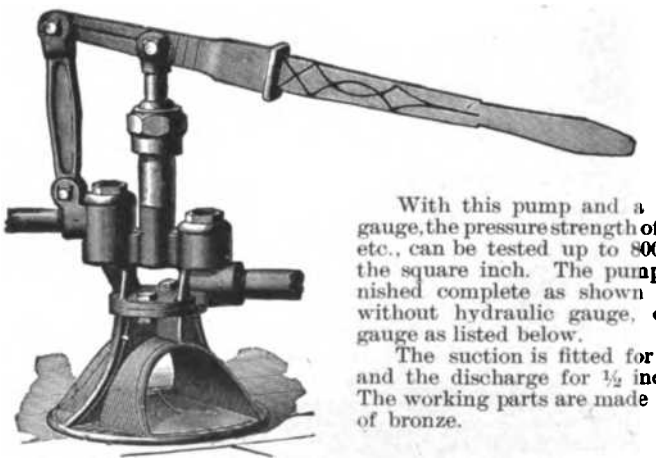
This apparatus has connection for 2 inch pipes, and must be located where the water will flow to it.

Connect steam pipe to swivel No. 1; water supply No. 2; and discharge to No. 3.

PRICE, $150.00

LITTLE GIANT HYDRAULIC PRESSURE TEST PUMP

FOR TESTING BOILERS, CYLINDERS, PIPES, ETC.



With this pump and a suitable gauge, the pressure strength of boilers, etc., can be tested up to 800 lbs. to the square inch. The pump is furnished complete as shown in cut, without hydraulic gauge, or with gauge as listed below.

The suction is fitted for ¾ inch and the discharge for ½ inch pipe. The working parts are made entirely of bronze.

FIG. 2229

PRICES

Size of Piston.	Length of Stroke.	Length of Lever.	Suction for	Discharge for		
					Without Gauge.	With Gauge
⅞ inch.	3 inch.	24 inch.	¾ inch Pipe.	½ inch Pipe.	$25 00	$50 00

N. B.—Every part of this pump is constructed in the most substantial manner, so that greater pressure can be obtained by using a longer lever, which can be easily made of bar iron or steel, the lever socket being adapted for the change.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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IMPROVED STANDARD TUBULAR WATER ARCH

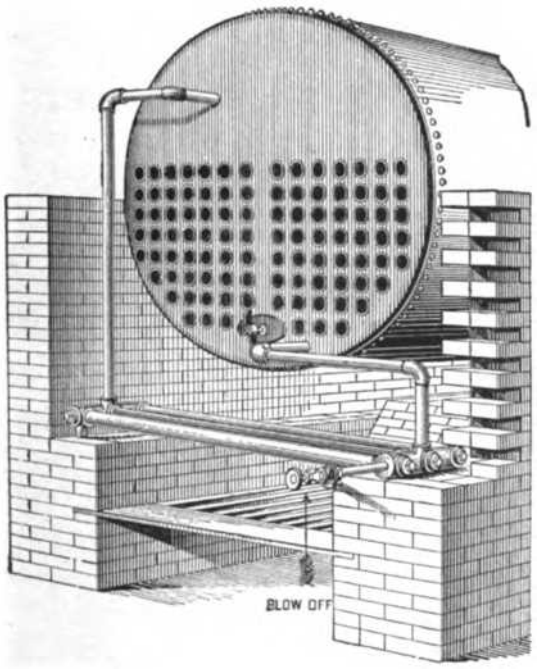


FIG. 2230

This arch is constructed so as to allow for a perfect circulation, same as in an ordinary water tube boiler.

This arch is made of extra heavy steel boiler tubes, the ends of which are expanded in two steel headers. On the side of the headers opposite to the tubes there are openings supplied with special plugs, which, when removed, will allow of the tubes being cleaned, same as the tubes in an ordinary tubular boiler.

Heavy brass unions can always be used to advantage in connecting the arch to the boiler.

PRICES

Size, Inches.	Each.	Size, Inches.	Each.	Size, Inches.	Each.	Size, Inches.	Each.
30	$75 00	42	$85 00	54	$95 00	66	$105 00
36	80 00	48	90 00	60	100 00	72	110 00

HANCOCK SHAKING GRATE WITH WATER TUBES

FOR STATIONARY AND LOCOMOTIVE BOILERS

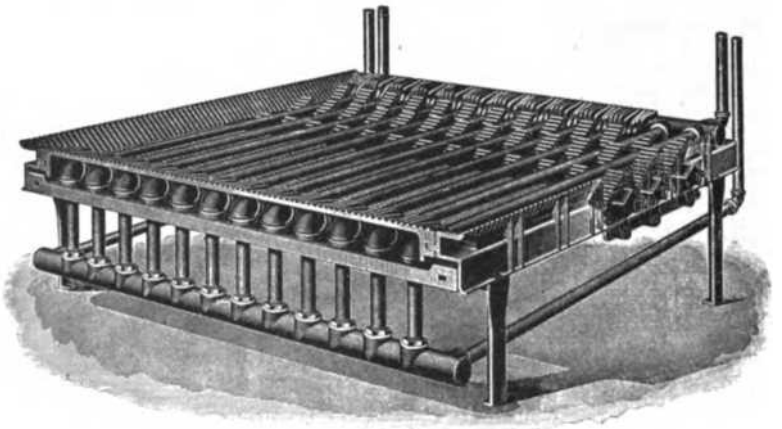


FIG. 2231, REPRESENTING STATIONARY TYPE

The cut above shows the general construction and the arrangement of the "Water Tubes" of the Hancock Shaking Grate with Water Tubes,—"Stationary" Type,—the front section being tipped forward or in the position when being shaken.

The Hancock Shaking Grate with Water Tubes is most economical in the production of steam with either anthracite or bituminous coal, and is especially adapted for burning coke, the "Choppers" or shakers having the necessary air space (54% including the "Water Tubes") to successfully burn this class of fuel.

The "Water Tubes," which are connected to "Headers" in the front and back of the furnace, protect the "Choppers" (which oscillate between the "Water Tubes") from burning, thus insuring the greatest durability.

The "Rear Header" is located a considerable distance below the top of the grate and is connected to the "Water Tubes" by vertical tubes and elbows to allow for the irregular expansion of the "Water Tubes."

The "Rear Header" is connected at each end by pipes running through the ash pit and up to a convenient place in the bottom of the front tube sheet.

The "Front Header" is connected at each end by pipes passing through the boiler front up to and through the smoke arch and into the boiler at a convenient point in the tube sheet just below the water line.

The grate inclines about one inch in one foot from the rear to the front, which secures easy circulation of the water through the "Water Tubes."

The "Brass Plugs," which are fitted into the outer ends of the "Tees" used for making the turns in the pipe connections on the front of the boiler, may be easily removed to either wash out or examine the "Water Tubes" or "Headers."

No valves or other fittings being required, the simplicity and durability of the grate will be apparent.

The arrangement of the "Water Tubes" and pipe connections absolutely prevents any pocketing or trapping of air at any point and secures perfect circulation of the water.

The "Water Tubes," "Headers," and "Rocker Bars" are supported on an independent frame which extends entirely around the fire box and which is supported by four legs resting on the bottom of the ash pit. The entire framework can be raised or lowered to correspond to the height of the furnace door, and is held securely together by keys, no bolts being used.

LOCOMOTIVE TYPE

In the Locomotive type the "Water Tubes" screw into the front or tube sheet of the fire box and their back ends are secured by composition metal "Sleeves" tapered and threaded on the outside. The "Sleeves" are bored on the inside to fit the "Water Tubes," which are turned a short distance from the end.

The "Sleeves" being screwed tightly into the back sheet of the fire box are compressed against the "Water Tubes" sufficiently to make a tight joint, but will allow the "Water Tubes" to slip endwise sufficiently to overcome any inequality of expansion. This arrangement for securing the "Water Tubes" has proved to be most effectual and reliable.

Estimates for grates for boilers of from 48 inches to 84 inches diameter inclusive, and further detailed information will be furnished upon application.

McCLAVE'S IMPROVED GRATES

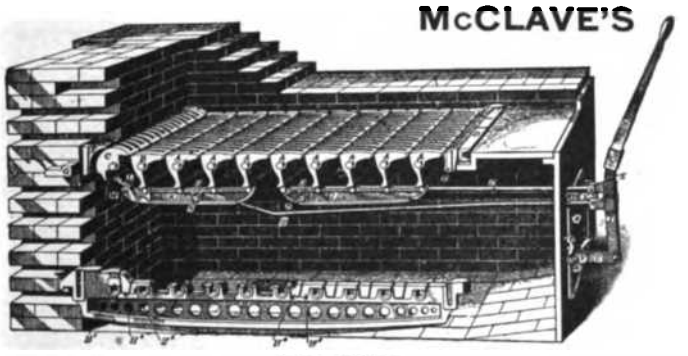


FIG. 2232

Fig. 2232 shows one row or section of McClave's Improved Grate, fitted with twin levers for divided movement, with the grate bars in their normal position, and having one journal bar removed to show end view of grate bars, also the arrangement of the connecting bars and connecting rods.

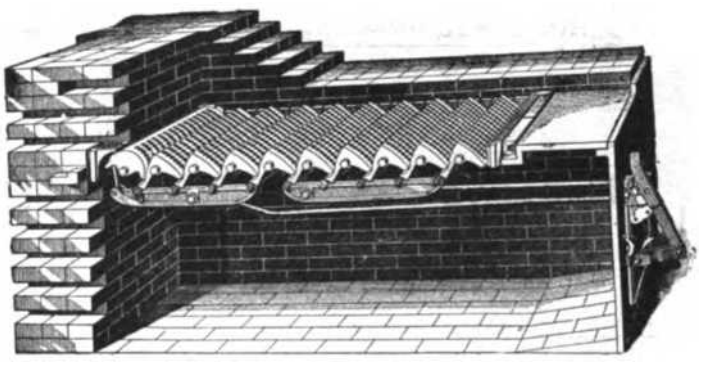


FIG. 2233

Fig. 2233 shows one divided section of McClave's Improved Grate, showing shaking movement. This movement is used principally for soft coal and anthracite egg coal. In this movement there is no increase of openings during the operation, the bars keeping equi-distant from each other in their travel from the normal position downward and return.

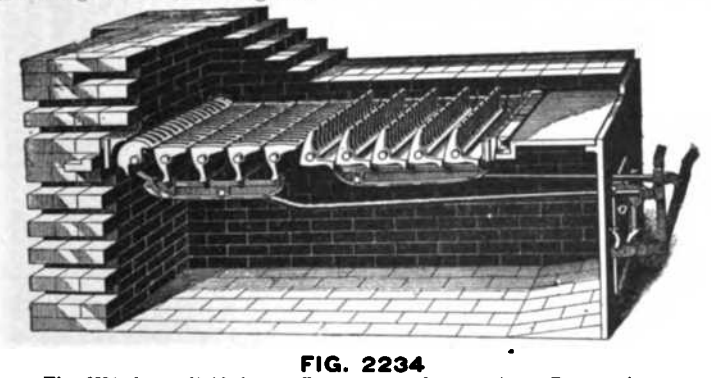


FIG. 2234

Fig. 2234 shows divided cut off movement, front series. (Rear series operated similarly.) This method of operation is especially designed for all kinds of coal fuels which form large slabs of clinkers, and which cannot be properly handled by either of the other movements without wasting the unconsumed fuel on the surface of the fire.

The McClave Improved Grate has been adopted by many of the largest manufactories in the country, such as steel mills, wire mills, paper mills, steam heat and electric companies, packing houses, pipe lines, collieries, etc., etc. It combines many valuable features for burning hard or soft coal, especially the smaller sizes. Special catalogue and prices furnished on application.

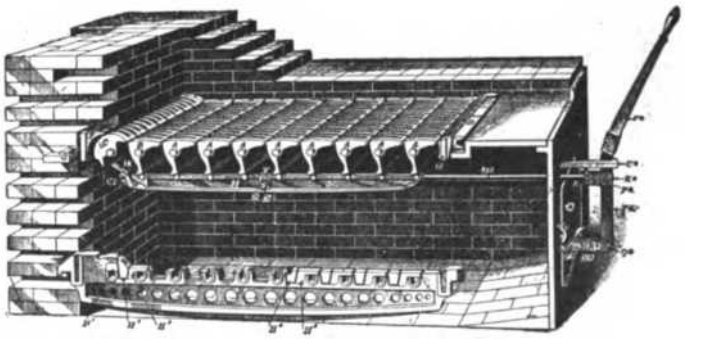


FIG. 2235

Fig. 2235 shows one section of McClave's Improved Grate fitted with single levers for whole cut off movement, with the grate bars in their normal position, and having one journal bar removed.

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ASHCROFT-MARTIN BALANCED FURNACE DOORS AND GRATE BARS

DESCRIPTION, FIGS. 2236 AND 2237

The fire bars are plain square wrought iron, and project outside the front of the furnace; each alternate one can be turned round by means of a spanner key, and the whole set can be thus turned in about one minute, freeing the furnace from dross, and clearing the spaces for the admission of air. The furnaces thus fitted will run double the time of ordinary ones without cleaning out.

This combination of the patent doors and bars is such as to allow the freest admission of air through the fuel, insuring the maximum of combustion, and causing a constant current of fresh air in the stoke hole. The oxygen mixes with the gases in the process of combustion, causing them to become perfectly developed before leaving the furnace, which diminishes the fouling of the tubes and prevents the possibility of re-ignition taking place in the chimney.

The patent balanced door, Fig. 2236, can be attached to any style of boiler. When ordering, send a rough sketch of boiler fronts, and give dimensions of opening for door, and we can furnish doors all fitted ready to attach in place of the ordinary furnace door.

Prices on application

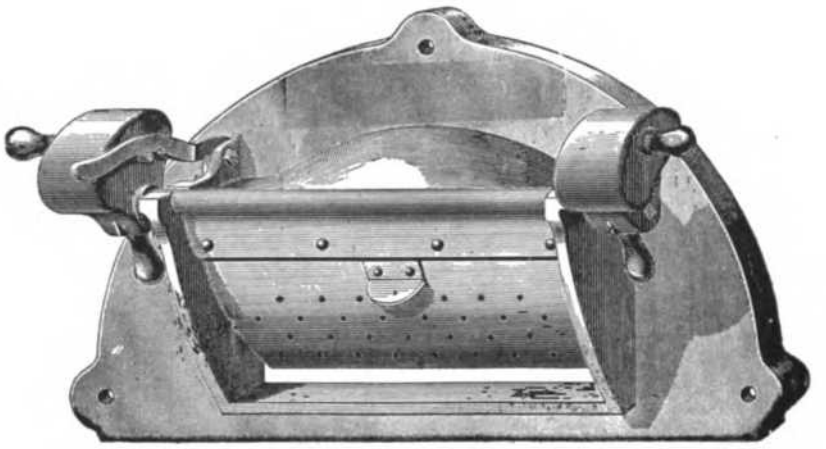


FIG. 2236

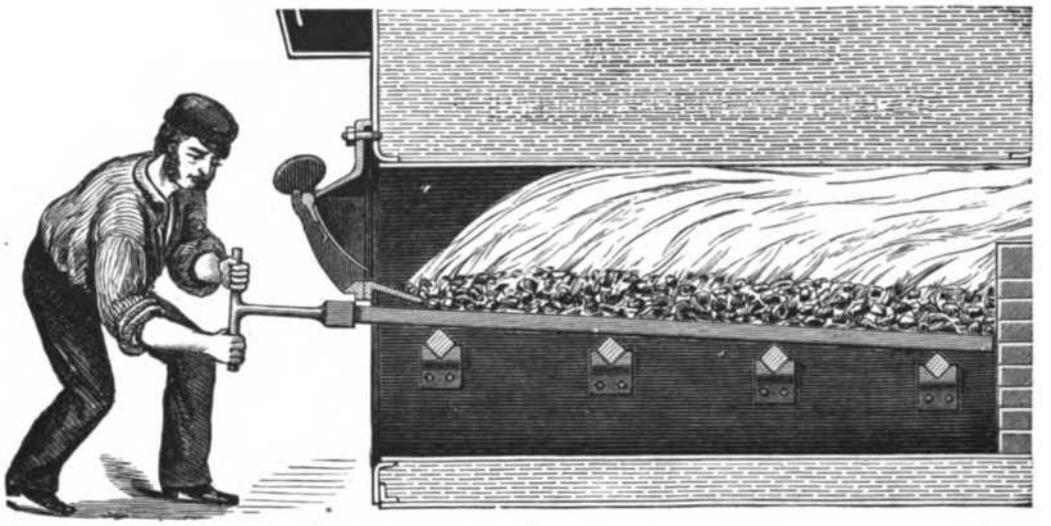


FIG. 2237

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

SECTIONAL GRATE AND GRATE BARS

FOR STEAMERS, LOCOMOTIVES AND STATIONARY BOILERS. ADAPTED FOR ANTHRACITE COAL, BITUMINOUS COAL, SAWDUST AND SHAVINGS

NO. 5 ROCKING GRATE



FIG. 2238

NO. 6 DUMPING GRATE

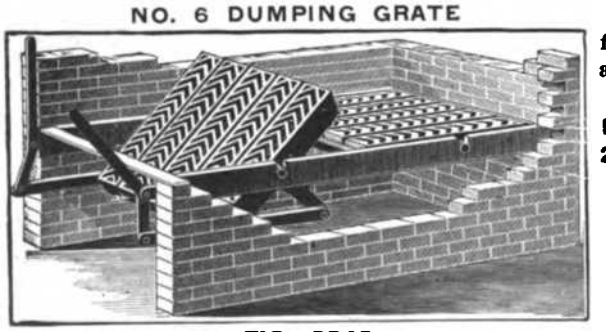


FIG. 2240

AIR OPENINGS, FIGS. 2238 TO 2242 FOR BURNING SAWDUST OR SHAVINGS

For burning sawdust	¼ inch opening, and ⅜ inch iron ⅜ " " " ⅜ " " ½ " " " ½ " "
" " shavings	½ " " " ½ " " ⅝ " " " ½ " "

DIRECTIONS FOR ORDERING NO. 2 GRATE

Give length and width of furnace. We make allowance for expansion. State whether bars are to go in one or two lengths. State what air opening is preferred. State whether furnace is of brick or iron.

Special sheet of directions for ordering grates Nos. 1, 5 and 6 sent on application.

PRICES, FIGS. 2238 TO 2242, ON APPLICATION.

NO. 1 OR SECTIONAL GRATE

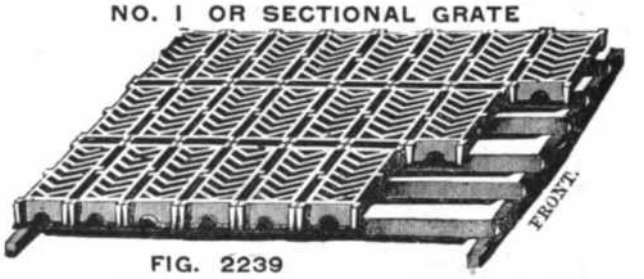


FIG. 2239

NO. 2 OR LONG BAR IN ONE OR TWO LENGTHS

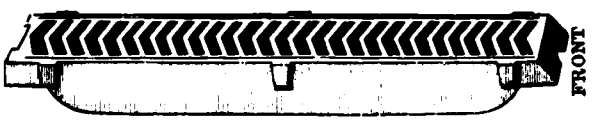


FIG. 2241, TOP VIEW



FIG. 2242, BOTTOM VIEW

AIR OPENINGS, FIGS. 2238 TO 2242

The patterns are of the following sizes, and are marked respectively thus:

A—	¼	inch opening and	⅜	inch iron for	burning	screenings
B—	⅜	" " "	⅜	" "	"	buckwheat coal
C—	½	" " "	½	" "	"	pea or nut coal
D—	⅝	" " "	½	" "	"	stove coal
E—	¾	" " "	½	" "	"	egg coal
F—	⅞	" " "	½	" "	"	broken coal
G—	1	" " "	½	" "	"	lump coal

For bituminous coal ½ inch, ⅝ inch or ¾ inch openings as preferred.

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GRATE FOR CORLISS, HAZLETON AND CLIMAX BOILERS



FIG. 2243

GRATE FOR NEW CORLISS AND MANNING BOILERS

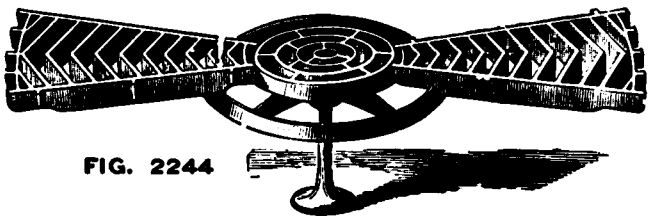


FIG. 2244

N. B.—Those giving orders for this grate will please give the depth from the ledge (where the grates rest) to bottom of ash pit; and dimensions of ash pit door opening; also, giving diagram of the furnace, if possible, with the exact diameter in the clear between rivets (if such come in the way). We make the allowance for expansion.

GRATES FOR VERTICAL CORLISS AND MANNING BOILERS

NO. 2 1/2

DIRECTIONS FOR ORDERING NO. 2½ GRATES

Give diameter of furnace from iron to iron—taken 2½ inches above top of bearings. We make allowance for expansion. Give width of ledge, or bearing on which the grate rests. State what air opening is preferred.



FIG. 2245

PRICES, FIGS. 2243 TO 2245, ON APPLICATION

ARGAND STEAM BLOWER FOR FURNISHING BLAST TO BURN THE CHEAPER GRADES OF HARD AND SOFT COAL

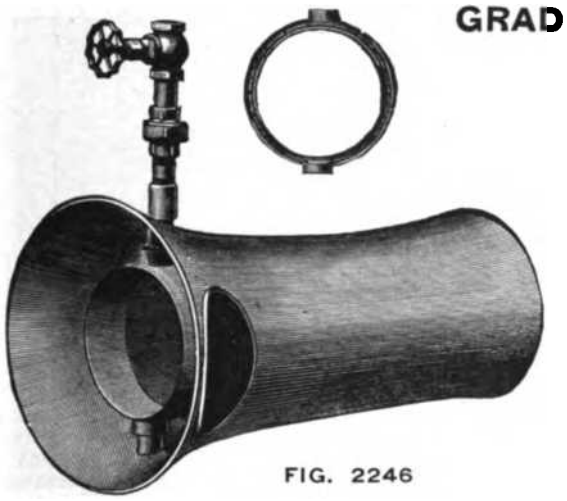


FIG. 2246

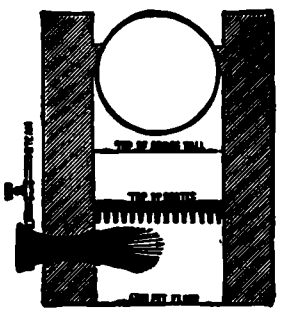


FIG. 2247

Method of placing a straight blower through a side wall.

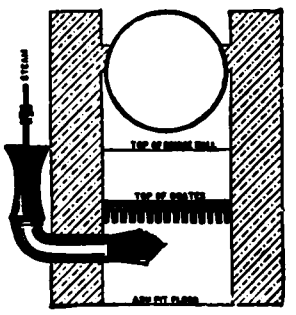


FIG. 2248

Method of placing a blower in side wall with elbow.

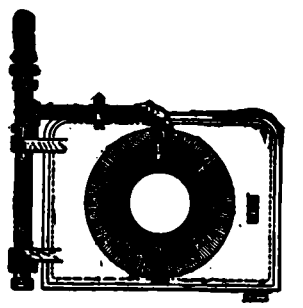


FIG. 2249

Method of connecting the blowers to the ash doors when they can not be placed through the side walls or between the ash doors, as shown in preceding plans, In this case, the steam supply pipe is brought down to and in line with the hinge pin, the center of the pipe being in line with the center of the hinge pin. Connection is then made to the blower as shown above in cut. Just above the hinge pin a swivel joint is placed in the vertical pipe so as to permit the opening and closing of the ash doors.

DESCRIPTION, FIG. 2246

The special merits of this blower are as follows: (1) It furnishes a large volume of air with a small amount of steam. (2) The air and steam are thoroughly mixed in the shell of the blower before the blast is delivered into the ash pit, (3) It makes very little noise in operation and furnishes a superior quality of blast for the burning of small coal fuels.

No. of Blower.	Length of Shell, Inches.	Diameter Steam Ring, Inches.	Outside Diameter of Shell at Mouth or Air Inlet End, Inches.	Outside Diameter of Shell at Outlet or Discharge End. Length, Inches.	Diameter, Inches.	Length, Inches.	Diameter, Inches.	Length, Inches.	Diameter Inches.	Diameter of Hole required in front for Flange Blower, Inches.
7	20, 24, or 27 long	7	13½	20	9⅞	24	9⅞	27	10⅝	..
7	17 long, with flange	7	13½	17	8¾	..	...	..	..	10
6	20, 24, or 27 long	6	12½	20	8¾	24	8¾	27	9⅜	..
6	17 long, with flange	6	12½	17	7¾	..	...	..	..	8⅞
5	20 or 24 long	5	11⅜	20	7⅞	24	8⅜	..	..	..
5	16 long, with flange	5	11⅜	16	6¾	..	...	..	..	7⅞
4	20 or 24 long	4	9¼	20	6¼	24	6⅞	..	..	..
4	16 long, with flange	4	9¼	..	..	..	...	..	..	..
3	20 or 24 long	3¼	8¼	20	5 9/16	24	6 5/16	..	..	..
3	15 long. with flange	3¼	8¼	15	4¾	..	..	..	..	..

The length of the blower shell does not determine the size, but the diameter of the ring and shell denote both size and power.

PRICES ON APPLICATION

The Nos. 3 and 4 blowers are designed mainly for vertical boilers, and when used for such purpose should always have an elbow, so that the blower will stand vertical by the side of boiler. The No. 5 can also be used for this purpose.

The blowers are fitted up with globe valve, union and nipples, ready to attach to steam supply pipe from boiler.

No. 3 will furnish blast for from 4 to 8 square feet of grate surface. No. 4, 8 to 12.

Nos. 5, 6 and 7 are designed for all kinds of horizontal furnace construction.

No. 5 will furnish blast for from 12 to 20 square feet of grate surface. No. 6. 20 to 30. No. 7, 30 to 40.

A furnace having from 40 to 60 square feet of grate should be equipped with two No. 6 blowers, and a furnace having from 60 to 80 square feet of grate should have two No. 7 blowers.

All short blowers, "with flange," are designed to go through the front; as shown in Fig. 2249.

We can furnish elbows for all the above sizes when required.

When ordering, state the size and style of blower wanted.

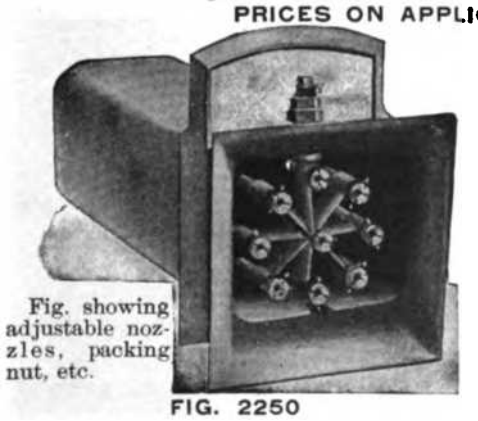


Fig. showing adjustable nozzles, packing nut, etc.

FIG. 2250

HOT BLAST INJECTOR BLOWER

This blower acts on the same principle as a water injector, with this difference, that the nozzles have the same adjustment as a valve, so that in making the adjustment a light or heavy air blast can be produced at will.

The blower blast is thus under perfect control.

9 inch blower having 9 adjustable jets will furnish sufficient power for 36 square feet of grate surface.

Details and prices on application.

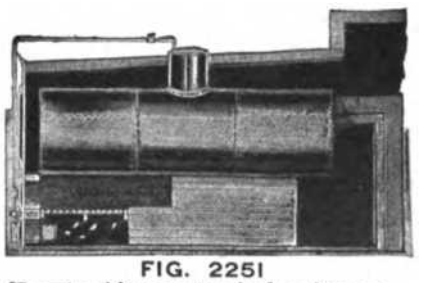


FIG. 2251

Showing blower attached to furnace.

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ASH SPRAYER

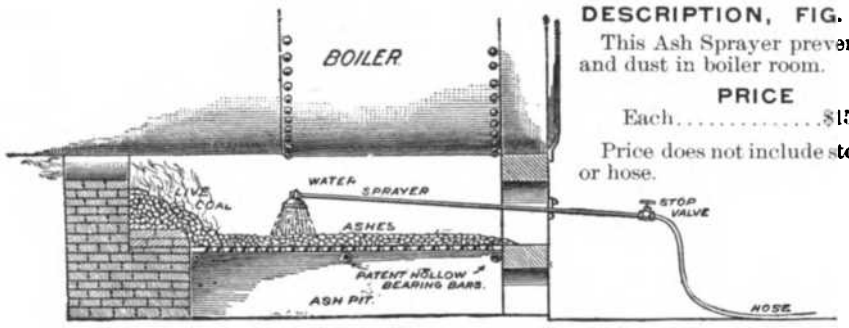


FIG. 2252

DESCRIPTION, FIG. 2252

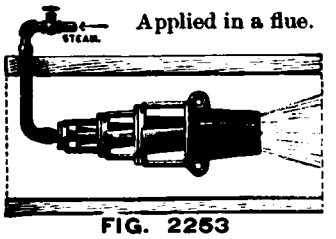
This Ash Sprayer prevents heat and dust in boiler room.

PRICE

Each.....$15 00

Price does not include stop valve or hose.

LEAD BLAST NOZZLE



Applied in a flue.

FIG. 2253

PRICES AND TABLE OF SIZES

Sizes, Nos.	Prices.	Sizes of Flue in Inches.
0	$25 00	9 to 11
1	30 00	12 " 15
1½	40 00	16 " 19
2	50 00	20 " 23
2½	65 00	24 " 28
3	80 00	29 " 33

BLAST NOZZLE
OR CHIMNEY VENTILATOR

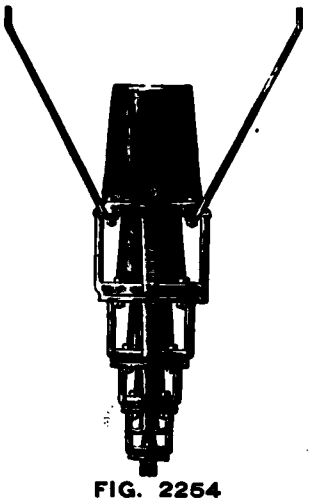


FIG. 2254

DESCRIPTION, FIG. 2254

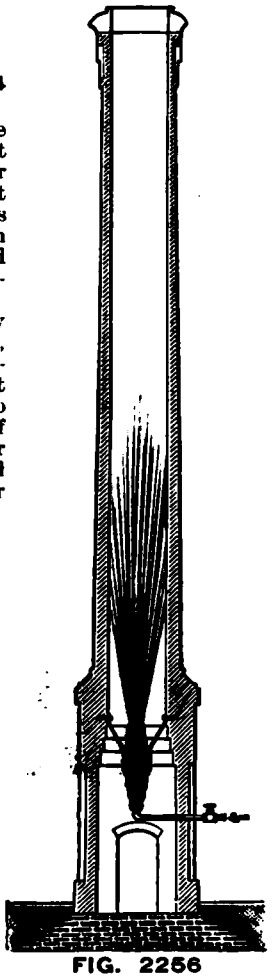
These instruments find their use and application where the draft of chimney is defective, either through want of altitude or want of area; also in flues and conduits which have no natural draft; in the latter case the flow is carried by impulse and mechanical contact only.

The Blast Nozzle applies not only where natural draft is defective, but also where, for ordinary purposes, the draft is sufficient but where at times it is necessary to force and burn a larger amount of fuel than the proportions of boiler and stack provide for with natural draft, such as is often the case for steamboat and factory use.

PRICES, FIG. 2254

Sizes of Steam Pipe, Inches.	Sizes, Nos.	Prices.	Sizes of Stack in Inches.
⅜	00	$10 00	Up to 8
½	0	12 00	9 to 11
½	1	15 00	12 " 15
¾	1½	20 00	16 " 19
¾	2	25 00	20 " 23
¾	2½	32 00	24 " 28
1	3	40 00	29 " 33
1	3½	50 00	34 " 40
1¼	4	60 00	41 " 50
1½	6	120 00	51 " 72
2	8	200 00	73 " 96
2½	10	350 00	97 & above

Suspended in a brick chimney.



Suspended in the ventilating flue of drying room.

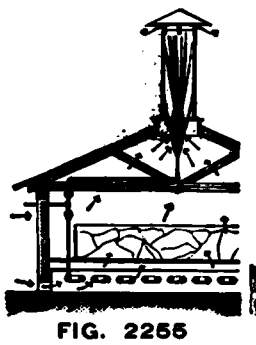


FIG. 2255

FIG. 2256

POSITIVE PRESSURE BLOWER

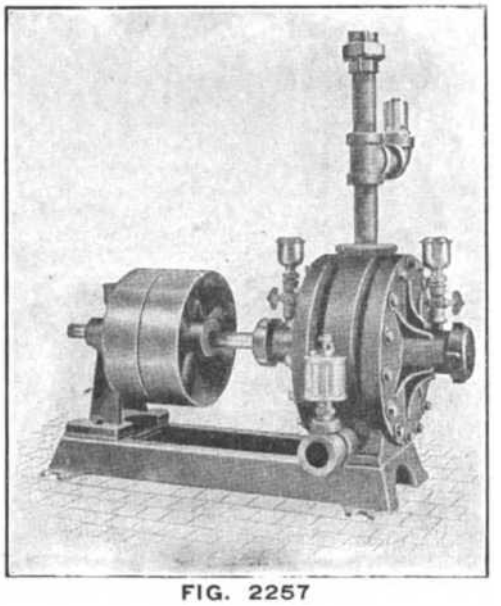


FIG. 2257

PRICES, FIG. 2257

Sizes, Nos.	Each.	Speed Rev. per Minute.	Capacity in Cubic Feet.	Size of Outlet, Inches.	Size Pulleys, Inches.	Shipping Weight, Pounds.
1	$30 00	600	6	¾	6x1½	30
2	40 00	600	15	¾	6x2	50
3	50 00	400	28	1	8x2	100
4	80 00	400	40	1	10x2	125
5	130 00	350	63	1½	12x3	275
6	160 00	350	87	1½	12x4	350
7	200 00	300	114	2	16x4	600
8	275 00	300	175	2	16x6	800

Prices include pulleys, oil cups and blowoff.
Prices on vacuum pumps quoted upon application.

FUEL OIL BURNERS

NO. 9

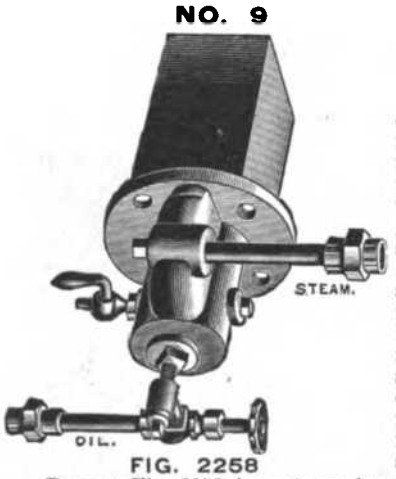


FIG. 2258

DESCRIPTION
FIGS. 2258 AND 2259

The blast is furnished by an ordinary blower, and no new arrangement of wind pipes will be required. By this system of burning crude oil all units of heat in the oil are used and formed into gas as near as can be made and not stored, so that there is no lost heat. For use under steam boilers it is far ahead of coal and also a large saving of labor in more ways than one. It is a direct way of getting best results from oil without going to any expensive process of reducing or making gas through any intermediate method of treatment. On application, stating number of burner desired and class of work to be accomplished, prices will be quoted.

NO. 10



FIG. 2259

Burner Fig. 2258 is a steam burner for boilers or for various other purposes. This burner is noiseless in its operation and does not in any way injure the boilers. It requires very little change in fire box, so that you can change back to coal quickly if desired.

Burner Fig. 2259 is an air burner; can be attached to most any furnace. This burner is very largely used in fitting up forges and furnaces that are already in shops and plants, and also when it is desirable to construct furnaces for special work.

FUEL OIL PUMP

DESCRIPTION, FIG. 2260

Pumps the oil from storage tanks to burners. Heats it with the exhaust steam to a high temperature. Forces it to the burners under a high and uniform pressure. Best possible condition for rapid and complete combustion. Handles equally well light or heavy oils. Will automatically supply one or one hundred burners with equal pressure. Perfectly safe. No oil above level of burners. In no way governed by gravity. Smallest possible quantity of oil in building. Perfectly clean. No oil visible at any time from storage tanks to fires. No leakage. No smell. Perfectly simple. Operation entirely automatic after starting. Furnished complete, ready for pipe connections to storage tanks and burners. Any ordinary pipe fitter or mechanic can make these connections. Full printed directions sent with each machine. Every machine tested before shipment. Prices on application.

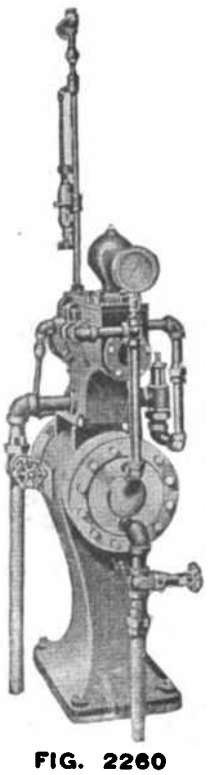


FIG. 2260

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UNIVERSAL STEAM JET ASHES CONVEYOR

The ashes ejector is a steam jet suction and forcing apparatus, taking in the ashes by suction and forcing them the rest of the discharge (which can be of considerable length, of 100 feet or more) into a truck as shown here, or on to a dump.

The ashes conduit is placed below the floor, and at a distance of about 18 inches from front of boilers, and with a suitable number of inlets, say one to each nest of two or four boilers.

The inlets are flush with the floor, and closed with a cover, which is opened when an inlet is to be used.

Each cover has a rod or wire rope attached to it, so that when an inlet is covered with a heap of ashes the cover can be pulled or slid from under.

The smaller pipe C, fitted at end with valve is for the purpose of admitting air.

This valve should be set according to the nature of the material, either full open, partly open, or closed altogether. The most desirable position will promptly manifest itself when operating.

B is the steam pipe connection to ejector.

INLET

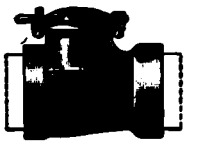


FIG. 2262

EJECTOR

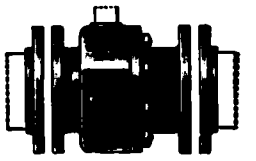


FIG. 2263

PRICES, FIGS. 2262 AND 2263

Sizes, Nos.	Ejector, with Counter Flanges, Each.	Inlets with Cover, Each.	Size of Pipes in Inches. Conduit A.	Steam B.	Air C.	Approx. lbs. of Ashes Discharged per minute.
3 in.	$40 00	$10 00	3	¾	1	35
4 "	50 00	12 00	4	1	1½	60
6 "	70 00	16 00	6	1½	2	130
8 "	90 00	20 00	8	2	2½	230

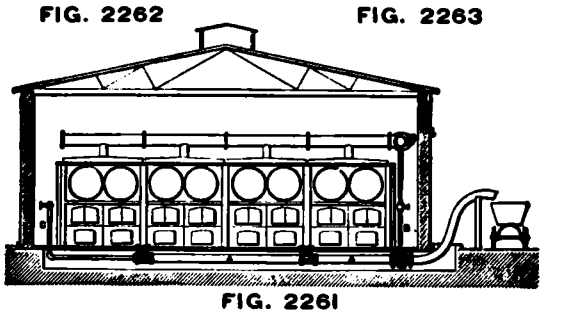


FIG. 2261

Showing location in a boiler house and discharging outside.

CLEANING DOORS

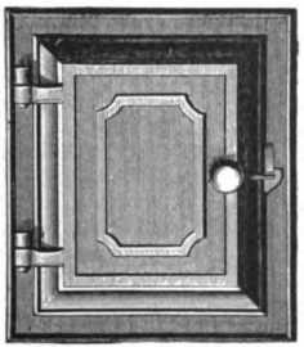


FIG. 2264

Numbers	1	2	3
Size of opening, inches	7 x 9	8 x 15	16 x 21
Prices, each	$2 00	$3 50	$5 00



FIG. 2265

Numbers	1	2
Size of opening, inches	18 x 30	24 x 36
Prices, each	$9 00	$15 00

CLEANING DOORS AND FRAMES

WITH SOCKET HINGES AND ANCHOR RODS

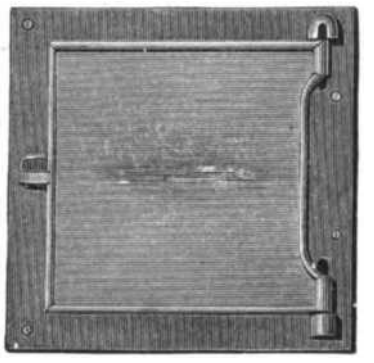


FIG. 2266

Door Openings. Inches.		Inches.	Prices, Each.
8 wide	x	6 high	$1 65
10 "		8 "	1 85
12 "		10 "	2 65
12 "		12 "	2 65
12 "		15 "	3 60
14 "		12 "	3 75
20 "		12 "	3 85

HEAVY CLEANING DOORS AND FRAMES

WITH DRILLED HINGES, DROP LATCH AND ANCHOR RODS

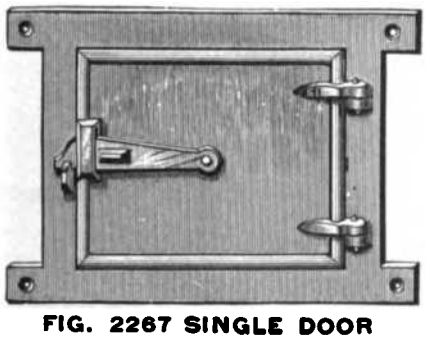


FIG. 2267 SINGLE DOOR

Door Openings. Inches.		Inches.	Prices.
12 wide	x	10 high	$4 00
16 "		12 "	5 50
18 "		15 "	6 75

PRICE, DOUBLE DOORS

Frame, 20 inches wide x 26 inches high
Doors, 12 inches x 10 inches } ...Each, $6 75

PRICES, FIG. 2268

Nos.	Inches.	
1.	9 x 14	Each, $10 00
2.	10½ 16	10 00
3.	11 15	10 00
4.	11 13	10 00

Price is complete, as shown in cut, set to any diameter of boiler, but does not include plate.

Plate, at extra cost, weighs about 100 lbs., unless made extra thick.

PRICES, HAND HOLE SADDLES

Inches.	Each.
6 x 10	$7 00
4 6	6 00

These prices include all fittings complete.

MANHOLE SADDLES

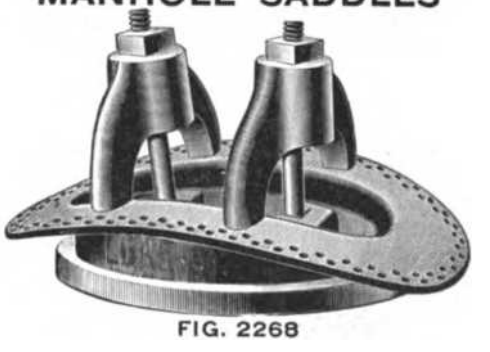


FIG. 2268

FIRE TOOLS

Hoe, Pokers, Slice Bars, Rakes.

PRICE, 20 CTS. LB.

Weights, 50 to 90 lbs. each, according to length.

HUSTON BOILER BRACE

These braces are made of fine quality open hearth steel boiler plate, just the same as used for boilers of 55,000 to 60,000 T. S. They are pressed at one heat from a solid piece of plate, without welds.

They are made of varying lengths and thicknesses to suit the trade, but ½ inch and 7/16 inch are usually found amply strong for any use, while ⅜ inch will do in case of smaller boilers on lower pressures.

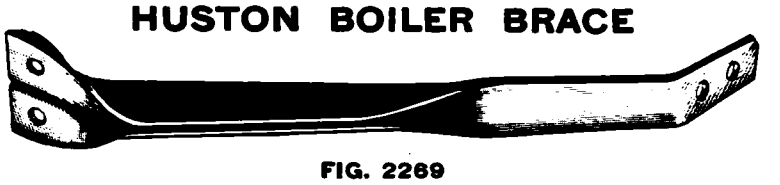


FIG. 2269

Average Weights, Fig. 2269, for Varying Thicknesses and Lengths.

Lengths. Inches. Thickness.	24	30	36	42	48	54	60	72
⅜ inch	10 lbs.	12 lbs.	13 lbs.	15 lbs.	18 lbs.	20 lbs.	23 lbs.	26 lbs.
7/16 "	12 "	14 "	16 "	19 "	20 "	23 "	26 "	30 "
½ "	14 "	16 "	18 "	20 "	23 "	26 "	28 "	34 "

The above are average weights. Longer lengths furnished when wanted. Prices on application.

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STEAM BOILER DAMPER REGULATORS

CLARK'S HIGH PRESSURE

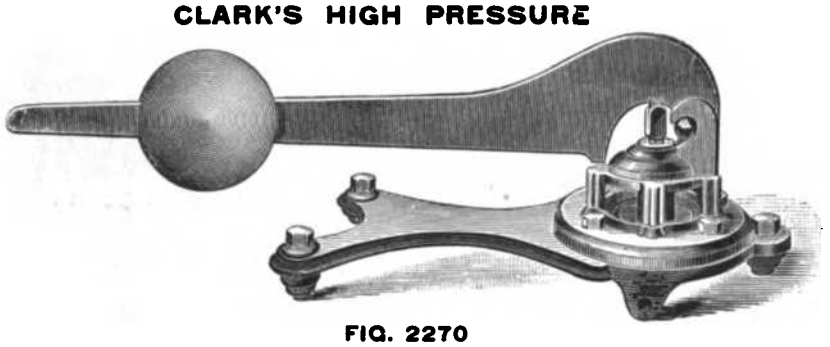


FIG. 2270

Number of Regulators	1	2	3
For use on boilers carrying a pressure not exceeding	50 lbs.	70 lbs.	70 lbs.
Prices	$10 00	15 00	25 00
Extra Rubber Diaphragms	1 00	1 50	2 50

UNION

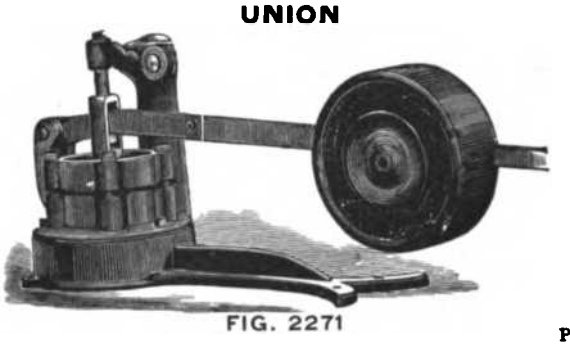


FIG. 2271

Nos.							Prices.
1.	For dampers	6 x 18	to	8 x 24	inclusive		$25 00
2.	" "	9	37 "	12	36	"	40 00
3.	" "	14	42 "	16	48	"	90 00

AUTOMATIC DAMPER REGULATOR

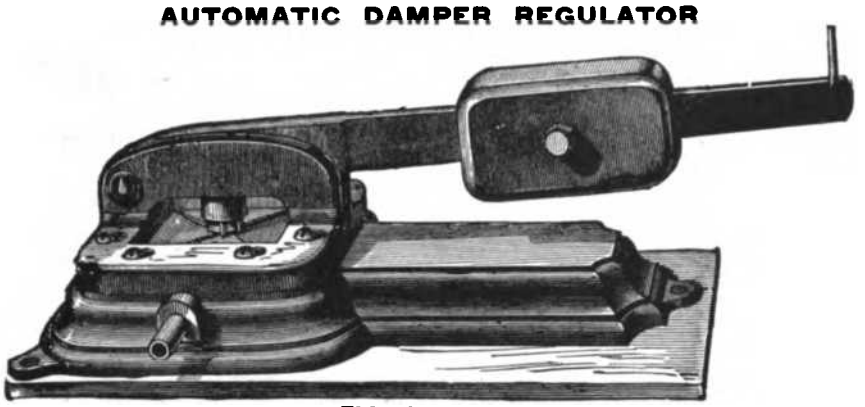


FIG. 2272

Sizes of Regulators	No. 2 4 H. P. and Under.	No. 3 From 4 to 20 H. P.	No. 4 From 20 to 50 H. P.	No. 5 50 H. P. and Over
Prices	$20 00	$25 00	$30 00	$35 00
Motion of levers	8 inch	9 inch	10 inch	11 inch
Arm on damper should be	5¾ "	6½ "	7¼ "	8 "

LOW PRESSURE



FIG. 2273

	Prices.
Diameter of bowl, 8 inches	$5 00
Extra rubber diaphragms	85

LOW PRESSURE DAMPER REGULATOR WITH SAFETY ATTACHMENT

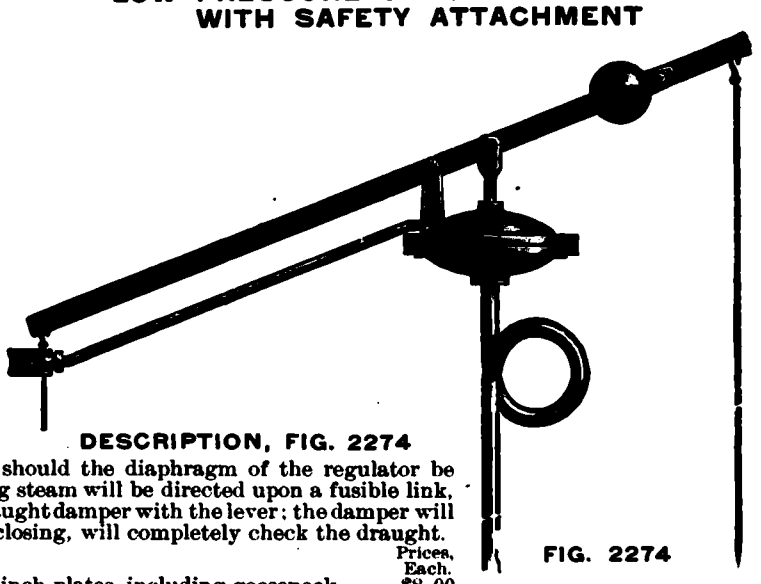


FIG. 2274

DESCRIPTION, FIG. 2274

By this device, should the diaphragm of the regulator be broken, the issuing steam will be directed upon a fusible link, connecting the draught damper with the lever; the damper will be released, and, closing, will completely check the draught.

	Prices, Each.
Regulator, with 7 inch plates, including gooseneck	$8 00
" " 9 " " " "	12 00

CURTIS

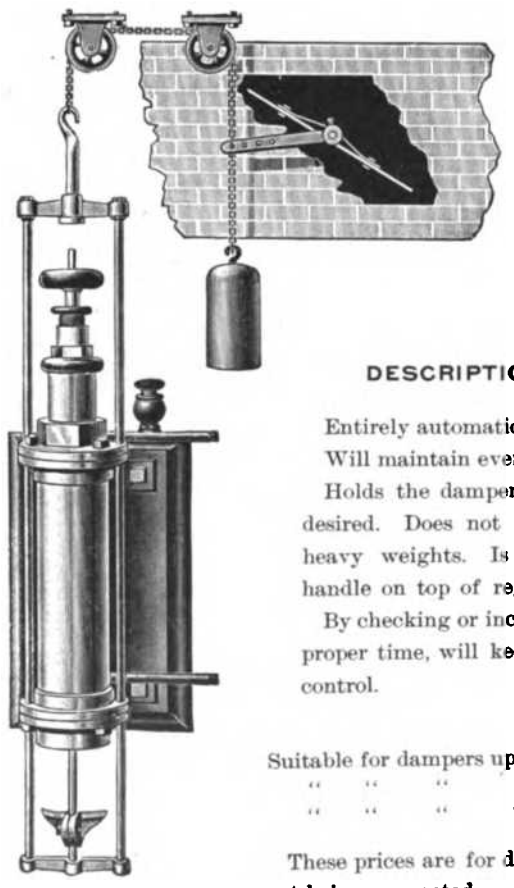


FIG. 2275

DESCRIPTION, FIG. 2275

Entirely automatic in its action.

Will maintain even pressure on boiler.

Holds the damper at partial opening if desired. Does not require any levers or heavy weights. Is controlled by wheel handle on top of regulator.

By checking or increasing the draught at proper time, will keep fire under complete control.

	Prices.
Suitable for dampers up to 40 in. diam.	$80 00
" " " " 60 " "	100 00
" " " " 72 " "	150 00

These prices are for damper regulator without being connected.

DAMPER REGULATOR FOR HIGH PRESSURE STEAM BOILERS

DESCRIPTION, FIG. 2276

This regulator, when properly set up and adjusted, will operate a damper of any size on a variation of but one pound pressure, so that if the damper is of ample size the boiler pressure will never vary more than one pound. It is actuated entirely by steam, and has but one connection to boiler and no water connection. No complicated parts; the only movable parts being two pistons, one small controlling the steam to the larger one.

Price, complete $50 00

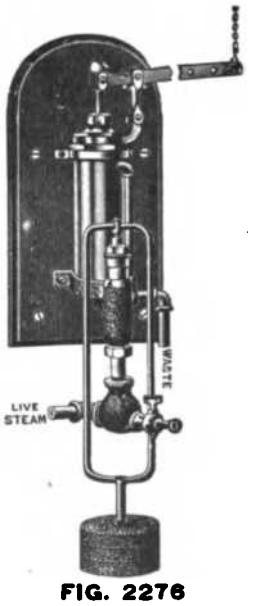


FIG. 2276

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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STEAM BOILER DAMPER REGULATORS

KELLAM

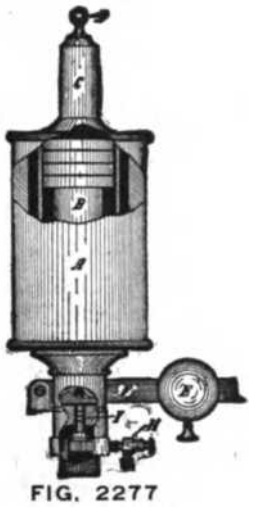


FIG. 2277

DESCRIPTION, FIG. 2277

No. 1, designed to control damper from four feet diameter upward.

No. 3, for dampers from twenty inches up to four feet diameter.

No. 4, all sizes up to twenty inches diameter.

All fittings except the steam pipes go with each machine.

This damper regulator works on the safety valve principle; has neither diaphragm, packing springs nor stuffing boxes.

PRICES ON APPLICATION

IMPROVED CLIMAX DAMPER REGULATOR

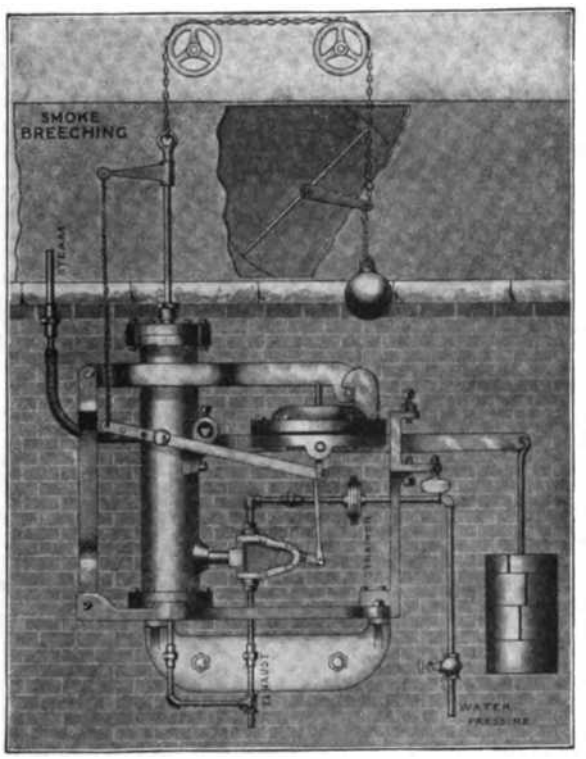


FIG. 2279

For perfectly controlling movements of dampers in connection with boilers according to the rise and fall of steam pressures.

Will control one or more dampers, either singly or in battery formation, the largest equally as well as the smallest, thereby obtaining and maintaining a constant uniform and invariable steam pressure on boilers.

The Climax Damper Regulators possess many unique and advanced features of construction which make them sensitive to a degree, positive and accurate in operation and economical in maintenance.

PRICE, EACH $150.00

DAMPER REGULATOR FOR HIGH OR LOW PRESSURE

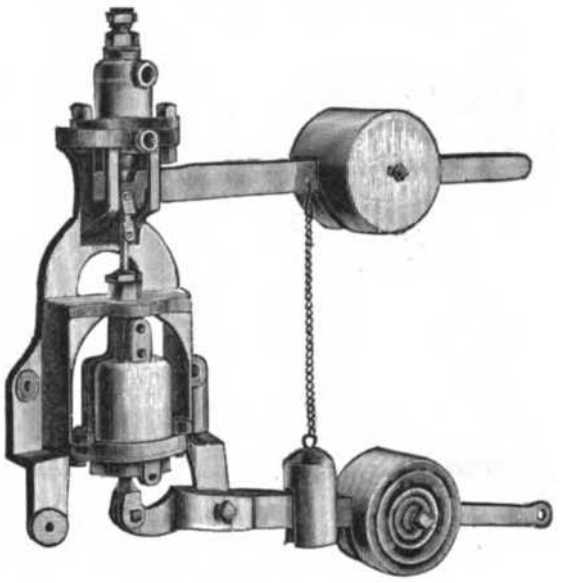


FIG. 2278

These regulators are very sensitive in action and will operate on slightest variation of steam pressure.

The boiler pressure is admitted to the upper cylinder, and the required steam pressure is counterbalanced by adjusting the weight on the top lever. A water valve is connected to said lever, which controls the water supply and discharge for lower cylinder. This pressure should not be less than 35 lbs. The lever at bottom is used to connect direct to the damper, or it is done by a chain which is run down and under a lower pulley (which must not be smaller than four inches in diameter), then raised up to the ceiling in the most direct line and over to damper lever in stack or chimney.

When in operation, the bottom lever must be above the center line when damper is open, and below when it is closed.

PRICE, EACH $75.00

HYDRAULIC DAMPER REGULATOR

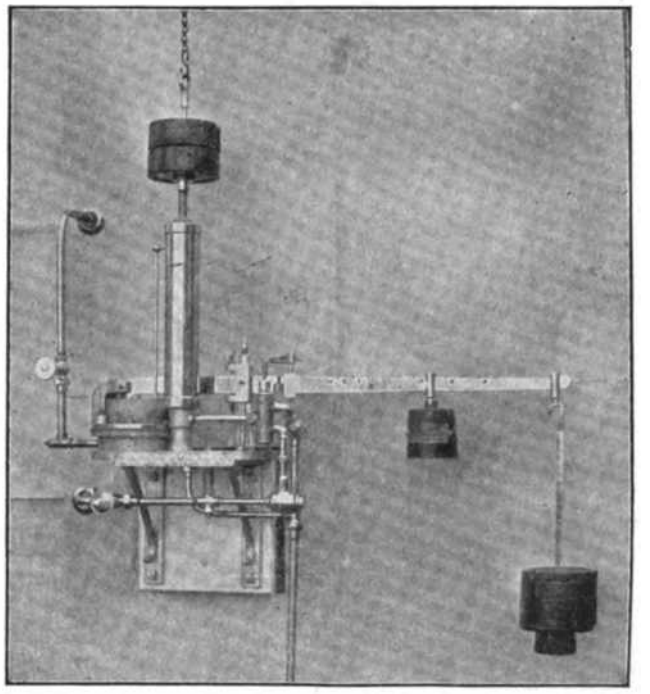


FIG. 2280

By the fine adjustment in all of its parts the apparatus is made to weigh accurately, regulate the steam pressure and fuel consumption of boilers by operating the dampers and controlling the admission of air to the furnaces, or by regulating the fan engine speed on induced draught, or regulating the mechanical stoker in its feeding of coal to the furnaces.

The regulator absolutely controls the fire so that the pressure in the boiler cannot exceed above what the apparatus is set to carry.

Every regulator is polished, nickeled and carefully tested before leaving the works. The diaphragm lever or scale beam is graduated in half-pound figures from 20 lbs. up to 25 lbs., and the scale pan rod in 5 lb. figures up to 150 lbs., by which the apparatus can be set quickly and accurately to any desired pressure. It is also used for testing steam gauges without removal from the boiler.

The regulator, when shipped, has steam, water supply and overflow pipe connections, with all necessary valves and unions connected and all in working position. The regulator is all practically connected and ready to be erected in any convenient place in the boiler or engine room, and so connected that it will control from one to twenty boilers with the same degree of high efficiency.

PRICES ON APPLICATION

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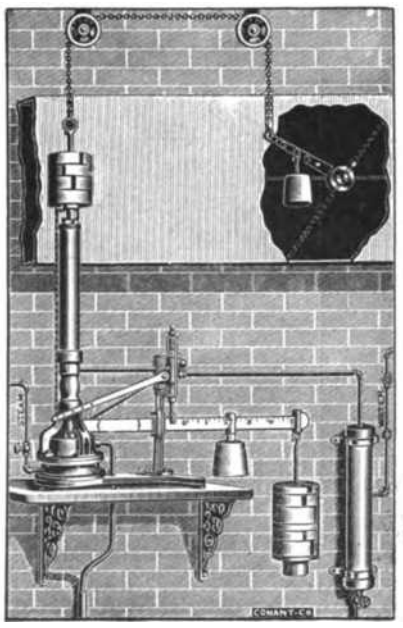


FIG. 2281

HYDRAULIC GAUGE TESTING DAMPER REGULATOR

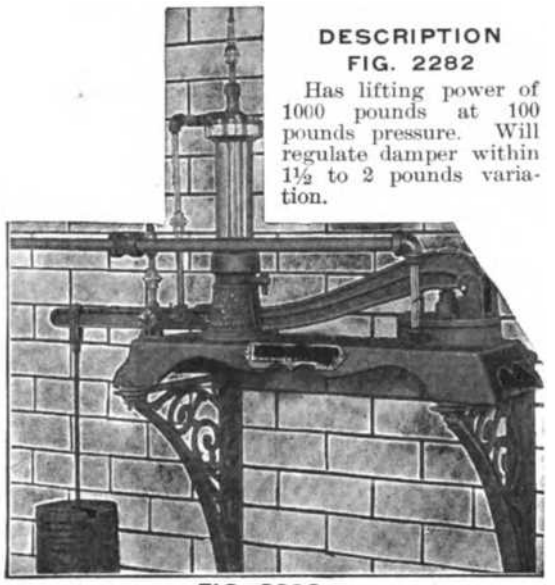
It will control the heaviest dampers, and requires no outside attachments, such as pistons and cylinders. It will move the damper slightly by a small change of steam pressure without allowing it to go fully open or closed. This regulator is a cold water machine. Water from the aqueduct is employed to operate a damper motor by being admitted through a small valve, which is attached to and operated by the lever of the steam weighing device, which vibrates with every pulsation of steam. Whenever the steam increases a fraction of one pound the beam is raised enough to open a passage for water to the damper motor, which moves the damper just enough to correct the steam pressure. A peculiar cutoff device closes the water valve after it has been opened by the rise in steam pressure, and holds the damper partially open, moving it back and forth from ⅛ to ½ of an inch on so light a change of pressure as not to be noticed on the steam gauge.

PRICES, FIG. 2281

Graduated, full nickel plated, each	$100 00
Not graduated, full nickel plated, each	90 00
" " plain finish	80 00

Fittings, $10 00 extra.

DAMPER REGULATOR



DESCRIPTION
FIG. 2282

Has lifting power of 1000 pounds at 100 pounds pressure. Will regulate damper within 1½ to 2 pounds variation.

FIG. 2282

Price, each.....$100 00

LITTLE GIANT DAMPER REGULATOR

DESCRIPTION, FIG. 2284

This machine will operate on low or high pressure, up to 100 pounds. It is adapted to small plants of one or two boilers. It has a water valve, a most important feature in hydraulic damper regulators. Will regulate a pound's pressure either way from point desired. State boiler pressure and aqueduct water pressure in ordering.

PRICE

Including globe valves, pulleys and chain for attaching to damper.

Each.....$60 00.

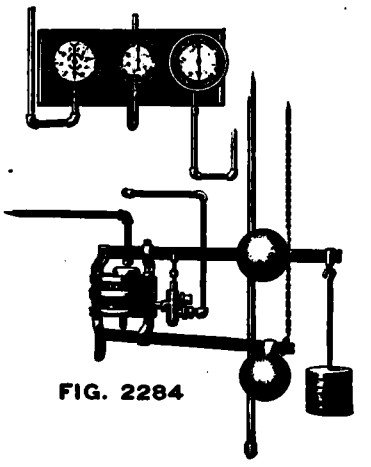


FIG. 2284

WROUGHT IRON PIPE COIL HEATER



FIG. 2285

As shown in cut, these are constructed of a cast iron case having connections on the cover into which the exhaust pipe from an engine or pump is to be run, for the purpose of heating the feed water while on its way through the inclosed coil to the boiler. Water of condensation collecting in the bottom of the cast cylinder can be drawn through the tapped opening made for this purpose.

FEED WATER HEATERS

AMERICAN STANDARD

PRICES, FIG. 2286

Nos. Heater.	Horse Power.	Length over all, Not including Legs.	Length Shell.	Diams. of Flange.	Diams. of Body.	Length of Legs.	Sizes of Exhaust.	Sizes of Feed.	Sizes of Drip.	Material.	Weight.	Each.
0	5	13	11	9	7	..	1½	½	½		44	$15
1	10	17	15	9	7	..	2	½	½		58	20
2	15	17	15	12	9½	..	2½	¾	½		85	30
3	20	21	18	12	9½	..	2½	¾	½		94	40
4	25	25	21	18	15	..	3	1	¾		234	50
5	30	29	25	18	15	..	3½	1	¾		273	60
6	40	33	30	18	15	..	3½	1	¾		287	80
7	50	37	32	20	17	12	4	1¼	1		450	100
8	60	40	35	20	17	12	4	1½	1		495	110
9	80	45	40	20	17	12	5	1½	1		537	130
10	100	50	45	20	17	12	5	1¼	1		629	150
11	125	45	40	24	20	12	6	1½	1¼		810	175
12	150	50	45	24	20	12	6	1½	1¼		895	220
13	200	50	45	27	24	15	8	2	1¼		1250	280
14	250	55	50	27	24	15	8	2	1¼		1470	340
15	300	68	63	27	24	15	8	2	1¼	CAST IRON.	1600	400
16	400	65	58	34	28	15	10	2½	1½		1750	500
17	500	70	63	34	28	15	10	2½	1½		1900	600
18	600	80	73	38	32	15	12	3	2		2400	700
19	800	101	94	38	32	15	14	3	2		2800	1000
20	1000	85	77	48	42	18	16	4	2½		4000	1500
21	1250	100	92	48	42	18	16	4	2½		4600	1750
22	1500	95	84	56	49	18	18	4	2½		5500	2000
23	2000	115	104	56	49	18	18	4	3	STEEL.	6500	2500
24	2500	100	86	70	60	18	20	5	3		7500	3000
25	3000	114	100	70	60	18	24	5	3		8500	3500

PRICES, FIG. 2285

Numbers	1	2	3	4	5
Sizes of pipe, inches	¾	1	1¼	1½	2
Diameters of cylinder, inches	12¼	14¼	16¾	20¼	24
Height of cylinder, inches	12	14	16½	20	24
Feet of pipe in coil	15	17	24	35	46
Each	$20 00	$30 00	$45 00	$80 00	$130 00

FEED WATER HEATER

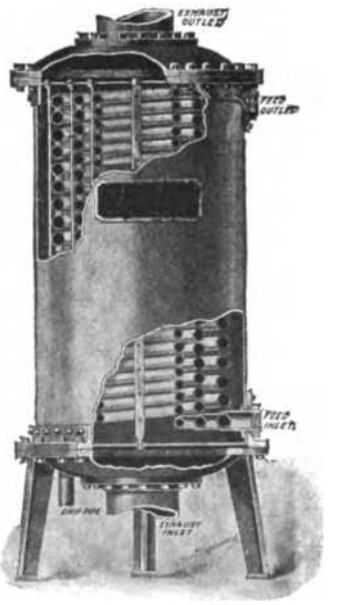


FIG. 2286

All coils tested to a pressure of 600 pounds. Copper coils and gun metal fittings solidly brazed and clamp stays. No trouble from expansion or contraction, back pressure or rust.

Heats water instantaneously from 210 to 212 deg. Fahrenheit.

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STANDARD FEED WATER HEATER

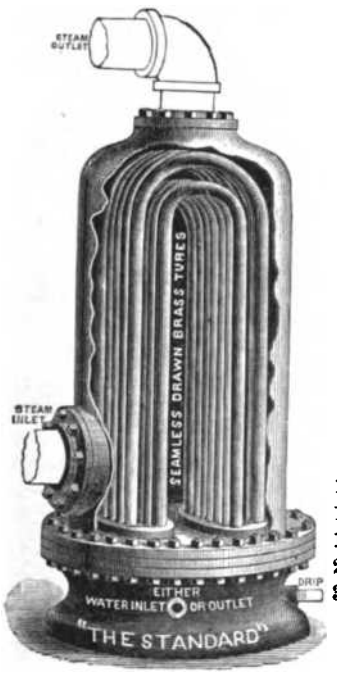


FIG. 2287

PRICES, FIG. 2287

Horse Power	Extreme Dimensions, in Inches. Dia.	Ht.	Size of Exhaust, in Inches. Sizes can be varied to suit.	Sizes of Feed, in Inches.	Each.
20	13 x	25	2½	1	$45 00
25	14 x	24	3	1	55 00
30	14 x	30	4	1	65 00
40	16 x	30	4	1	80 00
50	16 x	35	4	1	95 00
60	16 x	40	4	1	110 00
80	20 x	40	5	1½	130 00
100	20 x	45	6	1½	160 00
125	20 x	50	6	1½	215 00
150	20 x	60	8	1½	268 00
200	24 x	50	8	1½	322 00
300	24 x	64	10	2	430 00

IMPROVED BERRYMAN FEED WATER HEATER AND PURIFIER

PRICES, FIG. 2288

Horse Power.	Extreme Dimensions, in Inches. Dia.	Ht.	Size of Exhaust, in Inches. Sizes can be varied to suit.	Sizes of Feed, in Inches.	Each.
80	22 x	43	5	1½	$200 00
100	22 x	48	6	1½	225 00
125	22 x	54	6	1½	270 00
150	22 x	68	8	1½	310 00
200	26 x	56	8	2	385 00
250	26 x	65	8	2	425 00
300	26 x	74	10	2	480 00
350	26 x	84	10	2	525 00
400	34 x	71	10	2½	675 00
500	34 x	84	10	2½	775 00
600	34 x	96	12	2½	900 00
700	34 x	109	12	3	1,075 00
800	34 x	121	12	3	1,250 00
1,000	40 x	112	14	3	1,600 00
1,200	40 x	122	14	4	1,800 00
1,500	40 x	137	14	4	2,100 00

DESCRIPTION, FIG. 2288

The Improved Berryman is designed with special reference to obtaining the best results and greatest durability.

The feed water, after passing through the ∩-shaped brass tubes, enters the settling chamber, and it is here, by means of the exhaust steam jacket which entirely surrounds it, that the heat of the water is retained at about the temperature of the exhaust steam itself.

At this high heat the impurities are deposited and may be blown off at will, while the purified hot water flows to the boiler.

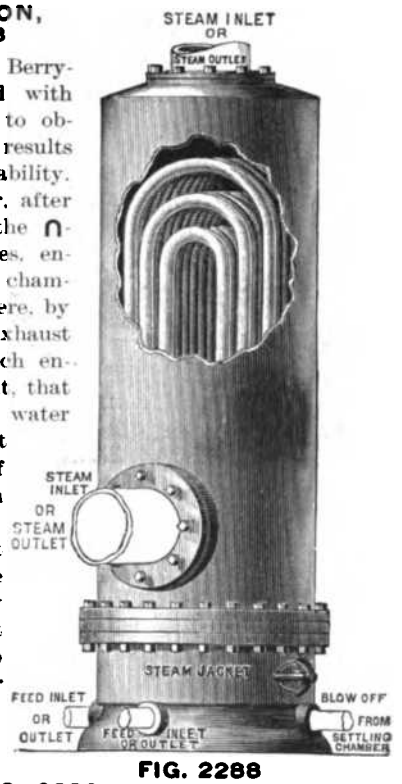


FIG. 2288

TUBULAR WATER HEATERS

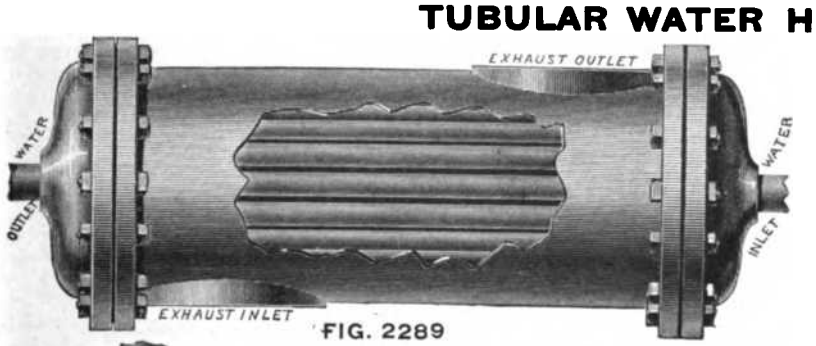


FIG. 2289

PRICES, FIG. 2289

Diameters in inches	6	8	15	15
Length in feet	3	3	2	4
Prices, with iron tubes	$30 00	$35 00	$75 00	$125 00
Prices, with seamless brass tubes	40 00	45 00	125 00	200 00
Iron tubes, per set	6 00	7 50	18 00	32 00
Brass tubes, "	18 00	20 00	50 00	100 00

Larger heaters, with wrought iron shells, for boilers from 50 to 250 horse power, made to order.

NATIONAL FEED WATER HEATERS

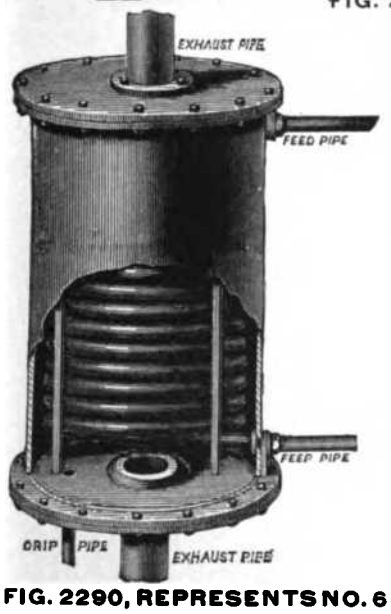


FIG. 2290, REPRESENTS NO. 6

DESCRIPTION, FIGS. 2290 AND 2291

The National Feed Water Heater consists of from one to six coils of seamless drawn copper or brass tubing incased in a cast iron or steel shell to which the exhaust steam is admitted, heating the water as it passes through the coil or coils.

Up to and including No. 10 (or from 5 to 100 horse power) a single coil is used. Above that size there are from two to six coils.

Sizes Nos. 1 to 2½ have exhaust inlet and outlet in top head. Sizes Nos. .05, 3, and above have exhaust inlet in bottom and outlet in top heads, unless ordered different. Size of exhaust can be varied to suit requirements. Two or more exhausts in bottom head, if necessary. Shells No. .05 to 25 are cast iron.

It can be economically used in condensing steam plants by placing the heater between the engine and the condenser.

PRICES, FIGS. 2290 AND 2291

Nos.	Horse Power.	Diameter of Feed Pipe, Inches.	Diameters of Exhaust Pipe, Inches.	Outside Dimensions of Heaters. Height. Inches.	Diam. Inches.	Weight, Pounds.	Each.
.05	5	½	2	10	7	30	$15 00
1	10	½	2	12	11	50	20 00
1½	15	½	2½	17	11	65	25 00
2	20	¾	2½	18	16	175	35 00
2½	25	1	3	20	19	250	45 00
3	30	1	4	34	20	370	55 00
4	40	1	4	36	20	390	65 00
5	50	1	4	41	20	420	80 00
6	60	1	4	46	20	475	100 00
8	80	1	4	51	20	515	120 00
10	100	1 or 1¼	5	56	22	775	140 00
12	125	1¼ or 1½	5	56	22	800	175 00
15	150	1½	8	60	26	1,140	220 00
20	200	1½ or 2	8	70	26	1,300	280 00
25	250	1½ or 2	8	76	26	1,400	340 00
30	300	2	8	89	29	1,450	400 00
40	400	2 or 2½	10	88	36	1,900	500 00
50	500	2 or 2½	10	102	36	2,150	600 00
60	600	2½ or 3	12	101	42	2,900	700 00
70	700	3	12	105	42	3,050	800 00
80	800	3	12	110	42	3,200	1,000 00
100	1,000	3 or 4	18	117	56	4,750	1,400 00
125	1,250	4	18	133	56	5,200	1,600 00
150	1,500	4	18	143	56	5,700	2,000 00
200	2,000	4½ or 5	18	138	66	9,400	2,500 00
250	2,500	5	18	153	66	10,500	3,000 00
300	3,000	5	24	170	66	11,600	3,500 00
400	4,000	6	24	198	66	13,500	5,000 00

The heights from No. 3 to No. 400 include legs; no legs below No. 3.

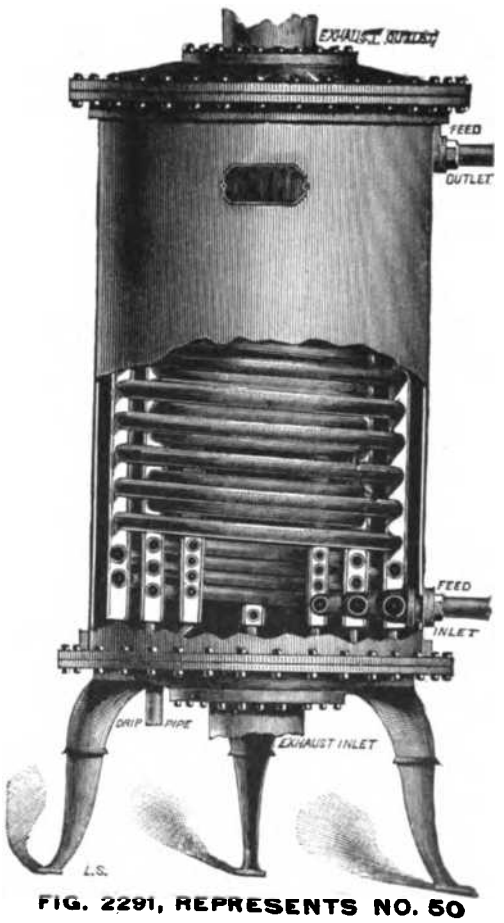


FIG. 2291, REPRESENTS NO. 50

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GOUBERT WATER TUBE FEED WATER HEATERS

VERTICAL TYPE

INTERIOR VIEW

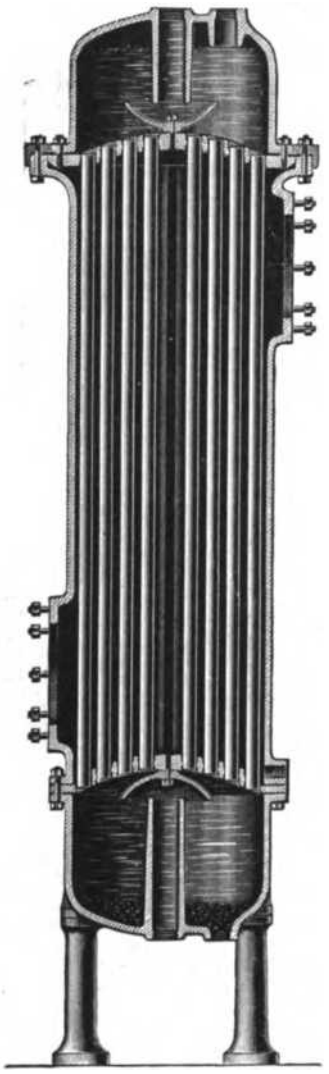


FIG. 2292

DESCRIPTION, FIGS. 2292 AND 2293

The shell and pressure parts of this heater are made of cast iron and the heating surface of seamless drawn straight brass tubes. The differential expansion between the tubes and the shell is provided for by means of a patented expansion joint. The water is fed at the bottom into a water chamber placed below the heating surface, and where it is claimed a large amount of sediment is collected. This water passes up through the interior of the tubes into the upper water chamber and thence to the outlet. The tubes, being straight and smooth, do not scale to any material extent, and by merely removing the top chamber they are all accessible for cleaning. Steam enters the shell on one side and leaves on the other, but the nozzles can be placed in any position to suit purchaser. These heaters are all tested to 240 lbs. cold water pressure and are guaranteed for a safe working pressure of 175 lbs. per square inch.

HORIZONTAL TYPE

The construction of this type of heater is similar to the vertical type, except that the water chambers are divided up by partitions, so as to cause a positive circulation of the water five times back and forth throughout the length of the tubes. It is claimed that this greatly improves the effectiveness of the heater. The horizontal construction enables the heater to be used where there is lack of head room, and it is especially adapted for use as a primary heater in connection with condensing engines.

CAPACITIES, PRICES, VERTICAL, FIGS. 2292 AND 2293 — PRICES, HORIZONTAL, FIG. 2292 — FIG. 2293

No.	Horse Power.	Diameter of Shell, Inches.	Diameter of Exhaust, Inches.	Feed Pipe, Inches.	Total Height on Legs. Ft.	Ins.	Approximate Shipping Weight, Pounds.	Each.	Total Height on Legs. Ft.	Ins.	Total Length Ft.	Ins.	Approximate Shipping Weight, Pounds.	Each.
1	50	12	6	1½	5	4	880	.....	2	6	4	7	950	.....
2	60	12	6	1½	5	11	900	.....	2	6	5	2	1.000	.....
3	70	12	6	1½	6	6	950	.....	2	6	5	8	1,050	.....
4	80	12	6	1½	7	0	1.000	.....	2	6	6	3	1.250	.....
5	100	12	6	1½	8	2	1.125	.....	2	6	7	5	1.400	.....
6	130	16	8	2	6	4	1.250	.....	3	0	5	7	1.675	.....
7	160	16	8	2	7	2	1.550	.....	3	0	6	5	1,750	.....
8	200	16	8	2	8	4	1.700	.....	3	0	7	7	1.900	.....
9	240	16	8	2	9	5	1.900	.....	3	0	8	8	2.000	.....
10	300	21	10	2½	8	9	2.500	.....	3	5	7	3	2.600	.....
11	350	21	10	2½	9	7	2.800	.....	3	5	8	1	2.900	.....
12	400	21	10	2½	10	5	2.900	.....	3	5	9	0	3.200	.....
13	500	25	12	3	9	7	3.800	.....	3	10	8	2	4.100	.....
14	600	25	12	3	10	8	4.000	.....	3	10	9	4	4.300	.....
15	700	25	12	3	11	10	4.400	.....	3	10	10	5	4.700	.....
16	800	29	16	4	10	8	5.000	.....	4	3	9	2	5.500	.....
17	900	29	16	4	11	7	5.500	.....	4	3	10	1	6.000	.....
18	1000	29	16	4	12	4	5.800	.....	4	3	10	10	6.500	.....

For larger sizes up to 5,000 H. P., prices will be furnished on application.

Flanges are furnished for exhaust connections on all sizes from Nos. 1 to 15 inclusive.

For all larger sizes no flanges are furnished.

Sizes of exhaust stated above are sizes of openings; companion flanges threaded for same size of pipe, or smaller if desired, may be bolted on.

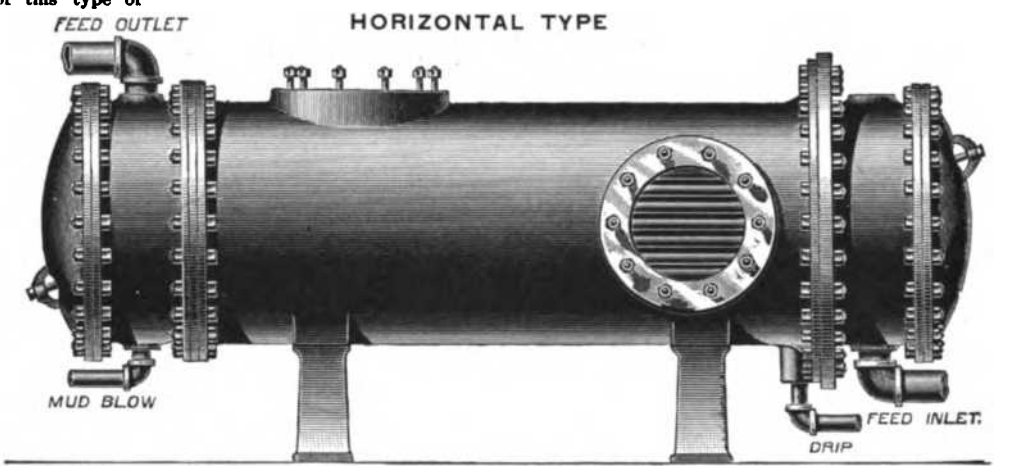


FIG. 2293

WAINWRIGHT EVEN FLOW WATER TUBE FEED WATER HEATER

VERTICAL TYPE

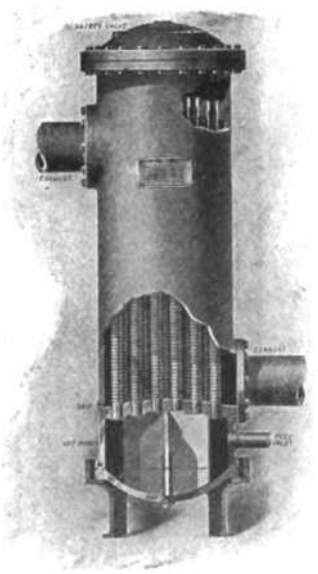


FIG. 2294

DESCRIPTION, FIGS. 2294 AND 2295

This even flow type of heater which we illustrate in both the vertical and horizontal form is especially designed to give a high efficiency of heat transmission in a very compact form.

It is equipped with the best seamless drawn corrugated copper tubes automatically taking care of the expansion, without the use of packing.

It has been found by experiment and practice that the best efficiency is attained when the feed water is put through the heater at a high rate of speed. One reason for this being that the water is thus kept in violent agitation, thereby bringing fresh particles constantly in contact with the heating surface.

This is accomplished in the Wainwright even flow type by means of partitions placed in the water chambers as shown. The feed water is thus caused to pass through successive groups of tubes, at a comparatively high rate of speed, with the added advantage that by this means the uniform use of all the tubes is secured.

The shell is of high grade of cast iron, and the tube plates and shell are cast in one piece. All openings are placed on the side of the shell, so that the interior is accessible at all times, by removing bonnets.

The capacities listed for this heater are guaranteed.

CAPACITIES, FIGS. 2294 AND 2295

No.	Horse Power.	Diameter Shell, Inches.	Exhaust, Inches.	Feed, Inches.	Shipping Weight, Pounds.
2	50	12	6	1½	770
3	75	12	6	1½	900
4	100	12	6	1½	930
5	150	12	6	1½	1,100
6	200	15	8	2	1.520
7	250	18	10	2½	1.920
7a	300	18	10	2½	1,950
8	350	18	10	2½	1.970
9	400	18	10	2½	2.170
10	500	22	12	2½	2.600
11	600	22	12	3	2.800
12	700	24	12	3	3.920
13	800	27	14	3	4.925
14	900	27	14	4	5.325
14a	1.000	27	14	4	5.425
15	1.100	30	14	4	7.130
16	1.200	30	14	4	8.230
17	1.300	32	16	4	11.170
18	1.500	32	16	5	11.670
19	2.000	36	24	5	14.230
20	3,000	36	24	5	15.950
21	1.000	48	30	6	23.390
22	5.000	48	30	6	26.380
23	6.000	60	30	8	38.050
24	7,000	60	30	8	41.030

Prices and further information on application.

HORIZONTAL TYPE

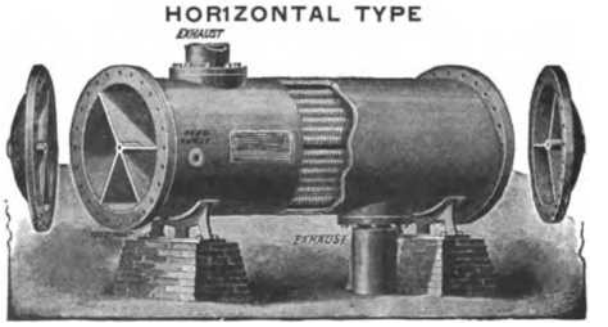


FIG. 2295

MANNING, MAXWELL & MOORE, 85, 87 AND 89 LIBERTY STREET, NEW YORK

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BUNDY WATER TUBE FEED WATER HEATERS

HORIZONTAL INTERIOR VIEW

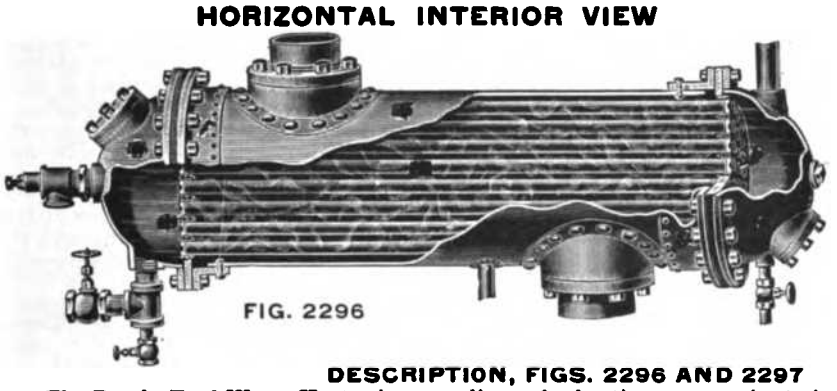


FIG. 2296

The Bundy Horizontal Feed Water Heater is similar in construction to the vertical type. It is recommended for use where the space the heater is to occupy will not accommodate one of the vertical type. It may also prove the more convenient form for heating water for laundry and other purposes, and liquids in manufacturing processes.

VERTICAL INTERIOR VIEW

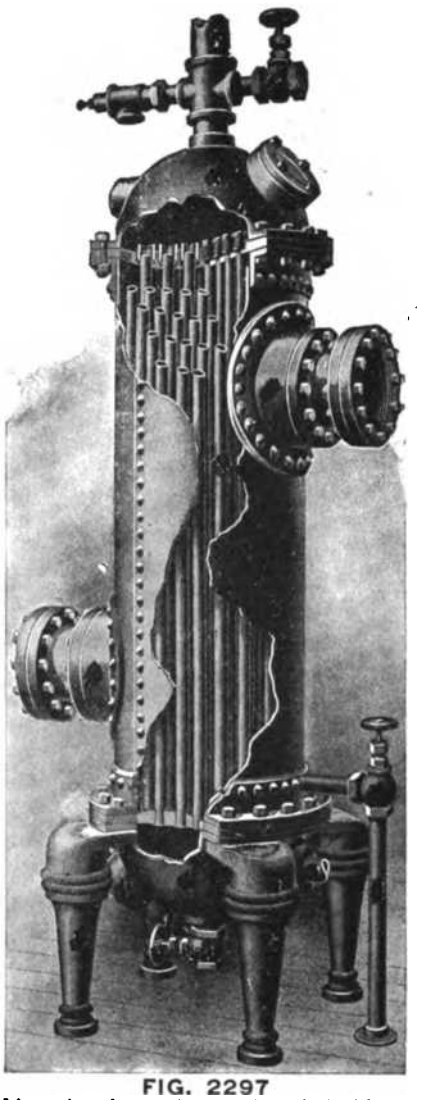


FIG. 2297

DESCRIPTION, FIGS. 2296 AND 2297

The Bundy Feed Water Heater is an appliance for heating water prior to its introduction to the boiler, also for heating liquids in manufacturing processes, and the heat it utilizes is taken, as a rule, from the exhaust steam, hence the great saving it effects is of particular interest to every steam user.

The tubes in the Bundy Feed Water Heater are straight and so can be easily cleaned. The tubes used are seamless drawn brass of best quality and tested to an internal hydrostatic pressure of 1,000 pounds per square inch. Ample provision is made for expansion and contraction of parts differently affected by the varying temperatures. Sediment and scum chambers with suitable blow-offs for removing impurities are provided. The circulation is positive, insuring an even distribution of water over all the heating surface. There is no obstruction to the passage of the exhaust steam through the heater which might cause a back pressure on the engine.

PRICES, FIGS. 2296 AND 2297

Size.							1¼ in. Tubes.			Size.							1¼ in. Tubes.		
No.	H. P.	Diameter, Inches.	Height of Vertical. Inches.	Length of Horizontal. Inches.	Exhaust Pipe. Inches.	Water Supply Pipe. Inches.	No.	Length, Inches.		No.	H. P.	Diameter, Inches.	Height of Vertical. Inches.	Length of Horizontal. Inches.	Exhaust Pipe. Inches.	Water Supply Pipe. Inches.	No.	Length. Inches.	
21	40	12	50	38	4	1½	21	24		52	700	30	114	102	12	4	121	70	
22	50	12	56	44	4	1½	21	30		53	800	30	124	112	16	4	121	80	
23	60	12	62	50	5	1½	21	36		54	900	30	134	122	16	4	121	90	
24	70	12	68	56	5	1½	21	42		55	1,000	30	144	132	16	4	121	100	
25	80	12	74	62	6	1½	21	48		56	1,100	30	154	142	16	4	121	110	
26	90	12	80	68	6	1½	21	54		57	1,200	30	164	152	16	4	121	120	
27	100	12	86	74	6	1½	21	60		61	1,400	39	130	118	18	5	221	78	
31	125	16	73	61	7	2	37	41		62	1,600	39	141	129	18	5	221	89	
32	150	16	81	69	7	2	37	48		63	1,800	39	152	140	18	5	221	100	
33	175	16	89	77	7	2	37	56		64	2,000	39	163	151	20	5	221	111	
34	200	16	97	85	7	2	37	64		71	2,500	48	159	147	22	6	333	93	
35	250	16	113	101	8	2	37	80		72	3,000	48	174	162	24	6	333	108	
36	300	16	129	117	9	2½	37	96		73	3,500	48	189	177	24	6	333	123	
41	350	24	110	98	10	2½	76	72		74	4,000	48	204	192	24	6	333	138	
42	400	24	120	108	10	2½	76	82		81	5,000	60	195	183	30	8	532	119	
43	450	24	130	118	10	3	76	92		82	6,000	60	219	207	30	8	532	143	
44	500	24	140	128	12	3	76	102		83	7,000	60	243	231	30	8	532	167	
51	600	30	104	92	12	4	121	60											

Prices on application.

All Bundy Feed Water Heaters up to and including 12 inch exhaust pipe have companion flanges which are threaded for standard iron pipe; larger sizes are furnished without flanges. One relief and three blow off valves are furnished with each heater. The size and location of opening for exhaust pipe connection may be at buyer's convenience, but in the absence of written instructions on orders they will be of sizes as above and located opposite sides, top and bottom.

VACUUM FEED WATER HEATER AND PURIFIER

STANDARD PATTERN

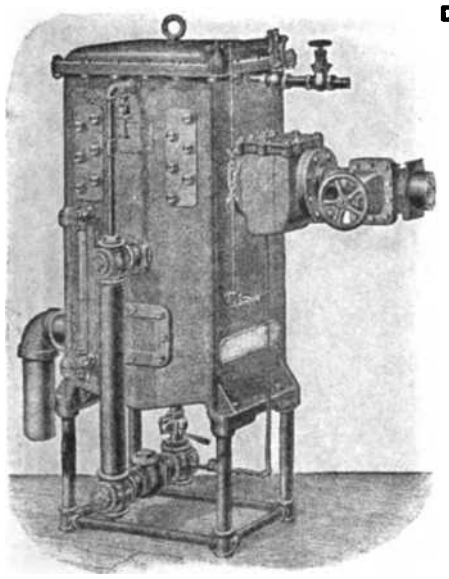


FIG. 2298

DESCRIPTION, FIG. 2298

In the illustration, the "Vacuum" Feed Water Heater and Purifier is shown in the regular pattern adapted for the usual conditions under which a heater is required for service.

Modifications can be provided for, according to convenience or requirements to meet the views of intending purchasers, thus maintaining the same excellence of results through a large range of service to be determined by a knowledge of the conditions existing, or that will exist.

They are designed to utilize the heat of exhaust steam economically, and may serve either for heating the feed water for boiler service manufacturing purposes, or as a receptacle for the condensation from a steam heating system.

The heater consists of a closed cast iron (or wrought steel) shell or casing, rectangular in form, with a doubly inclined bottom; the interior construction is copper and brass. It is provided with inlet pipes for exhaust steam and for cold water respectively, the supply of the latter being automatically controlled by a balanced valve and open gravity float attachment.

The heater is further provided with a drip from the oil separator, a sealed "over-flow," a bottom blow off connection, an outlet for the heated and purified water leading to the feed pump, a gauge glass, and a combination vent and inlet air valve. Prices and further information on application.

COCHRANE FEED WATER HEATER AND PURIFIER

DESCRIPTION, FIG. 2299



FIG. 2299

Every one of these heaters is equipped with a Cochrane oil separator.

Heating water: The full temperature due to the exhaust transmitted to the feed water—no deterioration in heating capacity from age, or from scale or oil—capacity limited only by the quantity of exhaust steam and the quantity of water which can be brought together in the heater.

Purifying water: Real purification given—all the exhaust condensed in heating the water is saved and utilized. Ample tray surface for precipitation and deposit, with large capacity for carrying coke or other filtering material for stopping and retaining those impurities rendered insoluble at the temperature of exhaust steam, as well as mud, sand, etc. Purification by flotation and settlement.

Cleaning and operating: Every facility for ease of cleaning, all parts being readily accessible. Large manhole openings for hauling out and recharging with filtering material. Trays made interchangeable and removable for cleaning. No compartments to be cleaned. Heater flushed by simply pulling down on the cold water valve. Overflow and waste full size without valves or obstructions. Prices and further information on application.

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WHEELER'S PATENT FEED WATER HEATER

VERTICAL TYPE, WITH FEED OPENINGS IN LOWER CHAMBER

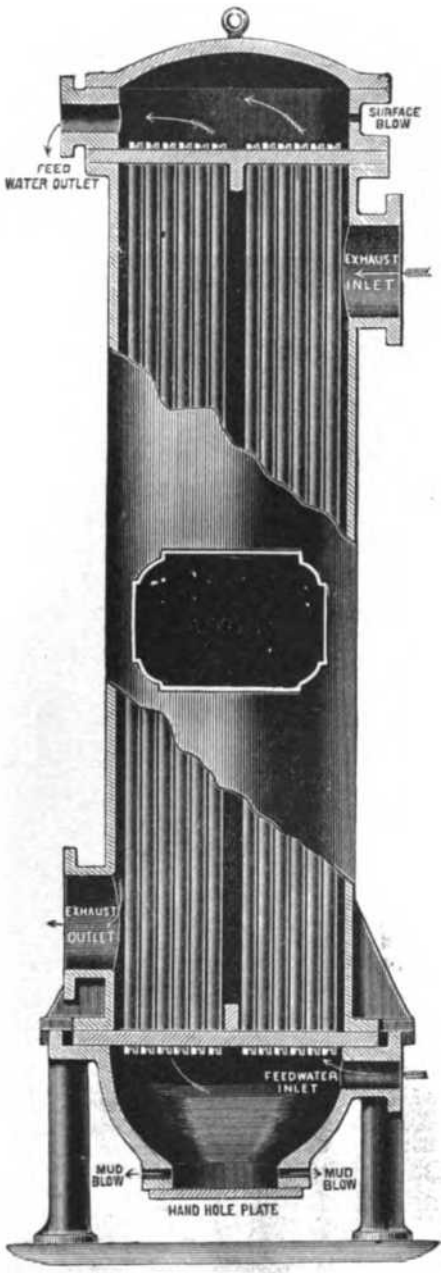


FIG. 2300

DESCRIPTION, FIG. 2300

This type of heater is especially suitable for service where feed water is impregnated with lime, magnesia, or sediment of any kind. As shown by the cut opposite, the heater is provided with both mud blow and surface blow off connections. The tubes are drawn thick at one end and are screwed into the upper tube head and secured in the lower tube head with brass ferrules and special asbestos packing, both tube heads being made of high grade charcoal iron. This arrangement provides in the most perfect manner for expansion and contraction without the least danger of strain to any part. The tubes can readily be unscrewed and replaced by any ordinary mechanic, and without injury to the tubes or tube heads.

The tubes are made of best quality seamless drawn brass—well tinned inside and outside, and tested to 700 pounds pressure per square inch. By removing the upper cover of the heater, and the bottom hand hole plates, the tubes can be readily cleaned, and the settling chambers emptied with little trouble and loss of time.

The shell of the heater is made of cast iron, or steel plate, as preferred; and the exhaust nozzles are usually placed as shown by engraving opposite; where it is preferred, however, these exhaust nozzles can be placed in any other position as desired.

We furnish these heaters in sizes ranging from 50 horse power to 6,000 horse power and with feed openings in lower chamber as per cut—with feed water outlet on top of heater and with independent cover and side outlet.

Can also furnish them in horizontal type. For prices, weights, dimensions, and other particulars apply for special schedule sheets.

MARINE FEED WATER HEATER

DESCRIPTION, FIG. 2301

The Marine Feed Water Heater, although equally suited for land use in connection with condensing or non-condensing engines, was specially designed for use in connection with triple expansion and quadruple expansion marine engines for heating the feed water by utilizing the heat in the exhaust steam from the auxiliaries; and where this is not sufficient, using live steam, or steam from the intermediate or low pressure receivers of the main engines. In the case of marine boilers working under heavy pressures, the practice of feeding with water at high temperatures not only leads to economy of fuel, but also increases the life of the boilers, and relieves them of the strains due to expansion and contraction.

It is with the view of securing the greater economy to be gained by utilizing the exhaust from the auxiliaries that the feed water heater is offered. It is equally suitable for live steam, but such use is only recommended where there is not sufficient exhaust steam for heating the feed water to the desired temperature. In modern steamships, especially those of large size employing numerous auxiliary engines, considerable economy is effected by turning the exhaust steam into a heater, instead of into the condenser, where its heat is practically lost. Prices and further information on application.

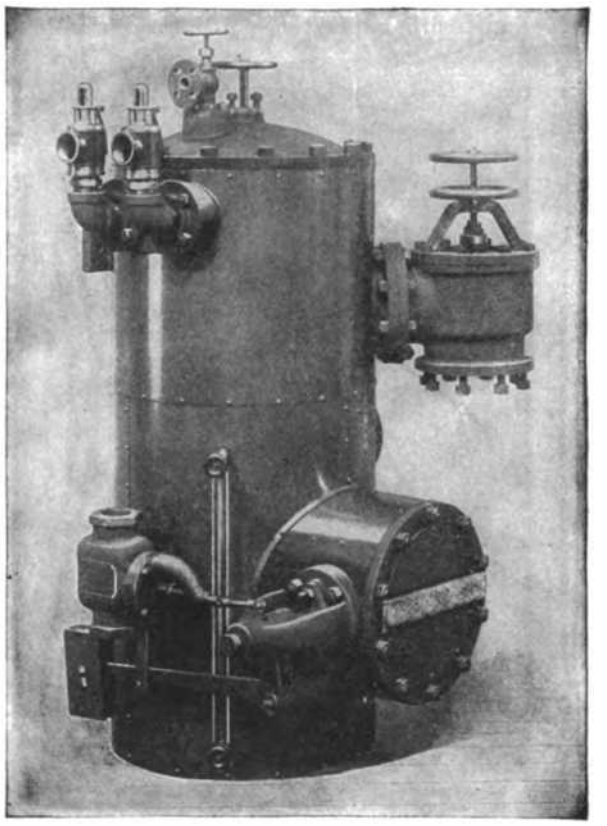


FIG. 2301

Above illustration is taken from an auxiliary heater used with an engine of 6,000 horse power.

THE H-D NOISELESS WATER HEATER

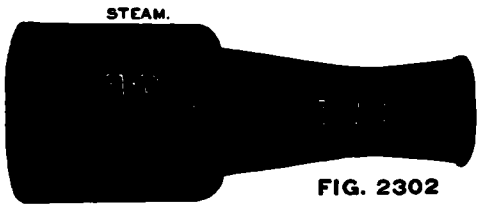


FIG. 2302

These heaters are designed for uses where it is desired to heat liquids by direct steam pressure.

The steam issues from an annular steam jet and comes in contact with the water through the center of the jet of steam as well as the outside. This arrangement enables the greatest quantity of liquid to be heated with practically no noise at all. By the rapid circulation produced it absolutely insures a uniform temperature of the liquid.

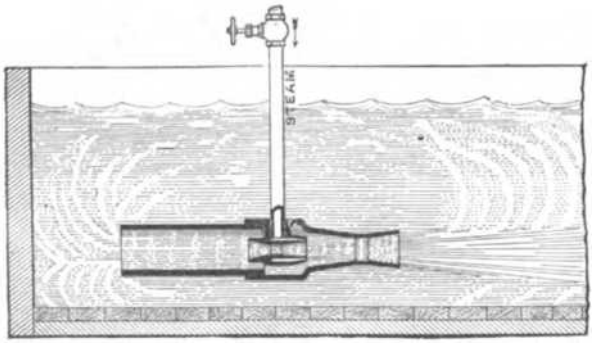


FIG. 2303

DIRECTIONS FOR USING

Ordinarily a steam pipe is screwed into the heater, and the heater inserted in the tank. If the tank is a long one, by screwing a pipe in the water inlet a better circulation is produced.

When desired we can thread the delivery end of the heater, which will permit the heater being attached outside of the tank with the pipes leading to it.

PRICES, FIG. 2302

With data showing time required to raise 100 gallons of water 50 degrees Fahr.

Size.	Each.	Size Steam Connection.	Size Water Inlet.	With 10 lbs. St'm Pressure. Time in Minutes.	With 20 lbs. St'm Pressure. Time in Minutes.	With 40 lbs. St'm Pressure. Time in Minutes.	With 60 lbs. St'm Pressure. Time in Minutes.	With 80 lbs. St'm Pressure. Time in Minutes.
1	$5 00	⅜	1¼	40	30	18	13	10
2	7 00	½	1½	12	9	5½	4	3
3	10 00	¾	2	7½	6	3½	2½	1¾
4	15 00	1	2½	5	3	2	1½	1

From the above data, showing the required time for each size to raise the temperature of 100 gallons of water 50 degrees Fahr., it can easily be determined what size is required to heat a given quantity of water to any degree of temperature.

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THE CONTINUOUS WATER HEATER AND CONDENSER

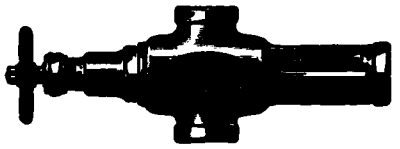


FIG. 2304

TABLE OF CAPACITIES

Steam Pressure.	Vacuum Exhaust of 10 in. Mercury.		or Atmosphere.		Steam 10 lbs.		Steam 20 lbs.	
Increase in temp. of disc.	Max. 20	Min. 36	Max. 30	Min. 52	Max. 52	Min. 86	Max. 74	Min. 118

PRICES, FIG. 2304

Size or Diam. of connections. Inch.	Each.	Volume of Water Discharged—Gal. per hour. Max.	Min.
¼	$15 00	100	60
⅜	20 00	225	135
½	25 00	400	240
¾	30 00	925	540
1	40 00	1,650	970
1¼	50 00	2,590	1,500
1½	60 00	3,770	2,200
2	80 00	6,670	3,800
2½	110 00	10,450	6,100
3	150 00	15,000	8,800
4	200 00	26,775	15,600
6	300 00	67,000	39,000

With steam above 30 lbs. water can be heated to boiling point.

We can also give a higher increase of temperature with steam of lower pressure than given in above table if so specified.

The volumes and temperatures in above table are with supply water under 10 lbs. pressure and a temperature of 60 deg. Fahr. and spindle full open for maximum and closed for minimum.

With a supply pressure of more than 10 lbs. the volume will of course increase, and the same discharge temperature be obtained with a corresponding increase in steam pressure.

WATER FILTERS

TYPE OR STYLE "M," NUMBERS 64 TO 124 INCLUSIVE



FIG. 2306

SIZES AND CAPACITIES FIG. 2306

Size Nos.	Supply Pipe. Inches.	Capacity Gallons per Minute.	Shipping Weights in lbs. "M" Style.
14	¾	1½ to 3	600
24	¾	3 " 6	900
34	1	4 " 8	1,000
54	1½	8 " 16	1,800
64	1½	11 " 22	3,200
74	2	15 " 30	3,500
84	2½	25 " 50	6,000
94	3	50 " 100	10,000
104	4	75 " 150	16,000
114	5	100 " 200	24,000
124	6	125 " 250	34,000
134	7	165 " 325	44,000
144	8	200 " 400	56,000

STAR VACUUM FEED WATER HEATER, PURIFIER AND FILTER

DESCRIPTION FIG. 2305

The filter forms the base of the heater and purifier, the hot water from which is conducted to a settling or mud chamber at the bottom. This mud-chamber is provided with a blow off. The filter is composed of coke, or other suitable materials, contained between perforated diaphragms. This material can be renewed when desired, convenient access to the filter chamber being provided.

The hot water rises from its settling chamber and slowly passes through the filtering material to the outlet chamber located above. The water traverses the filter at a very low velocity, due to the large filter bed, and the time necessary for proper filtration is thus provided. The peculiar construction of the filter, permitting a slow upward filtration, avoids the short circuiting of the water, and insures efficiency of operation.

With this filter a connection is provided for flushing and thoroughly cleaning the same by reverse circulation. This results in indefinitely prolonging the life of the filter bed.

Further information, prices and special blanks for ordering furnished on application.

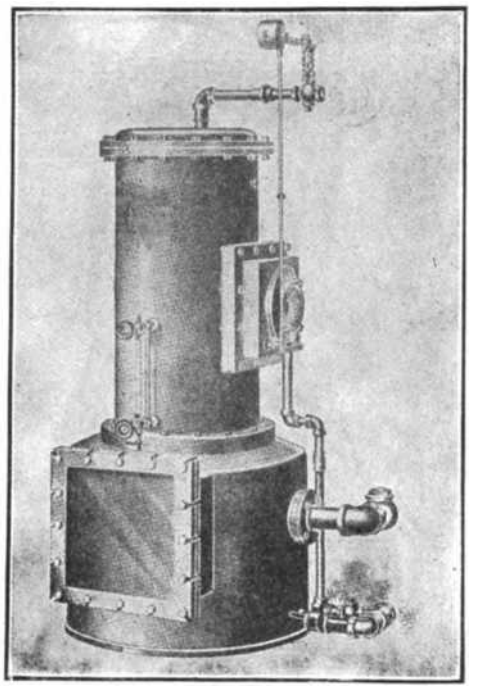


FIG. 2305

DESCRIPTION, FIG. 2306

City, Town and Village Water Supplies Purified.

Water free from color, taste and smell. "Return water" freed from oil. Scale producing waters rendered harmless.

For all branches of Manufactures.

Mills, dye and bleach works, boiler plants, sugar refineries, paper mills, laundries, bottling establishments. Pure water for public buildings, hotels, public and private institutions, hospitals, clubs, apartment houses, office buildings and private residences.

Capacity in gallons will vary according to the condition of the water to be filtered.

In ordering, please state whether porcelain lined cylinders, and tinned and nickel plated brass pipe and fittings are wanted, as an extra charge is made for these.

Capacities as given in table to the left are based and guaranteed on Croton (New York) water, 35 pounds pressure.

In estimating capacities, due allowance must be made for Western or muddy waters.

Prices on application. Estimates on larger sizes and complete filter plants, large or small, will be promptly furnished.

VERTICAL PRESSURE SINGLE TANK



FIG. 2307

PRESSURE AND GRAVITY FILTERS

SINGLE OR DOUBLE TANK

For (1) Factories, paper and textile mills, dye houses, bleacheries, breweries, laundries, etc.

For (2) Houses, hotels, hospitals, clubs, baths, office buildings, apartment houses, etc.

For (3) Boiler feed.

Purification of the entire supply before distribution.

Slow and thorough filtration.

Frequent and thorough cleaning and aeration of filter beds. Method of washing filter beds by the use of water and air combined, which is absolutely efficient and entirely simple to operate.

No expert care necessary; no renewals required.

STANDARD SIZES, PRESSURE FILTERS VERTICAL

Diameter of each Tank. Inches.	Service Pipe Inches.	Capacity in U. S. Galls. per Min. Single Tank.	Double Tank.
14	1	2 to 4	5 to 8
20	1¼	4 " 6	10 " 14
24	1½	6 " 10	15 " 20
30	1½ to 2	10 " 20	20 " 35
40	2 to 2½	20 " 30	40 " 60
50	2 " 2½	30 " 40	60 " 80
5 ft.	2½ to 3	40 " 60	80 " 125
6 " 6 in.	3 to 3½	70 " 100	125 " 175
8 "	4 " 5	100 " 150	175 " 250

Prices and particulars on application as to gravity filters and large capacity pressure filters. (Horizontal type and special sizes.)

VERTICAL PRESSURE DOUBLE TANK

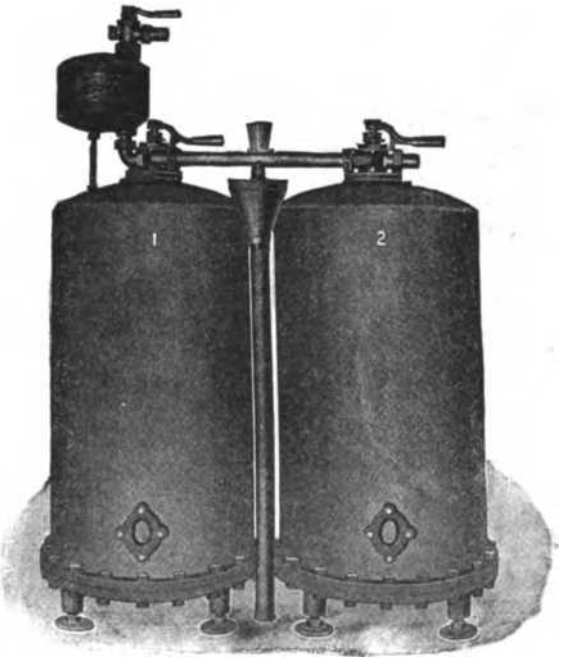


FIG. 2308

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BAIRD'S EVAPORATORS

VERTICAL TYPE C

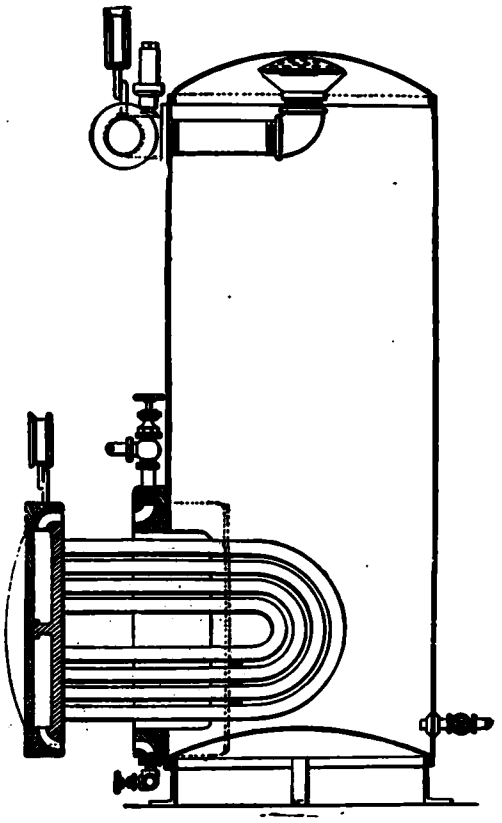


FIG. 2309

DESCRIPTION, FIG. 2309

The evaporator is indispensable on steamers carrying high steam pressures, and when water in the boilers is impregnated with the oils used in the steam cylinders.

These evaporators are built in the following different types to suit conditions, and the spaces into which they are to fit:

Type A—Horizontal Shell, with Horizontal Straight Tubes.

Type B—Horizontal Shell, with Horizontal U Bends.

Type C—Vertical Shell, with Horizontal U Bends.

C is a vertical apparatus with horizontal U bends, and is to be used where floor space is limited. Steam from the boiler or receiver is introduced into the bends through steam chest, and when condensed is discharged into a steam trap. Clean sea water surrounds the bends of the evaporator, and is vaporized by the heat of the bends. This vapor or steam is either carried to the distiller for drinking water, or to the main condenser of the ship to make up for the water lost by leaks or vents, so that fresh water may be obtained at all times for main boilers.

To remove bends for cleaning or inspection it is only necessary to unbolt steam chest, and the whole nest of bends can be withdrawn at once, without breaking steam connections or disturbing any of the fittings. When used on the main condenser where there are, say, 26 inches of vacuum, the water will be boiled in a temperature of about 153 degrees, and at that temperature little or no sulphate of lime scale is precipitated. Used in this way the bends rarely require scaling.

HORIZONTAL TYPE A

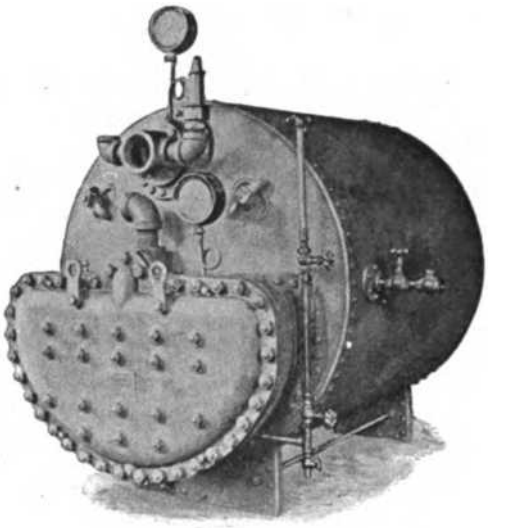


FIG. 2310

Fig. 2310, type A, is a Horizontal Evaporator, and as will be seen requires less head room than Fig. 2309, but takes up more floor space.

These evaporators are built in regular sizes up to 6,000 gallons of potable, or 9,000 gallons of feed water per 24 hours, and in special sizes for larger quantities. The shells are in one piece of plate steel, the longitudinal seams being welded or riveted. The heads are of pressed steel. The coils or bends are of copper, steel, or iron, as ordered.

BAIRD'S FRESH WATER DISTILLING APPARATUS

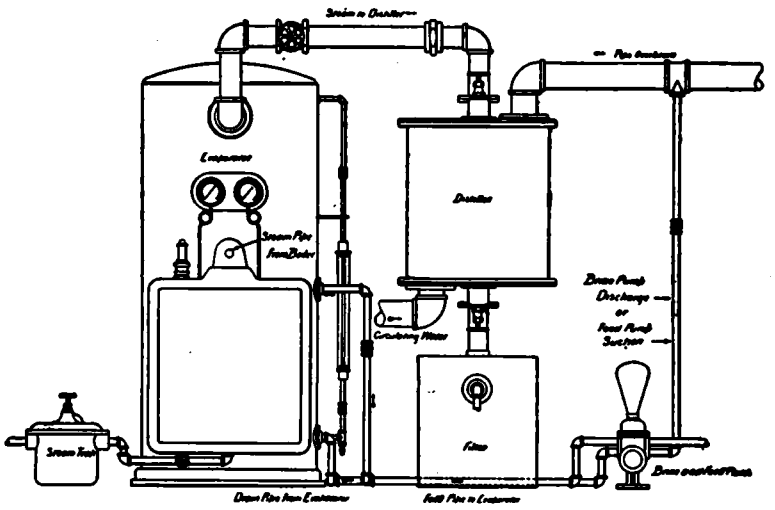


FIG. 2311

TABLE OF SIZES, CAPACITIES, ETC., FIGS. 2309 AND 2310

Size Number,		0	½	1	2	3	4	5	6	7	8	9	10
Output in Gals. per 24 Hours.	Potable Water,	250	500	750	1,000	1,500	2,000	2,500	3,000	3,500	4,000	5,000	6,000
	Feed Water,	375	750	1,125	1,500	2,250	3,000	3,750	4,500	5,250	6,000	7,500	9,000

Details and full information on application. Other sizes to order.

DESCRIPTION FIG. 2311

When drinking water is required, all or a part of the vapor from evaporator can be condensed and filtered as shown in Figure 2311. Pure water from filter can flow or be pumped to ships' tanks according to their location.

A distilling plant consists of an evaporator for vaporizing polluted water, a distiller for condensing the vapor, a filter tank and the necessary pumps—*i. e.*, an evaporator feed pump, brine pump, and a pump for circulating condensing water through distiller, and, when required, a pump for elevating pure water to ships' tanks. Prices on application.

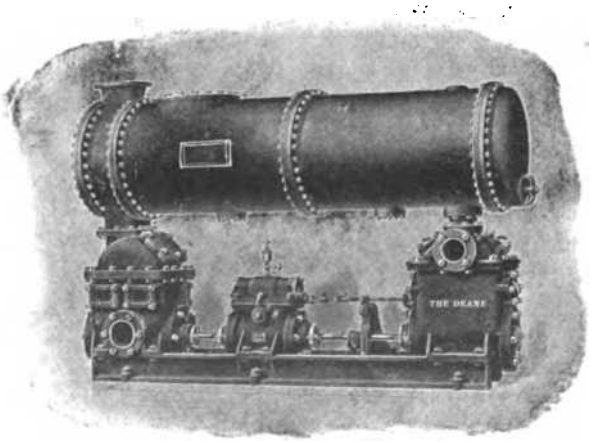


FIG. 2312

WAINWRIGHT SURFACE CONDENSER WITH CORRUGATED TUBES

This surface condenser has corrugated copper tubes and has been designed to meet a demand for a condenser of high efficiency and durability.

The use of the corrugated tubes dispenses with all packing. The tubes are joined to the tube plates, by expanded joints reinforced by hard brass ferrules tightly driven, the tube plates are of composition metal.

This cut shows a Wainwright Surface Condenser mounted upon a combined air and circulating pump. These condensers have been designed with reference to the dimensions of standard pumps, and by the use of short connecting, special castings, may be connected to any pump under any circumstances. The arrangement shown is direct and simple, but is only one of many possible combinations. Prices and further information on application.

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IMPROVED WHEELER-ADMIRALTY SURFACE CONDENSER

MOUNTED UPON COMBINED AIR AND CIRCULATING PUMPS

CYLINDRICAL PATTERN

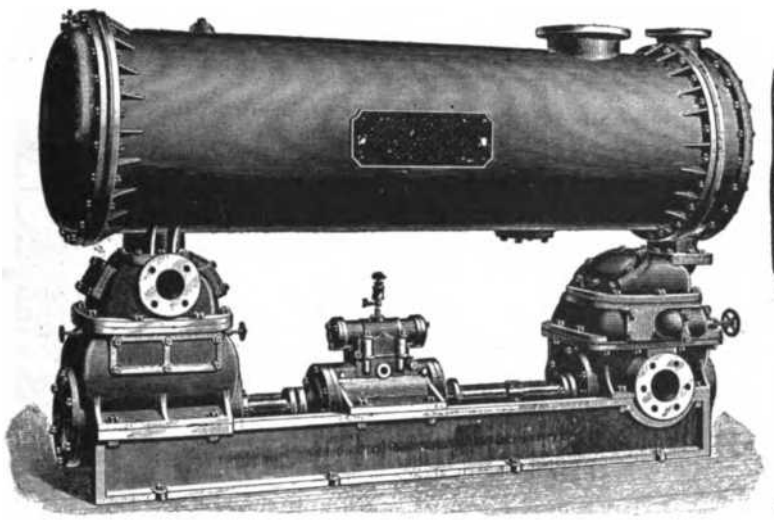


FIG. 2313

RECTANGULAR PATTERN

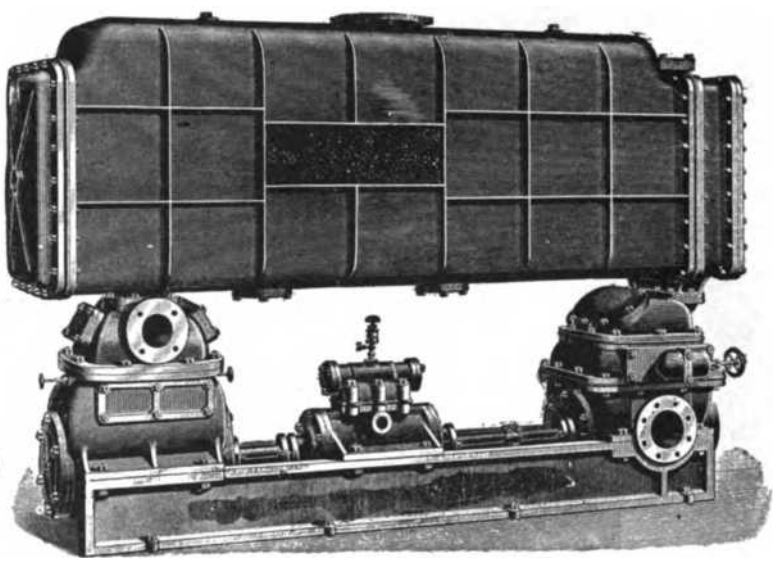


FIG. 2314

DESCRIPTION, FIGS. 2313 AND 2314

In the Wheeler-Admiralty Surface Condenser the arrangement and method of fastening the tubes combines to make it a most effective condenser. The removal of the tubes for cleansing is accomplished without damage to the tubes or heads.

In the Rectangular Type, an increased efficiency over the cylindrical design is obtained by a special arrangement by which the velocity of the exhaust steam is decreased and an amplified storage space provided.

The combined outfit, as shown in cuts, where the condenser is mounted over air and circulating pumps operated by the same steam cylinder, is an extremely desirable arrangement, economizing floor space and piping and insuring perfect drainage to the air pump. These condensers are also combined with air pumps, either horizontal or vertical, and centrifugal circulating pumps, electrically driven pumps, etc. Further information and prices given on application.

WHEELER COMBINED AUXILIARY CONDENSER AND FEED WATER HEATER

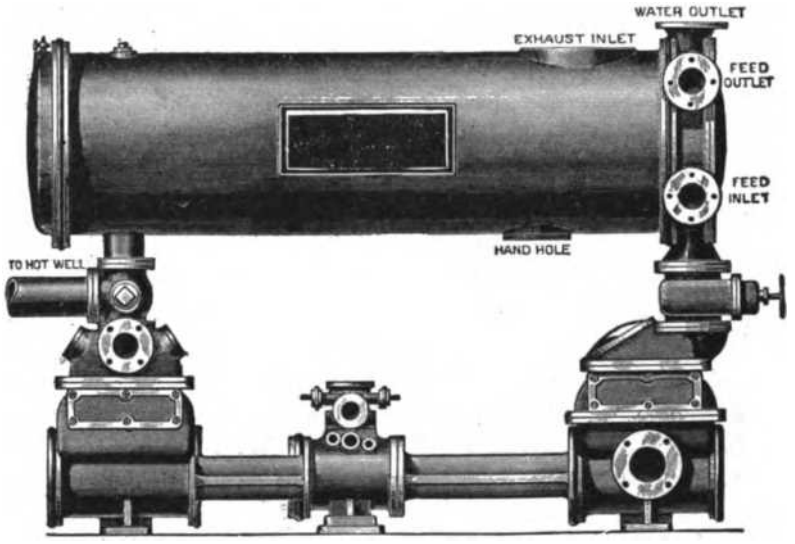


FIG. 2315

DESCRIPTION, FIG. 2315

The cut Fig. 2315 illustrates the Wheeler Auxiliary Condenser mounted over combined air and circulating pump. It is intended for marine service and is provided with a gate valve on the water end, a three way cock over the air pump with connection to the hot well, and inlet and outlet openings in the water chamber. The shell, water box, and bonnets are built to withstand boiler pressure. The apparatus acts as a special condenser caring for the exhaust from auxiliaries when in port, and at sea augments economy of fuel by imparting the heat units in the exhaust to the boiler feed. Prices and further information on application.

EXHAUST STEAM INDUCTION CONDENSER

FOR STEAM ENGINES AND PUMPS

DESCRIPTION, FIG. 2316

The object of a condenser, when applied to a steam engine, is to remove the pressure of the atmosphere from the exhaust side of the piston. This is accomplished by connecting the exhaust pipe to a chamber where a continuous vacuum is maintained by providing a cooling medium which will condense the exhaust steam, and at the same time provide a means of expelling the resulting water of condensation and the air contained in the steam, or which may find its way there through leaks.

With engines in fair condition, a vacuum of from 25 to 28 inches is maintained in the condenser, according to the temperature of water supply.

This condenser requires no tank, no pump, no water column of thirty-four feet, or hot well, nor does it need any foundation, and there is no continual waste of steam to operate air pumps. A fall of water of fifteen feet is all that is required. The means used to accomplish this is the exhaust steam velocity as it comes from steam engine cylinder. The best results can be obtained without any cost of maintenance. There is considerable saving in the use of steam, and twenty-five to thirty per cent. increase in the power of engine.

Any engineer can connect this condenser from the printed instructions furnished, which also explains the manner of operation. It requires from one to one and a half gallons of water per minute per horse power to operate it.

When inquiring for condenser please state diameter and stroke of piston, steam pressure, revolutions per minute, point of cut off, and style of engine. If a head of water is available, state height of fall; if water has to be lifted, state height of lift and distance of water from engine.

Prices and further information on application.

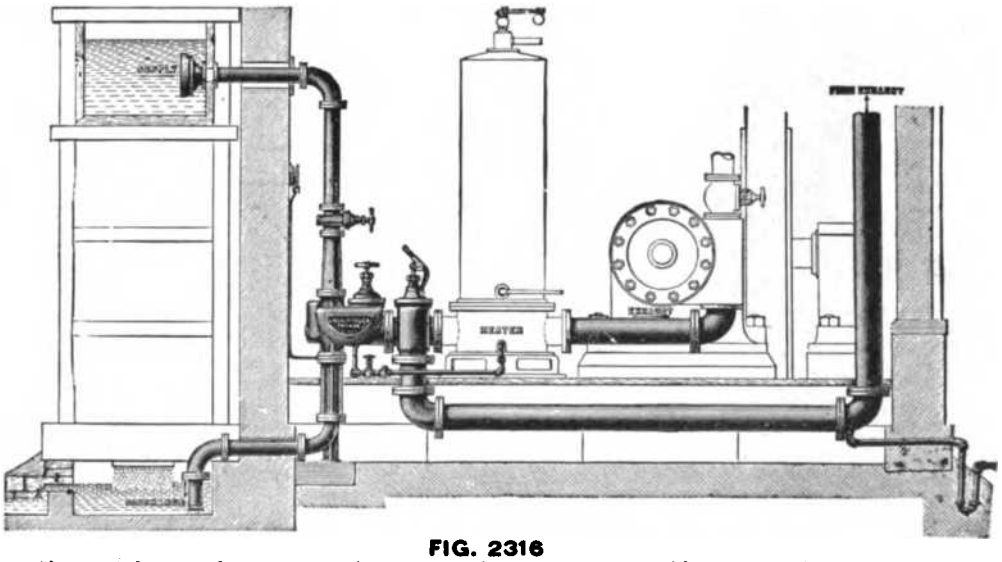


FIG. 2316

Above cut shows condenser connected to steam engine or steam pump, with water supply under pressure or fall from flume, tank, river, or pond, and discharging below.

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POSITIVE ACTING PUMP GOVERNOR



FIG. 2317

DESCRIPTION, FIG. 2317

This pump governor is used for automatically operating a steam pump and handling the condensation water from heating systems.

For establishing and maintaining a fixed water line in heating systems, a very desirable feature of a well-regulated steam plant.

Also, to provide a means for taking care of condensation from heating installations, where from necessity a large amount of radiating surface is found located on basement floors, below water line of boilers.

Extensively used in connection with heating systems for railroad round houses, car shops, paper mills, and lumber drying plants.

PRICES

Size Number.	Draining Capacity Lineal Feet, 1 inch Pipe.	Size Steam Pipe to Pump Inches.	Size Suction Inches.	Each.
0	5,000	½	1½	$150 00
1	10,000	¾	2	200 00
2	20,000	1	2½	300 00
3	30,000	1¼	3	400 00
4	50.000	1½	4	500 00

CONDENSATION RECEIVER AND AUTOMATIC PUMP REGULATOR

DESCRIPTION, FIG. 2318

This appliance is designed to meet a demand for an independent receiver and automatic pump regulator, detachable from steam pump or other apparatus, occupying but a minimum of space, and adaptable to being placed in almost any situation to meet the greater number of conditions as met with in modern engineering and steam heating practice.

They are thoroughly first class in every detail of construction and positive in service. Operating valve is guaranteed positively steam tight and is actuated by a mechanical motion which precludes any possibility of its sticking to valve seats or failing to operate.

These receivers and Regulators are very suitable where it is desired to place the automatic governing apparatus some distance from pump, or on different levels from steam pumps, where available space is limited or contracted, and for placing in any special situation and for many particular services for which they may suggest themselves to the engineering profession.

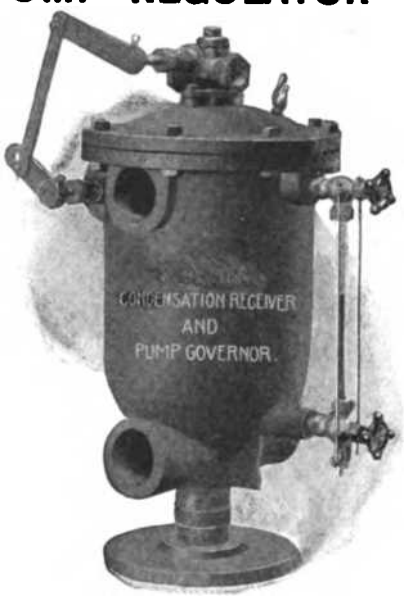


FIG. 2318

PRICES

No.	Draining Capacity, Square Feet Radiation.	Size Steam Valve.	Size Inlet and Outlet Connections.	Prices Each.
0	5,000	½	1½	$70 00
1	10,000	¾	2	100 00
2	20,000	1	2½	130 00
3	30.000	1¼	3	150 00
4	40,000	1½	4	200 00

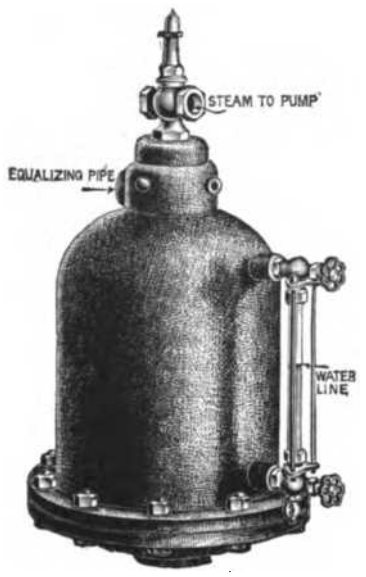


FIG. 2319

BOILER FEED REGULATOR

DESCRIPTION, FIG. 2319

Is a simple device for governing boiler-feed pumps. There are no complicated mechanism, levers or stuffing boxes to interfere with its operation. The advantage gained by this construction makes it a very reliable and positive regulator.

Where it is used in connection with one boiler, the regulator is placed in an upright position in front of the boiler, with top and bottom connections, keeping the water level as shown in the cut. The steam connection is made from the pump to the valve on top of regulator.

Where they are used on a battery of boilers, one regulator is placed on each boiler, and the water from the feed pump passes through the valve regulator. A ¼ inch pipe having a union and valve is run from the pump delivery to the top cylinder of regulating valve.

PRICE, $130.00

Regulator complete, with water gauge.....$130 00

AUTOMATIC FEED PUMP AND RECEIVER

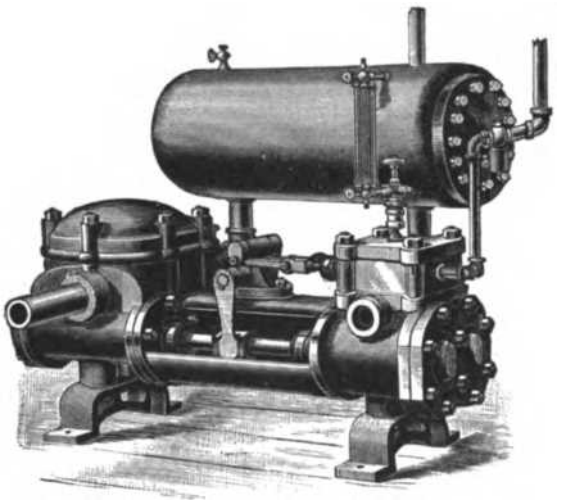


FIG. 2320

FOR DRAINING CONDENSATION DIRECT BACK TO BOILER

Forms a very compact and effective combination by means of which the returns from any system of heating or drying in which steam is condensed are automatically and regularly returned into the boiler against any pressure that may be therein, and at the highest possible temperature. This applies to steam coils, radiators, steam jackets, drying cylinders, slashers, lumber dryers, canneries, brick kilns, etc.

This receiver can be attached to any pump.

PRICES

Size No.	Without Pump.	With Duplex Pump.	Steam Valve to Pump Inches.	Capacity in Lineal Feet of 1 inch Pipe.	Dimensions of Receiver, Inches.
½	$ 60 00	$120 00	⅜	15,000	10x24
1	70 00	165 00	½	30,000	12x24
1½	85 00	200 00	¾	60,000	18x30
2	100 00	240 00	1	120,000	20x36
2½	150 00	290 00	1	200,000	24x36

SAFETY AUTOMATIC FEED WATER REGULATOR

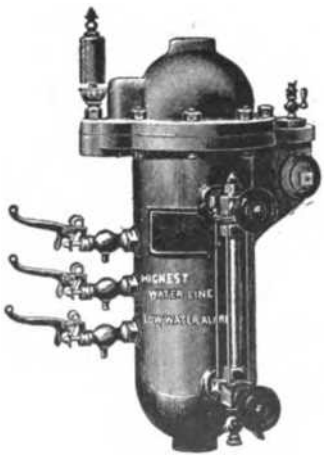


FIG. 2321

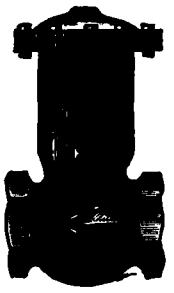


FIG. 2322

DIAPHRAGM VALVE

This Diaphragm Valve when used to control the pump is placed in the steam pipe of same but when used to regulate the feed water, it is placed in the feed water line and is connected by a ¼ inch stem pipe to safety regulator on the front boiler.

DESCRIPTION, FIG. 2321

This steam boiler governor comprises a water column, a steam boiler governor, and a safety alarm column combined.

It is applicable to and efficient on a single boiler or a battery of boilers, or will control supply of steam and water to a pump and boiler. It takes the place of every description of water column and is attached in precisely the same way to the boiler, and will regulate the water whatever the supply, if it be steam pump, power pump, or city pressure, or by gravity. Can be applied to any type of boiler and is particularly adaptable to waste heat boilers as well as all steam boilers for any and every purpose. On ordering, state kind of boilers and size of feed pipe, and if right or left bend regulators are desired.

PRICES

Governor complete, including water column, alarm and regulating or water valve.....$85 00
Without water gauge or gauge cocks..... 75 00
Without the safety alarm..... 60 00

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AUTOMATIC FEED PUMP AND RECEIVER

DESCRIPTION, FIG. 2323

This Feed Pump and Receiver is used for draining steam coils, radiators, heaters, drying cylinders, steam jackets, etc., and forcing the water of condensation in its hottest condition direct to the steam boilers. It is perfectly reliable and automatic in its operation. It returns the condensed steam to the boiler in a steady, continuous flow as fast as it accumulates in the receiver. It is not affected by variation of steam pressure, and entirely prevents all snapping and waterhammer in pipes. The Automatic Steam Pump and Receiver can be used for other purposes than a boiler feed appliance; for instance, for regulating the brine circulation in refrigerating machinery, for the temporator apparatus in beer cooling and for other circulating purposes.

This apparatus also makes an efficient form of governor for maintaining a uniform water level in steam heating systems. When used for this purpose the receiver is placed at the height at which it is required to maintain the water line. When desired, the receiver and pump may be separated, the receiver being placed at the water line level and the pump located below at any convenient point.

CAPACITIES, FIG. 2323

Sizes.	Gallons Delivered per Minute.	Square Feet of Radiating Surface it will Drain.	Space Occupied. Length, Inches.	Width, Inches.	Height, Inches.
A	12	5,000	36	25	22
B	20	10,000	35	30	24
C	35	20,000	46	37	30
D	60	40,000	47	37	30

Prices include everything shown in the illustration.

We also furnish this apparatus, when required, with the receiver mounted directly over the pump. Prices on application.

SIZE, 6 X 4 X 6

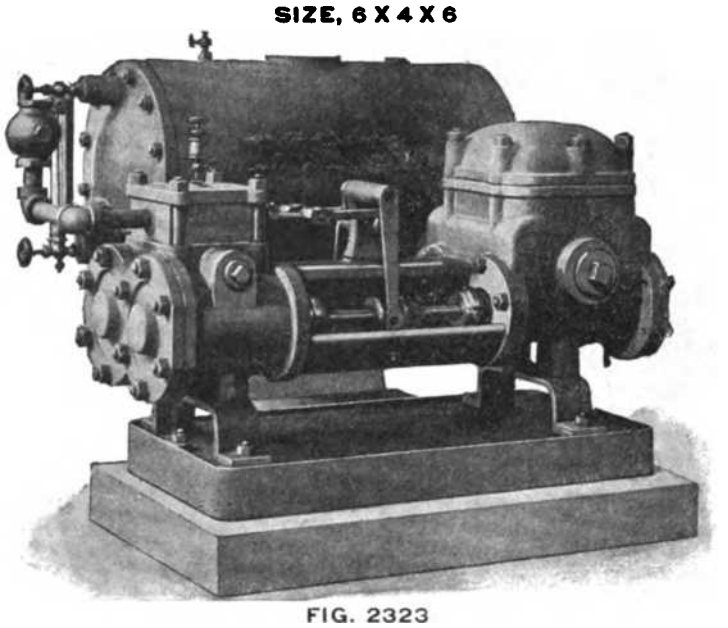


FIG. 2323

BOILER FEED PUMP, PISTON PATTERN

SIZE, 6 X 4 X 6

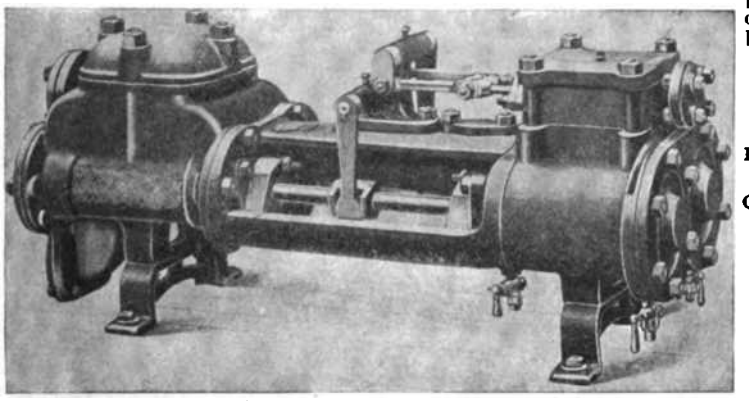


FIG. 2324

DESCRIPTION, FIG. 2324

This pump is good for 150 pounds pressure. It is fitted with packed water pistons of iron or brass, as may be required, operating in brass lined cylinders. The water valves are of brass or hard composition, and are controlled by brass cylindrical springs held in place by guards of the same material.

CAPACITIES, FIG. 2324

Diameters of Steam Cylinders.	Diameters of Water Pistons.	Length of Stroke.	Horse Power Boiler, based on 30 lbs. of water per hour, which the pump will supply with ease.	Diameters of Pistons required in any single cylinder pump to do the same work at same speed.	SIZES OF PIPES FOR SHORT LENGTHS. To be increased as length increases. Steam Pipe.	Exhaust Pipe.	Suction Pipe.	Discharge Pipe.
2	1⅛	2¾	35	1⅝	⅜	½	1	¾
3	2	3	100	3	⅜	½	1¼	1
4½	2¾	4	200	4	½	¾	2	1½
5¼	3½	5	400	5	¾	1¼	2½	1½
6	4	6	550	5⅝	1	1¼	3	2
7½	5	6	800	7¼	1½	2	4	3
7½	4½	10	950	6⅜	1½	2	4	3
9	5¼	10	1300	7½	1½	2	4	3
10	6	10	1700	8½	2	2½	5	4

PRICES ON APPLICATION

BOILER FEED PUMP, ADMIRALTY PATTERN

DESCRIPTION, FIG. 2325

This pump is good for 250 pounds pressure.

It was designed to meet the requirements of the British Admiralty, and has since been modified to conform, at the same time, to the views of the United States Bureau of Steam Engineering.

The steam end is of the well known type, but embodies some of the latest patented features. The ordinary slide valves have in the case of this design been substituted by improved piston valves with outside adjustable lost motion links, making it possible to readily adjust the stroke. The water end is made of composition, gun metal, or cast iron sufficiently strong to work against a pressure of 250 pounds. When made of cast iron the water end is thoroughly brass fitted.

In accordance with the latest practice, these pumps are intended to run without cylinder lubrication.

SIZE, 7½ X 5 X 6

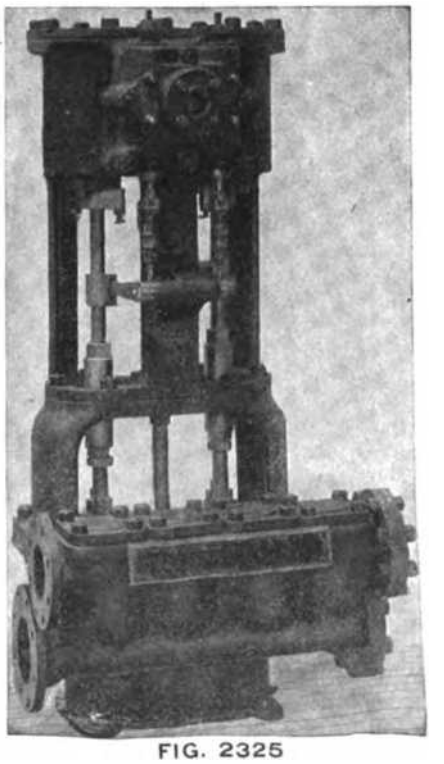


FIG. 2325

CAPACITIES, FIG. 2325

Diameters of Steam Cylinders.	Diameters of Water Pistons.	Length of Stroke.	Horse Power of Boiler, based on 30 pounds of water per hour, which the pump will supply with ease.	Diameters of Pistons required in any single cylinder pump to do the same work at same speed.	SIZES OF PIPES FOR SHORT LENGTHS. To be increased as length increases. Steam Pipe.	Exhaust Pipe.	Suction Pipe.	Discharge Pipe.
4½	3	4	400	4¼	½	¾	2	2
5¼	3½	5	550	5	¾	1¼	2½	2½
6	4	6	750	5⅝	1	1¼	4	3
6	4½	6	1000	6¾	1	1¼	4	3
7½	5	6	1200	7⅛	1½	2	5	4
9	6	6	1700	8½	1½	2	5	4
7½	4½	10	1400	6⅜	1½	2	4	3
9	6	10	2100	8½	2	2½	5	4
10	7	10	2900	9⅞	2	2½	6	5
12	8½	10	4200	12	2½	3	6	5
12	9¼	10	5000	13	2½	3	6	5
14	10	15	7000	14	2½	3	8	6

PRICES ON APPLICATION

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PATENT BOILER FEED OR PRESSURE PUMP

SIZE NO. 4½

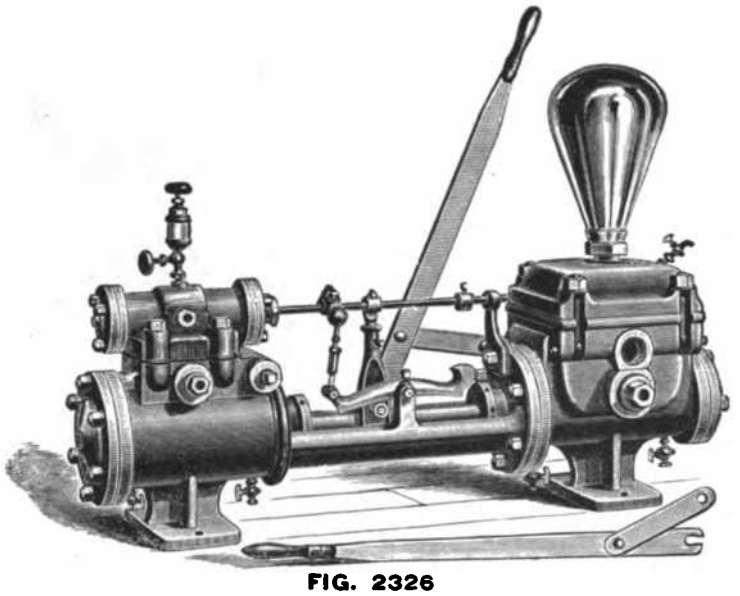


FIG. 2326

DESCRIPTION, FIG. 2326

This Pump is arranged for hot or cold water or other liquids. Its improved valve motion and steam valves give the smoothest work under the most exacting conditions. The pump can be regulated to run at any speed desired—an important feature in the feeding of boilers.

In the manufacture of these steam pumps the best composition metal (Government standard) is used for the piston rods, stuffing boxes, valve seats, and water cylinder linings. The water pistons are also made of composition, and are packed with a special form of adjustable packing, adapted for either hot or cold liquids. All parts are made to gauge, and are therefore interchangeable.

These pumps have large direct water passages and full valve area, which admit of a speed that makes them very efficient fire pumps.

CAPACITIES, FIG. 2326

No.	Steam Cylinder. Inches.	Water Cylinder. Inches.	Stroke. Inches.	Gallons per Stroke.	*Capacity per Minute at Ordinary Speed. Strokes	Gals.	Steam Pipe. Inches.	Exhaust Pipe. Inches.	Suction Pipe. Inches.	Delivery Pipe. Inches.	Floor Space Required. Inches.
000	2½	1½	3	.023	150	3½	¼	⅜	½	⅜	17 x 5
00	3	1¾	3	.031	150	4¾	¼	⅜	¾	½	18 x 5
0	3¼	2	4	.05	150	7½	½	¾	1¼	1	26 x 6
1	3½	2¼	4	.07	150	10½	½	¾	1¼	1	28 x 7
2	4	2½	5	.11	150	16½	½	¾	1¼	1	31 x 8
3	5	3¼	7	.25	125	31	¾	1	2	1½	44 x 13
4	5½	3¾	7	.34	125	42	¾	1	2	1½	45 x 14
4½	7	4	7	.39	125	49	1	1¼	2½	2	45 x 14
5	7	4½	10	.69	100	69	1	1¼	3	2½	55 x 16
6	7½	5	10	.85	100	85	1	1¼	3	2½	55 x 16
6½	8	5	12	1.02	100	102	1	1¼	4	4	67 x 19
7	10	6	12	1.47	100	147	1¼	1½	4	4	67 x 19
8	12	7	12	2.00	100	200	2	2½	5	5	67 x 20
9	14	8	12	2.61	100	261	2	2½	5	5	67 x 20
10	16	10	16	5.44	75	408	2½	3	6	6	80 x 22
11	18	12	24	11.75	50	588	3½	4	8	6	110 x 27
12	20	14	24	16.00	50	800	3½	4	10	8	111 x 29
13	24	16	24	20.80	50	1,040	4	4½	12	10	
14	30	18	24	26.43	50	1,322	5	6	14	12	

Larger sizes on hand or to order at short notice.

*Twice the above capacities can be had in emergencies; but for continuous work, such as boiler feeding, we advise about half the speeds stated.

All sizes up to and including No. 6 have suction and delivery openings on both sides; consequently, connections can be made on either side of pump desired. When ordering a pump, please answer the following questions: 1st. Whether for hot or cold water? 2d. To what height is water to be lifted by suction? 3d. Length of suction pipe? 4th. Against what pressure or height is water to be forced? 5th. Amount of water needed per hour?

The Nos. 0, 1, 2, 3, 4, and 4½ pumps are provided with hand power attachments.

The hand power attachment is invaluable, as the pump can be used, when steam is down, for filling boilers after "blowing off," washing decks, fire purposes, etc. The hand lever can be easily removed by simply lifting it from the pump.

Prices on application.

PISTON PUMP, FOR BOILER FEEDING, ETC.

SIZE, 10 X 6 X 10

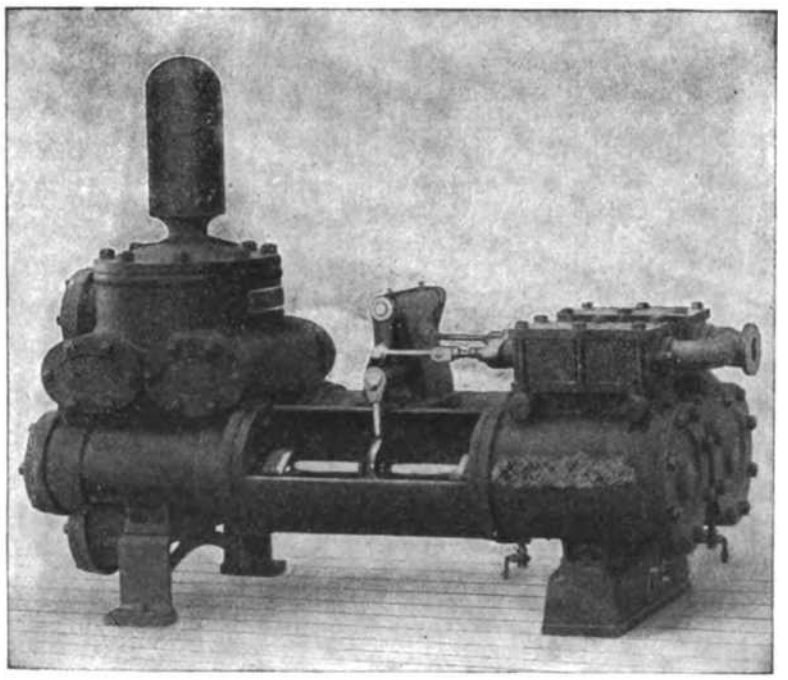


FIG. 2327

DESCRIPTION, FIG. 2327

This cut illustrates a pump of the piston pattern, designed for boiler feeding, fire, hydraulic elevator, and general service where the water pressure does not exceed 150 pounds. This pattern should be used where the liquid to be pumped contains small quantities of grit or foreign material, or where there is an unusually long or high suction lift, and a foot valve cannot be used.

The water cylinders are composition lined, and have adjustable packed pistons. The water valves are so arranged that the water pistons are at all times submerged. The valve areas and water passages are large, and special care has been taken to have all the parts easily accessible for inspection or repairs.

CAPACITIES, FIG. 2327

Diameters of Steam Cylinders.	Diameters of Water Piston.	Length of Stroke.	Displacement in Gallons per Stroke of One Piston.	Proper Strokes per Minute of One Piston, Varying with Kind of Work and Pressure.	Gallons Delivered per Minute by Both Pistons at Stated Number of Strokes.	Diameter of Piston Required in any Single Cylinder Pump to do the same work at same speed.	Sizes of Pipes for Short Lengths. To be Increased as Length Increases. Steam Pipe.	Exhaust Pipe.	Suction Pipe.	Discharge Pipe.
2	1⅛	2¾	.013	100 to 300	2 to 7	1⅝	⅜	½	1	¾
3	2	3	.04	100 " 250	8 " 20	2⅞	⅜	½	1¼	1
4½	2¾	4	.10	100 " 200	20 " 40	4	½	¾	2	1½
5¼	3½	5	.20	100 " 200	40 " 80	5	¾	1¼	2½	1½
6	4	6	.33	100 " 150	70 " 100	5⅝	1	1½	3	2
7½	5	6	.51	100 " 150	100 " 150	7	1½	2	4	3
9	5	6	.51	100 " 150	100 " 150	7	1½	2	4	3
7½	4½	10	.69	75 " 125	100 " 170	6⅜	1½	2	4	3
9	5¼	10	.93	75 " 125	135 " 230	7½	1½	2	4	3
10	5¼	10	.93	75 " 125	135 " 230	7½	2	2½	5	4
10	6	10	1.23	75 " 125	180 " 300	8½	2	2½	5	4
12	6	10	1.22	75 " 125	180 " 300	8½	2½	3	6	5
14	6	10	1.22	75 " 125	180 " 300	8½	2½	3	6	5
10	7	10	1.66	75 " 125	245 " 410	9⅞	2	2½	6	6
12	7	10	1.66	75 " 125	245 " 410	9⅞	2½	3	6	6
14	7	10	1.66	75 " 125	245 " 410	9⅞	2½	3	6	6
12	7½	10	1.91	75 " 125	285 " 480	10¼	2½	3	6	6
14	7½	10	1.91	75 " 125	285 " 480	10¼	2½	3	6	6
16	7½	10	1.91	75 " 125	285 " 480	10¼	2½	3	6	6
16	8	10	2.17	75 " 125	300 " 540	11¼	2½	3	6	6
12	8½	10	2.45	75 " 125	365 " 610	12	2½	3	6	6
14	8½	10	2.45	75 " 125	365 " 610	12	2½	3	6	6
16	8½	10	2.45	75 " 125	365 " 610	12	2½	3	6	6
18½	8½	10	2.45	75 " 125	365 " 610	12	3	3½	6	6
20	8½	10	2.45	75 " 125	365 " 610	12	4	5	6	6
14	9¼	10	2.90	75 " 125	400 " 700	13	2½	3	8	7
16	9¼	10	2.90	75 " 125	400 " 700	13	2½	3	8	7
18½	9¼	10	2.90	75 " 125	400 " 700	13	3	3½	8	7
20	9¼	10	2.90	75 " 125	400 " 700	13	4	5	8	7

A slight additional charge is made when pumps are fitted with brass pistons and piston rods. An extra charge is also made for bed plates.

To designate the sizes, give the diameters of steam cylinders and water pistons and length of stroke.

Prices on application.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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SPECIAL DUPLEX BOILER FEED PUMP, PRESSURE PATTERN

Size, 6 x 4 x 6

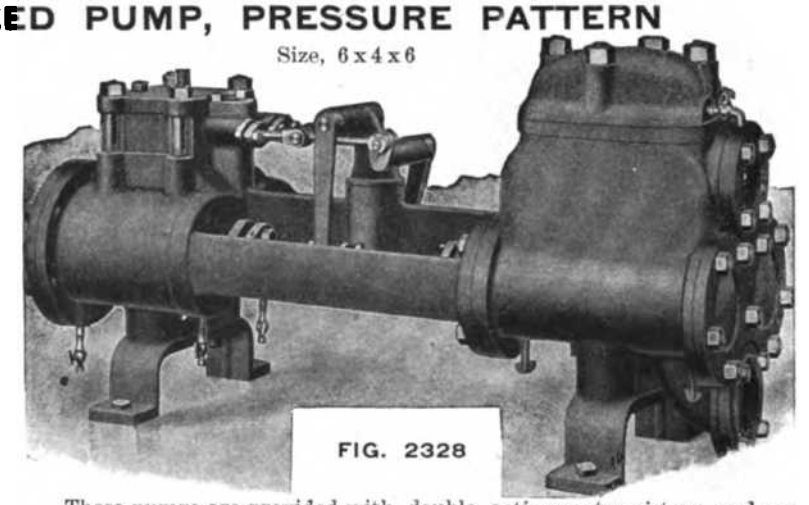


FIG. 2328

These pumps are provided with double acting water pistons, and are suitable for boiler feeding, fire service, or for general purposes. The water cylinders are brass lined, and the water pistons are arranged so that the packing may be readily renewed when required.

CAPACITIES, FIG. 2328

Steam Cylinders. Inch.	Water Cylinders. Inch.	Stroke. Inch.	Capacity, in Gallons, per Stroke, Each Piston.	Strokes, per Minute, Each Piston.	Capacity of Both Cylinders, in Gallons, per Minute.	Steam Pipe. Inch.	Exhaust Pipe. Inch.	Suction Pipe. Inch.	Discharge Pipe. Inch.
2	1¼	2¾	.014	100 to 300	2 to 8	⅜	½	1	¾
3	2	3	.04	100 250	8 20	⅜	½	1¼	1
4½	2¾	4	.10	100 200	20 40	½	¾	2	2
5¼	3½	5	.20	100 200	40 80	¾	1¼	2½	2½
6	4	6	.33	100 150	66 100	1	1½	3	3
7½	4½	6	.42	100 150	85 125	1½	2	4	3
7½	5	6	.51	100 150	100 150	1½	2	4	3
7½	4½	10	.69	75 125	100 170	1½	2	4	3
9	5¼	10	.93	75 125	135 230	2	2½	4	3
10	6	10	1.22	75 125	180 300	2	2½	5	4
10	7	10	1.66	75 125	245 410	2	2½	6	5
12	7	10	1.66	75 125	245 410	2½	3	6	5
14	7	10	1.66	75 125	245 410	2½	3	6	5
12	8½	10	2.45	75 125	365 610	2½	3	6	5
14	8½	10	2.45	75 125	365 610	2½	3	6	5
16	8½	10	2.45	75 125	365 610	2½	3	6	5
12	10¼	10	3.57	75 125	530 890	2½	3	8	7
14	10¼	10	3.57	75 125	530 890	2½	3	8	7
16	10¼	10	3.57	75 125	530 890	2½	3	8	7

Also patterns for larger sizes.

A slight additional charge is made when pumps are fitted with brass pistons and brass piston rods. Prices on application.

To designate the sizes give the diameter of steam and water cylinders and length of stroke.

STEAM BOILER FEED PUMPS

ON COLUMN, WITH TIGHT AND LOOSE PULLEYS FOR HAND OR POWER

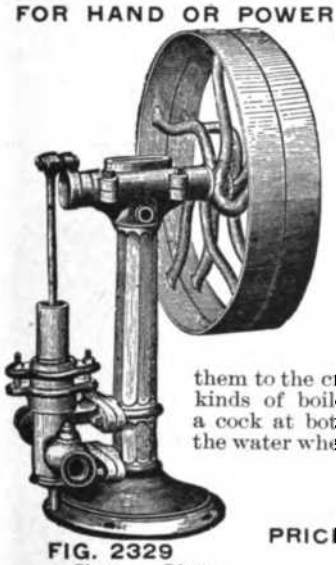


FIG. 2329

DESCRIPTION

These pumps do not involve the necessity of a countershaft or other intermediate appliances for conducting the power to operate them, but can be placed in any convenient position in line with the mainshaft or connected with the crank shaft of the engine direct. The pulleys on the pumps of 3 inch stroke are 18 inches diameter and 3 inches face, while the pulleys on the pumps of 6 inch stroke are 22 inches diameter and 4 inches face. Both pulleys are provided with set screws for fastening them to the crank shaft when needed. All sizes and kinds of boiler feeding pumps are provided with a cock at bottom of the cylinder for drawing out the water when not in operation to prevent freezing.

PRICES, FIG. 2329

Nos.	Sizes Pipe, Inches.	Diams. Plunger, Inches.	Stroke, Inches.	Capacity per Rev., Gallons.	Revs. per Minute.	Horse Power, Boiler.	Each.
1	1	2	3	1/26	50	10	$34 00
2	1¼	2½	3	1/16	50	18	40 00
3	1¼	3	3	1/10	45	25	50 00
4	1	2	6	1/13	40	20	65 00
5	1¼	2½	6	1/8	40	36	75 00
6	1½	3	6	1/8	40	50	85 00

FOR POWER

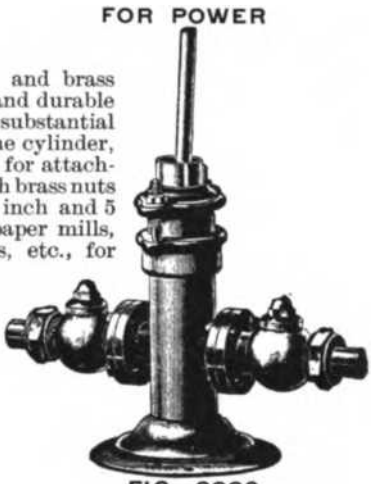


FIG. 2330

DESCRIPTION

It is made with cast brass piston and brass valves and caps, and is a very strong and durable pump throughout, having a broad, substantial base, with globe valves bolted to the cylinder, and union couplings on the outer ends for attaching suction and discharge pipes, and with brass nuts on stuffing gland, studs, etc. The 4 inch and 5 inch pumps are extensively sold to paper mills, distilleries, tanneries, starch factories, etc., for pumping thick material, and give great satisfaction for their rare usefulness. For this purpose we attach angle valves instead of the globe valves—the former having no receptacles where such materials can settle and harden, while being of so large a capacity that a high rate of speed is unnecessary. All sizes are made with cast brass plungers.

PRICES, FIG. 2330

Nos.	Sizes Pipe, Inches.	Diams. Plunger, Inches.	Stroke, Inches.	Capacity per Rev., Gallons.	Revs. per Minute.	Horse Power, Boiler.	Each.
1	¾	1¼	6	1/42	40	15	$10 00
2	1	1½	6	1/28	40	20	15 00
3	1	2	6	1/13	40	35	22 00
4	1¼	2½	6	1/8	40	50	30 00
5	1½	3	6	9/80	40	75	40 00
6	2	4	10	½	20	100	60 00
7	2½	5	10	9/7	20	160	90 00

COLUMN GEARED BOILER FEED PUMP

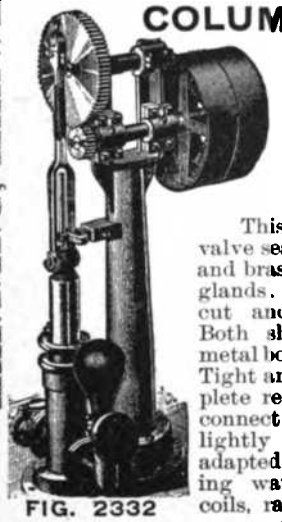


FIG. 2332

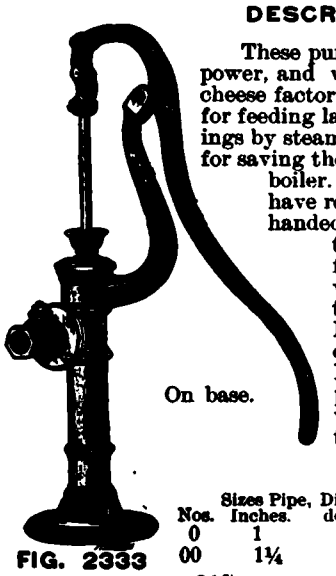
DESCRIPTION AND PRICES, FIG. 2332

This pump has valves and valve seats of bronze, brass plunger and brass nuts on studs of stuffing glands. The gears are machine cut and the pinion is of bronze. Both shafts run in anti-friction metal boxes. Ratio of gears, 4 to 1. Tight and loose pulleys. All complete ready to fasten to floor and connect to piping. This pump runs lightly and noiselessly, and is adapted to feeding boilers, returning water of condensation from coils, radiators, etc.

No.	Sizes Pipe, Inch.	Diams. Plunger, Inches.	Stroke, Inches.	Capacity per Rev., Gallons.	Revs. per Minute.	Horse Power, Boilers.	Each.
1	1	2	6	1/18	40	26	$75 00
2	1¼	2¾	6	1/6	40	49	80 00
3	1½	3½	6	¼	40	80	90 00
4	2	4¼	6	3/8	40	120	100 00

HAND BOILER FEED PUMPS

DESCRIPTION, FIGS. 2333 AND 2334



On base.

FIG. 2333

These pumps are for feeding small boilers by hand power, and well adapted for use in mint distilleries, cheese factories, etc. They are also of ample capacity for feeding larger boilers when used for heating buildings by steam, especially if a steam trap is employed for saving the condensed steam and returning it to the boiler. The rod and plunger are of brass. They have revolving fulcrums for either right or left handed working. A brass globe check valve in the eduction outlet prevents the return flow of water into the pump. They are very serviceable for filling still boilers or those under a moderate pressure of steam. Being fitted with metallic valves throughout, they pump hot as well as cold water. In pumping hot water, the pump should be placed as near the water as possible, otherwise the steam is apt to rise and destroy the vacuum.

PRICES

Nos.	Sizes Pipe, Inches.	Diams. Cylinder, Inches.	Stroke, Inches.	Capacity per Rev., Gals.	Iron, Each.	Brass Cylinders, Each.
0	1	2	5	1/13	$12 00	$18 00
00	1¼	2½	5	1/8	14 00	22 00

On plank.

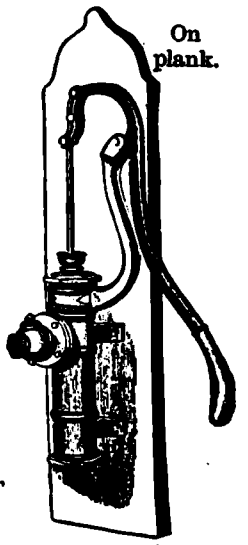


FIG. 2334

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AUTOMATIC FEED PUMP AND RECEIVER

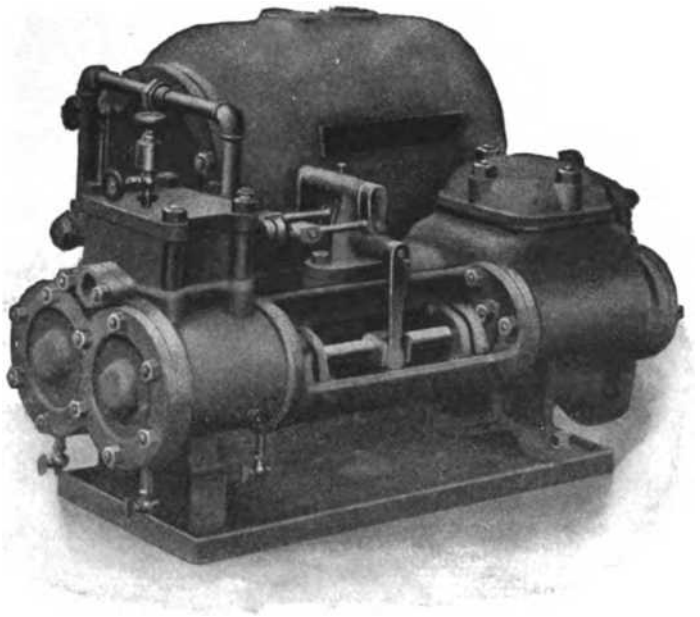


FIG. 2335

DESCRIPTION FIG. 2335

This receiver and pump are recommended for use in the draining of heaters, radiators, steam coils and steam jackets, and to force the water of condensation in its hottest condition direct to the steam boiler.

This arrangement is strictly automatic ; it is not affected by variation of steam pressure ; it is an aid to economy in coal consumption ; it increases the efficiency of the heating plant, and it prevents the snapping and water hammer heard where traps with intermittent action are used.

The condensed steam enters at the top and gravitates to the bottom of the receiver ; the float located therein is connected with a regulating apparatus placed on the steam end of the pump. As this float rises or falls the speed of the pump is regulated and the water is kept at a constant level in the receiver.

Should it be desired that this arrangement be the sole means of feeding the boilers, cold water may be introduced directly into the receiver, whence it is pumped into the boiler.

Nos.	Sizes.	Radiating Surface it will Drain in Square Feet.	Approximate Dimensions. Lengths.	Widths.	Heights.
2	4½ x 2¾ x 4 ins.	12,000	3 ft. 6 ins.	2 ft. 7 ins.	2 ft. 3 ins.
3	5¼ 3½ 5 "	25,000	3 " 7 "	2 " 7 "	2 " 3 "
4	6 4 6 "	40,000	4 " "	2 " 8 "	2 " 3 "

PRICES ON APPLICATION

BOILER FEED PUMP, PISTON PATTERN

DESCRIPTION, FIG. 2336

The engraving on the right represents a standard design of duplex boiler feed pump of smaller size. They are suitable for either hot or cold water, and are intended for use where pressure is not over 150 lbs. to the square inch. Steam ends can be fitted with either balanced piston valves or slide valves, as shown.

These pumps are fitted with two double acting fibrous packed water pistons of iron or brass, as required, which operate through bronze lined water cylinders and brass valves, seats, guards and springs. Rubber valves to suit any service can be furnished.

The two pistons of these pumps double their capacity as compared with a single cylinder pump of the same dimensions.

Diameters of Steam Cylinders.	Diameters of Water Piston.	Lengths of Stroke.	Horse Power of Boiler, based on 30 lbs. water evaporation per hour, which Pump will feed	Pipe Sizes for Short Lengths to be increased as Length increases. Steam Pipe.	Exhaust Pipe.	Discharge Pipe.	Suction Pipe.
4½	2¾	4	200	½	¾	1½	2
5¼	3½	5	400	¾	1¼	1½	2½
6	4	6	600	1	1¼	2	3
7½	4½	6	750	1½	2	3	4
7½	5	6	900	1½	2	3	4
7½	4½	10	1,000	1½	2	3	4
7½	5	10	1,250	1½	2	3	4
9	5	10	1,250	2	2½	3	4
10	6	12	1,900	2	2½	4	5

A slight additional charge is made when pumps are fitted with brass pistons and piston rods. To designate the sizes, give diameter of steam cylinders and water pistons, and length of stroke.

PRICES ON APPLICATION

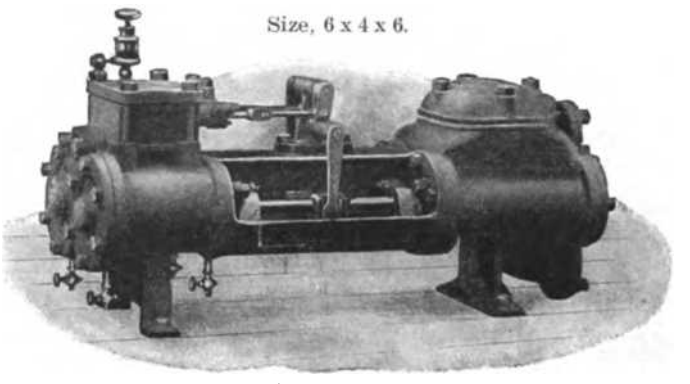


FIG. 2336

BOILER FEED PUMP

CENTER PACKED PLUNGER PATTERN FOR 150 POUNDS PRESSURE

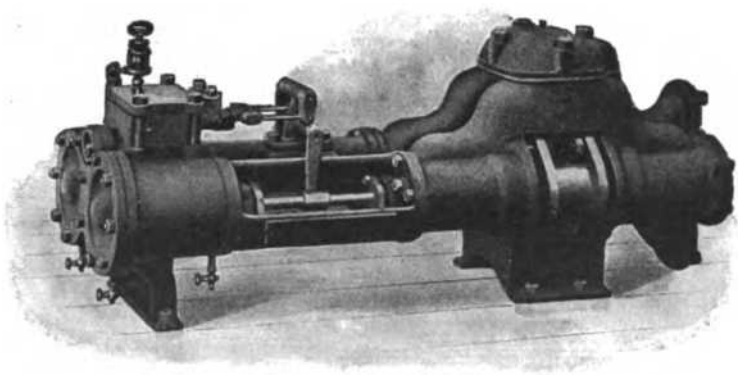


FIG. 2337 Size, 7½ x 4½ x 6

DESCRIPTION, FIG. 2337

This pump is intended for feeding boilers, and it is adapted for either hot or cold water. The plungers are centrally packed, and are easily accessible for repacking. The valves are placed above the plungers, so that the pump is always primed. Its operation is smooth and quiet. Brass or rubber valves are furnished as required.

Diameters of Steam Cylinders.	Diameters of Plungers.	Lengths of Stroke.	Horse Power of Boiler, based on 30 lbs. water evaporation per hour, which Pump will feed.	Pipe Sizes for Short Lengths, to be increased as Length increases. Steam Pipe.	Exhaust Pipe.	Discharge Pipe.	Suction Pipe.
5¼	3½	5	400	¾	1¼	1½	2½
6	4	6	600	1	1¼	2	3
7½	4½	6	750	1½	2	3	4
7½	5	6	900	1½	2	3	4
7½	4½	10	1,000	1½	2	4	5
7½	5	10	1,250	1½	2	4	5
9	5	10	1,250	2	2½	4	5
10	6	12	1,900	2	2½	4	5

PRICES ON APPLICATION

PRESSURE PATTERN FOR 300 POUNDS PRESSURE

DESCRIPTION, FIG. 2338

Pumps of this pattern have four single acting outside packed water plungers, each reciprocating through deep stuffing boxes into the ends of the water cylinders. These stuffing boxes are adjustable.

The water cylinders are made of special grade of iron, and are cast on end. The valves are of brass, controlled by composition springs.

The separate interchangeable valve chambers have suction and delivery valves in the same chamber, and are accessible through separate covers.

Diameters of Steam Cylinders.	Diameters of Plungers	Lengths of Stroke.	Horse Power of Boiler, based on 30 lbs. water evaporation per hour, which Pump will feed.	Pipe Sizes for Short Lengths, to be increased as Length increases. Steam Pipe.	Exhaust Pipe.	Discharge Pipe.	Suction Pipe.
6	3½	6	400	1	1¼	2	3
7½	4	6	500	1½	2	2	3
7½	4½	10	800	1½	2	3	4
9	5	10	1,100	2	2½	3	4
10	6	12	1,800	2	2½	4	5

A slight additional charge is made when pumps are fitted with brass plungers and piston rods. To designate the sizes, give the diameter of steam cylinders and water plungers and length of stroke.

PRICES ON APPLICATION

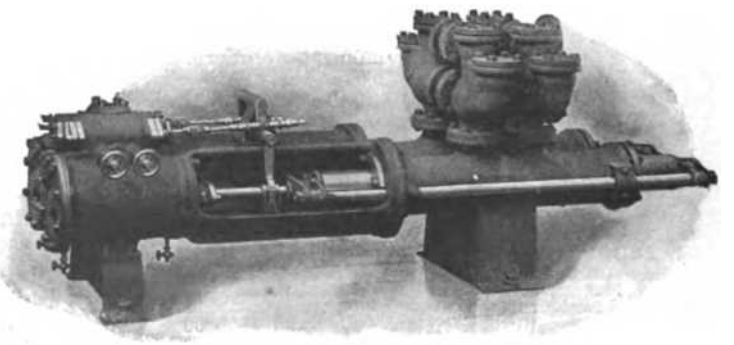


FIG. 2338 Size, 9 x 5 x 10

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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GENERAL SERVICE PISTON PUMP

This pump differs in construction from the center packed plunger, or the plunger and ring type, in that the water cylinders are provided with pistons packed with fibrous packing. This type of pump will be found excellent for boiler feeding, fire hydraulic elevator and general service where the water pressure is not over 150 pounds to the square inch. It is also recommended where there is an unusually high or long suction lift and where no foot valve can be used. The water cylinders are composition lined. The water valves are so placed that the water pistons are always submerged. The valve areas and water passages are large.

Diameters of Steam Cylinders, Inches.	Diameters of Water Pistons, Inches.	Length of Stroke, Inches.	Gallons Delivered per Minute by Both Pistons at Stated Piston Speed.
4½	2¾	4	22 to 47
5¼	3½	5	40 " 80
6	4	6	65 " 105
7½	4½	6	85 " 130
7½	5	6	100 " 160
7½	3¾	10	75 " 115
7½	4	10	85 " 130
7½	4½	10	107 " 165
7½	5	10	133 " 204
9	4	10	85 " 130
9	4½	10	107 " 165
9	5	10	133 " 204
10	6	12	208 " 368
12	6	12	208 " 368
10	7	12	280 " 500
12	7	12	280 " 500
14	7	12	280 " 500
12	7½	12	320 " 575
14	7½	12	320 " 575
12	8	12	368 " 655
14	8	12	368 " 655
16	8	12	368 " 655
18	8	12	368 " 655

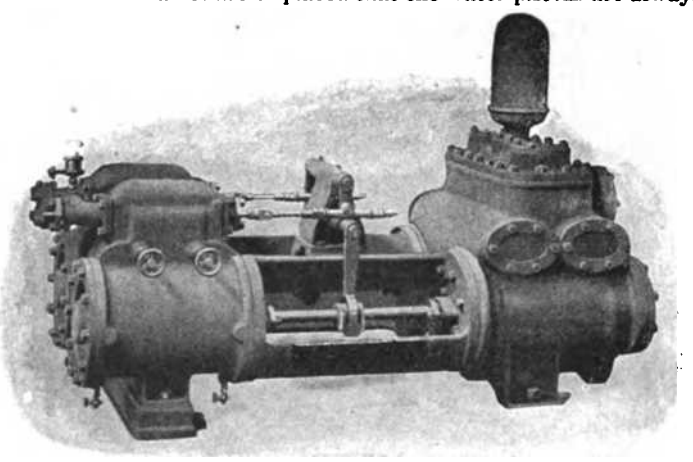


FIG. 2339

Size, 12 x 7 x 12

Larger sizes furnished. Prices on application. A slight additional charge is made when pumps are fitted with brass pistons and piston rods. An extra charge is also made for bed plates. To designate the sizes, give the diameter of steam cylinders and water pistons and length of stroke. We can also furnish a number of other combinations and pumps of longer stroke in addition to above list for any required service.

COMPOUND PRESSURE PUMP

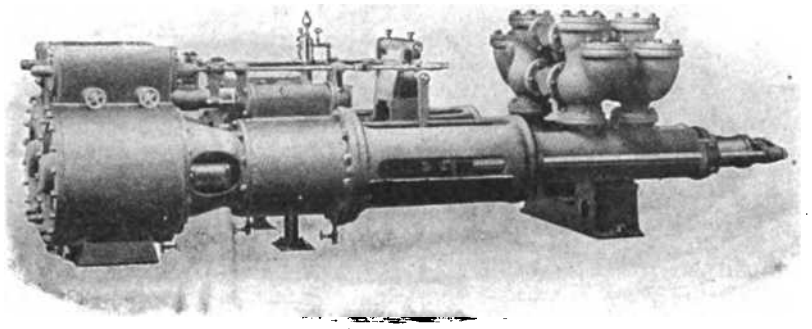


FIG. 2340

Size, 16 and 25 x 7¾ x 16

DESCRIPTION, FIG. 2340

This Compound Pressure Pump is designed for service where water pressure above 300 pounds is required. It is especially adapted for steel works, rolling mills, hydraulic cranes and general hydraulic machinery.

Instead of the ordinary double acting plunger, four plungers, single acting, are provided, working into the ends of the water cylinders, which have central partitions. These plungers are connected to exterior rods by means of crossheads, making the pump double acting.

Stuffing boxes of liberal area are exterior, permitting easy access when leakage occurs, and allowing the use of different forms and materials for packing. The valve chambers or pots permit easy access to their interior. They contain suction and delivery valves, and are of such shape as to secure the greatest strength. The water passages are direct and easy. The valves are so arranged that the plungers are always submerged, and the best conditions exist to secure a long suction lift. The water cylinders and valve chambers are made of a special grade of hard iron. It is of advantage to have the compound arrangement of pump can be furnished without the compound steam cylinders, cylinders, especially when the work to be performed is constant; but this type of and in sizes to suit any requirements. Prices on application.

CENTER PACKED PLUNGER PUMP

This pump is recommended for use where the water to be pumped is gritty and muddy and in severe work where the water pressure is heavy. It will withstand a pressure of 200 pounds per square inch. In the design and construction of this pump great care has been taken that the loss by friction, inseparable from packed plungers of all forms, shall be reduced as far as possible. Absolute rigidity of adjustment under the heavy pressures to be encountered is secured. The patterns are so subdivided that, in case of necessity, any part may be renewed at comparatively small cost. The cost of this pump is somewhat greater than that of the ordinary pattern; but as it is intended for such severe work no pains nor expense have been spared to add to its strength and efficiency.

Diameters of Steam Cylinders, Inches.	Diameters of Plungers, Inches.	Length of Stroke, Inches.	Gallons Delivered per Minute by Both Plungers at Stated Piston Speed.
10	5	12	143 to 256
10	6	12	206 " 368
12	6	12	206 " 368
12	7	12	280 " 500
14	7	12	280 " 500
16	7	12	280 " 500
18	7	12	280 " 500
14	8	12	368 " 655
16	8	12	368 " 655
18	8	12	368 " 655
20	8	12	368 " 655
14	8½	12	414 " 740
16	8½	12	414 " 740
18	8½	12	414 " 740
20	8½	12	414 " 740
14	10	12	570 " 1,018
16	10	12	570 " 1,018
18	10	12	570 " 1,018
20	10	12	570 " 1,018
16	12	12	827 " 1,470
18	12	12	827 " 1,470
20	12	12	827 " 1,470

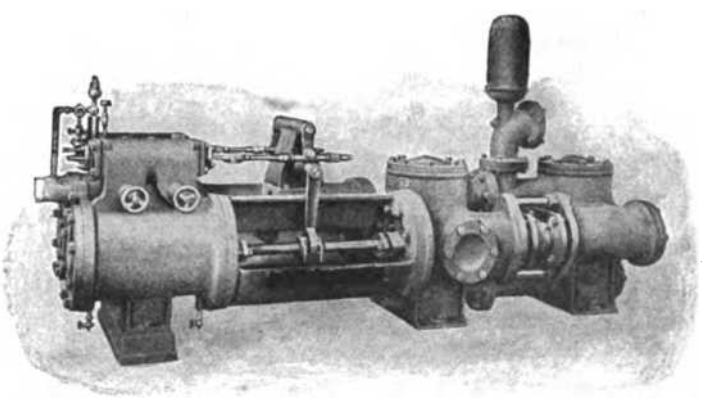


FIG. 2341

Size, 10 x 6 x 12

A slight additional charge is made when pumps are fitted with brass plungers and piston rods. An extra charge is also made for bed plates. To designate the sizes, give the diameter of steam cylinders and water plungers and length of stroke. We can also furnish a number of other combinations and pumps of longer stroke in addition to above list for any required service. Prices on application.

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VERTICAL TRIPLEX POWER PUMPS

STYLE D. SIZE, 2 X 3

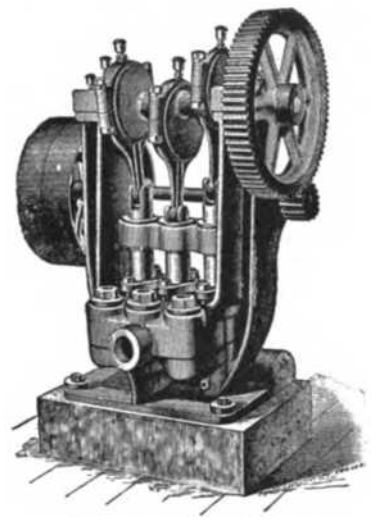


FIG. 2342

STYLE B. SIZE, 5 X 6

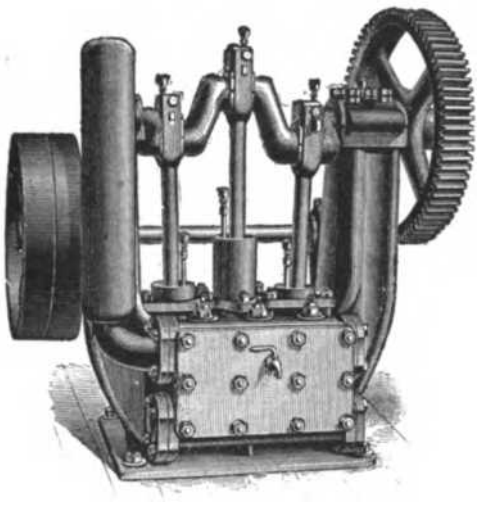


FIG. 2343

STYLE E. SIZE, 8 X 8

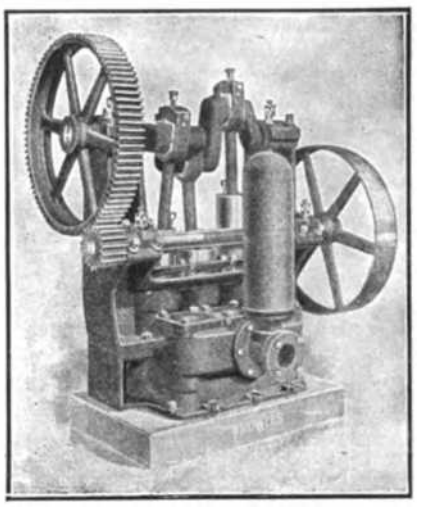


FIG. 2344

DESCRIPTION, FIGS. 2342 AND 2343

These pumps are intended for boiler feeding and tank service; also for hydraulic cylinders of wood pulp grinders. Fitted with valves for hot or cold water or other liquids.

The gears are cut and run noiselessly, and the plungers are packed from the outside so any leakage may be readily detected.

Each pump is provided with tight and loose pulley, and has suction and discharge openings on opposite sides.

When sending inquiries or orders, give us complete information regarding number of grinders and size and number of hydraulic cylinders for each grinder; also pressure.

All sizes in the following list are suitable for 150 lbs. water pressure.

CAPACITIES, ETC., FIGS. 2342 AND 2343, FOR 300 FEET LIFT

Diameter of Plungers.	Stroke.	Revolutions per Minute.	Gallons per Revolution.	Gallons per Minute.	Suction.	Discharge.	Pulleys Tight and Loose. Style.	Diameter.	Face.	Ratio of Gears.	Dimensions over all. Length.	Width.	Height.
1¼	2	60	.0319	1.9	¾	¾	D	12	1¾	5 to 1	16⅞	10 13/16	18¼
1¾	2½	60	.0780	4.6	1	1	D	12	1¾	5 " 1	19	14½	22½
2	3	50	.1224	6.1	1¼	1¼	D	12	2½	5 " 1	23 7/16	16	27
2½	3	50	.1912	9.5	1½	1½	D	12	2½	5 " 1	25¼	17¼	28
2½	4	50	.2500	12.5	1½	1½	B	15	3	5 " 1	27	17	31
3	4	45	.3673	16.5	1½	1½	B	15	3	5 " 1	82¼	28	29
4	4	45	.6528	29.3	2	2	B	20	3	5 " 1	38¼	28¼	39¼
4	6	40	.9787	39.1	2	2	B	20	3	5 " 1	38¼	28¼	39¼
5	6	40	1.530	61.2	3	3	B	26	4	5 " 1	46½	35	48½
5	8	40	2.040	81.6	3	3	B	30	5	5 " 1	48½	37	48½
6½	8	40	3.448	137	4	4	B	30	6	5 " 1	62¾	42½	59
8	8	40	5.222	208	5	4	B	36	6	5 " 1	71	52	62
8	10	40	6.525	261	5	4	B	42	6	5 " 1	71	55	63½
8	12	40	7.833	314	5	4	A	42	6	6 " 1	88	81	105
9	10	40	8.262	330	5	4	A	42	6	6 " 1	88	81	105
9	12	40	9.915	397	6	5	A	42	8	6 " 1	88	81	105
10	12	40	12.243	490	8	7	A	42	8	6 " 1	93⅞	81	106½
							1 Pulley						
11	12	40	14.811	592	8	7	A	42	10	6 " 1	93⅞	81	106½
12	12	40	17.628	705	10	8	A	48	10	6 " 1	97½	88	109½
13	12	40	20.685	827	10	8	A	48	12	6 " 1	97½	88	109½

DESCRIPTION, FIG. 2344

This pump is designed for light work for 100 feet lift.

Plungers are outside packed; boxes babbitted, hammered and bored out to exact fit, and gears cut.

Each pump is furnished with tight and loose pulleys and discharge air chamber, and has suction and discharge openings on opposite sides.

Boxes in the crank ends of connecting rods are provided for taking up wear.

In sending inquiries or orders always state the water pressure.

CAPACITIES, ETC., FOR 100 FEET LIFT

Diameter of Plungers.	Stroke.	Revolutions per Minute.	Gallons per Revolution.	Gallons per Minute.	Suction.	Discharge.	Pulleys Tight and Loose. Style.	Diameter.	Face.	Ratio of Gears.	Dimensions over all. Length.	Width.	Height.
4	4	45	.6528	29	2	2	E	20	3	5 to 1	32½	32½	34
4	6	40	.9787	39	2	2	E	20	3	4 " 1	32½	32½	34
5	6	40	1.530	61	3	3	E	20	4	4 " 1	40¼	38	44
5	8	40	2.040	81	3	3	E	20	4	4 " 1	40¼	38	44
6½	8	40	3.448	137	4	4	E	26	5	4 " 1	54	43	55
7	8	40	3.998	159	5	4	E	30	5	4¼ " 1	54	43	55
8	8	40	5.222	208	5	4	E	30	6	5 " 1	59	43	57½
8	10	40	6.525	261	5	4	E	36	6	5 " 1	59	43	57½
8	12	40	7.833	314	5	4	E	36	6	5 " 1	67	48	69
9	10	40	8.262	330	5	4	F	30	5	5 " 1	82	59½	82
9	12	40	9.915	397	6	5	F	30	5	5 " 1	87	66	90
10	12	40	12.243	490	8	7	F	30	6	5 " 1	87	66	95
11	12	40	14.811	592	8	7	F	30	6	4.85 " 1	87	66	95
12	12	40	17.628	705	10	8	F	42	8	5 " 1	96½	78	101
13	12	40	20.685	827	10	8	F	42	8	5 " 1	96½	78	101

We have also a full line of patterns for these pumps arranged for operating by electric motors, geared directly to them and mounted on the same bed plate. Prices on application.

TRIPLEX POWER PUMP

FRONT VIEW

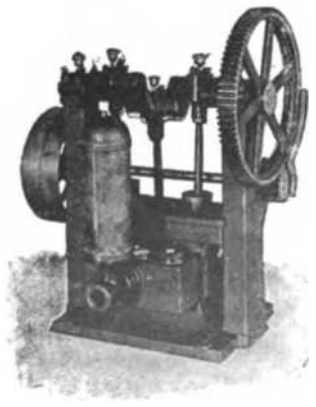


FIG. 2345

DESCRIPTION, FIGS. 2345 AND 2346

The base, cylinders, standards, suction and discharge valve chambers are all cast in one piece, making a very compact and strong pump. The crank shaft is large and the pump throughout is made to work against a head of 350 feet. Plungers are of bronze; valves are rubber disks reinforced by bronze plates and working on bronze guides and seats. Bronze or vulcanized rubber valves are used for hot water. Gears are machine cut from solid.

PRICES

No.	Diameter of Cylinder. Inches.	Stroke. Inches.	Suction. Inches.	Discharge. Inches.	Geared.	Pulleys. Inches.	Gallons per Revolution.	Revolutions per Minute of Crank.	Prices.
1	1¼	2	1	¾	5 to 1	12 x 1½	1/35	50	$50 00
2	1¾	2½	1¼	1¼	5 " 1	12 x 2½	1/14	50	75 00
3	2	3	1¼	1¼	5 " 1	12 x 2½	⅛	50	100 00
4	2½	4	1½	1½	5 " 1	15 x 3	¼	50	125 00
5	3	4	1½	1½	5 " 1	15 x 3	⅓	45	140 00
6	4	4	2½	2	5 " 1	18 x 3	⅝	45	200 00

REAR VIEW

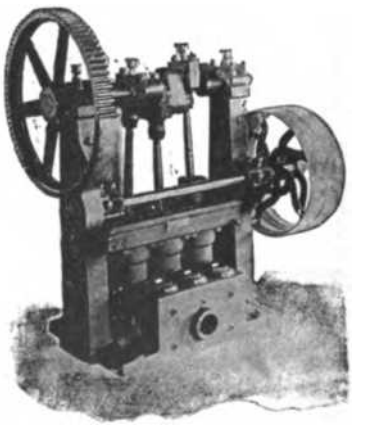


FIG. 2346

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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SPECIAL DUPLEX PUMP

OUTSIDE PACKED PLUNGER PATTERN

CAPACITIES, FIG. 2347

Steam Cylinders, Inches.	Water Plungers, Inches.	Stroke, Inches.	Capacity, in Gallons, per Stroke, Each Plunger.	Strokes per Minute, Each Plunger.	Capacity of Both Cylinders, in Gallons, per Minute.	Steam Pipe, Inches.	Exhaust Pipe, Inches.	Suction Pipe, Inches.	Discharge Pipe, Inches.	Water Pressure Pump End Will Stand, in Pounds, per Sq. In.
3	2	3	.04	100 to 200	8 to 16	½	¾	1½	1¼	300
4½	2	4	.05	100 " 200	10 " 20	½	¾	1½	1¼	300
5¼	3	5	.15	100 " 200	30 " 60	¾	1¼	2	1½	300
6	3½	6	.25	100 " 150	50 " 75	1	1½	2½	2	300
7½	4	6	.33	100 " 150	67 " 100	1½	2	3	2½	300
7½	4¼	10	.61	50 " 100	61 " 122	1½	2	4	3	300
10	4	10	.54	50 " 100	54 " 108	2	2½	4	3	250
10	4	10	.54	50 " 100	54 " 108	2	2½	4	3	450
10	5	10	.85	50 " 100	85 " 170	2	2½	4	3	250
10	5	12	1.02	50 " 100	102 " 204	2	2½	4	3	250
10	6	10	1.22	50 " 100	122 " 244	2	2½	5	4	250
10	6	12	1.47	50 " 100	147 " 294	2	2½	5	4	250
12	4	10	.54	50 " 100	54 " 108	2½	3	4	3	450
12	4	12	.65	50 " 100	65 " 130	2½	3	4	3	450
12	5	10	.85	50 " 100	85 " 170	2½	3	4	3	300
12	5	12	1.02	50 " 100	102 " 204	2½	3	4	3	300
12	6	10	1.22	50 " 100	122 " 244	2½	3	5	4	300
12	6	12	1.47	50 " 100	147 " 294	2½	3	5	4	300
12	7	10	1.66	50 " 100	166 " 332	2½	3	6	5	300
12	7	12	2.00	50 " 100	200 " 400	2½	3	6	5	300
12	7½	10	1.91	50 " 100	191 " 382	2½	3	6	5	300
12	7½	12	2.30	50 " 100	230 " 460	2½	3	6	5	300
14	5	10	.85	50 " 100	85 " 170	2½	3	4	3	300
14	5	12	1.02	50 " 100	102 " 204	2½	3	4	3	300

Also patterns for larger sizes. Prices on application.

For mining work, when so ordered, suction opening will be made same diameter as plunger, except 7½ inches and 8⅝ inches, which will be made 7 inches and 8 inches diameter, respectively. Discharge opening will be for next smaller size pipe than suction pipe. A slight additional charge is made when pumps are fitted with brass plungers. To designate the sizes, give the diameter of steam and water cylinders and length of stroke. We can furnish pumps of the above type suited for much heavier pressures than those named in the table.

Size, 5¼ x 3 x 5

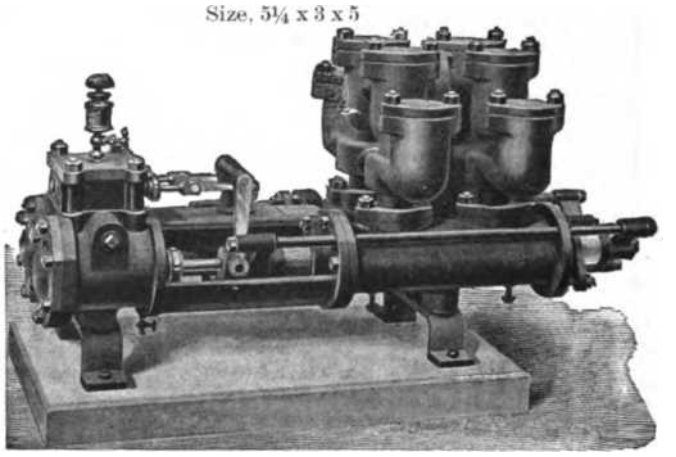


FIG. 2347

This pattern of pump is specially designed for pipe lines, for mining purposes, for feeding boilers carrying very high steam pressures in conformity with the most modern practice, or for any service requiring the delivery of liquids under unusually heavy pressure, not to exceed 250 to 450 pounds per square inch. Owing to the facility with which wear in the water plungers may be taken up, by setting out the packing in the stuffing boxes, these pumps are specially well suited for handling gritty liquids.

SPECIAL DUPLEX TANK OR LIGHT SERVICE PUMP

Size, 10 x 8½ x 10

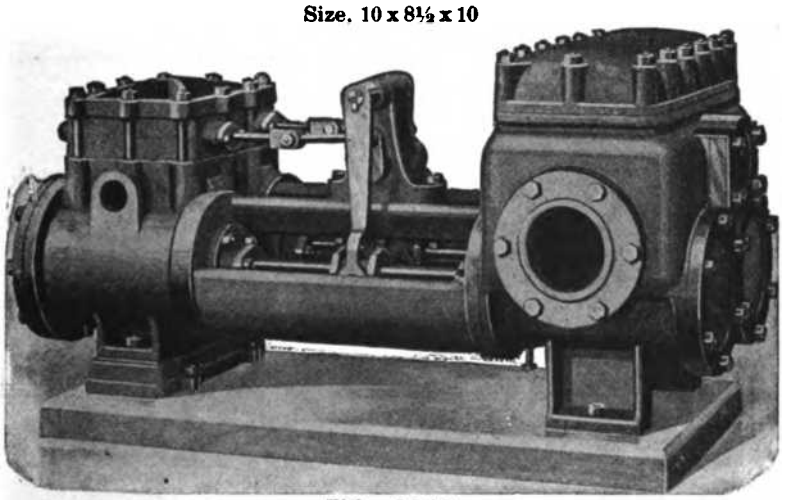


FIG. 2348

This pump is designed for use where the liquid handled is to be raised only to a moderate height. It is made of the piston pattern, pump pistons fibrous packed, and is furnished with valves of hard or soft rubber, or of metal, as required, according to the liquid to be handled. Water cylinders are brass lined.

CAPACITIES, FIG. 2348

Steam Cylinders, Inches.	Water Cylinders, Inches.	Stroke, Inches.	Capacity in Gallons per Stroke Piston, Each.	Strokes per Minute, Each Piston.	Capacity of Both Cylinders, in Gallons, per Minute.	Steam Pipe, Inches.	Exhaust Pipe, Inches.	Suction Pipe, Inches.	Discharge Pipe, Inches.
4½	3¾	4	.20	100 to 200	40 to 80	½	¾	2½	1½
5¼	4¾	5	.38	100 " 150	75 " 110	¾	1¼	3	2½
6	5¾	6	.67	100 " 150	130 " 195	1	1½	4	3
6	7½	6	1.14	100 " 150	225 " 340	1	1½	6	5
7½	6	6	.73	100 " 150	146 " 220	1½	2	4	3
7½	7½	6	1.14	100 " 150	225 " 340	1½	2	6	5
6	8½	6	1.47	100 " 150	295 " 440	1	1½	6	5
7½	8½	6	1.47	100 " 150	295 " 440	1½	2	6	5
7½	6	10	1.22	75 " 125	180 " 300	1½	2	5	4
7½	7	10	1.66	75 " 125	245 " 410	1½	2	6	5
7½	8½	10	2.45	75 " 125	365 " 610	1½	2	6	5
10	8½	10	2.45	75 " 125	365 " 610	2	2½	6	5
10	10¼	10	3.57	75 " 125	530 " 890	2	2½	8	7
10	12	10	4.89	75 " 125	730 " 1220	2	2½	10	8
12	12	10	4.89	75 " 125	730 " 1220	2½	3	10	8
10	14	10	6.66	75 " 125	990 " 1660	2	2½	12	10
12	14	10	6.66	75 " 125	990 " 1660	2½	3	12	10
14	14	10	6.66	75 " 125	990 " 1660	2½	3	12	10

Also patterns for larger sizes.

A slight additional charge is made when pumps are fitted with brass pistons and brass piston rods.

To designate the sizes give the diameter of steam and water cylinders and length of stroke. Prices on application.

TANK OR LIGHT SERVICE PUMP

CAPACITIES, FIG. 2349

Steam Cylinder, Inches.	Water Cylinder, Inches.	Stroke, Inches.	Gallons per Stroke.	Capacity per Minute at Ordinary Speed, Strokes.	Gallons.	Steam Pipe, Inches.	Exhaust Pipe, Inches.	Suction Pipe, Inches.	Delivery Pipe, Inches.	Floor Space Required, Inches.
3¼	3¼	4	.15	125	18	½	¾	1½	1¼	28 x 10
4	4	5	.27	125	33	½	¾	2	1½	34 11
5	4	7	.39	125	49	¾	1	2½	2	44 12
5½	5½	7	.72	125	90	¾	1	3	2½	44 13½
6	5½	7	.72	125	90	¾	1	3	2½	44 13½
6	6	12	1.47	100	147	¾	1	4	4	66¾ 19
6	7	12	2.00	100	200	¾	1	5	5	66¾ 19
7½	7	10	1.66	100	166	1	1¼	5	5	56½ 19
7½	7½	10	1.91	100	191	1	1¼	5	5	56½ 19
8	6	12	1.47	100	147	1	1¼	4	4	66¾ 19
8	7	12	2.00	100	200	1	1¼	5	5	66¾ 19
8	8	12	2.61	100	261	1	1¼	5	5	66¾ 20
8	9	12	3.30	100	330	1	1¼	6	6	66¾ 21½
8	10	12	4.08	100	408	1	1¼	6	6	66¾ 21½
10	10	12	4.08	100	408	1¼	1½	6	6	66¾ 21½
10	10	16	5.44	75	408	1¼	1½	6	6	78½ 21½
10	12	12	5.87	100	587	1¼	1½	8	6	66¾ 23¾
10	12	16	7.83	75	587	1¼	1½	8	6	78½ 23¾
12	10	12	4.08	100	408	2	2½	6	6	66¾ 21½
12	10	16	5.44	75	408	2	2½	6	6	78½ 21½
12	12	12	5.87	100	587	2	2½	8	6	66¾ 23¾
12	12	16	7.83	75	587	2	2½	8	6	78½ 23¾
14	12	12	5.87	100	587	2	2½	8	6	66¾ 23¾
14	12	16	7.83	75	587	2	2½	8	6	78½ 23¾
14	14	16	10.66	75	800	2	2½	10	8	78½ 27
14	14	24	16.00	50	800	2½	3	10	8	108 27

Also patterns for larger sizes or other combinations of cylinders.

The water cylinders are arranged with composition linings, valve seats, valve bolts, water pistons, piston rods, stuffing boxes; the water pistons are packed with a special form of adjustable packing.

Auxiliary boiler feed pumps (single action plungers) attached when required. Prices extra. Pumps with water cylinders entirely of composition, extra. The hand power attachment applied to the first four sizes.

In ordering, parties will please state fully the duty to be performed, also size and length of pipes.

2⅝ feet high.

2½ feet high.

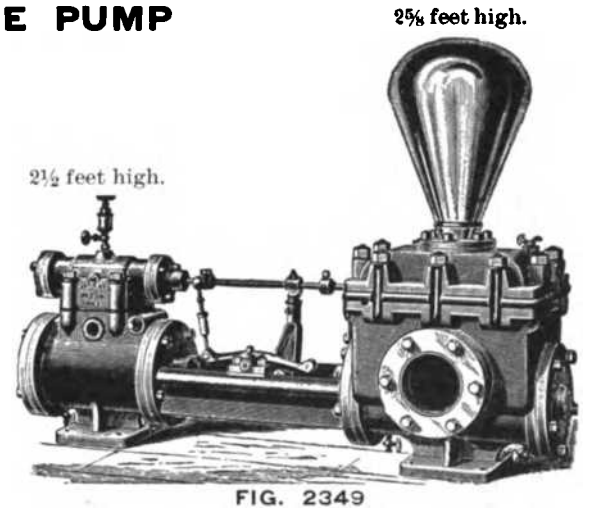


FIG. 2349

For pumping water or other liquids to limited heights and distances these pumps possess special advantages; they combine large pumping capacity with small expenditure of steam. These pumps are principally used at railroad water stations, gas and oil works, bleacheries, tanneries, refineries, plantations, distilleries, etc. A variety of valves is used adapted for hot, cold, thick, thin, alkaline or other liquids.

For quarries and clay pits, also for coffer dams, tunnels, foundation pits, ore beds, sewerage and irrigating purposes, these pumps are especially adapted, having large water passages and valve openings.

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PISTON PUMP FOR TANK OR LIGHT SERVICE

SIZE, 9 X 8½ X 10

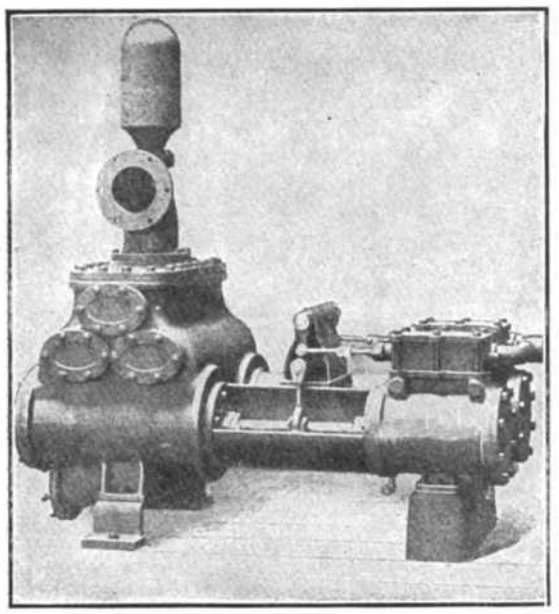


FIG. 2350

This pump is designed for raising liquids to moderate heights with ordinary steam pressure. It is intended for use at railway water stations, breweries, distilleries, gas and oil works, tanneries, bleacheries, refineries, etc. The valves are made of material suitable to the liquid to be pumped.

CAPACITIES, FIG. 2350

Diameters of Steam Cylinders.	Diameters of Water Pistons.	Length of Stroke.	Displacement in Gallons per Stroke of One Piston.	Proper Strokes per Minute of One Piston, varying with kind of Work and Pressure.	Gallons Delivered per Minute by both Pistons at stated Number of Strokes.	Diameters of Pistons Required in any Single Cylinder Pump to do the same Work at same Speed.	SIZES OF PIPES FOR SHORT LENGTHS. To be Increased as Length Increases. Steam Pipes.	Exhaust Pipes.	Suction Pipes.	Discharge Pipes.
3	2¾	3	.07	100 to 250	15 to 37	4	⅜	½	1¼	1
4½	3¾	4	.20	100 " 200	40 " 80	5¼	½	¾	2½	1½
5¼	4¾	5	.38	100 " 150	75 " 110	6¾	¾	1¼	3	2
6	5¾	6	.67	100 " 150	130 " 195	8⅛	1	1¼	4	3
7½	5¾	6	.67	100 " 150	130 " 195	8⅛	1½	2	4	3
6	7½	6	1.14	100 " 150	225 " 340	10¼	1	1¼	6	5
7½	7½	6	1.14	100 " 150	225 " 340	10¼	1½	2	6	5
6	8½	6	1.47	100 " 150	295 " 440	12	1	1¼	6	5
7½	8½	6	1.47	100 " 150	295 " 440	12	1½	2	6	5
7½	6	10	1.22	75 " 125	180 " 300	8½	1½	2	5	4
10	6	10	1.22	75 " 125	180 " 300	8½	2	2½	5	4
7½	7	10	1.66	75 " 125	245 " 410	9⅞	1½	2	6	5
10	7	10	1.66	75 " 125	245 " 410	9⅞	2	2½	6	5
7½	8½	10	2.45	75 " 125	365 " 610	12	1½	2	6	5
9	8½	10	2.45	75 " 125	365 " 610	12	2	2½	6	5
10	8½	10	2.45	75 " 125	365 " 610	12	2	2½	6	5
7½	10¼	10	3.57	75 " 125	530 " 890	14¼	1½	2	8	7
9	10¼	10	3.57	75 " 125	530 " 890	14½	2	2½	8	7
10	10¼	10	3.57	75 " 125	530 " 890	14¼	2	2½	8	7
12	10¼	10	3.57	75 " 125	530 " 890	14¼	2½	3	8	7
9	12	10	4.89	75 " 125	730 " 1220	17	2	2½	10	8
12	12	10	4.89	75 " 125	730 " 1220	17	2½	3	10	8
14	12	10	4.89	75 " 125	730 " 1220	17	2½	3	10	8
10	14	10	6.66	75 " 125	990 " 1660	19¾	2	2½	12	10
12	14	10	6.66	75 " 125	990 " 1660	19¾	2½	3	12	10
14	14	10	6.66	75 " 125	990 " 1660	19¾	2½	3	12	10

Also patterns for larger sizes.

A slight additional charge is made when pumps are fitted with brass pistons and piston rods. An extra charge is also made for bed plates.

To designate the sizes, give the diameters of steam cylinders and water pistons and length of stroke. Prices on application.

HOT AIR PUMPING ENGINES WITH COAL, KEROSENE OR GAS FURNACE

PRICES, FIG. 2351

Sizes Diam. Cylinders in Inches.	Height to Top of Fly Wheel. Ft.	In.	Floor Space. Ft. In.	Ft. In.	Approximate Shipping Weights in Pounds.	Revolutions per Minute.	With Pump Attached to Engine, Each.	Extra for Deep Well Pumps and Attachments, Each.	Extra for Kerosene Burners and Tanks, Each.
5	5	0	2 2 x	2 9	1,100	100 to 160	$210 00	$15 00	$10 00
6	6	0	2 4 x	3 4	1,900	100 " 120	300 00	20 00	12 00
8	7	2	2 5 x	3 11	3,200	100 " 120	420 00	20 00	15 00
10	7	9	2 8 x	4 4	3,700	80 " 110	540 00	20 00	15 00

The prices named above include engine, pump, air and vacuum chambers, wrench, shovel and poker, oil and oil can; everything complete, ready for suction and discharge pipe; but do not include pipes of any kind.

Sizes of Cylinders, Inches.	Sizes of Pipes and Approximate Quantities of Fuel. Suction and Discharge Pipes, Inches.	Cubic Feet of Gas.	Quarts of Kerosene per Hour.	Pounds Anthracite Coal per Hour.	Approximate Capacity per Hour. Sizes of Cylinders, Inches.	50 Feet, Gallons.
5	1	20	2	3	5	350
6	1¼	50	3	4 to 5	6	1,000
8	2	60	5	6 " 7	8	2,000
10	2½	80	6	7 " 8	10	3,500

The extreme vertical heights at which engines may be depended upon to do satisfactory work are as follows: 5 inches, 100 feet; 6 inches, 160 feet; 8 inches, 250 feet; 10 inches, 350 feet.

When deep well pumps are used these distances may be increased. Correspondence with us is advisable in every case. When gas is used as fuel, the quantity of water pumped is somewhat less than when coal, wood or oil is the fuel.

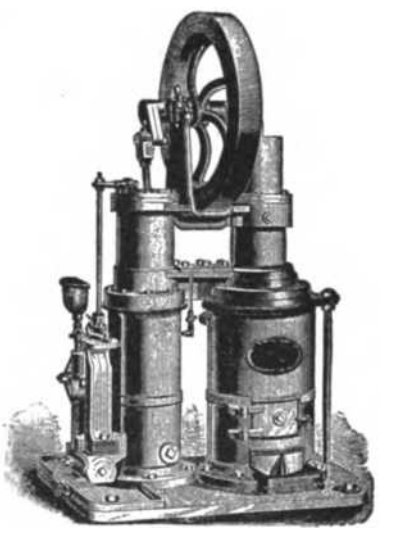


FIG. 2351, WITH FURNACE

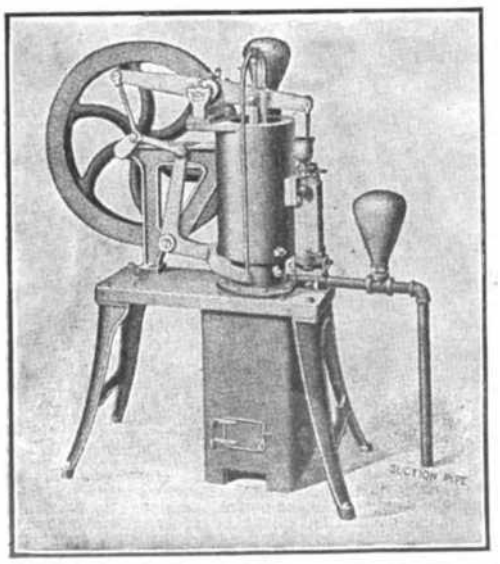


FIG. 2352, WITH COAL FURNACE

HOT AIR PUMPING ENGINES WITH COAL, KEROSENE OR GAS FURNACE

PRICES, FIG. 2352

Sizes, Diameter Air Cylinder in Inches.	Floor Space. Ft. In.	Ft. In.	Height, Ft. In.	Approximate Shipping Weights in Pounds.	With Pump Attached to Engines, Each.	Extra for Deep Well Pumps and Attachments, Each.	Extra for Kerosene Burners and Tanks, Each.
5	2 5 x 1	4	4 2	400	$120 00		$10 00
6	3 6 x 2	0	4 5½	700	170 00	$10 00	10 00
8	4 0 x 2	2	5 5½	1,100	210 00	15 00	10 00
10	4 4 x 3	2	5 6	1,900	300 00	20 00	12 00

The above prices include engine, pump, air chamber, vacuum chamber, furnace, wrench, oil can and oil, but no pipes of any kind.

Sizes of Cylinders, Inches.	Sizes of Pipes and Approximate Quantities of Fuel. Suction and Discharge Pipes, Inches.	Cubic Feet of Gas.	Quarts of Kerosene per Hour.	Pounds Anthracite Coal per Hour.	Approximate Capacity per Hour. Sizes of Cylinders, Inches.	50 Feet, Gallons.
5	¾	12	1	2	5	150
6	1	16	2	3	6	300
8	1¼	20	2	4	8	500
10	1½	50	3	5	10	1,000

The extreme vertical heights at which engines may be depended upon to do satisfactory work are as follows: 5 inches, 50 feet; 6 inches, 75 feet; 8 inches, 125 feet; 10 inches, 160 feet.

Correspondence with us is advisable in every case. When gas is used as fuel, the quantity of water pumped is somewhat less than when coal, wood or oil is the fuel.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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VERTICAL PLUNGER SINKING PUMP

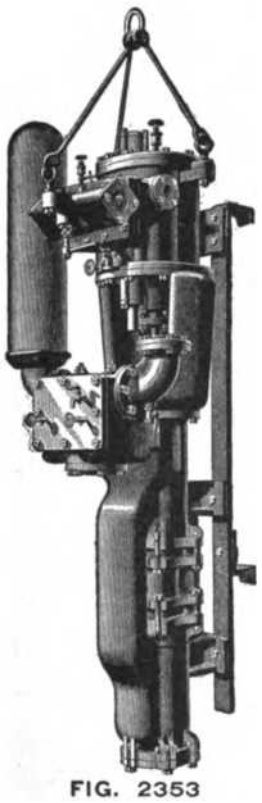


FIG. 2353

In this type of pump a hard iron plunger moves in two working barrels having stuffing boxes and glands fitted with swing bolts for convenience in packing. The valves are of medium hard rubber, with brass seats, bolts and springs, the valve chamber being independent and easily removable for inspection or repairs. The suction valve chamber is fitted with automatic air valves for relieving the pump of air, and the discharge air chamber has a cock for the same purpose. The discharge elbow is fitted with a standard flange and has a cock for drawing off the water in discharge pipe when desired. The bottom flange of the lower working barrel has swing bolts for convenience of removal in order to take out sand or gravel, and the discharge air chamber is in one piece. securing compactness and minimum weight.

The steam cylinder has a recently improved valve gear, without external moving parts, thus reducing the liability to injury from accident or rough usage. The entire design of this pump is exceptionally strong and compact.

Diameters of Steam Cylinders.	Diameters of Plungers.	Stroke.	Gallons per Stroke.	*Capacity per Minute, Galls.	Steam Pipe.	Exhaust Pipe.	Suction Pipe.	Discharge Pipe.	Dimensions Over All.	Weight.
7	3½	12	.50	50	1	1½	2½	2	74 x 25 x 27⅝	1100
8	4	12	.65	65	1	1½	3½	2½	74 25 27⅝	1200
8	4½	12	.80	80	1	1½	4	3	83¼ 25 31¼	1200
10	3¾	12	.55	55	1½	2	3½	2½	86 28⅞ 27⅝	1450
10	4½	13	.89	85	1½	2	4	3	88 28⅞ 31¼	1800
10	5	13	1.10	100	1½	2	4	3	88 28⅞ 31¼	1900
12	6	13	1.59	150	1½	2½	5	4	98 32⅛ 36⅝	2450
12	7	14	2.33	200	1½	2½	5	4	108 34⅝ 39⅝	3500
14	7	14	2.33	200	2	3	5	4	112⅜ 38⅝ 39⅝	4150
16	8	16	3.48	260	2½	4	6	5	124 44 43	4700
18	9	16	4.41	330	3	4	6	5	126 46 45	6500
16 x 16 †	11	20	8.23	500	3	5	8	7	176¼ 40⅝ 38½	10,800
	12	20	9.79	600	3	5	8	7	176¼ 40⅝ 38½	10,800

*Capacities given are for a piston speed of about 100 feet per minute. This may be doubled in an emergency, but we do not recommend exceeding it for continuous service.

†These pumps have two steam cylinders placed tandem on the same rod, and taking steam at full pressure.

Prices on application.

SINKING PUMP

The Sinking Pump shown combines all of the advantages of single cylinder sinking pumps, with the additional advantages of being positive in its action and quiet in its operation, while the space occupied in the shaft is practically less than a single cylinder pump of the same capacity.

The design combines great strength with minimum space occupied, and the working parts, especially the water valves, are easily accessible.

The water end is amply strong for a working pressure of two hundred pounds. The valves are the standard winged mine valves, faced with leather, each being located in a separate chamber. The valve caps are held in place by bolts covering the caps, which can be swung out by simply releasing the strain on two set screws, so that all valves may be examined or replaced in the least possible time.

The valve motion is standard, constructed throughout of forgings. This motion is positive in its action, and will always start from any point of its stroke.

SIZE, 14×7½×10

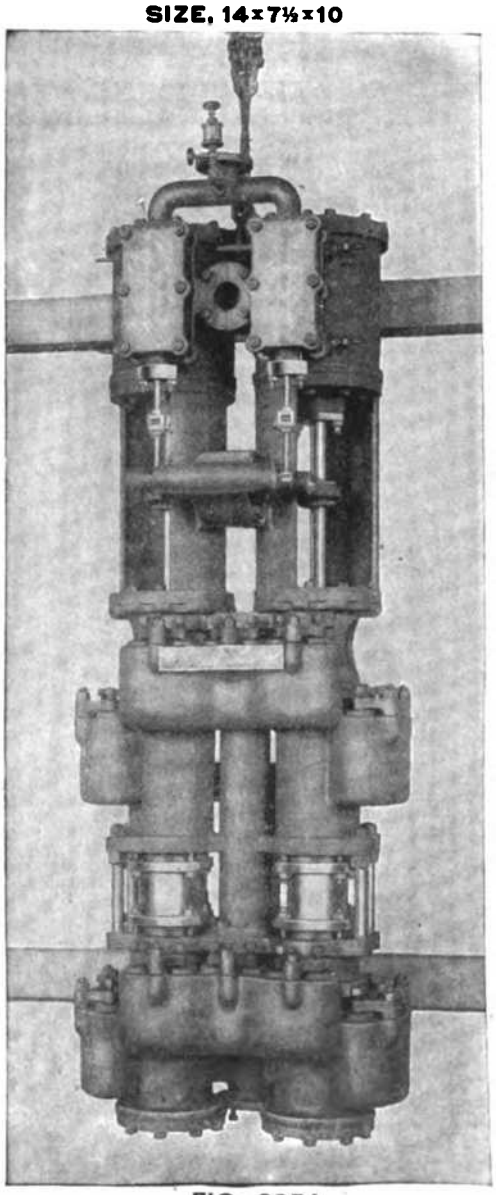


FIG. 2354

Diameters of Steam Cylinders.	Diameters of Water Plungers.	Length of Stroke.	Gallons Delivered per Minute at Ordinary Speed.	Diameters of Plunger Required in any Single Cylinder Pump to Do the Same Work at Same Speed.	APPROXIMATE SPACE OCCUPIED. Breadth.	Width.	Height.	Approximate Shipping Weight.	SIZES OF PIPES FOR SHORT LENGTHS. To be Increased as Length Increases. Steam Pipe.	Exhaust Pipe.	Suction Pipe.	Discharge Pipe.
6	3½	6	65	5	28"	24"	7'4"	2150	1	1¼	3½	3
7½	3½	6	65	5	28"	26"	7'4½"	2250	1½	2	3½	3
6	4	6	85	5½	28"	24"	7'4"	2200	1	1¼	3½	3
7½	4	6	85	5½	28"	26"	7'4½"	2300	1½	2	3½	3
7½	4½	10	140	6⅜	32"	28"	9'	3000	1½	2	4	3
9	4½	10	140	6⅜	34"	28"	9'	3100	2	2½	4	3
10	4½	10	140	6⅜	34"	28"	9'	3200	2	2½	4	3
9	6	10	250	8½	42"	31"	9'2"	4460	2	2½	5	4
10	6	10	250	8½	42"	31"	9'2"	4560	2	2½	5	4
12	6	10	250	8½	42"	36"	9'6"	5160	2½	3	5	4
14	6	10	250	8½	42"	36"	9'6"	5560	2½	3	5	4
9	7½	10	420	10½	43"	32"	9'6"	5600	2	2½	6	5
10	7½	10	420	10½	43"	32"	9'6"	5700	2	2½	6	5
12	7½	10	420	10½	43"	36"	9'8"	6300	2½	3	6	5
14	7½	10	420	10½	43"	36"	9'8"	6500	2½	3	6	5
16	9	10	600	12¾	52"	41"	10'5"	8000	2½	3	8	6
18½	9	10	600	12¾	52"	41"	10'5"	8500	3	3½	8	6
20	11	10	900	15½	53"	46"	10'9"	11,000	4	5	10	8

An additional charge is made when pumps are fitted with brass plungers and piston rods.

To designate the sizes, give the diameters of steam cylinders and water plungers, and length of stroke.

Prices on application.

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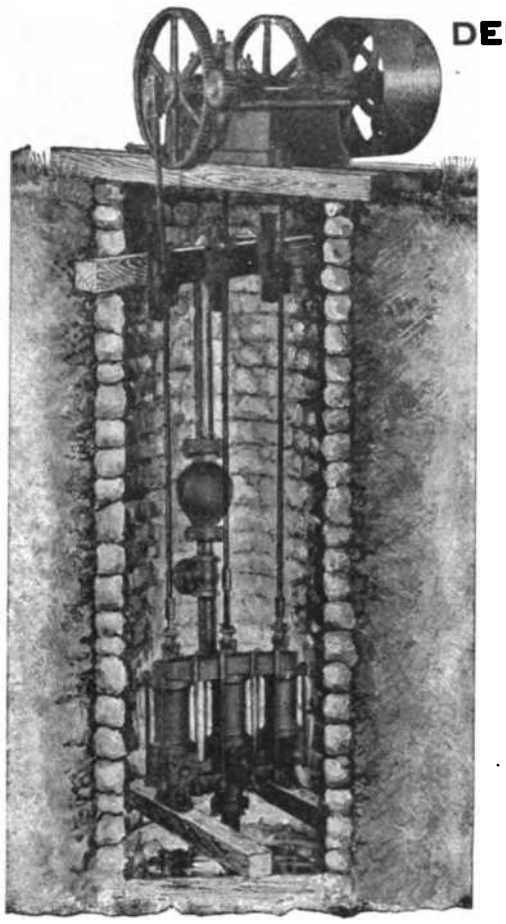
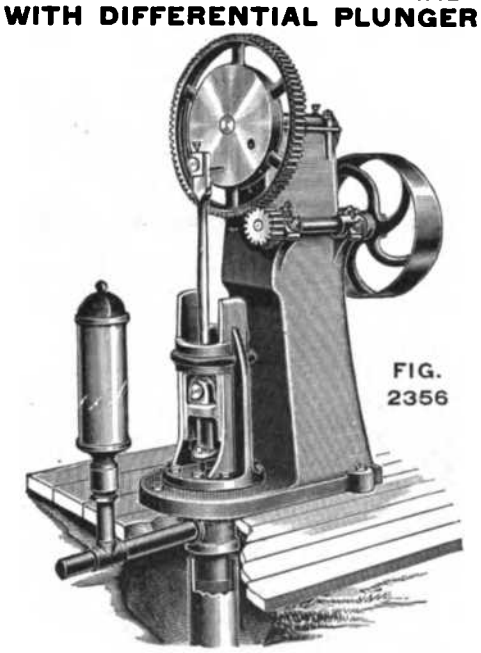


FIG. 2355

DEEP WELL WORKING HEAD WITH DIFFERENTIAL PLUNGER



This deep well working head is made with stroke that can be adjusted from 12 to 16 inches. It has differential plunger to equalize the flow of water. A substantial cross head and guide relieves the rod from all lateral strain. Plungers and rod may be drawn from the well without moving the working head. All parts of this working head are heavy and strong, the bearing surfaces are large and lined with best quality of babbitt scraped to a true bearing. Ratio of gearing 5 to 1.

CAPACITIES

Diam. and Stroke, Inches.	Height from Water to Delivery, Feet.	Gallons per Stroke.	Connecting Pipe, Inches.	Discharge Pipe, Inches.
2¼ x 16	600	.275	2½	2
2¾ 16	500	.411	3	2
3¼ 16	400	.575	3½	2
3¾ 16	300	.765	4	2
4¼ 16	225	.982	4½	3
4¾ 16	175	1.227	5	3
5¾ 16	125	1.80	6	3½
6¾ 16	100	2.48	7	3½

Stroke.	Maximum Sizes of Pipe, Inches. Connecting.	Discharge.	Pulley, Inches. Diameter.	Face.	Price.
12-16	7	3½	20	6	$230

DEEP WELL TRIPLEX POWER PUMP

DESCRIPTION, FIG. 2355

This pump is designed for wells which are too deep to be within the suction limit of an ordinary pump, and is especially adapted for mines and for wells adjacent to many of our rivers, where the variation in the height of water necessitates putting the working barrels near the lowest water level. The crank shaft, pulleys and gears are the same as used in triplex pumps of corresponding sizes. These are mounted on heavy cast iron frame, the pillow blocks both of main shaft and countershaft being cast solid on same. The cylinders are made regularly of cast iron, but they can be lined with brass or copper or made of solid brass when so desired. They are securely fastened to top and bottom chambers by stay rods and can be readily removed when necessary. Hand plates are provided to afford easy access to the valves. Cross heads are of phosphor bronze suitably guided. Check valve and air chamber are furnished for discharge pipe. Any of these pumps will work in wells 350 feet deep.

SIZES

Diam. Cyl., Inches.	Stroke, Inches.	Suction, Inches.	Discharge, Inches.	Pulleys, Inches.	Gallons per Rev.	R. P. M. of Crank.
5	8	3½	3	24 x 6	2	40
6	8	4	3½	28 7	2⁹⁄₁₀	40
7	8	5	4	28 8½	4	40
8	8	6	5	30 10½	5¼	35
8	10	6	5	36 12½	6½	35

The above pumps are all geared for five revolutions of counter shaft for one of crank shaft.
Full detailed specifications and prices furnished on application.

BELT POWER WORKING HEAD

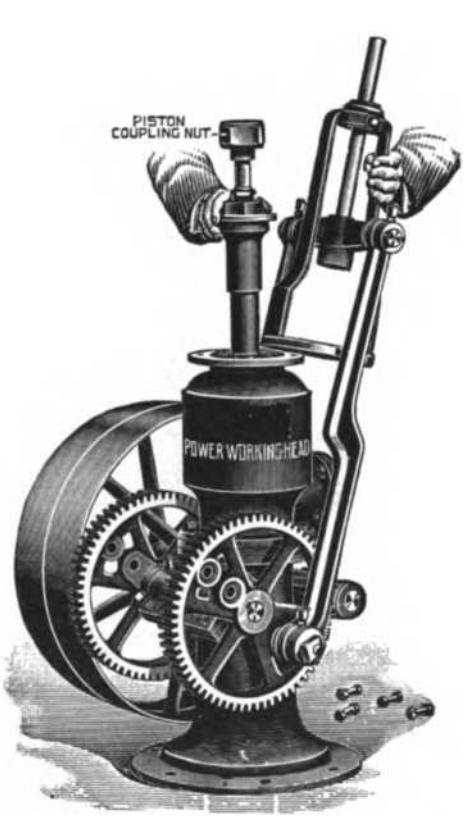


FIG. 2357
Showing piston uncoupled to remove piston rod.

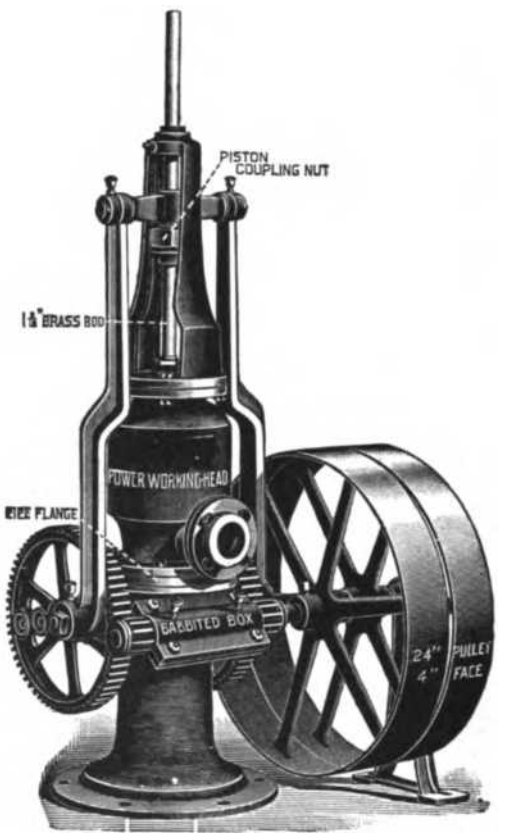


FIG. 2358

DESCRIPTION AND PRICE, FIGS. 2357 AND 2358

This working head is built especially for deep well work. Its construction insures great lifting power, strength and capacity. The arrangement is such that the power is applied direct to the piston from the two drive wheels, one located on each side of the main stand.

The gears are located to one side so that the work is done on the direct upward motion, the piston passing down on the angle. This insures great lifting power and light wear. All boxes are parted and babbitted. Has outer shaft bearer with universal adjustable box; has steel pinions.

This working head is so constructed that by uncoupling the piston (see coupling nut in cut) and removing the piston rod a 4 inch plunger can be withdrawn through the head. The well pipe is attached to a pipe flange located below the air chamber; hence any size pipe, from 1¼ inch pipe to 4¼ inch casing, can be used by changing the flanges. The pipe can be withdrawn through the base.

Will raise water 250 feet. Should be run not over 35 revolutions per minute and less on deep wells.

Back geared six to one. Has 5, 7½ and 10 inch stroke. .

Belt power working head as represented above, without cylinder or pipe .....Each, $75 00

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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TUBULAR WELL TOOLS

ARTESIAN WELL CYLINDER

DESCRIPTION, FIG. 2359

It is adapted for use with working heads. The barrel is heavy seamless drawn brass tubing with brass couplings. The cylinder is fitted with brass ball valves and cup leather packings. The entire cylinder is of improved construction throughout and unusually strong. All sizes are fitted above with a pipe size enough larger to allow the drawing up of the plunger and check without disturbing the cylinder in the well.



FIG. 2359

Inside Diams. Inches.	Length Stroke, Inches.	Capacity per Stroke, in Gallons.	Length Pump Barrel, Inches.	Outside Diams. Caps, Inches.	Top and Bottom Connecting Pipes, Inches.	Size of Pin in Plunger.	Square Wood Sucker Rods, Inches.	Prices, Each.
1⅜	16	.10	36	2 3/16	1½	⅝	1⅛	$15 00
1⅜	24	.154	44	2 3/16	1½	⅝	1⅛	16 50
1¾	10	.10	27	2 15/16	2	⅝	1⅛	17 50
1¾	16	.16	33	2 15/16	2	⅝	1⅛	19 00
1¾	24	.25	41	2 15/16	2	⅝	1⅛	21 00
2¼	10	.172	29	3 9/16	2½	⅞	1¼	26 00
2¼	16	.275	35	3 9/16	2½	⅞	1¼	28 00
2¼	24	.41	43	3 9/16	2½	⅞	1¼	30 00
2¼	36	.61	55	3 9/16	2½	⅞	1¼	34 00
2¾	10	.257	31	3⅞	3	⅞	1½	34 00
2¾	16	.411	37	3⅞	3	⅞	1½	36 00
2¾	24	.61	45	3⅞	3	⅞	1½	38 00
2¾	30	.77	51	3⅞	3	⅞	1½	40 00
2¾	36	.925	57	3⅞	3	⅞	1½	42 00
3¼	10	.36	35	4 7/16	3½	⅞	2	45 00
3¼	16	.574	41	4 7/16	3½	⅞	2	48 00
3¼	24	.862	49	4 7/16	3½	⅞	2	52 00
3¼	30	1.06	55	4 7/16	3½	⅞	2	55 00
3¼	36	1.292	61	4 7/16	3½	⅞	2	58 00
3¾	10	.478	37	5⅛	4	⅞	2¼	67 50
3¾	16	.764	43	5⅛	4	⅞	2¼	70 00
3¾	20	1.05	47	5⅛	4	⅞	2¼	72 50
3¾	24	1.147	51	5⅛	4	⅞	2¼	75 00
3¾	28	1.34	55	5⅛	4	⅞	2¼	77 50
3¾	30	1.374	57	5⅛	4	⅞	2¼	80 00
3¾	36	1.72	63	5⅛	4	⅞	2¼	85 00
3¾	42	2.00	69	5⅛	4	⅞	2¼	90 00
4¼	10	.614	39	5¾	4½	1⅛	2½	87 50
4¼	16	.982	45	5¾	4½	1⅛	2½	90 00
4¼	20	1.23	49	5¾	4½	1⅛	2½	92 50
4¼	24	1.473	53	5¾	4½	1⅛	2½	95 00
4¼	28	1.72	57	5¾	4½	1⅛	2½	97 50
4¼	30	1.842	59	5¾	4½	1⅛	2½	100 00
4¼	36	2.21	65	5¾	4½	1⅛	2½	105 00
4¼	42	2.60	71	5¾	4½	1⅛	2½	110 00
4¾	10	.767	41	6¼	5	1⅛	3	120 00
4¾	16	1.227	47	6¼	5	1⅛	3	127 50
4¾	20	1.53	51	6¼	5	1⅛	3	131 50
4¾	24	1.84	55	6¼	5	1⅛	3	135 00
4¾	28	2.15	59	6¼	5	1⅛	3	138 50
4¾	30	2.30	61	6¼	5	1⅛	3	142 50
4¾	36	2.76	67	6¼	5	1⅛	3	150 00
4¾	42	3.22	73	6¼	5	1⅛	3	157 50

WROUGHT FORGED SUCKER ROD COUPLINGS

Connection between working heads and cylinders is made by ash rods coupled with Fig. 2361 coupling, which is of wrought iron, very heavy and strongly riveted to the rod.



FIG. 2361

Size of Rod, Inches.	Prices per Foot, Ash Rods with Couplings.	Prices of Couplings, per Pair.	Adapted for Working Barrel, Diam., Inches.
1⅝	$0 15	$1 00	From 2¾ to 4¼
2¼	30	3 00	" 4¼ " 5¾
3½	60	5 50	" 5¾ " 7¾

SAND PUMP AND DRILL COMBINED

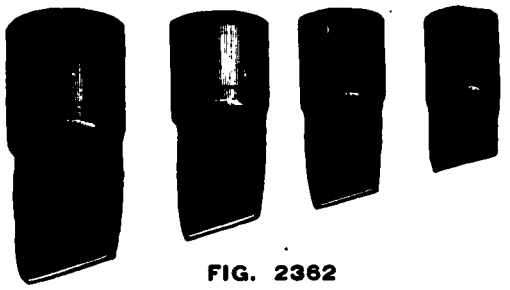


FIG. 2362

Gas Pipe Thread Connection, Inches.	Actual Size of Bit, Inches.	Prices.
1	1¾	$1 25
1	2	2 00
1	2½	3 00
1¼	3	4 00

BRASS JACKET DRIVE WELL POINT

PRICES, FIG. 2360

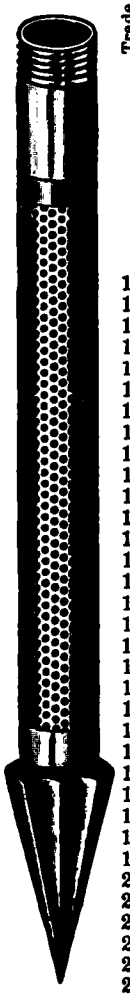


FIG. 2360

Trade Nos.	Diams. Pipe, Inches.	Length of Point, Inches.	Length of Jacket, Inches.	Nos. of Holes.	No. 60 Gauze, per Dozen.	No. 70 Gauze, per Dozen.	No. 80 Gauze, per Dozen.	No. 90 Gauze, per Dozen.	No. 100 Gauze, per Dozen.
74	1	24	18	72	$33 00	$40 00	$46 00	$52 00	$62 00
76	1	30	24	96	42 00	49 00	56 00	64 00	78 00
78	1	36	30	120	51 00	59 00	66 00	76 00	94 00
80	1	42	36	144	60 00	68 00	76 00	88 00	120 00
82	1	48	42	168	69 00	78 00	86 00	100 00	136 00
84	1	54	48	197	78 00	87 00	96 00	112 00	152 00
86	1¼	20	14	80	30 00	36 00	42 00	50 00	64 00
90	1¼	24	18	100	36 00	44 00	52 00	60 00	80 00
94	1¼	30	24	130	46 00	55 00	64 00	75 00	100 00
98	1¼	36	30	165	56 00	66 00	76 00	90 00	120 00
100	1¼	42	36	200	66 00	77 00	88 00	105 00	140 00
102	1¼	48	42	225	76 00	88 00	100 00	120 00	160 00
106	1¼	54	48	260	86 00	99 00	112 00	135 00	180 00
110	1¼	60	54	290	96 00	110 00	124 00	150 00	200 00
112	1¼	66	60	320	106 00	121 00	136 00	165 00	220 00
114	1¼	72	66	350	116 00	132 00	148 00	180 00	240 00
136	1½	24	18	120	48 00	57 00	65 00	78 00	94 00
140	1½	30	24	162	60 00	70 00	80 00	96 00	118 00
144	1½	36	30	198	72 00	84 00	95 00	114 00	142 00
146	1½	42	36	240	84 00	97 00	110 00	132 00	166 00
148	1½	48	42	276	96 00	111 00	125 00	150 00	188 00
150	1½	54	48	312	108 00	124 00	140 00	168 00	204 00
152	1½	60	54	348	120 00	138 00	155 00	186 00	228 00
154	1½	66	60	384	132 00	151 00	170 00	204 00	252 00
156	1½	72	66	420	144 00	165 00	185 00	222 00	276 00
160	2	24	18	144	75 00	85 00	94 00	110 00	130 00
164	2	30	24	208	90 00	101 00	112 00	132 00	160 00
168	2	36	30	264	105 00	118 00	130 00	154 00	190 00
170	2	42	36	288	120 00	134 00	148 00	176 00	220 00
172	2	48	42	336	135 00	151 00	166 00	198 00	250 00
174	2	54	48	384	150 00	167 00	184 00	220 00	280 00
176	2	60	54	432	165 00	184 00	202 00	242 00	310 00
178	2	66	60	480	180 00	200 00	220 00	264 00	340 00
180	2	72	66	528	195 00	217 00	238 00	286 00	370 00
184	2½	36	30	300	180 00	205 00	230 00	260 00	300 00
188	2½	48	42	360	230 00	265 00	300 00	340 00	400 00
192	2½	60	54	420	280 00	325 00	370 00	420 00	500 00
196	2½	72	66	480	330 00	385 00	440 00	500 00	600 00
200	3	36	30	300	240 00	275 00	310 00	340 00	410 00
204	3	48	42	420	300 00	345 00	390 00	430 00	520 00
208	3	60	54	540	360 00	415 00	470 00	520 00	630 00
212	3	72	66	660	420 00	485 00	550 00	610 00	740 00
216	4	48	36	360	480 00	520 00	560 00	600 00	700 00
220	4	72	60	600	630 00	695 00	760 00	840 00	1000 00
224	4	96	84	840	780 00	870 00	960 00	1080 00	1300 00
228	4	120	108	1080	930 00	1045 00	1160 00	1320 00	1600 00

SOLID STEEL DRIVE HEAD



FIG. 2363

MALLEABLE DRIVE CAP

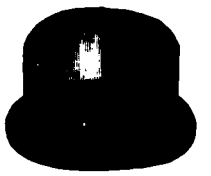


FIG. 2364

PRICES

Pipe, Inches.	Each.	Pipe, Inches.	Each.	Pipe, Inches.	Each.
1¼	$1 50	2½	$6 00	1¼	$0 20
1½	2 00	3	9 00	1½	24
2	2 50	4	16 00	2	44

COUPLING FOR IRON RODS



FIG. 2365

Size Rods, Inch.	Threads to the Inch.	Galvanized, per Pound.	Plain, per Pound.	Brass, per Pound.
⅜	14, regular	$0 20	$0 16	$0 50
⅜	16, to order	20	16	50
⅜x7/16	12x14	20	16	50
7/16	12	20	16	50
½	12	20	16	50
⅝	11	20	16	50
¾	10	20	16	50

EARTH AND SAND BORING AUGER



FIG. 2366

SAND AND CLAY AUGER



FIG. 2367

CLAY AUGER



FIG. 2368

PRICES FIGS. 2366 TO 2368

Inches.	Each.	Inches.	Each.
2	$6 00	4	$10 00
2½	6 50	4½	15 00
3	7 00	5	20 00
3½	8 50	6	25 00

We can furnish augers to go inside 2 inch pipe when ordered.

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PUMP COUNTER SHAFT

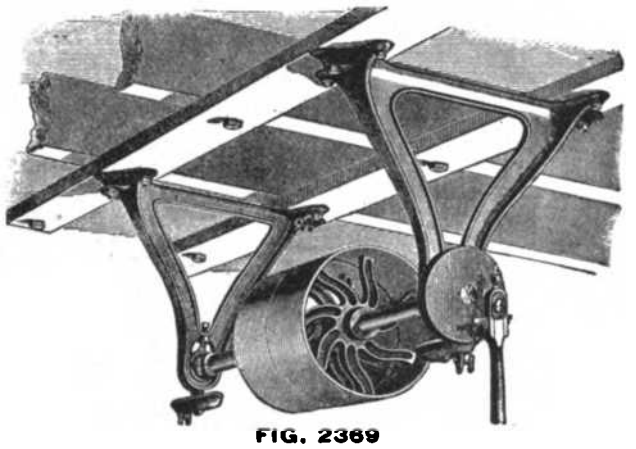


FIG. 2369

Counter shaft complete, with pulleys 18 inches in diameter and 5 inch face crank plate, gib and key connections, stub for welding..... $35 00

POWER GEARED PUMP COUNTER SHAFT

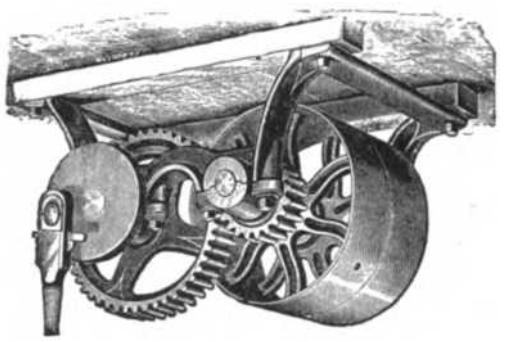


FIG. 2370

Counter shaft complete as shown in cut; pulleys are 18 inch diameter and 4 inch face $50 00

IMPROVED DEEP WELL STANDARD

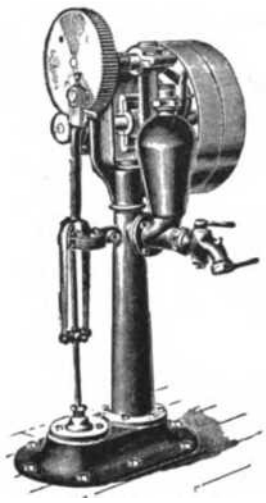


FIG. 2371

DESCRIPTION FIG. 2371

The column of this standard is extra heavy. Cut gears are used. The bearings are of ample size and lined with best babbitt metal, scraped true. The stroke may be made either 6 inches or 8 inches. Fitted for 1½ inch pipe and 18 x 3½ inch pulleys, unless otherwise ordered.

Stroke, Inches.	Pulleys, Inches.	Price.
6 and 8	18 x 3½	$78 00

DEEP WELL GEARED FORCE PUMP STANDARD

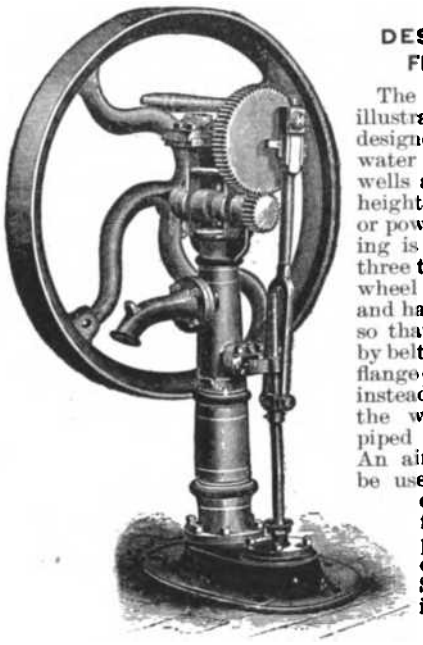


FIG. 2372

DESCRIPTION FIG. 2372

The pump standard illustrated herewith is designed for elevating water from very deep wells and to a great height, by either hand or power. The gearing is in the ratio of three to one. The fly wheel is very heavy and has a broad face, so that it can be run by belt power. A pipe flange can be attached instead of the spout if the water is to be piped to a distance. An air chamber can be used in place of either. Fitted for 1½ inch pipe, unless otherwise ordered. Stroke, 6 and 8 inches.

Nos.	Pulley Fly Wheel, Inches.	Discharge.	Prices.
1	30 x 4½	Plain spout or pipe flange	$65 00
2	30 4½	With air chamber	68 00
3	30 4½	Air chamber and cock	70 00

EXTRA STRONG DEEP WELL FORCE PUMP STANDARD



FIG. 2373

The above represents a force pump standard for use in deep wells. Has a heavy crank fly wheel, wrought iron pitman, bronze rod, with rod guide. Stuffing box with bronze gland is in the base. Stroke, 6 inches to 8 inches. Always fitted for 1½ inch pipe unless otherwise ordered.

Nos.	Fly Wheel, In.	Discharge.	Prices.
1	30	Plain spout or flange	$39 00
2	30 x 4½	" " " "	41 00

DOUBLE ACTING RAIL ROAD FORCE PUMP

DESCRIPTION, FIG. 2374
Mounted on Plank. For Power.

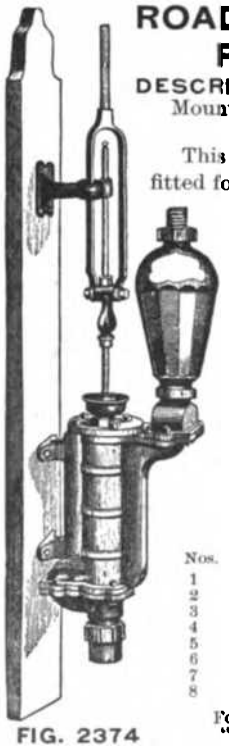


FIG. 2374

This represents a very efficient double acting force pump, fitted for attaching to a crank driven by machine power. It has an unusually large solid brass rod with a heavily forged pitman attached; and all parts are firmly bolted through strong flanges, effectually preventing the possibility of leakage at any point. The air chamber can have one or two outlets, at the option of the purchaser.

It is admirably calculated for being driven by power without the use of a balance wheel to regulate its motion. We furnish counter shaft, crank, pulleys or gears, hangers, post boxes, and pitman heads for driving this pump. It is in extensive use in tanneries, factories, etc., and also for wind mill power

Nos.	Sizes of Pipe, Inches.	Diam. of Cylinder, Inches.	Stroke, Inches.	Capacity per Rev., Gallons.	Revolut'ns per Minute.	Iron, Prices, Each.	Brass Cylinder, Prices, Each.
1	1	2	8	⅛	80	$17 50	$30 00
2	1¼	2½	8	⅛	75	21 00	39 00
3	1½	3	8	½	70	25 00	52 00
4	2	3½	8	⅔	60	30 00	74 00
5	2	4	8	⅞	50	44 00	99 00
6	2	4½	8	1	50	58 00	142 00
7	2½	5	8	1⅓	40	80 00	170 00
8	3	6	8	2	40	100 00	200 00

For gun metal valves for Nos. 4, 5 and 6, add to list..... $10 00
" " " " " " 7 and 8, add to list..... 15 00

WIND MILL FORCE PUMP

FORKED ROD



FIG. 2375

DESCRIPTION FIGS. 2375 AND 2376

These pumps are used extensively in connection with wind mills. They are arranged with pitman for any kind of power.

When used in connection with a wind mill it is preferable to have the forked rod coupling (shown in cut), to which the wood rod of the wind mill is attached. For forked rod coupling, add $1.50 to list below.

PRICES, FIG. 2376

Nos.	Diam. Cyl., Inches.	Stroke, Inches.	Suction and Discharge, Inches.	Iron.	Brass.
1	2	7	1	$10 00	$21 00
2	2½	7	1¼	11 00	22 00
3	3	7	1¼	12 50	27 00

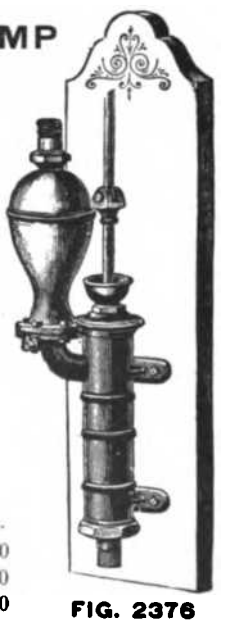


FIG. 2376

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DOUBLE ACTING PACIFIC RAILROAD FORCE PUMPS

FOR HAND POWER

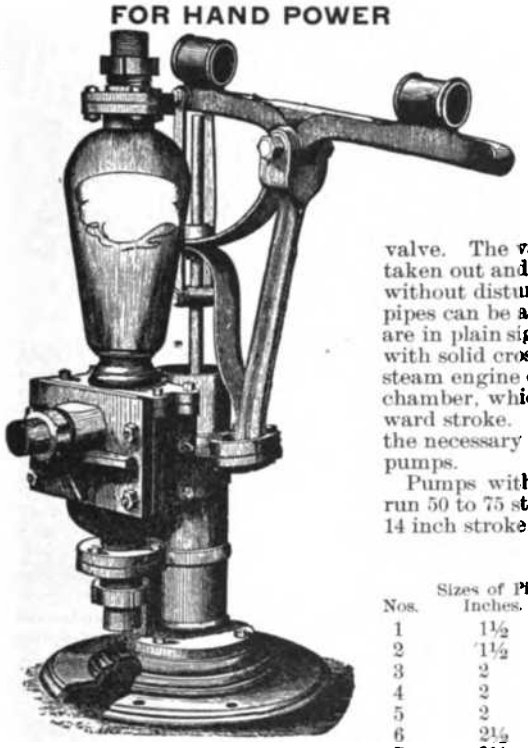


FIG. 2377

DESCRIPTION, FIGS. 2377 AND 2378

These double acting force pumps are designed especially for the use of railroad corporations, distillers, paper mills, etc., or for other parties who require a very powerful, substantial and reliable pump to raise a large quantity of water for fire protection or other purposes.

These pumps are so constructed that all parts are easy of access in case of necessity. All the valves are bronze with a rubber facing, and are best variety of poppet valve. The valve seats are also of bronze, screwed in, and can be readily taken out and replaced at any time by simply removing the face plate, without disturbing any other part of the pump. The suction and discharge pipes can be attached or detached without any trouble, as all the joints are in plain sight on the front of the pump. The piston rod is of gun metal, with solid cross head. The cylinders are bored and polished equal to any steam engine cylinder. The stuffing box is surrounded by an oil or water chamber, which prevents the admission of air into the pump on the downward stroke. It will, therefore, be readily seen that these pumps combine the necessary attributes to make them always perfect double acting force pumps.

Pumps with 3, 4, 5 and 6 inch cylinders and 8 inch stroke should be run 50 to 75 strokes per minute. Those with 4, 5, 6, 7 and 8 inch cylinders, 14 inch stroke, should be run 40 to 45 strokes per minute.

PRICES, FIGS. 2377 AND 2378

Nos.	Sizes of Pipe, Inches.	Diam. Cylinder, Inches.	Stroke, Inches.	Capacity per Rev., Gallons.	Iron, Each.	Brass Lined Cylinder, Each.
1	1½	3	8	½	$65 00	$75 00
2	1½	3	10	9/10	70 00	78 00
3	2	4	8	⅞	75 00	79 50
4	2	4	12	1¼	100 00	111 00
5	2	4	14	1½	110 00	125 00
6	2½	5	8	1⅓	90 00	110 00
7	2½	5	14	2⅜	130 00	165 00
8	3	6	8	2	110 00	135 00
9	3	6	14	3⅜	175 00	215 00
10	4	8	10	4⅓	275 00	325 00

We can furnish larger sizes of above for power, when required.

FOR MACHINE POWER

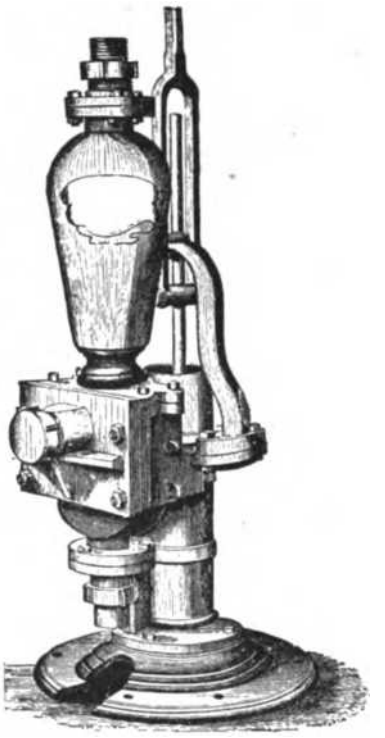


FIG. 2378

ANTI-FREEZING LIFT AND FORCE PUMP



FIG. 2379

DESCRIPTION, FIG. 2379

These pumps are arranged for wells not exceeding 30 feet in depth, but by inexpensive auxiliaries are often used where the well is of 50 feet, or greater, depth.

DIRECTIONS

When used as a force pump, the thumb screw in air chamber should be screwed tight. Take out the screw when used as an ordinary lift pump.

PRICES, FIG. 2379

Nos.	Dia. Cyl., Inches.	Suction, Inches.	Capacity per Rev., Gallons.	Each.
1	2¾	1¼	⅛	$13 00
2	3	1¼	⅛	13 50
3	3¼	1¼	¼	14 00
4	3½	1½	⅛	14 50

HOUSE FORCE PUMP

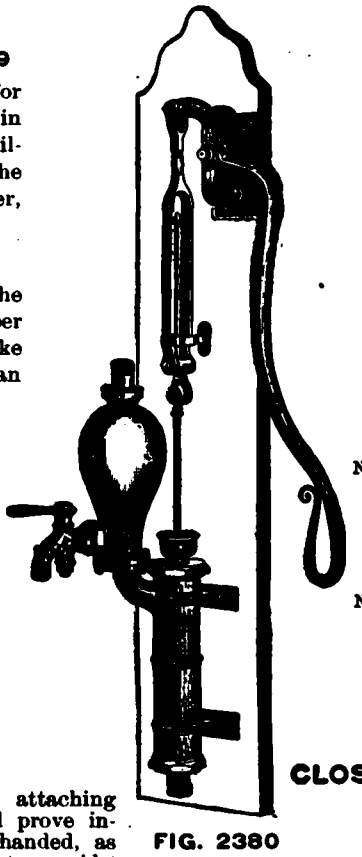


FIG. 2380

DESCRIPTION, FIG. 2380

The faucet is threaded on the spout end for attaching hose, which convenience, in case of fire, will prove invaluable. This pump is made right or left handed, as ordered, and can be made for pumping hot water, acids, etc. The cock is made of iron, with brass plug if intended for hot or cold water; but if desired for pumping wines, liquors or acids it is all made of the best bronze.

PRICES, FIG. 2380

Nos.	Sizes Pipe, Inches.	Diam. Cyl., Inches.	Stroke, Inches.	Capacity per Rev., Gallons.	Iron, Each.	Brass Cyl., Each.	Brass, Each.
1	1	2	8	⅛	$18 50	$23 50	$32 00
2	1¼	2½	8	⅛	19 50	25 50	36 00
3	1¼	3	8	¼	21 00	27 50	41 00

FORCE PUMP ON PLANK

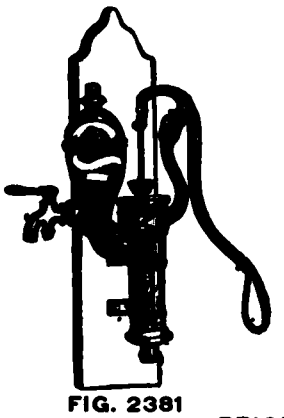


FIG. 2381

PRICES, FIG. 2381

Nos.	Diam. Cylinder, Inches.	Stroke, Inches.	Sizes Pipe, Inches.	Gallons per Stroke.	Iron, Each.	Brass Cylinder, Each.
1	2½	5	1¼	⅛	$12 50	$17 00
2	3	5	1¼	⅛	14 50	18 50
3	4	5	1½	⅜	23 50	34 50

FORCE PUMP ON BASE

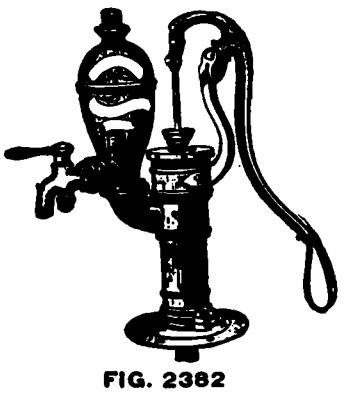


FIG. 2382

PRICES, FIG. 2382

Nos.	Diam. Cylinder, Inches.	Stroke, Inches.	Sizes Pipe, Inches.	Capacity per Stroke, Gallons.	Iron, Each.	Brass Cyl'der, Each.
1	2½	5	1¼	⅛	$12 50	$17 50
2	3	5	1¼	⅛	14 50	18 50
3	4	5	1½	⅜	23 50	34 50

The 4 inch pump has rubber buffer on fulcrum.

CLOSE TOP PITCHER SPOUT CISTERN PUMP



FIG. 2383

PRICES, FIG. 2383

Nos.	Inches. Diam. Cyl.,	Fitted for Pipe, Inches,	Capacity per Stroke, Gallons.	Iron, Each.	Brass Lined Cylinder, Each.
1	2½	1¼	1/10	$4 25	$6 50
2	3	1¼	⅛	4 75	7 25
3	3½	1¼	⅛	5 25	8 00
4	4	1½	¼	6 25	9 00
5	4½	1½	⅛	9 50	12 50

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ANTI-FREEZING PUMPS

OPEN TOP CISTERN AND WELL

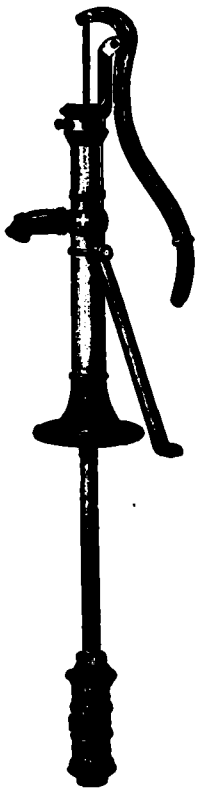


FIG. 2384

CLOSE TOP WELL

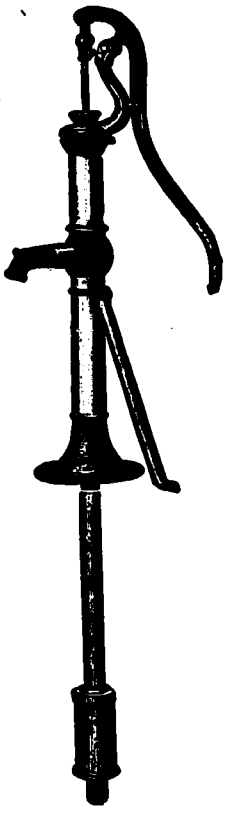


FIG. 2385

PRICES, FIG. 2384

Nos.	Diam. Cyl., Inches.	Suction, Inches.	Prices, Complete.	Prices, Standard only, without Cyl. or Set Length.
3	2¾	1¼	$8 25	$4 00
4	3	1¼	8 50	4 50
5	3¼	1¼	9 00	5 25

PRICES, FIG. 2385

Nos.	Diam. Cyl., Ins.	Suction, Inches.	Height of Stock, Inches.	Base to Spout, Inches.	Prices, Complete.	Stand'd only, without Cyl. or Set Length.
3	2¾	1¼	33¼	19½	$8 75	$4 50
4	3	1¼	35¼	21	9 25	5 00
5	3¼	1¼	37¼	23	9 75	5 75

FLORIDA FORCE PUMPS



FIG. 2388



FIG. 2389

These improved Force Pumps can be used on driven wells, on sinks over cisterns, for filling wash basins, bath tubs, and tanks in upper rooms. They will throw a continuous and powerful stream to a height of 40 feet or more. Unless otherwise ordered, we shall always fit them for a ¾ hose.

PRICES, FIG. 2388

Nos.	Diam. Cyl., Inches.	Stroke, Inches.	Capacity per Rev., Gallons.	Pipe, Inches.	Iron, Prices.	Copper Lined Cylinder, Prices.
0	2½	5	1/10	1¼	$9 00	$11 25
1	3½	5	1/6	1½	10 00	12 50

PRICES, FIG. 2389

Nos.	Diam. Cyl., Inches.	Stroke, Inches.	Capacity per Rev., Gallons.	Pipe, Inches.	Iron, Prices.	Copper Lined Cylinder, Prices.
0	2½	5	1/10	1¼	$11 50	$13 75
1	3½	5	1/6	1½	12 50	15 00

REVOLVING TOP CISTERN PUMPS

WITH BASE

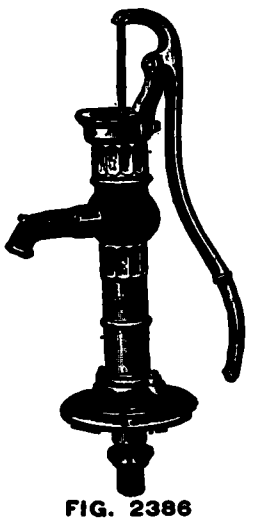


FIG. 2386

This iron Cistern Pump has brass valve seat and brass tubes projecting, for attaching lead, gas and other pipe, as may be ordered. The fulcrum and lever revolve, and can be adjusted to any position by merely turning the set screw under the lever.

Nos.	Diam. Cyl., Inches.	Fitted for Pipe, Inches.	Capacity per Stroke, Gallons.	Iron, Prices.	Brass Cyl'der, Prices.
0	2	1	1/15	$3 50	.....
1	2¼	1	1/12	4 00	$6 00
2	2⅜	1¼	1/11	4 50	7 00
3	2½	1¼	1/10	5 00	8 00
4	3	1½	1/8	5 50	10 00
5	3¼	2	1/5	6 50	14 00
6	3½	2	¼	8 00	.....
7	4	2½	⅓	12 00	.....

WITH BRACKETS



FIG. 2387

This Bracket Cistern Pump is especially adapted to places where a pump with a flanged base could not be used. It can be secured to the wall or a post, as found most convenient, and occupies the least possible space. Has a revolving top, brass valve seat, bolt fastenings and union couplings. To prevent freezing the lever is raised to its full height, which trips the valves and lets all the water out of the pump.

Nos.	Diam. Cyl., Inches.	Fitted for Pipe, Inches.	Capacity per Stroke, Gallons.	Iron, Prices.	Brass Cyl'der, Prices.
0	2	1	1/15	$3 50	.....
1	2¼	1	1/12	4 00	$6 00
2	2⅜	1¼	1/11	4 50	7 00
3	2½	1¼	1/10	5 00	8 00
4	3	1½	1/8	5 50	10 00
5	3¼	2	1/5	6 50	14 00
6	3½	2	¼	8 00	.....

ASHCROFT ROTARY OIL PUMP

This pump is used for drawing and forcing oil, soda water or other lubricants from a small tank, to which it can be attached for supplying a continuous stream to the cutters, drills or other small tools used in any machine, and it is particularly advantageous where a good and continuous feed of oil or soda water is desired. The lubricant can be used over and over by allowing it to run back into the tank from which the pump draws after it has run off the tools.

PRICE, $20.00 EACH.

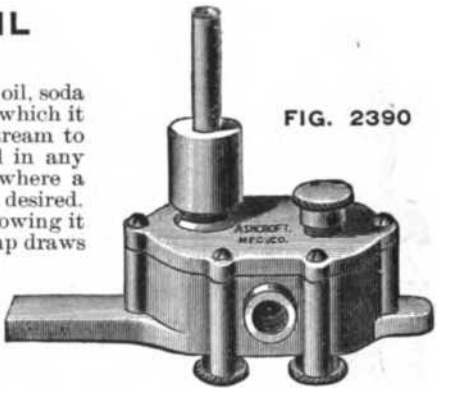


FIG. 2390

WATCH PUMP

DESCRIPTION, FIG. 2391

This Pump is operated by means of a lever which may be worked either horizontally or vertically. By its construction very little power is consumed in friction. The valves are of brass with brass wing pistons, consequently these pumps can be used to pump hot or cold liquids, wines, oil, cider, acids, etc. The pipe connections are flanged so that pump can be removed at any time without disturbing the pipes.

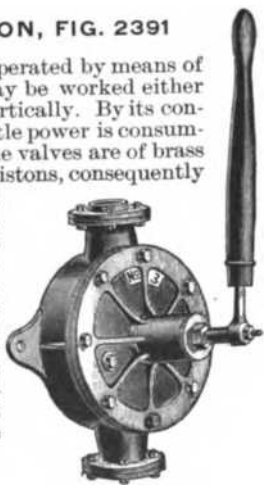


FIG. 2391

Nos.	Suction and Discharge Fitted for Pipe, Inches.	Approximate Capacity per Hour, Gals.	Iron, Prices.	Brass, Prices.
1	½	264	$5 00	$7 00
2	¾	352	6 00	9 00
3	1	427	7 25	12 50
4	1¼	634	9 00	15 00
5	1¼	950	10 00	18 75
6	2	1346	12 00	21 25

AIR COMPRESSOR AND VACUUM PUMP

DESCRIPTION FIG. 2392

This pump can be operated by either hand or power, and a pressure of eighty or more pounds is easily maintained by one man. The pump may be arranged for vacuum as well as pressure.

Diameter of cylinder, 4 inches; stroke, 5 inches; capacity per revolution, 62 cubic inches.

PRICE, $50.00

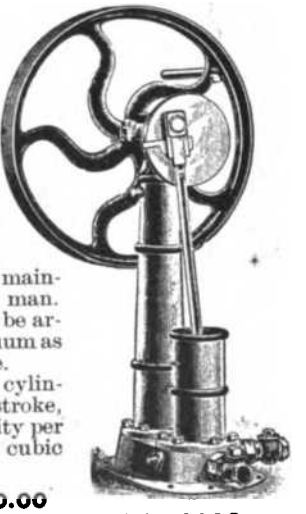


FIG. 2392

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BELT AND HAND PUMPS

NO. 0001 BELT PUMP

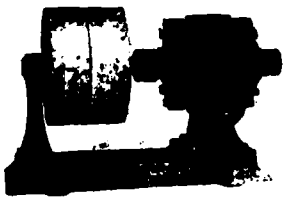


FIG. 2393

DESCRIPTION, FIG. 2393

For pumping beer, oil, or water.
Built in three sizes.
Capacity, 20 to 30 gallons per minute.
For prices see bottom of page.

NO. 0001 HAND PUMP

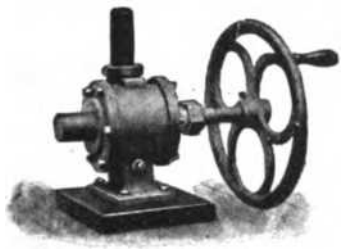


FIG. 2395

DESCRIPTION, FIG. 2395

35 pound hand wheel.
For pumping beer, oil, or water.
Built in three sizes.
Capacity, 20 to 30 gallons per minute.
For prices see bottom of page.

NO. 2 SPECIAL TANNERS' LIQUOR PUMP

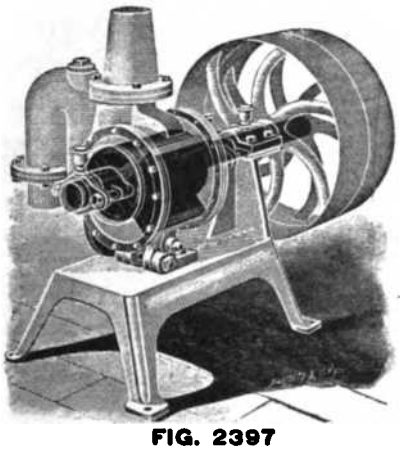


FIG. 2397

Built in bronze.
3 inch or 4 inch suction and discharge.
Capacity, 200 to 250 gallons per minute.
In ordering, specify for log or pipe connection.

NO. 0 SPECIAL BEER PUMP

DESCRIPTION, FIG. 2394

2 inch suction and discharge.
For pumping beer, acids, etc.
Capacity, 75 to 100 gallons per minute.
For prices see bottom of page.

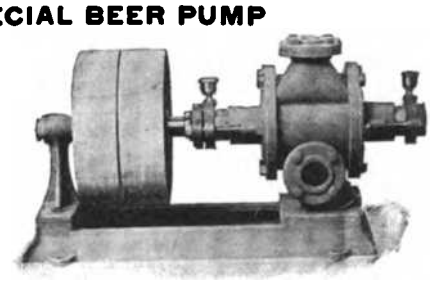


FIG. 2394

NO. 5 SPECIAL PUMP

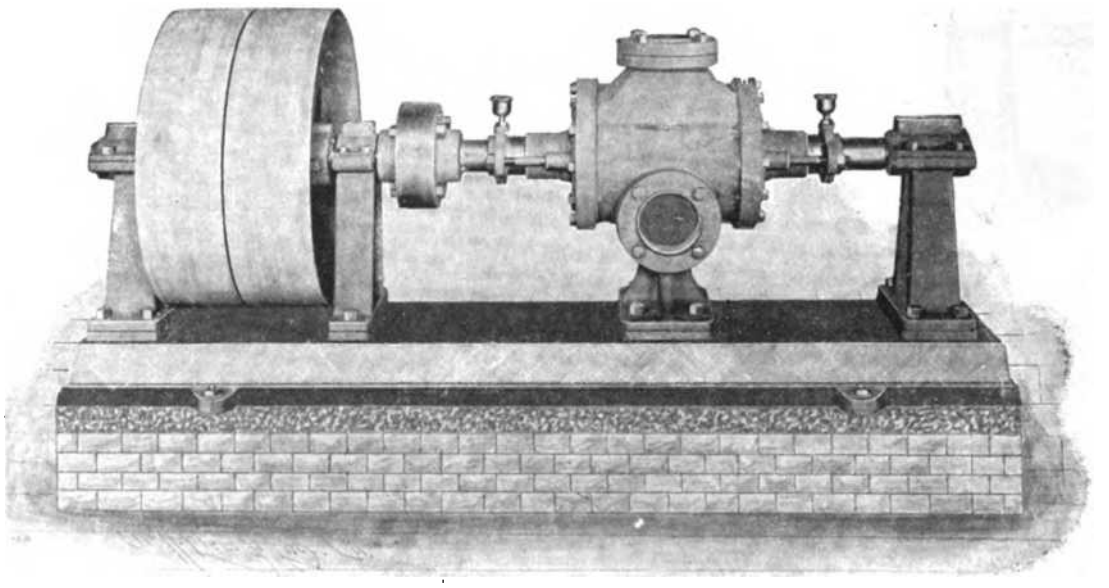


FIG. 2396

DESCRIPTION, FIG. 2396

Built in bronze or iron.
For pumping soap, beer wort, wet grains, etc.
Furnished with Bethlehem steel piston, hydraulic forged and annealed.
Made in three sizes: Nos. 4, 5, and 6.
No. 4, fitted with 4 inch suction, 4 inch discharge. Capacity, 300 to 350 gallons per minute.
No. 5, fitted with 5 inch suction, 5 inch discharge. Capacity, 350 to 400 gallons per minute.
No. 6, fitted with 8 inch suction, 6 inch discharge. Capacity, 450 to 500 gallons per minute.
Capacity, wet grains, per hour: No. 4, 15,000 pounds. No. 5, 25,000 pounds. No. 6, 50,000 pounds.
For prices, see bottom of page.

NO. 1 BELT PUMP

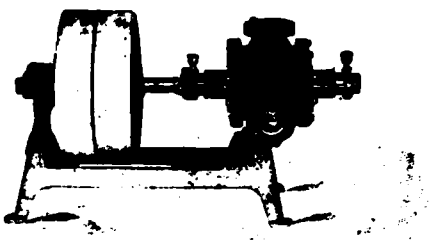


FIG. 2398

3 inch suction and discharge.
For pumping soap, lye, oil, etc.
Capacity, 150 to 200 gallons per minute.

DIMENSIONS, FIGS. 2393 TO 2398

No. of Pump.	Dimens's of Shell. Inches.	Diam. of Suct'n and Discharge. Inches.	Revs. per Minute.	Size of Pulleys, Inches.	Gallons per Minute.	Weight of Belt Type. Pounds.
..... 0001	4 x 4	1½	130 to 150	2¼ x 7	30	65
..... 0002	4 x 4	1¼	130 " 150	.....	25	65
..... 0003	4 x 4	1	130 " 150	.....	20	65
..... 002	6 x 6	2	120 " 140	3¼ x 12	50 to 60	150
..... 001	6 x 6	1½	120 " 140	3½ x 12	40 " 50	150
..... 0	6 x 6	2	120 " 140	3½ x 18	75 " 100	215
Brewers 0	6 x 6	2	100 " 120	5 x 20	120 bbls. per hr.	225
..... 1	7 x 8	3	100 " 120	4½ x 18	150 to 200	350
..... 2	8 x 8	3 or 4	100 " 120	5 x 20	200 " 250	400
Special 2	8 x 8	3 " 4	100 " 120	6 x 24	200 " 250	740
..... 4	8 x 12	4	100 " 120	6 x 24	300 " 350	600
Soap 4	8 x 12	4	100 " 120	6 x 24	1,200 lbs. per min.	650
Special 4	8 x 12	4	100 " 120	6 x 24	300 to 350	900
..... 5	9 x 12	5	100 " 120	8 x 24	350 " 400	1,000
Special 5	9 x 12	5	100 " 120	8 x 24	350 " 400	1,100
..... 6	10 x 16	8 x 6	100	10 x 30	450 " 500	2,100

PRICES, FIGS. 2393 TO 2398

No. of Pump.	Belt Pump. Iron.	Belt Pump. Bronze.	Steam Pump. Iron.	Steam Pump. Bronze.	Hand Pump. Iron.	Hand Pump. Bronze.	Motor Pump. Iron.	Motor Pump. Bronze.
0001	$30 00	$50 00	.....	.....	$30 00	$50 00	$230 00	$250 00
0002	25 00	45 00	.....	.....	25 00	45 00	230 00	250 00
0003	22 50	42 50	.....	.....	22 50	42 50	230 00	250 00
002	45 00	75 00	.....	.....	45 00	75 00	.....	.....
001	40 00	70 00	.....	.....	40 00	70 00	.....	.....
0	75 00	100 00	$200 00	$225 00	.....	.....	.....	350 00
0	75 00	100 00	.....	.....	.....	.....	.....	350 00
1	100 00	150 00	200 00	250 00	.....	.....	400 00	450 00
2	125 00	165 00	225 00	285 00	.....	.....	425 00	500 00
2	150 00	200 00	.....	.....	.....	.....	.....	.....
4	150 00	225 00	350 00	400 00	.....	.....	.....	550 00
4	150 00	.....	.....	.....	.....	.....	.....	.....
4	175 00	250 00	.....	.....	.....	.....	.....	.....
5	175 00	250 00	.....	450 00	.....	.....	.....	600 00
5	200 00	350 00	.....	500 00	.....	.....	.....	650 00
6	250 00	500 00	.....	.....	.....	.....	.....	.....

Prices on special pumps with special motors or engines quoted on application.

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LARGE HAND ROTARY PUMP

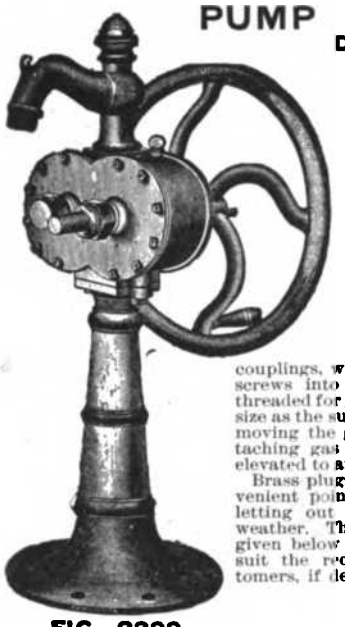


FIG. 2399

DESCRIPTION
FIG. 2399

This pump is adapted for mines, steamboats, breweries, etc.

The comparatively great amount of work it will perform in a given time renders it extremely useful in places where machine power is neither convenient nor available.

The outer end of the goose neck is threaded for hose couplings, while the end which screws into the pump case is threaded for gas pipe of the same size as the suction, so that by removing the goose neck and attaching gas pipe water can be elevated to any height desired.

Brass plugs are placed at convenient points in the case for letting out the water in cold weather. The sizes of the pipes given below can be changed to suit the requirements of customers, if desired.

PRICES

Nos.	Fitted for Pipe, Inches.	Size Hose, Inches.	Capacity Per Revolution, Gallons.	Iron, Each.	*Bronze, Each.
1	1¼	1	⅛	$30 00	$42 00
2	1½	1	⅛	23 00	47 00
4	2	1½	⅛	35 00	65 00
5	2	2	½	40 00	75 00

*The bronze pumps are all bronze except base and fly wheel.

POWER ROTARY FORCE PUMP

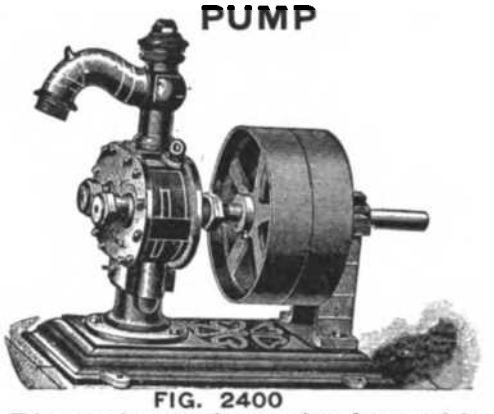


FIG. 2400

This pump is mounted on an iron frame and is arranged with tight and loose pulleys, outside babbitt bearing, etc. It is well adapted for a small fire pump, and will throw water from 125 to 150 feet horizontally. For oil refineries, breweries, distilleries, etc., it is admirably suited for various purposes, and also in extensive use in cotton and woolen factories for pumping drinking water into upper rooms. The driving shaft is made of ample length to permit a balance wheel with handle to be placed on outside of the bearing, readily enabling it to be worked by hand in an emergency. The spout is screwed for hose on the outer end and for wrought iron pipe where it connects to the pump. The spout can be removed and connection made with iron pipe wherever it is necessary to force the water upward to any height above the pump.

PRICES

Nos.	Fitted for Pipe, Inches.	Capacity Per Revolution, Gallons.	Sizes Pulleys, Inches.	Iron, Each.	Bronze, Each.
1	1¼	⅛	7 x 2½	$26 00	$45 00
2	1½	⅛	7 x 2½	31 00	55 00
4	2	⅛	12 x 3¼	48 00	75 00
5	2½	½	15 x 3¼	54 00	90 00

Balance wheels for above pumps, $1.00, $2.00, and $3.00, according to size.

POWER ROTARY FORCE PUMP



FIG. 2401

This pump is admirably adapted for high speed gas or kerosene engines and electric motors. The height of bearings admits the use of a relatively large pulley to compensate for the high speed of the motor.

This pump is always fitted for wrought iron pipes.

Drip cocks are supplied to prevent freezing.

PRICES

Nos.	Sizes Pipe, Inches.	Capacity Per Revolution, Gallons	Iron, Each.	Bronze, Each.
1	1¼	⅛	$25 00	$47 00
2	1½	⅛	28 00	52 00
4	2	⅛	45 00	75 00

POWER ROTARY FIRE PUMP

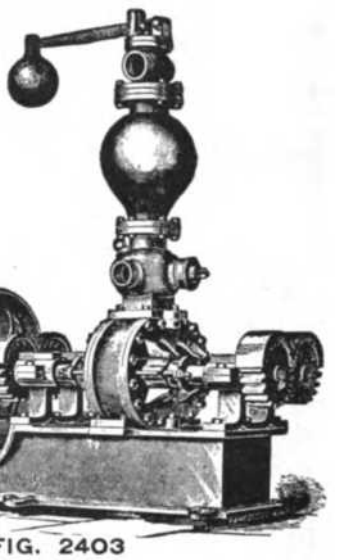


FIG. 2403

DESCRIPTION
FIG. 2403

These pumps are provided with air chamber and safety valve. They are arranged so that one, two or three lines of hose can be attached at the same time, or all the stories of a building can be instantly flooded by means of a pipe from the pump and cut-offs for hose on each floor, or the pump can be connected directly with an automatic sprinkler system, or the water may be led through underground pipes to hydrants located outside the building.

PRICES

Nos.	Sizes Suction Pipe, Inches.	Sizes Discharge Hose, Inches.	Number of Streams.	Capacity Per Revolution, Gallons,	Revolutions Per Minute.	Each.
1	2	1½	1	½	350	$110 00
2	2½	1½ or 2	1	⅝	325	125 00
3	3	2	2	1¼	300	175 00
4	4	2 or 2½	2	1⅝	280	255 00
5	5	2½	3	2⅛	250	315 00
6	8	2½	4	4	250	475 00

Prices include safety valves and outside shafts. Size of pulleys same as for corresponding size, Fig. 2404.

ROTARY BARREL PUMP

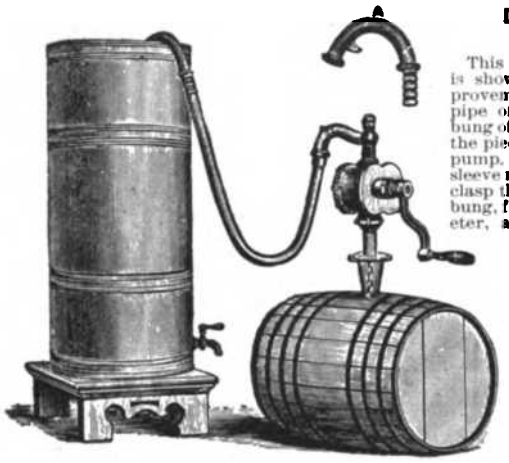


FIG. 2402

DESCRIPTION
FIG. 2402

This Hand Rotary Force Pump is shown arranged with an improvement for holding the suction pipe of the pump rigid in the bung of a barrel, and also exhibits the pieces which accompany each pump. The holder is a conical sleeve made in halves, designed to clasp the pipe firmly in any sized bung, from 1½ to 4 inches in diameter, and without injuring the shape of the bung in the least degree. The discharge pipe is so formed that it retains its hold on the tank without other fastening. A suction pipe three feet in length goes with each pump, and is notched at the bottom so that the entire contents of the barrel can be discharged. With this complete and perfect apparatus liquids of any consistency can be pumped from barrels and other casks to any desired distance or height.

PRICES

No. 1. Suction and discharge, 1 inch; size hose, ⅞ inch; capacity at 100 revolutions per minute, 13 gallons; iron, each, $17.00; bronze, each, $39.00.

No. 2. Suction and discharge, 1 inch; size hose, 1 inch; capacity at 100 revolutions per minute, 20 gallons; iron, each, $20.00; bronze, each, $44.00.

Above prices include suction pipe, hose coupling, hook and holder, discharge spout, and bung attachment. Brass or copper suction pipes furnished at extra cost.

POWER ROTARY FORCE PUMP

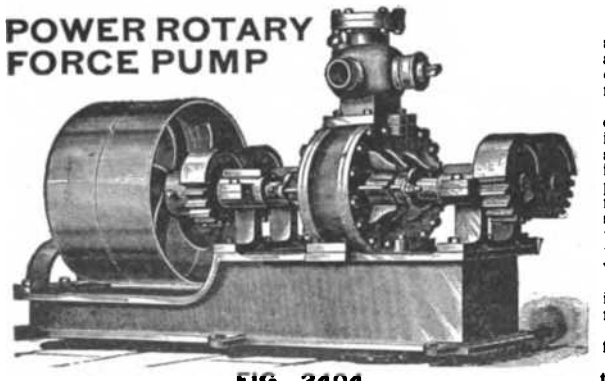


FIG. 2404

DESCRIPTION, FIG. 2404

This pump will discharge a large and constant stream without the aid of an air chamber; can be run at a very high speed without injury; has no packing or valves to become obstructed or worn out. There is nothing about these pumps but metal.

Its qualities adapt it for all establishments where an extra quantity of water is required for manufacturing, fire protection, water works, supplying sprinkler systems in mills, distilleries, and breweries, for pumping hot liquors; in sugar and oil refineries, pipe lines, paper mills, and starch factories; in slate, stone, and marble mills, where they serve the double purpose of supply and freeing the quarries of muddy and gritty water; at railway stations, mines, salt wells; also as wrecking pumps, as they will not become clogged with wet grain, etc.

In the bronze pumps the case, sides, cams, and stuffing boxes are all made of the best bronze, leaving nothing exposed to the action of any chemicals.

Furnished with either tight and loose pulley or gears for driving, as most convenient to the purchaser.

A capacious vacuum chamber, into which the suction pipe screws, is also cast in the frame.

PRICES

Nos.	Capacity Per Revolution, Gallons.	Diameter Suction and Discharge, Inches.	Revolutions Per Minute.	Sizes of Pulleys.	Iron, Each.	Bronze, Each.
1	⅛	2	200	14 x 4½	$100 00	$160 00
2	⅝	2½	175	16 x 5½	115 00	180 00
3	1¼	3	150	18 x 6½	160 00	260 00
4	1⅝	4	125	20 x 8½	240 00	.....
5	2⅛	5	100	Geared	300 00	.....
6	4	8	100	Geared	450 00	.....

HORIZONTAL CENTRIFUGAL PUMP

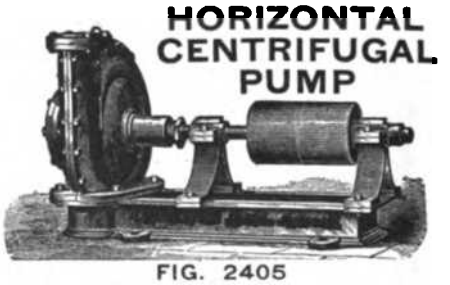


FIG. 2405

For paper mills, sugar houses, tanneries, breweries, irrigation, contractors' uses, for drilling sewers, sugar, and rice plantations, wheel and lock pits, excavations, etc. In ordering state whether pump is to be right or left handed.

PRICES

Nos.	Iron, Each.	Iron with Suction Primer, Each.	Brass, Each.
2	$30 00	$45 00	$60 00
3	65 00	80 00	120 00
4	75 00	90 00	145 00
5	90 00	105 00	160 00
6	120 00	145 00	250 00
6½	140 00	180 00	325 00
7	180 00	220 00	400 00
8	310 00	375 00	.....

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HORIZONTAL RIGHT HAND PUMP WITH SUCTION PRIMER

PRICES, FIG. 2406

No. Pump (Diameter Discharge Opening).	Economical Capacity, Gallons per Minute.	Horse Power Required for Each Foot Elevation.	Prices Brass Horizontal Pump, Without Primer.	Prices Brass Horizontal Pump, With Primer.	Prices Bronze Horizontal Pump, Without Primer.	Prices Bronze Horizontal Pump, With Primer.
1½	70	.058	$85	$105	$99	$125
1¾	90	.075	100	120	122	148
2	120	.10	125	150	156	189
2½	180	.15	150	175	183	216
3	260	.22	175	210	210	255
4	470	.30	275	330	327	395
5	735	.45	350	420	425	512
6	1,050	.59	410	495	505	611

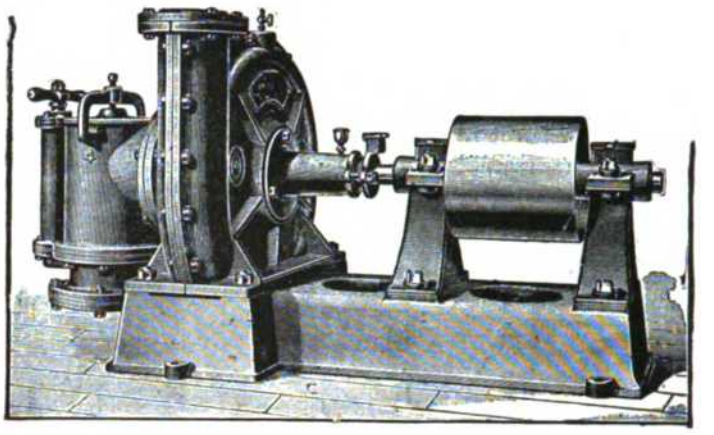


FIG. 2406

DESCRIPTION, FIG. 2406

These pumps are made to run right handed, as shown in illustration, unless otherwise ordered. The discharge as usually made will be in a vertical position, as shown in cut, unless another delivery is desired. These pumps when fitted with brass parts are used by makers of refrigerating and ice machinery for circulating brine.

DOUBLE SUCTION ROTARY PUMPS

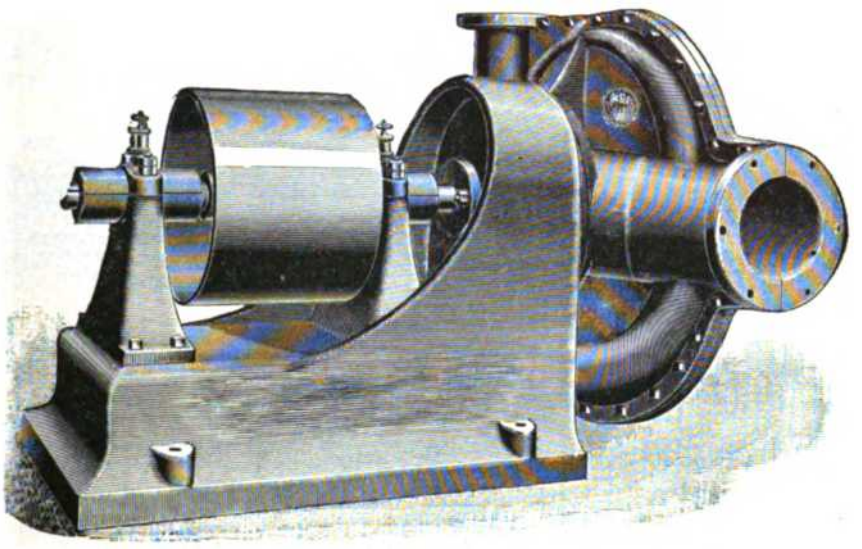


FIG. 2407

PRICES, FIG. 2407

No. Pump (Diameter Discharge Opening).	Diameter Suction Opening.	Economical Capacity, Gallons per Minute.	Horse Power Required for Each Foot Elevation.	Diameter and Face of Pulley, Inches.	Floor Space Required, in Inches.	Shipping Weight, Lbs.	Prices Iron Pump.	Prices Extra if Brass Fitted.
1½	2	70	.058	7x 8	20x32	250	$60	$12
1¾	2	90	.075	7x 8	20x32	300	75	15
2	3½	120	.10	8x 8	26x35	550	90	18
2½	3½	180	.15	8x 8	26x35	575	100	22
3	3½	260	.22	8x 8	27x38	600	125	25
4	5	470	.30	10x10	33x40	860	175	40
5	6	735	.45	12x12	37x49	1,300	250	60
6	7	1,050	.59	15x12	43x51	1,460	350	90
8	9	2,000	1.00	20x12	52x61	2,305	500	130
10	11	3,000	1.52	24x12	57x73	3,100	775	165
12	13	4,200	2.00	30x14	69x82	5,500	1,120	275
15	18	7,000	3.50	40x15	89x78	8,600	1,325	...
18	20	10,000	4.50	40x16	90x80	9,300	2,050	...
20	22	12,000	5.40					
22	24	13,000	5.50					
24	24	15,000	6.50					
30	30	22,000	9.00					
36	36	32,000	13.00					
42	42	44,000	17.00					
48	48	56,000	22.00					

Prices on application.

PRICES, FIG. 2408

No. Pump (Diameter Discharge Opening.)	Diameter Suction.	Cubic Yards Material per Hour, 10 to 20 Per Cent. of Solids. 10 p. c.	15 p. c.	20 p. c.	Horse-Power Required for Each 10 Feet Elevation.	Will Pass Solids: Diameter, Inches.	Diameter and Face of Pulley.	Floor Space Required, Inches.	Shipping Weight.	Prices of Pump With Suction and Discharge Elbow, Flap Valve and Ejector.	Prices Extra for Steel Lining.
4	4	14	21	28	4	2	12x12	40x31	980	$210	$70
6	6	30	45	60	8	4½	20x12	68x40	2,125	300	100
8	8	60	90	120	15	6	24x14	72x48	3,670	475	130
10	10	90	135	180	25	8	30x15	94x54	4,975	600	170
12	12	125	190	250	30	10	36x20	114x66	7,825	850	230
15	15	210	315	420	50	10	42x24	154x78	15,200	1,775	...
18	18	300	450	600	70	10	48x30	160x80	16,125	2,000	...

HYDRAULIC DREDGING AND SAND PUMP

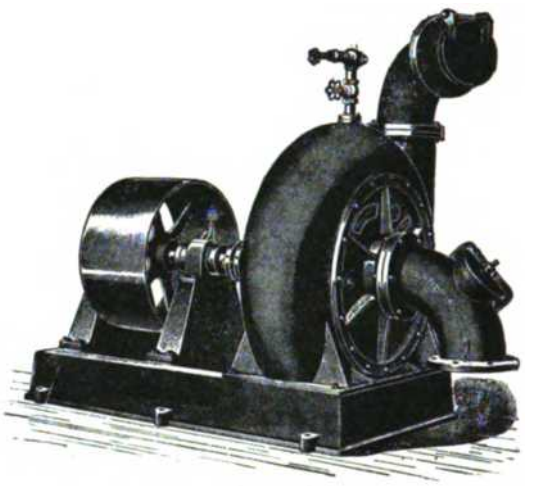


FIG. 2408

DESCRIPTION, FIG. 2408

A removable disk has been fitted to the suction side of pump which can, by unscrewing a few bolts, be taken apart from pump shell, giving full view to interior of pump, and as this opening is larger than the piston, this can be withdrawn without disturbing any of the other parts; the whole operation can be performed in a few minutes.

The pump shell is cast solid and is extremely heavy, special care having been taken to provide an extra amount of metal in those parts which experience has shown are most subject to wear. The shell is so constructed that the wear is equal on all parts. The waterways are of same size throughout the pump, insuring a steady flow of water and material and making it impossible for any solid that will pass the suction pipe to clog up the pump.

The piston is perfectly balanced for any end thrust by an arrangement that will not diminish the suction power of the pump or cause any unnecessary friction. By having the piston balanced not only is the enormous pressure on the bearings avoided, but the pump will also run more smoothly and with less power.

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IMPROVED CATARACT CENTRIFUGAL PUMP

SINGLE STANDARD BEARING

Sizes, 8 inches and under.

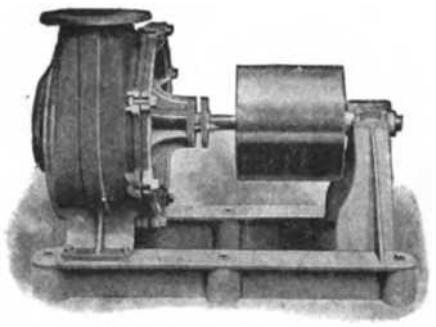


FIG. 2408A

DOUBLE STANDARD BEARING

Sizes, 10 inches and over.

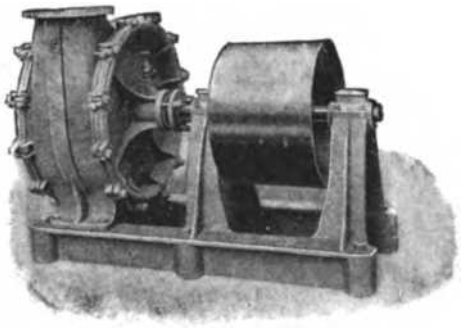


FIG. 2409

PRICES, SPEED TABLE, ETC., FIGS. 2408A AND 2409

Size of Pump, No.	Suction and Discharge Openings. Diameter, Inches.	Dimensions of Pulley. Diameter, Inches.	Dimensions of Pulley. Face, Inches.	Economical Working Capacities, Gallons per Minute.	Prices of Pump.	Water Lift of Pump in Feet. 5 ft.	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	35 ft.
						Revolutions per Minute for above Lifts.						
2	2	5	5	150	$40 00	610	675	735	800	870	930	990
3	3	6	6	300	60 00	520	585	640	700	760	820	950
4	4	8	8	500	80 00	420	465	515	560	610	655	750
5	5	10	8	800	100 00	370	410	450	490	530	570	650
6	6	12	8	1,200	120 00	315	350	385	420	455	490	560
8	8	16	12	2,200	170 00	260	290	320	350	380	410	475
10	10	24	16	4,000	300 00	210	235	260	280	305	325	380
12	12	30	18	6,000	430 00	190	210	230	250	270	295	350
15	15	48	24	10,000	750 00	155	175	195	210	225	245	290
20	20	56	24	15,000	1,400 00	125	140	155	170	180	195	230
24	24	With thrust bearing and coupling.		22,000	.....	110	120	130	140	155	165	185
30	30			30,000	.....	95	105	115	125	135	145	165

The above speeds are based on a direct lift from surface of the water to the point of discharge, and if extra bends or long suction or discharge pipes are to be used, the speeds must be increased proportionately. Speeds to suit all conditions applicable to centrifugal pumps will be submitted if requirements are furnished. Special prices for pumps of bronze or other composition, as also for vertical pumps, on application.

Parties ordering these pumps should specify the position of the pump discharge opening preferred by giving the style and figure; otherwise we will send Fig. 2412, Discharge Up.

DESCRIPTION, FIGS. 2408 AAND 2409

These pumps are designed and constructed expressly for requirements for water and sewerage, mining operations, works of construction, dry docks, wrecking, raising coal from sunken vessels, paper mills and tanneries, for ballast and circulating pumps, syrups, half stuffs, etc., and for raising and passing with water from 20 to 40 per cent. of any kind of foreign substance, such as sand, shells, coal, corn, paper pulp, tan bark, etc. Sizes and capacities from 100 to 60,000 gallons of water per minute

DISCHARGE UNDER



FIG. 2410

DISCHARGE OVER DISCHARGE UP



FIG. 2411 FIG. 2412

DESCRIPTION, FIGS. 2410 TO 2412

The above cuts represent Figs. 2408a and 2409 in every particular, except the position of the discharge opening, and are thus shown for the specific purpose of enabling contemplating purchasers to select such figure as may best suit the location in which the pump is to be placed, so as to save unnecessary bends or angles. The suction opening in each case is in the plane of motion with the driving pulley, as shown, and the arrows shown on the pulleys indicate the direction in which the pulleys must revolve.

IMPROVED ANTI-FRICTION CENTRIFUGAL PUMP

DISCHARGE UP DISCHARGE UNDER DISCHARGE OVER

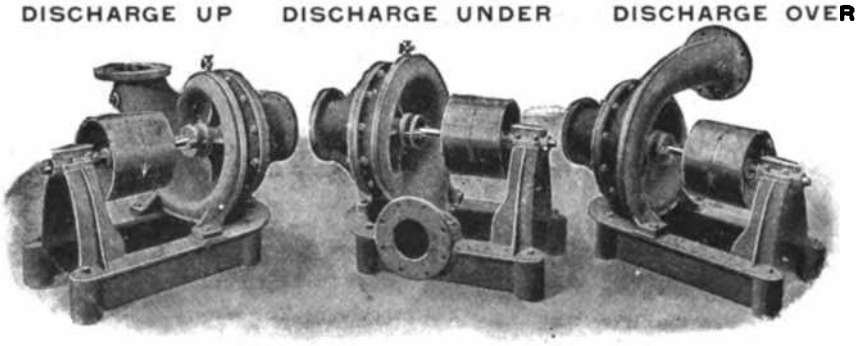


FIG. 2413 FIG. 2414 FIG. 2415

DESCRIPTION, FIGS. 2413 TO 2415

These pumps are especially adapted for water works, drainage, irrigation, circulating and general contracting work. The pressure pumps are specially built for raising water to greater heights than the drainage, and in some instances to a height of 100 feet. They are both similar in construction, except that the pressure has increased suction openings. Each pump can, however, be driven to discharge double the quantity of water, but at a sacrifice of power. The speeds, as given in tables below, are based on a direct lift from surface of the water to the point of discharge, and if extra bends or long suction or discharge pipes are to be used, the speeds must be increased accordingly. Speeds to suit all conditions applicable to centrifugal pumps will be submitted if requirements are furnished.

These pumps will pass with the water a large percentage of foreign material, such as sand, corn, grain, etc.

PRICES, FIGS. 2413 TO 2415

Drainage pumps, for ordinary elevations.

No. of Pumps.	Suction Opening. Inches.	Discharge Opening. Inches.	Dimensions of Pulleys. Diameter. Inches.	Dimensions of Pulleys. Face. Inches.	Economical Working Capacities. Gallons per Minute.	Prices of Pumps.	Water Lift of Pump in Feet. 5 ft.	10 ft.	15 ft.	20 ft.	25 ft.	30 ft.	40 ft.
							Revolutions per Minute for above Lift.						
3	3	3	6	6	250	$60 00	725	920	1,100	1,260	1,420	1,570	1,800
4	4½	4½	8	8	600	75 00	450	590	720	840	950	1 040	1,200
6	6	6	12	8	1,200	130 00	315	420	510	590	660	720	825
9	9	9	20	14	3,500	400 00	190	260	310	350	385	415	475
15	15	15	30	18	12,000	750 00	160	210	255	295	330	360	400

Pressure pumps, for high elevations.

No. of Pumps	Suction Opening, Inches.	Discharge Opening, Inches.	Dimensions of Pulleys. Diameter, Inches.	Dimensions of Pulleys. Face, Inches.	Economical Working Capacities, Gallons per Minute.	Prices of Pumps.	Water Lift of Pump in Feet. 30 ft.	40 ft.	50 ft.	60 ft.	70 ft.	80 ft.
							Revolutions per Minute for above Lift.					
2	3	2	6	6	150	$60 00	1,460	1,720	1,940	2,120	2,260	2,460
3	4½	3	8	8	400	75 00	950	1,110	1,250	1,370	1,470	1,550
4	6	4	12	8	800	130 00	620	770	910	1,050	1,180	1,300
6	9	6	20	14	1,800	400 00	400	510	610	700	780	856
10	15	10	30	18	7,000	750 00	310	400	480	550	610	660

Parties ordering these pumps should specify position of the pump discharge opening preferred, by giving the style and figure; otherwise we will send Fig. 2415, Discharge Over. Special prices for pumps of bronze or other composition, as also for vertical pumps, on application.

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NEW YORK, LIBERTY AND 85, 87, MANNING, MAXWELL & MOORE, 85,

VERTICAL SUBMERGED CENTRIFUGAL PUMP

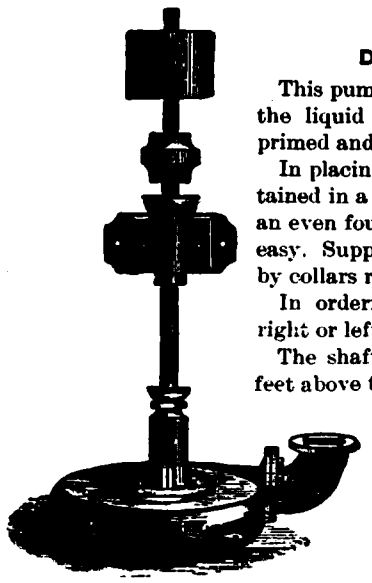


FIG. 2416

DESCRIPTION, FIG. 2416

This pump is intended to be submerged in the liquid to be raised; it is, consequently, primed and ready to start at all times.

In placing pump see that the shaft is maintained in a vertical position, that legs rest on an even foundation, and shaft turns free and easy. Support shafting above pump couplings by collars resting on shaft bearings.

In ordering state whether pump is to be right or left handed.

The shaft we furnish extends about three feet above the pump, and its weight, and that of the disk, is supported by a bronze step below the pump, which may be adjusted, when worn, by means of a screw.

PRICES, FIG. 2416

No.	Capacity Gallons per Minute.	Suction, Inches.	Discharge, Inches.	Pulleys—Diameters, Inches.	Pulleys—Face, Inches.	Iron.	Brass.
2	150	2	1½	6	6	$24 00	$48 00
3	300	2½	2	7	8	55 00	100 00
4	450	3	2½	7	8	65 00	130 00
5	650	4	3	7	8	70 00	160 00
6	1,250	5	4	10	10	105 00	200 00
6½	1,850	6	5	10	10	130 00	305 00
7	2,600	7	6	12	12	150 00	350 00
8	4,750	10	8	18	12	265 00	

VERTICAL PUMPS

DESCRIPTION, FIG. 2417

This pump is intended to be submerged in the liquid to be raised from the vat, junk or pit in which it is placed. It is made of iron, brass or bronze, is simple in construction, and easily placed in position. When made of brass it is used by and is a great favorite with tanners, as it will pass bark, pieces of hide and skin, hair, etc., without clogging.

As the pump is constantly immersed it is primed and ready to start at all times.

In placing pump see that the shaft is maintained in a vertical position, that legs rest on an even foundation, and shaft turns free and easy. Be sure everything is in line and securely fastened. Support shafting above pump coupling by collars resting on boxes or bearings.



FIG. 2417

PRICES, FIG. 2417

Nos. Pumps (Diameters Discharge Opening).	Economical Capacity, in Gallons per Minute.	Horse Power Required for Each Foot Elevation.	Diameter and Face of Pulley in Inches.	Floor Space Required in Inches.	Distance from Bottom of Pump to Center of Coupling. Ft.	In.	Coupling Bored for Connecting Shaft. In.	Prices Extra Bearings, Each.	Prices Extra Coupling, Each.	Shipping Weight, Lbs. Submerged Type.	Prices, Complete, as per Footnote. Submerged Type.
1½	70	.058	5 x 6	17 x 21	2	9	1	$1 00	$1 50	110	$40 00
1¾	90	.075	6 x 6	21 x 29	3	0	1	1 00	1 50	165	50 00
2	120	.10	7 x 8	23 x 30	3	4	1 1/16	1 50	2 00	198	65 00
2½	180	.15	7 x 8	24 x 30	3	4	1 1/16	1 50	2 00	220	80 00
3	260	.22	7 x 8	25 x 32	3	6	1⅛	1 50	2 00	235	95 00
4	470	.30	8 x 10	29 x 39	4	0	1 7/16	2 00	2 50	380	110 00
5	735	.45	10 x 10	34 x 45	4	7	1 11/16	2 50	3 00	605	140 00
6	1,050	.59	12 x 12	37 x 48	4	7	1 13/16	3 00	3 50	740	170 00
8	2,000	1.00	18 x 12	45 x 56	5	5	2	4 00	4 00	1,320	265 00
10	3,000	1.52	20 x 12	51 x 68	5	5	2	4 00	4 00	1,430	330 00
12	4,200	2.00	24 x 14	63 x 72	6	0	2⅜	5 00	5 50	2,640	420 00
15	7,000	3.50	30 x 16	77 x 102	6	6	3¼	8 00	8 00	4,830	600 00
15*	7,000	3.50	30 x 15	60 x 71	6	6	3¼	8 00	8 00	2,400	480 00
18	10,000	4.50	36 x 18	98 x 126	7	0	3¾	10 00	12 00	5,300	950 00
18*	10,000	4.50	30 x 16	66 x 78	6	6	3¼	10 00	12 00	2,600	850 00
20	12,000	5.40	36 x 20	73 x 92	4	6	4	15 00	20 00	4,300	1,255 00

Each pump is furnished complete with discharge elbow, one pair couplings, pulley, and one bearing.

*Refers to low lift pumps.

IMPROVED VERTICAL WRECKING PUMP

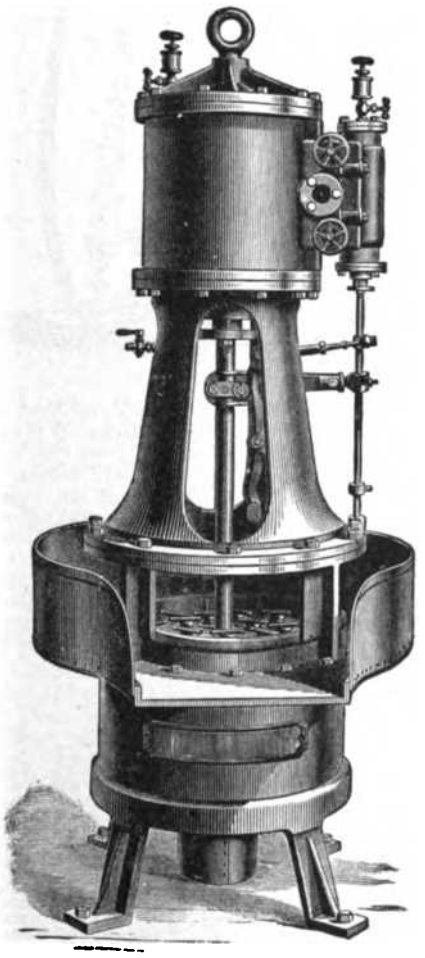


FIG. 2418

Prices on application.

DESCRIPTION, FIG. 2418

This Vertical Pump is a very convenient and inexpensive form of pump for wrecking, drainage or irrigating purposes. They are light, portable, and have great pumping capacity. They are single acting, but the flow of water from the pumps is practically constant, as the peculiar design and operation of pumps give this effect. These pumps will handle large quantities of water. They will not grind out and lose their suction power, causing excessive slippage, but will fully discharge their correct theoretical capacity of water at any speed.

A full and comparatively long stroke, with an even, smooth motion on the up as well as on the down stroke, are special features of this pump. The steam cylinder is positive and does not require any lever or other hand gear to work it "off the center." There are no belts to slip or complicated mechanism to get out of order.

These pumps are simply "lift" pumps and are not designed to elevate water above their discharge nozzles, but they will draw water any distance within the limit of "suction" power.

The water cylinder is lined with brass; the piston rod, valve seats, etc., are also of brass; so that these pumps are adapted for salt as well as for fresh water. Valves of best vulcanized rubber are used with the largest area possible to pass obstructions.

CAPACITIES, FIG. 2418

Steam Cylinder, Inches.	Water Cylinder, Inches.	Stroke, Inches.	Capacity per Minute at Ordinary Speed, Gallons.	Steam Pipe, Inches.	Exhaust Pipe, Inches.	Suction Pipe, Inches.
6	12	10	350 to 400	¾	1	6
10	20	12	1,000 " 1,200	1¼	1½	10
14	25	12	1,400 " 1,600	2	2½	12
16	27	12	1,600 " 1,800	2½	3	12
18	30	10	1,800 " 2,000	2½	3	14
18	30	16	2,000 " 2,300	2½	3	14
18	33	16	3,200 " 3,600	2½	3	16

Also patterns for larger sizes and other combinations of cylinders.

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BRASS DOUBLE CYLINDER FORCE PUMP



FIG. 2419

DESCRIPTION FIG. 2419

This pump is adapted for house or ship use. Brass plugs are provided at all necessary points for entirely emptying the pump of water in cold weather. The discharge tube is brass, screwed for iron pipe or for soldering on brass or copper pipe, and held in place by a union nut coupling. The cylinders, rods, stuffing glands and air chambers are all brass.

No. 2, fitted for pipe 1¼ inches, diameter cylinder 2½ inches, capacity per revolution, 3/10 gallons.

Price, $35 00

HORIZONTAL DOUBLE ACTING SHIP PUMP

This pump is very useful for elevating large quantities of water from wells or reservoirs, and a most convenient pump for use on shipboard as a force pump for washing decks, extinguishing fires, etc. All parts exposed to the action of salt water being made non-corrosive, it is peculiarly adapted for vessels making long voyages.



FIG. 2423

PRICES

No.	Suction, Inches.	Disch'ge, Inches.	Diam. Cylinder, Inches.	Stroke, Inches.	Capacity per Rev. Gals.	Iron, Prices.	Brass Cylinder, Prices.
1	2½	2	5	5	85/100	$45 00	$95 00
2	2½	2½	6	5	1 3/10	55 00	125 00

DOUBLE ACTING THRESHER FORCE PUMP

DESCRIPTION, FIG. 2420

This pump is used for filling thresher wagon tanks for boiler supply, draining cellars, cess pools, and barnyards, irrigation, cleaning out boilers, washing windows and wagons, spraying fruit trees and vegetation, and for fire protection.

One horizontal pumping cylinder taking water at each end of stroke, thus the whole force exerted in working the pump is usefully applied to raising and forcing the water. Has bronze valves and valve seats. Water ways are large enough to reduce friction to the lowest point. The piston is packed with double crimped leather, and the piston rod of rustless steel, works in a bronze stuffing box. A long wood lever, easily detachable, works the pump with the least expenditure of strength. All parts are easy of access for examination or repairs. Made on the interchangeable system, repairs can be furnished at a minimum price. Occupies space 9x20 inches.

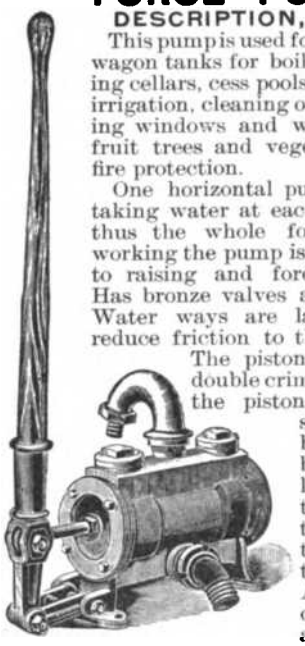


FIG. 2420

No. 1, Suction and discharge hose 2 inches, diameter cylinder 5 inches, stroke 5 inches, capacity per revolution 85/100 gals. Price.....$18 00

HORIZONTAL DOUBLE ACTING EXCELSIOR FORCE PUMP

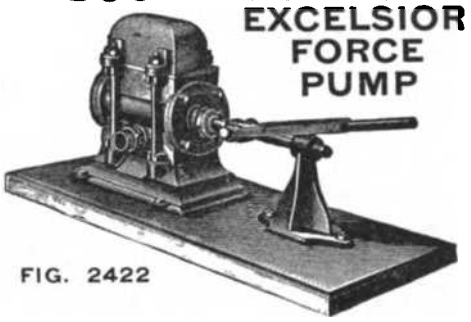


FIG. 2422

The above cut represents the Excelsior Force Pump, fitted with wrought iron pitman and bronze guide and rod, for attaching to power. This is an excellent arrangement for filling tanks or for fire purposes, and is also extensively in use at railway watering stations, for operating by horse power. It can safely be run at 50 revolutions per minute, and in cases of emergency at a much higher rate of speed. Fitted for gas pipe unless otherwise ordered. The iron pumps have copper lined cylinders. An iron wrench, fitting all nuts, stuffing gland, and hose couplings accompanies each pump.

PRICES

No.	Suction, Inches.	Disch'ge, Inches.	Diam. Cylinder, Inches.	Stroke, Inches.	Capacity per Rev. Gals.	Iron, Prices.	Brass Cylinder, Prices.
1	1¼	1¼	3	5	3/10	$30 00	$60 00
2	2	2	4	5	½	32 00	62 00
3	2½	2	5	5	85/100	47 00	91 00
4	2½	2½	6	5	1 3/10	50 00	123 00

HORIZONTAL DOUBLE ACTING EXCELSIOR SUCTION AND FORCE PUMP

DESCRIPTION, FIG. 2425

It is mounted on iron bed plate, with crank and turned tight and loose pulleys. All the valves are easily accessible. The pump is provided with brass plugs for emptying it in cold weather. The counter shaft is made of sufficient length to take a hand crank, and is supported by strong, bearings, lined with anti-friction metal. The piston rod, valves, and valve seats are all of gun metal. If not otherwise ordered, we fit them for wrought iron pipe connections, but when desired we arrange them for either hose or lead pipe without extra charge.

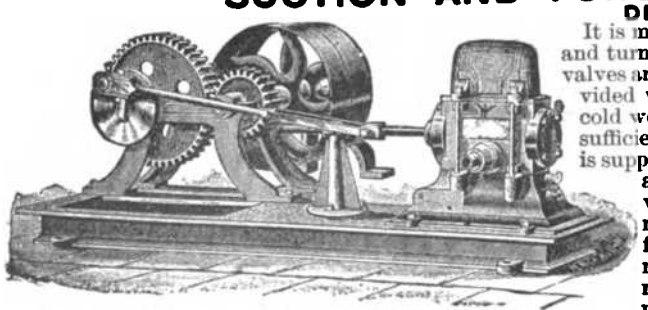


FIG. 2425

HORIZONTAL DOUBLE ACTING FORCE PUMP

DESCRIPTION, FIG. 2421

This horizontal double acting force pump contains all modern improvements, such as vertical suction, double discharges, bronze rod and stuffing gland, lever stop to prevent the straining of the rod, sliding fulcrum, drip dish, let off plugs, etc., etc. The removal of two bolts gives access to the valve system. The removal of the cylinder head gives easy access to the piston and all working parts of the pump. It is made on the interchangeable system so that repairs to supply breakages will replace the broken parts with certainty.

No. 1, suction 1 inch, discharge 1 inch, diameter of cylinder 2½ inches, stroke 5 inches, capacity per revolution ½ gallons.

PRICES

Iron.....$16 00
Brass lined cylinder.. 18 00



FIG. 2421

EXCELSIOR HORIZONTAL DOUBLE ACTING SHIP PUMP

The cylinder is lined with copper; the piston rod, valves, and seats are made of bronze. All parts of this pump exposed to the action of water are non-corrosive. It is especially valuable on board ships for washing decks, wetting sails, or extinguishing fires; and equally invaluable on wharves, or around factories, mills, warehouses, livery stables, lumber yards, etc., for a fire pump and other purposes. The water ways are large and direct, and its general arrangement such that it can be easily overhauled. All water can be drawn out by simply unscrewing the let off plugs, situated at each end of the cylinder for this purpose, thus rendering the pump anti-freezing in the coldest latitudes. All the valves can be examined and removed, if necessary, by taking off the brass nuts of the four bolts holding all the parts together. A priming plug is placed at the upper back end of the cylinder, enabling the cylinder to be lubricated, or the valves primed when required. All appurtenances for fitting, etc., go complete with each pump. Arranged for hose, and lead or iron pipe connections.

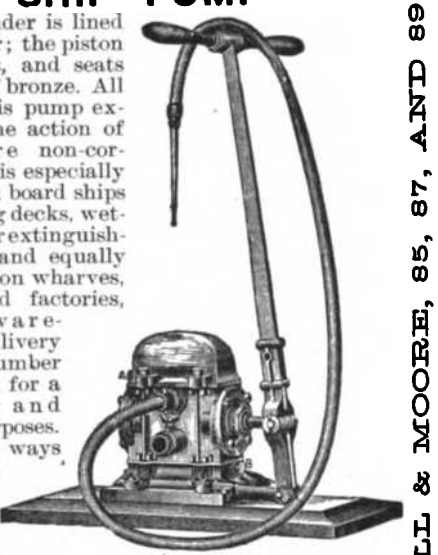


FIG. 2424

Prices quoted below do not include hose.

PRICES, FIG. 2424

No.	Suction, Inches.	Disch'ge, Inches.	Diam. Cylinder, Inches.	Stroke, Inches.	Capacity per Rev. Gals.	Iron, Prices.	Brass Cylinder, Prices.
1	1¼	1¼	3	5	3/10	$28 00	$58 00
2	2	2	4	5	½	32 00	60 00
3	2½	2	5	5	85/100	35 00	90 00
4	2½	2½	6	5	1 3/10	45 00	120 00

PRICES, FIG. 2425

No.	Suction, Inches.	Disch'ge, Inches.	Diam. Cylinder, Inches.	Stroke, Inches.	Capacity per Rev. Gals.	Iron, Prices.	Brass Cylinder, Prices.
1	1¼	1¼	3	5	3/10	$70 00	$100 00
2	2	2	4	5	½	75 00	115 00
3	2½	2	5	5	85/100	100 00	155 00
4	2½	2½	6	5	1 3/10	115 00	189 00

An iron wrench, fitting all nuts, stuffing gland, and hose coupling goes with each pump.

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IMPROVED CLOSE TOP TWO CYLINDER FORCE PUMP

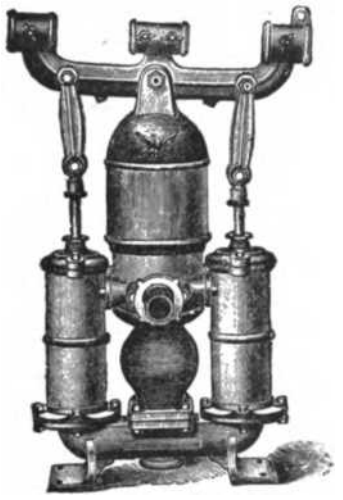


FIG. 2426

DESCRIPTION, FIG. 2426

This pump is adapted for steamboats, factories, railroads, etc.

It is constructed with a vacuum chamber on the suction, which is cast in one piece with the discharge air chamber, and bolted to the bed plate directly under the air chamber, thus combining two highly valuable additions, viz.: A strong support to the air chamber, and a cushion of air to receive the shock of the ascending column of water, which otherwise would expend its force upon the suction valves and soon render them useless. Rubber buffers have also been added to ease the concussion from the beam at the termination of the stroke. It contains brass cased piston rods, with valves and stuffing glands of brass. The water passages are large and direct. With each pump we furnish two wooden levers of ample length and strength to work it to the fullest capacity. We also furnish it with iron folding brakes, the brakes being of ample length for eight or ten men to work.

PRICES, FIG. 2426

Nos.	Suction Pipe, Inches.	Discharge Hose. Inches.	Diameters, Cylinder, Inches.	Strokes, Inches.	Capacity per Rev., Gallons.	Iron, Each.	Brass Cylinders, Each.
1	1½	1¼	3	6	⅛	$40 00	$60 00
2	2	1½	4	6	⅜	55 00	80 00
3	2½	2	5	6	1	70 00	95 00
4	3	2	6	6	1 1/10	100 00	155 00

Iron folding brakes, $20 00 extra, to list.

EAGLE SHIP'S MAIN AND BILGE PUMP

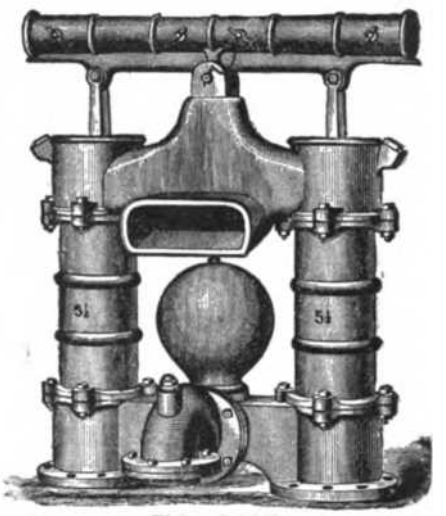


FIG. 2427

DESCRIPTION, FIG. 2427

Wooden levers go with each pump, and are arranged to be worked by 2, 4 or 6 men. The upper and lower boxes are made of brass. The drop bucket or lower box is incased in a brass chamber, or reservoir, thereby preventing rusting, and is always primed. It has reversible top, rubber buffers, and all improvements and appliances for easy and successful operation. Each cylinder will work independently of the other.

PRICES, FIG. 2427

Nos.	Suction Pipes, Inches.	Diameters Cylinder, Inches.	Strokes, Inches.	Capacity per Rev., Gallons.	Iron, Each.	Copper lined Cylinders, Each.
1	3	5	8	1⅛	$55 00	$75 00
2	3	5½	8	1⅜	60 00	80 00
3	3	6	8	1 1/10	70 00	90 00
4	4	8	8	3 1/10	130 00	160 00

GALVANIZED IRON DIAPHRAGM FORCE PUMP



FIG. 2428

DESCRIPTION, FIG. 2428

This pump is made with either bottom inlet for iron pipe or side inlet for suction hose. It is used by sewer departments for emptying catch basins, on board yachts, by electric, telegraph and gas companies for pumping out man holes, in greenhouses, and, in fact, in every place where a large quantity of water containing sand, gravel or sewage matter has to be raised by hand power. Weighs less than 50 pounds complete, and can be easily moved from place to place; can be operated by windmill or other power when desired.

Size of pump, No. 0; capacity per hour, 1,500 gallons; diameter of suction, 2 inches; diameter of discharge, 1½ inches. Bottom inlet for iron pipe, price, each, $15 00. Side inlet for suction hose, price, each, $17 00.

When ordering be particular to state whether bottom or side inlet is wanted.

FRICTIONLESS NON-CHOKABLE PUMPS

BOTTOM SUCTION

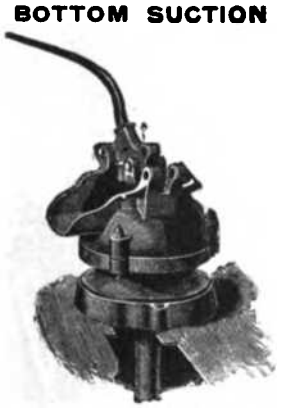


FIG. 2431

These pumps are not affected by grain, sand, coal dust, mud, gravel, sewage, sanitary deposits, or any semi-liquid matter, but will pump water containing such substances without choking or wearing the pump. The diaphragms are carefully made of the best Para rubber. It is adapted for use on board vessels, barges, in factories, on railroads and farms, or wherever it is desired to raise as much water as possible with the least possible labor. These pumps work equally well with flywheel attachment.

PRICES, FIG.. 2431

Nos.	Sizes of Iron Pipes, Inches.	Capacity per Hour, Gallons.	Each.
1	2½	1,500	$18 00
2	3	3,500	24 00

SIDE SUCTION



FIG. 2432

Used by sewer contractors, foundation or bridge builders, or in water works. The pump, being frictionless, and having large open valve ways, is especially adapted for sewer departments, or for pumping drainage or sewage matter, sanitary deposits, mud, gravel, quicksands, etc. As the pump is very compact in construction, it can be moved from one place to another with ease. Power attachment can be very easily applied.

PRICES, FIG. 2432

Nos.	Sizes of Suction Hose, Inches.	Capac. per Hour, Gal.	Each.
1	2½	1,500	$20 00
2	3	3,500	26 00

Prices do not include hose or strainer.

FRICTIONLESS NON-CHOKABLE DIAPHRAGM PUMPS

BOTTOM SUCTION



FIG. 2429

SIDE SUCTION



FIG. 2430

DESCRIPTION, FIGS. 2429-2430

These pumps are especially designed for use in mines, quarries, barges and vessels. They are also used in factories, on railroads and farms, and by builders of sewers and foundations.

PRICES, FIGS. 2429 AND 2430

	Diaphragm, Inches.	For Iron Pipes, Inches.	Capacity per Stroke, Gal.	Each.
Fig. 2429, bottom suction....	12½	3	1½	$40 00
Fig. 2430, side "	12½	3	1½	43 00

Above prices do not include hose or strainer.

FRICTIONLESS NON-CHOKABLE PUMPS

BOTTOM SUCTION



FIG. 2433

DESCRIPTION FIGS. 2433 AND 2434

Will discharge matter containing sand, gravel, coal dust, tar, mud, drainage, grain, and other mixtures. It is frictionless and non-chokable. Has heavy wrought iron handle, only partially shown in cut. Diaphragm of best Para rubber.

SIDE SUCTION



FIG. 2434

PRICES, FIGS. 2433 AND 2434 (Without Hose.)

Fig. 2433, bottom suction, 12½ inches diaphragm, 3 inch iron suction, price, each, $40 00; Fig. 2434, side suction, 12½ inches diaphragm, 3 inch hose suction, price, each, $43 00.

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CATARACT DIAPHRAGM PUMP

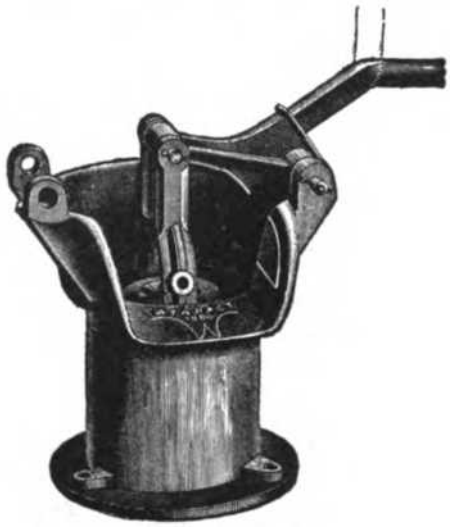


FIG. 2435

This pump is adapted for contractors, mines, quarries, barges, vessels, and all other purposes where large quantities of water have to be raised.

The cylinder is lined with heavy copper.

The valves are faced with pure gum rubber, and are so arranged that they can be readily withdrawn for the purpose of sounding, or for repairs.

The lever is so arranged that it can be used horizontally or vertically.

Nos.	Suction, Inches.	Diameters, Cylinder, Inches.	Stroke, Inches.	Capacity per Revolution, Gallons.	Prices, Each.
1	2½	6	4½	½	$20 00
2	3	8½	6½	1½	25 00

DIAPHRAGM FREE PUMP

BOTTOM INLET PUMP

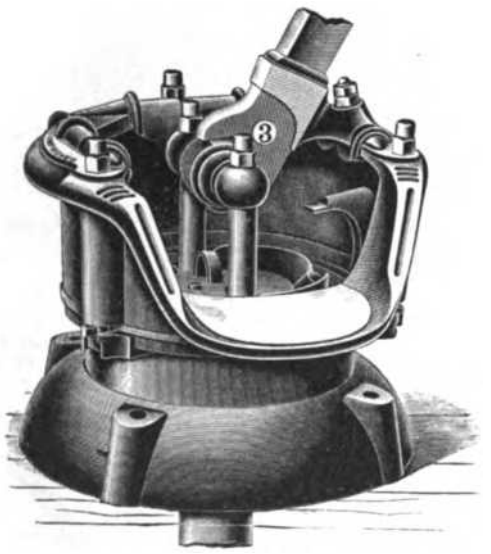


FIG. 2438

DESCRIPTION FIG. 2438

These pumps are made to connect with iron pipe, are not affected by water containing sand or gravel.

The pumps are used by vessels, barges and yachts, also for filling tanks for railroads and street sprinklers, or wherever a stationary pump of large hand power capacity is required.

Sizes Pump, Nos.	Length of Stroke, Inches.	Capacity per Stroke, Gal.	Diameters of Suction, Inches.	Total Weight Complete, Lbs.	Prices, Each.	Catalogue Number, Standard Iron Pipe Thread.	Catalogue Number, Export, Standard Eng. Thread.
2	2¾	½	2½	104	$14 00	200	203
3	3	1	3	160	16 00	201	204
4	4	2	4	280	30 00	202	205

When ordering be particular to state the kind of thread wanted, English or iron pipe.

Nos. 3 and 4 pumps have attachment for working pump with fly wheels by transmission of power from engine. Price of fly wheels, shaft, connecting rods and boxes upon application. Used by vessels and coal barges. Capacity of No. 4 pump with power attachment, 6,000 to 7,000 gallons per hour.

GALVANIZED HAND SUCTION PUMPS

SOLDERED JOINTS



FIG. 2436

SCREW JOINTS

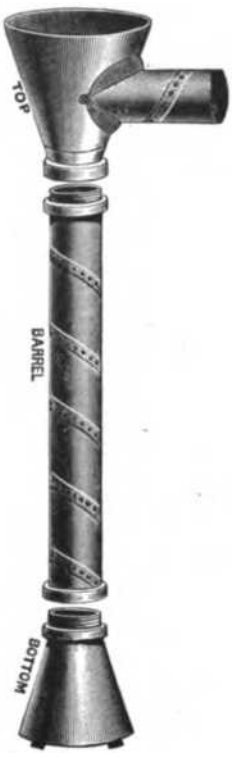


FIG. 2437

PRICES, FIGS. 2436 AND 2437

Inside Diameters, Inches.	Prices per Lineal Foot. Soldered Joint. Fig. 2436.	Prices, Fig. 2437. Add to Prices, Fig. 2436. Prices Are per Pair of Couplings.
1½	$0 55	
2	60	$1 40
2½	65	1 65
3	70	2 25
3½	75	2 50
4	80	3 00
4½	90	3 50
5	1 20	4 00

Pumps shorter than 5 foot long charged as 5 foot long.

DIAPHRAGM FREE PUMP

SIDE INLET PUMP

DESCRIPTION, FIG. 2439

These pumps are made to connect with suction hose. They will pump water containing sand, gravel, sewage matter, etc., without perceptible wear. They are used by city and town sewer departments, water works, foundation and bridge contractors.

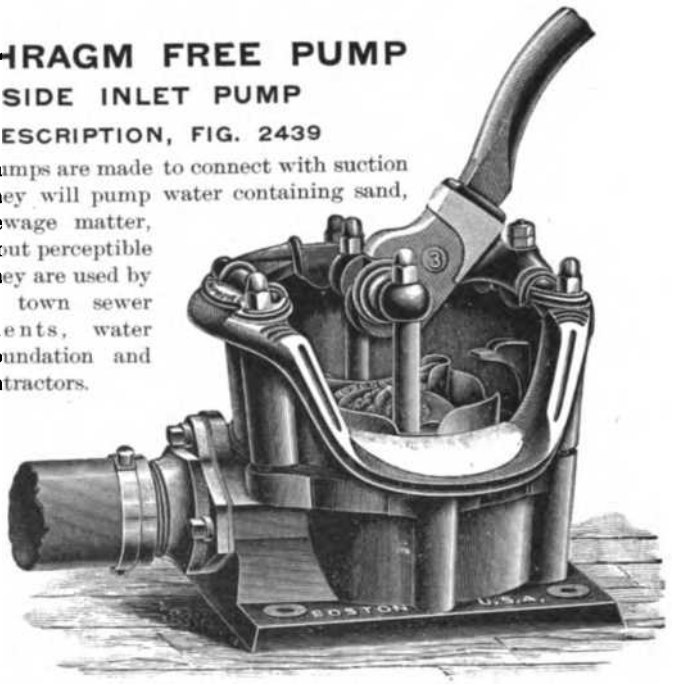


FIG. 2439

Sizes of Pump, Nos.	Length of Stroke, Inches.	Capacity per Stroke, Gal.	Diameters of Suction, Inches.	Total Weight Complete, Lbs.	Prices, Each.	Cat. No. with Boston Hose Thread.	Cat. No. with Stand'd Iron Pipe Thread.	Cat. No. for Export, Standard Eng. Th'd.
2	2¾	½	2½	112	$19 00	206	209	212
3	3	1	3	185	24 00	207	210	213
4	4	2	4	287	35 00	208	211	214

When ordering be particular to state the kind of thread wanted by giving the Catalogue No. as per above list. Furnished complete with hose coupling and galvanized strainer.

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AQUAJECT OR FIRE ANNIHILATOR



FIG. 2440

The cut shows the practical operation of the Portable Aquaject, for throwing water. All working parts liable to rust or corrosion are made of brass. It is adapted for throwing liquid solutions of all kinds and should be kept in every house, store, and factory in the country for fire protection. In fact, in a diminished degree, it is capable of every use of an ordinary force pump, and far more convenient. It is always ready for use, and not liable to get out of order. Will throw water at the rate of 8 to 10 gallons per minute to a height of 50 feet or more.

With each pump is sent suction and discharge hose connected, so that it requires no labor to put in immediate operation. Longer lengths of hose can be furnished if desired.

PRICE

Complete with 3 feet suction and 3 feet discharge hose, brass discharge pipe, and rose sprinkler..... $9 00

DOUBLE CYLINDER SPRAY PUMP

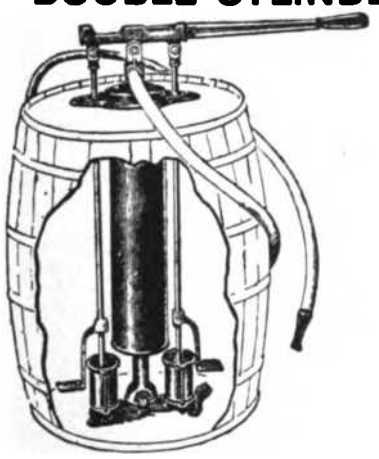


FIG. 2441

All the working parts are of brass, the valves are metal and can not get out of order or be injured in any way by the liquid used. The air chamber is made of galvanized iron; it will hold sufficient compressed air to keep the spray going from six to ten minutes after the pump is stopped. The agitators are placed so that they keep the liquid thoroughly stirred, and without requiring any extra work to do it. Plungers can be easily removed and packed without the necessity of employing a skilled mechanic.

PRICE

With 3 feet hose and spraying nozzle, ... $15 00

HYDROPULT

DESCRIPTION AND PRICE, FIG. 2442

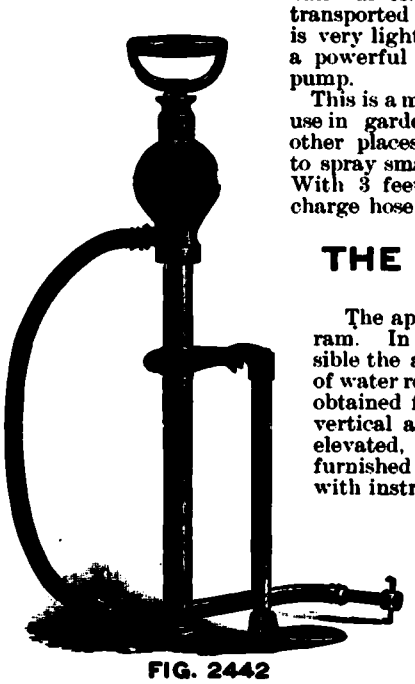


FIG. 2442

Made entirely of brass, with brass ball valves. Can be conveniently transported from place to place, as it is very light, but at the same time a powerful and most effective force pump.

This is a most convenient pump for use in gardens, conservatories, and other places where it is necessary to spray small shrubs, vines, etc.

With 3 feet of ½ inch discharge hose and nozzle..... $9 00

PLANET WHITEWASHING MACHINE

WITH PUMP, TRUCK, BARREL, ETC.

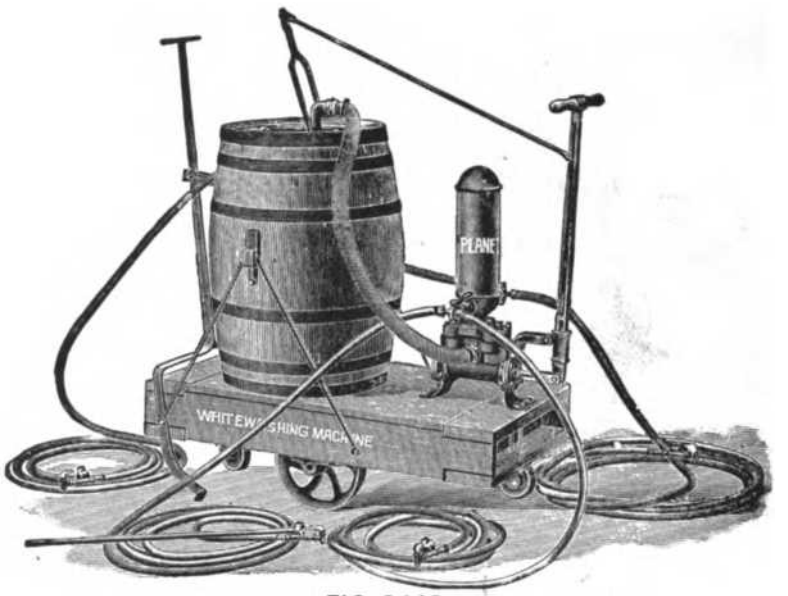


FIG. 2443

This machine is constructed for applying whitewash and cold water paint in large factories, warehouses, etc. The cut shows the Planet Double Acting Sprayer, with four 25 foot sections of hose and pole connections, each with a Bordeaux nozzle.

The barrel and pump are securely fastened to the truck, which is made with two center wheels and a swivel wheel at each end. When the truck is to be located for a time at one place, the handle or tongue is raised up and fastened, thus locking or anchoring the the truck to the floor. The whole outfit is complete. The agitator keeps the liquid mixed. The suction hose is connected at top of barrel, and can be detached and connected to a hydrant or thrown into a cistern, so that clear water may flow or be pumped through the working parts, thus cleansing the pump.

PRICES

With two 25-foot sections of hose, one 3-way stop cock, pole connections and nozzles.$60 00
Complete, as per cut, with four sections of hose, each with nozzle and pole connection. 75 00
25 foot section of ½ inch hose, couplings and pole connection with Bordeaux nozzle for whitewashing, complete each 8 00

IMPROVED HYDRAULIC RAM

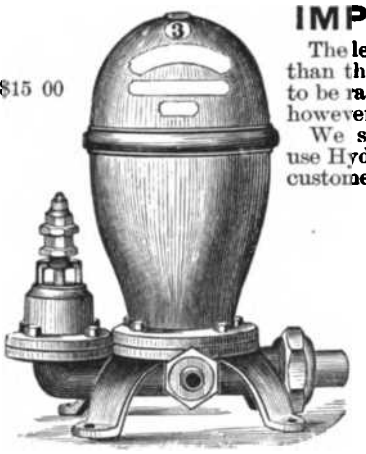


FIG. 2444

The length of the drive or supply pipe should not be less than three-quarters of the height to which the water is to be raised, or five times the height of supply; it may, however, be longer.

We solicit correspondence with parties desiring to use Hydraulic Rams. We are always ready to advise customers as to the best sizes for their own cases.

PRICES

No.	Minimum Quantity of Water required to Operate Ram. Gallons per Minute.	Length of Drive Pipe, Feet.	Calibre of Pipes. Drive, Inches.	Discharge, Inches.	Each.
2	2	Five	¾	⅝	$9 00
3	4	to six	1	⅞	11 00
4	8	times	1½	½	14 00
5	14	the	2	1	22 00
6	25	height	2½	1¼	40 00
7	60	of the	4	2	75 00
8	120	supply.	6	2½	125 00

THE HYDRAERAM, OR MODERN HYDRAULIC RAM

The apparatus represented is a new automatic hydraulic pumping engine, or hydraulic ram. In ordering a Hydraeram, care should be exercised in giving us as near as possible the amount of water per minute that can be supplied to the machine; the amount of water required every twenty-four hours; the number of feet fall, vertically, that can be obtained from the reservoir to the Hydraeram, and the length of drive pipe, also the vertical and horizontal distance the water must be discharged, the height water is elevated, and length of discharge pipe. Directions for setting and starting furnished with each machine. Specification sheets for giving exact data, with instructions, will be furnished on application.



FIG. 2445

PRICES, FIG. 2445

Nos.	Quantity of water supplied per minute to which Hydraeram is adapted. Gallons.	Approximate length of Drive Pipe, Feet.	Sizes of Pipe. Drive, Ins.	Discharge, Ins.	Extreme Height, Ins.	Diameter of Base, Ins.	Each.
11	2 to 5	10 to 50	1	½	17	8	$15 00
12	3 " 10	15 " 50	1½	¾	23	10	25 00
13	6 " 15	25 " 75	2	1	29	12	40 00
14	10 " 25	25 " 100	2½	1¼	35	16	65 00
15	20 " 60	40 " 125	4	2	46	19	110 00
16	30 " 100	40 " 150	6	3	60	24	175 00

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PULSOMETER STEAM PUMP

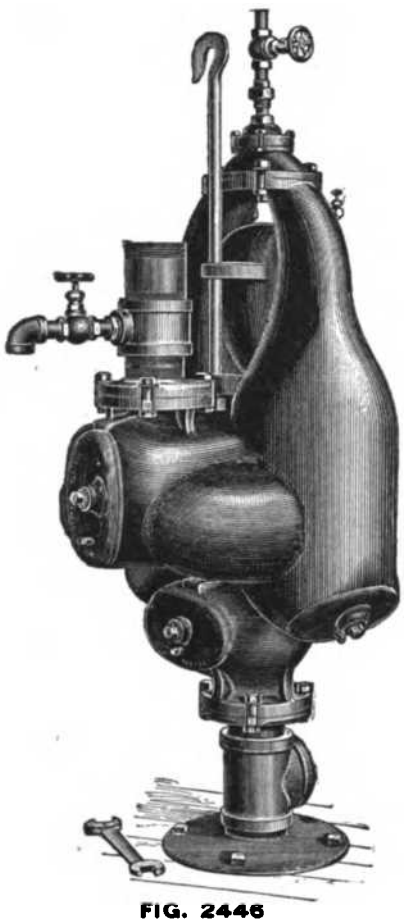


FIG. 2446

The main body of the pulsometer, as shown in the cut, is a casting made in one piece and consisting of two bottle-shaped chambers placed side by side. These are called working chambers. They taper toward each other at their upper halves and meet at their upper ends at a point at which is situated a steam valve-ball. This oscillates with a slight rolling motion between seats (with which it makes a steam tight joint) formed at the upper entrance to each of the already mentioned working chambers.

The pulsometer requires no special foundation, and if it be desired to place it in a stationary position, a stand can be supplied.

In a suspended position (a suitable hook for the purpose being supplied with each pump) it is used for sinking wells and shafts, and in connection with sewers, coffer-dams, excavating operations and the like. In positions where it is impracticable to provide a foundation for a pump, the pulsometer may be hung from a projecting beam, pole or tripod, and arranged with suitable tackle to be lowered or raised at will. Proper flexible steam and water connections should, in such cases, be provided.

In quarrying and rock excavating where blasting is necessary and frequent, the pulsometer may, by means of the derrick, be quickly lifted out of danger, and immediately placed in position again when blasting operations are over. It has no projecting or breakable parts to be injured by rough usage.

In its capability of operation while in suspension, and of being lowered or raised and swung about without at all interrupting its work.

Further information cheerfully furnished on application.

Full and explicit instructions for the use of the engineer in the installation and subsequent management of the pulsometer in all its various applications and under all conditions, is furnished with each pump.

PRICES

Number.	Sizes of Pipes. Inches. Steam.	Suction.	Discharge.	Capacity in gallons per minute at different elevations with boiler power and steam pressure usually provided. (Approximate). 25 Feet.	50 Feet.	75 Feet.	Horse Power Required.	Flat Valve.	Ball Valve.	Composition Metal. On Application.	Dimensions and Weights. Number.	Height, Inches.	Floor Space, Inches.	Weight, Pounds.
2	¼	1½	1½	20	17	13	4	$75	$79		2	22	14 x 13	95
3	⅜	2	2	60	50	38	5	100	106		3	27	17 x 14	140
4	½	2½	2½	100	80	65	6	150	158		4	33	19 x 19	295
5	½	3	3	180	160	115	9	175	187		5	36	21 x 22	430
6	¾	3½	3½	300	265	200	12	225	241		6	43	23 x 24	570
7	¾	4	4	425	375	275	15	275	300		7	49	25 x 26	745
8	1	5	5	700	625	450	25	400	440		8	61	32 x 33	1,375
9	1½	7	6	1,000	900	650	35	500	550		9	72	38 x 36	2,100
10	2	8	8	2,000	1,800	1,400	70	1,000	...		10	88	52 x 45	3,800

The price includes suitable strainer, either basket or mushroom, steam controlling globe valve with nipple and union, and relief valve. The capacities given are estimated from results obtained in actual practice and are rather underrated, better results being obtained in most cases, especially so where conditions are favorable as to short suction, high steam pressure, etc. Flat valve pumps are used for all general purposes. Ball valve pumps are used only for pumping liquids containing foreign matter, as waste of breweries, slaughter houses, pulp in paper mills, tan liquors, etc. Gun metal pumps are used only for handling chemicals, liquids liable to crystallize, acids, etc., that are destructive to cast iron.

LANSDELL'S STEAM SIPHON PUMP

This siphon pump is made for raising fluids by steam. It has no piston, no valves, no moving parts whatever. It is operated entirely by the direct action of steam; to set it, it is only necessary to attach the steam, suction and discharge pipes; to start it, means only the opening of the steam valve.

The siphon offers an unobstructed passage to the liquid pumped, and will pump anything smaller than the pipes; ashes, chips, rags, or other refuse do not choke it, but are pumped through with the water.

These siphon pumps can be constructed entirely of brass or lead for handling acid or other liquors destructive to iron.

Sizes from ¾ to 2 inches have suctions finished with screw ends as in Fig. 2447. Larger sizes have flanged suctions as in Fig. 2448.

PRICES, FIGS. 2447 AND 2448

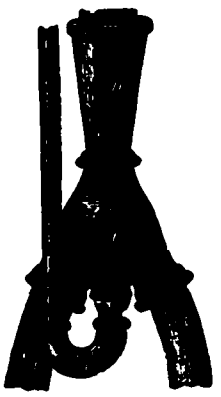


FIG. 2447

Prices are for siphon only and do not include any pipe connections.

Size No.	Capacity in gallons per Minute.	Horse Power required.	Diameter of Discharge.	Diameter of Steam.	Iron Body. High Pressure.	Iron Body. Low Pressure.
			Double Suction.			
3	30	1	¾	½	$8 00	$10 00
4	50	1½	1	¾	10 00	12 50
5	120	4	1½	1	17 50	20 00
6	200	6	2	1¼	22 50	25 00
7	320	8	2½	1½	35 00	40 00
8	450	12	3	1½	45 00	50 00
9	800	25	4	2	65 00	75 00
10	1,800	50	6	2½	150 00	175 00
			Single Suction.			
11	60	3	1¼	1	12 50	15 00

High pressure pumps are constructed to work with 30 lbs. and upward of steam pressure. Low pressure from 30 to 15 lbs. Pumps to work below 15 lbs., single suctions larger than 1¼, and pumps in lead or brass, are made to order.



FIG. 2448

LANSDELL'S PORTABLE RAILWAY SIPHON

For supplying locomotive tenders from any body of water within reach, near the side of the road. B is the steam hose attached to the locomotive boiler by a steam cock; A, the steam siphon; C, the steam cock, to be tapped into the boiler; D, D, the suction orifices; E, the discharge hose.

Steam is let on through the hose B, and water is forced through the discharge hose E into the tender. No. 1 will supply the ordinary quantity of water required by a tender in 10 to 12 minutes; No. 2, in 6 to 8 minutes.

Every locomotive provided with this appliance can be used as a fire engine, throwing water from the tender or any adjacent water. At all times and in all weathers.

PRICES, FIG. 2449

No. 1,	25	feet	each of	steam and discharge hose and fittings	$110 00
	30	"	"	" "	125 00
	35	"	"	" "	135 00
	40	"	"	" "	145 00
	45	"	"	" "	155 00
	50	"	"	" "	165 00
No. 2,	25	"	"	" "	145 00
	30	"	"	" "	155 00
	40	"	"	" "	180 00
	50	"	"	" "	200 00

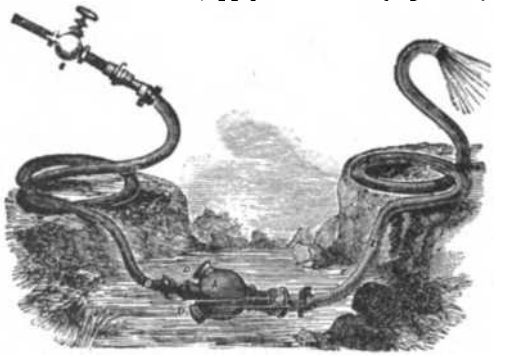


FIG. 2449

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SIPHON OR WATER LIFTER

PRICES, FIG. 2450

No.	Diameter of Pipes in inches. Suction.	Discharge.	Steam.	Capacities per hour. Gallons.	Cubic feet.	Steam at 50 lbs. Siphon near water level. Size.	Each.
0	¾	¾	⅜	400	52	¾	$5 00
1	1	1	½	700	90	1	6 00
2	1¼	1¼	¾	1,100	140	1¼	8 00
3	1½	1½	¾	1,600	210	1½	10 00
4	2	2	1	3,000	400	2	12 00
5	2½	2½	1¼	5,000	660	2½	20 00
6	3	3	1½	7,000	930	3	25 00

A. Suction Pipe.
B. Steam Connection.
C. End of Cone, or Steam Delivery.
D. Jam Nut.
E. Discharge.

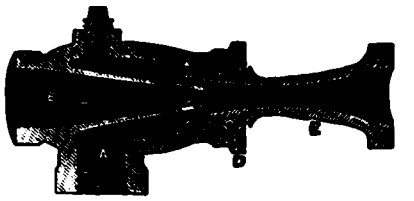


FIG. 2450

DESCRIPTION, FIG. 2450

This siphon will lift water fifteen feet with 60 lbs. steam pressure.

It is economical in the use of steam, and discharges a full pipe of water when in operation—when it is once set according to the directions—and requires no attention whatever.

Should be used on all steamships and places where tanks, vats or pits are to be pumped out or filled.

PATENT SUCTION TEE

This Tee stops one steam connection from backing up on another, and prevents all noise.

It can be used to advantage in making all connections on heating jobs. Where condensation returns to the boilers, put it on wherever two returns come together.

PRICES

Regular Tees, 100 Lbs.

Sizes, inches	¾	1	1¼	1½	2	2½	3
Prices	$0 80	$1 00	$1 25	$1 50	$2 00	$2 50	$3 00

Extra Heavy Tees, 250 Lbs.

Sizes, inches	1	1¼	1½	2	2½	3	3½	4	5	6
Prices	$2 00	$2 50	$3 00	$4 00	$6 00	$9 00	$12 00	$15 00	$24 00	$34 00

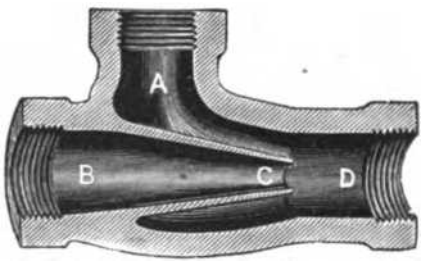


FIG. 2451

ARTESIAN WELL SIPHON

DESCRIPTION, FIG. 2452

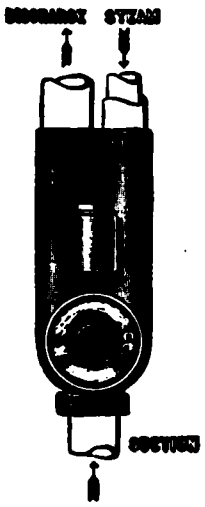


FIG. 2452

For artesian wells, the form is changed so as to bring the largest instrument into a pipe of specified diameter, and provision is made for a covering pipe to surround the steam pipe as far as it enters through the water.

The forcing capacity is even pressure; with steam 100 lbs. at siphon, will force 200 ft. Allowing a reduction of 25% of boiler pressure for pressure at siphon, would make the admissible total elevation in feet from siphon to top of tank, 1½ times the boiler pressure in lbs. per example; with boiler pressure of 100 lbs., total elevation can be 150 feet.

PRICES

Size	1	1¼	1½	2	2½	3	4
Diameter of Pipes:							
Suction	1	1¼	1½	2	2½	3	4
Discharge	1	1¼	1½	2	2½	2½	3
Steam in covering	½	¾	1	1¼	1½	2	2½
Steam above covering	¾	1	1¼	1½	2	2½	3
Covering	1	1¼	1½	2	2½	2½	3½
Min. Diam. of Well	3½	4½	5	5½	6½	7½	10
Capacity							
Gallons	700	1,100	1,600	3,000	5,000	7,000	14,000
Cubic feet	90	140	210	400	660	930	1,860
Price, includ'g Strainer	$25	$35	$50	$70	$95	$125	$160

ACID SIPHON PUMPS

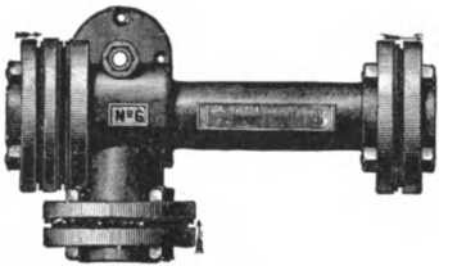


FIG. 2453

Made of Lead, in Iron Shell, and Platinum Steam Nozzle.

As the name indicates, these pumps are principally intended to handle sulphuric acid, or such liquids as attack iron and brass, and for that purpose are made of lead and platinum.

PRICES

Size. No.	Price of Siphon.	Price of Strainer.	Size of Pipe. Steam. Inches.	Liquid. Inches.	Capacity per hour. Cubic ft.	Gal.
0	$22 00	$2 50	½	¾	25	187
1	28 00	3 00	¾	1	50	375
2	35 00	3 50	¾	1¼	100	750
3	46 00	4 00	1	1½	150	1,125
4	58 00	5 00	1¼	2	250	1,870
5	74 00	6 00	1¼	2	350	2,625
6	90 00	8 00	1½	2½	500	3,750
7	120 00	12 00	2	3	750	5,625

The above capacities are with steam of 60 lbs. and specific gravity of water; with acid of higher specific gravity, capacity reduces. The proportionate height of elevation to steam pressure is as follows:

	Strength of Acid in Degrees Baume. 10	20	30	40	50	60
Steam Pressure, Lbs.	Height in feet to be forced.					
15	18	16	15	13	12	10
30	36	33	30	27	24	21
45	54	50	46	41	36	31
60	72	66	60	54	48	42
75	90	82	75	68	60	52
100	120	110	100	90	80	70

BRASS UNIVERSAL SIPHON

Ejector or Jet Pump.

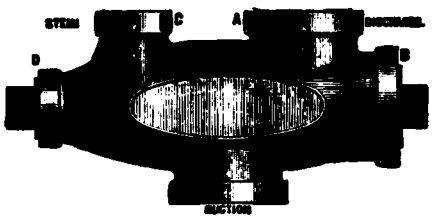


FIG. 2454

This Siphon is made entirely of brass.

It is used for lifting and conveying water and other liquids wherever desired, according to steam pressure obtainable.

It is used for Tanks, Cisterns, Wells, Rivers, Quarries, Mines, and Locomotives; also in Factories, Breweries, Distilleries, Sugar Refineries, and Tanneries, Steamships, Steamboats, and Steam Tugs.

Are constructed with the view of greatest convenience for attachment; they have two steam inlets and two discharge outlets, either of which may be used for the purpose. Steam may be attached at C, while D is closed by a plug, or vice versa; and the discharge may be connected at A, while B is closed by a plug, or vice versa.

PRICES

Sizes, Inches.	Capacity per hour in Gallons.	Suction and Discharge Pipe. In.	Steam Pipe. In.	Prices.	Prices of Strainer.
½	300	½	¼	$6 00	$0 50
¾	500	¾	⅜	8 00	60
1	960	1	½	10 00	75
1¼	1,300	1¼	¾	15 00	1 00
1½	2,000	1½	¾	20 00	1 20
2	3,500	2	1	30 00	1 50
2½	5,000	2½	1¼	40 00	2 40
3	8,000	3	1½	50 00	3 00
4	15,000	4	1½	90 00	4 00

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STEAM JET PUMP

VANDUZEN'S PATENTED LIFT AND FORCE PUMP

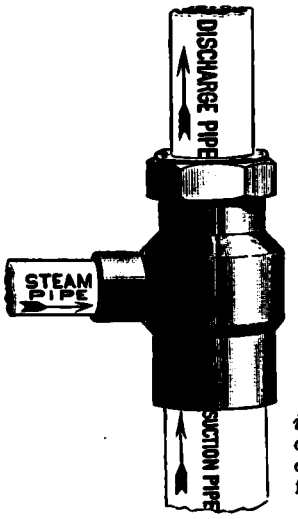


FIG. 2455

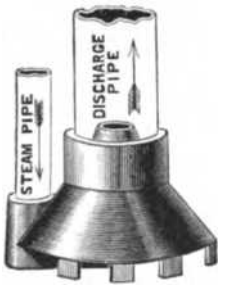


FIG. 2456

FOOT STRAINER FOR USE WITH FIG. 2455

The pump is made entirely of gun-metal; *i.e.*, the best quality of brass. For special duties, we furnish them of special metal, iron, copper, tin, etc., or composition, to order. The foot strainer is of cast iron, with brass strainer.

DESCRIPTION, FIG. 2455

This pump is used for elevating and conveying, from one place to another, any kind of water or liquid. It is not an injector or boiler-feeder. It is not recommended where the vertical height to which the water or liquid is to be elevated exceeds fifty-five feet. For greater elevations—*i.e.*, over fifty-five feet, but not over 100 feet—use two pumps, one above the other, at such a distance apart as will best equalize the work required between the two pumps. In such cases, if we are duly informed, we will give special directions for putting pumps into proper position and their operation. Horizontal distance is not so very important except as to friction involved by the flow of water or the liquid through the pipes. By elevation, we mean vertical elevation.

For hot liquids, for some liquids other than water, and for some especially severe or intricate duties, we can furnish pumps of special modifications or material to suit that case. These pumps will not elevate oils nor grease.

Sizes of pipes given in table below are those fitting the pump. Threads are cut to standard gas pipe sizes. Do not use smaller pipes than those fitting the pump; larger pipes may be used to advantage. Ordinary gas pipe and fittings are generally used, although hose and hose connections may be used at some places.

PRICES, FIGS. 2455 AND 2456

Sizes of Pump.	Prices of Pump.	Prices of Foot Strainer.	Discharge Pipes.	Suction Pipes.	Steam Pipes.	Steam Jet Diameters.	Capacity per Hour in Gallons.
No. 1 "L"	$7 00	$0 75	½ inches	¾ inches	⅜ inches	11/100 inches	200
" 2 "L"	8 50	1 00	¾ "	1 "	½ "	20/100 "	350
" 3 "L"	10 50	1 25	1 "	1¼ "	½ "	20/100 "	600
" 4 "L"	13 00	1 50	1¼ "	1½ "	¾ "	30/100 "	1,000
" 5 "L"	16 00	2 00	1½ "	2 "	¾ "	30/100 "	1,400
" 6 "L"	20 00	2 50	2 "	2½ "	1 "	50/100 "	2,500
" 7 "L"	26 00	3 00	2½ "	3 "	1 "	50/100 "	4,500
" 8 "L"	36 00	4 00	3 "	4 "	1¼ "	80/100 "	7,000
" 9 "L"	50 00	5 00	4 "	5 "	1¼ "	80/100 "	9,000
" 10 "L"	75 00	6 00	5 "	6 "	1½ "	1 "	12,000

If strainer is wanted be particular to so state in the order.

LOCOMOTIVE AND RAILROAD FIRE PUMP

DESCRIPTION, FIG. 2457

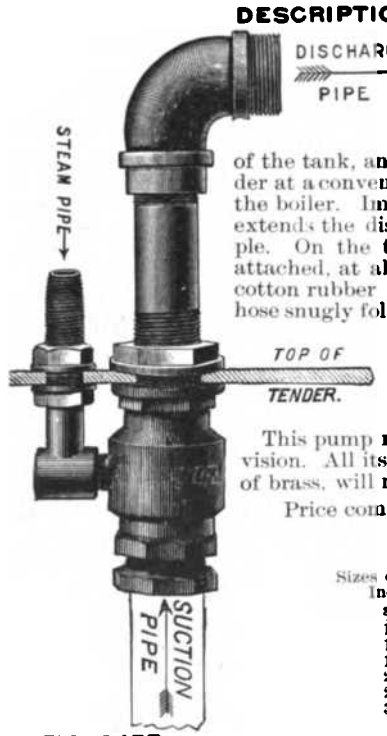


FIG. 2457

This is a steam jet pump, of special construction, placed in the rear part of the locomotive tender, just under the top. Attached to it is a brass suction pipe extending to the bottom of the tank, and a steam pipe leading out of the tender at a convenient place for a steam connection with the boiler. Immediately from the top of the pump extends the discharge pipe, a two inch gas pipe nipple. On the top of this is an elbow, to which is attached, at all times, a proper length of hose, flat cotton rubber lined preferred, and a hose nozzle, the hose snugly folded in a small box close to the pump.

The main feature is, that every locomotive is a steam fire engine, and every one with steam up means a fire engine on its way to the fire.

This pump requires no mechanical skill or supervision. All its parts are immovable, and being made of brass, will not corrode nor rust.

Price complete as shown in cut.....$40.00

BLAKESLEE JET PUMP

DESCRIPTION, FIG. 2458

This pump being operated by steam direct from the boiler can be placed in a cistern, well, near a river, or other water supply, a long distance from the boiler. The standard size will make fourteen feet suction, and raise water from 15 to 60 feet in height. The pressure of steam required is about one pound per square inch for each foot the water is to be raised.

Size of pump is determined by the internal diameter of suction pipe. In no case should a smaller pipe be used than indicated in the table below; and where the pump is placed a long distance from the boiler, the steam pipe should be one or two sizes larger, and protected by felting or similar covering. This is also advisable where pumps are placed far under water, in wells, or are liable to be submerged by high water in rivers.

In ordering pumps, give distance of water from tank, from the boiler to where the pump is desired to be placed; height to which the water is to be raised, and pressure of steam used.



FIG. 2458

PRICES, FIG. 2458, WITH BRASS FITTINGS

Sizes of Pump, Inches.	Suction Pipe, Inches.	Discharge Pipe, Inches.	Steam Pipe, Inches.	Steam Opening, Inches.	Capacity per minute, Gallons.	Each.
¾	¾	½	⅜	3/16	8	$8 00
1	1	¾	½	4/16	15	10 00
1¼	1¼	1	½	5/16	20	12 00
1½	1½	1¼	¾	6/16	30	14 00
2	2	1½	¾	7/16	40	16 00
2½	2½	2	1	8/16	50	20 00
3	3	2½	1	9/16	60	24 00

FLANGED

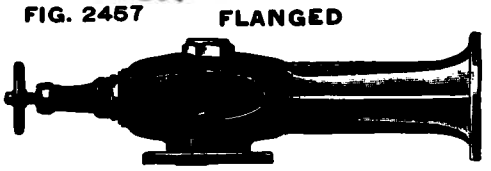


FIG. 2459

Sizes, Inches.	Prices, Each.	Capacity of Air per Hr, in Cu. Feet.	Dia. of pipes in Inches. Air.	Steam.
4	$90 00	18.000	4	1½
5	125 00	27.000	5	2
6	160 00	35.000	6	2
7	200 00	48.000	7	2½
8	250 00	60.000	8	3

The quantities given in above tables are the maximum with steam pressure of 60 lbs.

EXHAUSTERS AND COMPRESSORS

DESCRIPTION, FIGS. 2459 AND 2460

These exhausters and compressors are made of iron, with brass nozzles. Some of the uses for which they are successfully applied are:

Agitators for liquids while mixing or treating the liquids chemically. Exhausters under filters. To force gas through liquids. To lift by suction thick liquids into closed tanks. For the bleaching of glue, etc., by forcing sulphuric acid gas through. For washing and deodorizing oil. For priming of large suction pumps. As carbonic acid gas injectors. For exhaust steam heating to prevent back pressure on engine. For suction box of paper machines, etc.

SCREWED



FIG. 2460

Sizes, Inches.	Prices, Each.	Capacity of Air per Hr. in Cu. Feet.	Dia. of Pipes in Inches. Air.	Steam.
¼	$10 00	100	¼	⅛
½	15 00	300	½	¼
¾	20 00	600	¾	⅜
1	25 00	1.000	1	⅜
1½	30 00	2.000	1½	½
2	40 00	4.000	2	¾
2½	50 00	6.000	2½	1
3	70 00	12.000	3	1¼

The smaller sizes are for laboratory purposes.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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THE HANCOCK INSPIRATORS

FOR STATIONARY, MARINE AND PORTABLE BOILERS

DESCRIPTION, FIG. 2461

Adapted for a wider range of service than any other known device. Operated by three handles, but simpler in construction, more efficient, durable and economical than any other injector. Will lift water 25 feet or take it under a head. No adjustment of either steam or water supply for varying steam pressures. Will deliver the water at either high or low temperature, as desired. Guaranteed to be the most efficient apparatus for universal service now in use. Over 250,000 in daily use.

Owing to the peculiar construction of this form of the Hancock inspirator, it can be used for other purposes when not feeding the boiler. When desired, the lift side or lifting apparatus can be used as an ejector for delivering water to a tank, or for other purposes. To operate as a lifter only, open valve in steam pipe: also, valve No. 1 and valve No. 3; have valve No. 2 closed. Throttle the valve in the steam pipe until the best results are obtained. With a steam pressure of 30 pounds the temperature of the water delivered will be increased about 30 degrees Fahr.

PRICES, FIG. 2461

Sizes.	Prices, Stationary Type.	Pipe Connections. Steam.	Suction and Delivery.	Overflow.	Capacity per Hour with 60 pounds Steam Pressure, Gallons.	Horse Power. For the Ordinary Type of Boiler and Engine.	On a basis of 30 pounds Evaporation per H. P. per Hour.
7½	$16 00	⅜	⅜	¼	60	4 to 6	5 to 8
8¾	18 00	⅜	½	⅜	90	6 " 8	8 " 15
10	20 00	⅜	½	⅜	120	8 " 15	15 " 25
12½	25 00	½	¾	½	220	15 " 30	25 " 35
15	30 00	½	¾	½	300	30 " 40	35 " 60
17½	40 00	¾	1	¾	420	40 " 60	60 " 75
20	45 00	¾	1	¾	540	60 " 75	75 " 100
22½	55 00	1	1¼	1	720	75 " 90	100 " 130
25	60 00	1	1¼	1	900	90 " 120	130 " 175
30	75 00	1¼	1½	1¼	1,260	120 " 165	175 " 235
35	90 00	1¼	1½	1¼	1,740	165 " 230	235 " 300
40	110 00	1½	2	1½	2,230	230 " 300	300 " 400
45	125 00	1½	2	1½	2,820	300 " 375	400 " 500
50	150 00	2	2½	2	3,480	375 " 500	500 " 650
55	175 00	2	2½	2	3,650	500 " 600	650 " 700

STATIONARY TYPE



FIG. 2461

TYPE A

FOR STATIONARY AND MARINE BOILERS

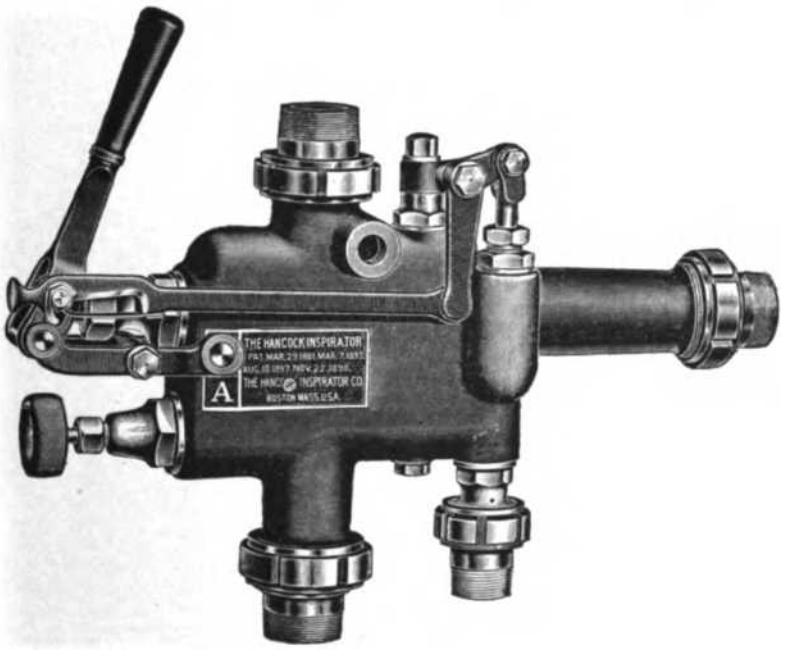


FIG. 2462

DESCRIPTION, FIGS. 2462 AND 2463

Types A and C of the Hancock inspirator have been introduced to meet the demand for an instrument of the class which is operated by one lever or handle. Type C is the upright pattern which is made in sizes from No. 10 to No. 20, inclusive. Type A is the horizontal pattern and is made in sizes from No. 25 to No. 55, inclusive. Each type is operated and connected the same.

TYPES A AND C



FIG. 2463

PRICES, FIGS. 2462 AND 2463

Sizes.	Type.	Prices Types, A and C.	Pipe Connections. Steam.	Suction.	Delivery.	Overflow.	Capacities per Hour. With 60 lbs. Steam Pressure, Gallons.	With 100 lbs. Steam Pressure, Gallons.	Horse Power. For the Ordinary Type of Boiler and Engine.	On a Basis of 30 pounds Evaporation per H. P. per Hour.
10	C	$20 00	¾	¾	¾	¾	120	135	8 to 15	12 to 20
12½	C	25 00	¾	¾	¾	¾	220	245	15 " 30	20 " 40
15	C	30 00	¾	¾	¾	¾	300	340	30 " 45	40 " 55
17½	C	40 00	¾	1	1	1	420	475	45 " 65	55 " 80
20	C	45 00	¾	1	1	1	540	610	65 " 80	80 " 110
25	A	60 00	1¼	1¼	1¼	1¼	900	1,020	80 " 130	110 " 180
30	A	75 00	1½	1½	1½	1½	1,260	1,430	130 " 170	180 " 235
35	A	90 00	1½	1½	1½	1½	1,740	1,975	170 " 230	235 " 300
40	A	110 00	2	2	2	1½	2,230	2,530	230 " 300	300 " 400
45	A	125 00	2	2	2	1½	2,820	3,200	300 " 375	400 " 500
50	A	150 00	2	2½	2	1½	3,480	3,950	375 " 500	500 " 650
55	A	200 00	2	2½	2	1½	3,650	4,140	500 " 600	650 " 750

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METROPOLITAN AUTOMATIC INJECTOR

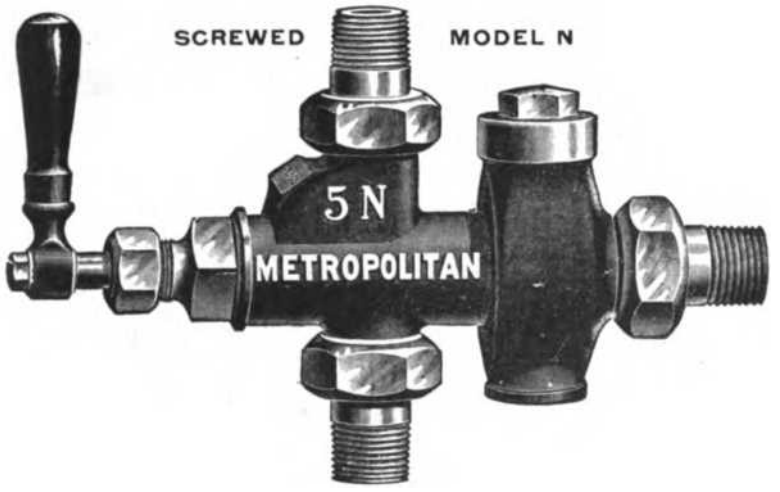


FIG. 2464

PRICES, FIG. 2464

Sizes.	Prices, each. Model N.	Size of all Pipe Connections. Inches.	Size Overflow or Waste Pipe.	Capacity with 80 lbs. Steam Pressure, 2-ft. Lift. Gallons.	Horse Power for the Ordinary Type of Boiler and Engine.	Horse Power on a Basis of 30 lbs. Evaporation per H. P. per Hour.
2	$15 00	⅜	¾	60	4 to 6	5 to 8
3	16 00	⅜	¾	80	6 " 8	8 " 12
3½	18 00	½	¾	120	8 " 15	12 " 20
4	20 00	½	¾	165	15 " 20	20 " 28
5	25 00	¾	1	250	20 " 30	28 " 40
6	30 00	¾	1	350	30 " 45	40 " 55
7	40 00	1	1¼	500	45 " 65	55 " 80
8	45 00	1	1¼	600	65 " 80	80 " 110
9	55 00	1¼	1½	800	80 " 100	110 " 145
10	60 00	1¼	1½	1,000	100 " 130	145 " 180
11	75 00	1½	2	1,300	130 " 170	180 " 235
12	90 00	1½	2	1,750	170 " 230	235 " 300
13	110 00	2	2½	2,300	230 " 300	300 " 400
14	125 00	2	2½	2,850	300 " 375	400 " 500

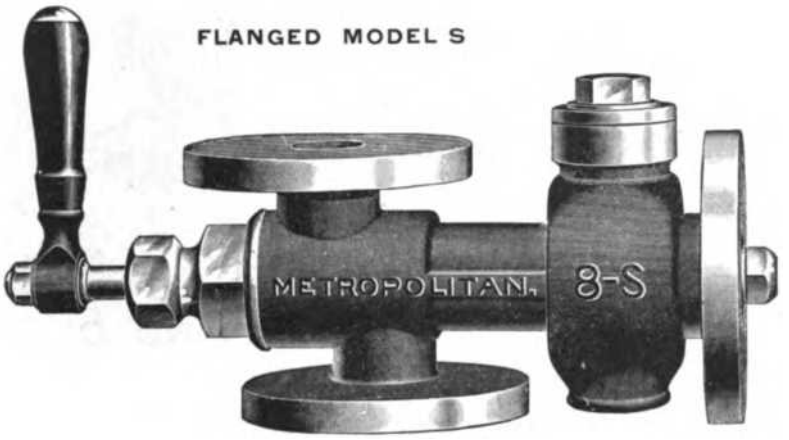


FIG. 2465

PRICES, FIG. 2465

Sizes.	Prices, each. Model S. Flanged.	Size of all Pipe Connections. Inches.	Size Overflow or Waste Pipe. Inches.	Capacity with 80 lbs. Steam Pressure, 2-ft. Lift. Gallons.	Horse Power for the Ordinary Type of Boiler and Engine.	Horse Power on a Basis of 30 lbs. Evaporation per H. P. per Hour.
2	$21 00	⅜	¾	60	4 to 6	5 to 8
3	23 00	⅜	¾	80	6 " 8	8 " 12
3½	26 00	½	¾	120	8 " 15	12 " 20
4	30 00	½	¾	165	15 " 20	20 " 28
5	35 00	¾	1	250	20 " 30	28 " 40
6	40 00	¾	1	350	30 " 45	40 " 55
7	50 00	1	1¼	500	45 " 65	55 " 80
8	55 00	1	1¼	600	65 " 80	80 " 110
9	65 00	1¼	1½	800	80 " 100	110 " 145
10	75 00	1¼	1½	1,000	100 " 130	145 " 180

We send a flat strainer with each of these injectors.

The Model S Injectors are the same as model N, except the connections are flanged instead of screwed, and some slight changes in the body and parts made necessary by the change connections.

METROPOLITAN "1898" INJECTOR

The Metropolitan "1898" injector is a double tube injector, and an improvement upon the Metropolitan double tube injector, which has proved so reliable, durable, efficient, and successful. The Metropolitan "1898" injector embodies all the improvements which experience shows can advantageously be used.

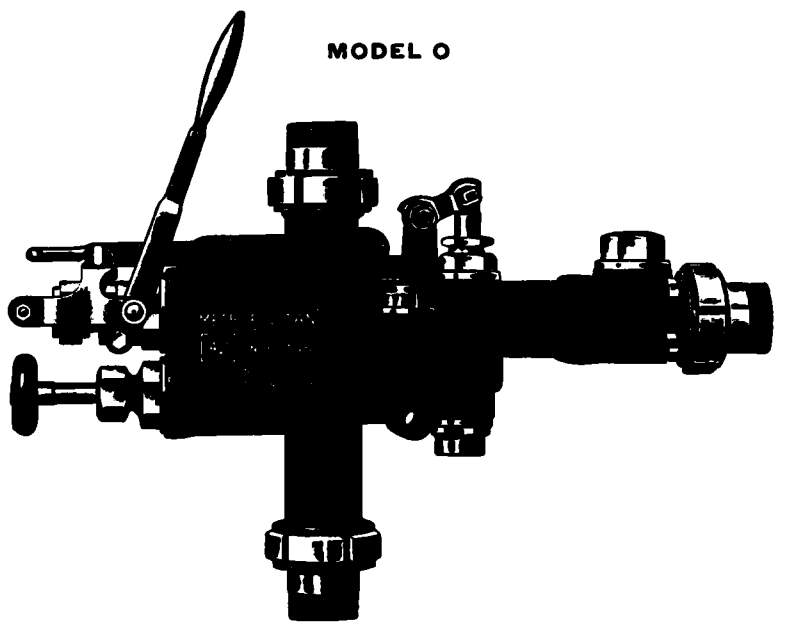


FIG. 2466

PRICES, FIG. 2466

Sizes.	Prices, each. Model O.	Size of all Pipe Connec'ns. Inches.	Size Overflow or Waste Pipe. Inches.	Capacity per Hour with 100 lbs. Steam Pressure. Gallons.	Capacity per Hour with 175 lbs Steam Pressure. Gallons.	Horse Power for the Ordinary Type of Boiler and Engine.	Horse Power on a Basis of 30 lbs. Evaporation per H. P. per Hour.
7½	$40 00	1	¾	525	600	45 to 65	55 to 80
8½	45 00	1	¾	625	720	65 " 80	80 " 110
9½	55 00	1¼	1	835	950	80 " 100	110 " 145
10½	60 00	1¼	1	1,040	1,195	100 " 130	145 " 180
11½	75 00	1½	1¼	1,350	1,550	130 " 170	180 " 235
12½	90 00	1½	1¼	1,800	2,070	170 " 230	235 " 300
13½	110 00	2	1½	2,350	2,675	230 " 300	300 " 400
14½	125 00	2	1½	2,900	3,275	300 " 375	400 " 500
15½	150 00	2½	2	3,600	3,975	375 " 500	500 " 650
16½	200 00	2½	2	4,300	4,750	500 " 650	650 " 800

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METROPOLITAN 1898 INJECTOR

The Model T injectors are the same as Model O, Fig. 2466, except the connections are flanged instead of screwed, and some slight changes in the form of the body.

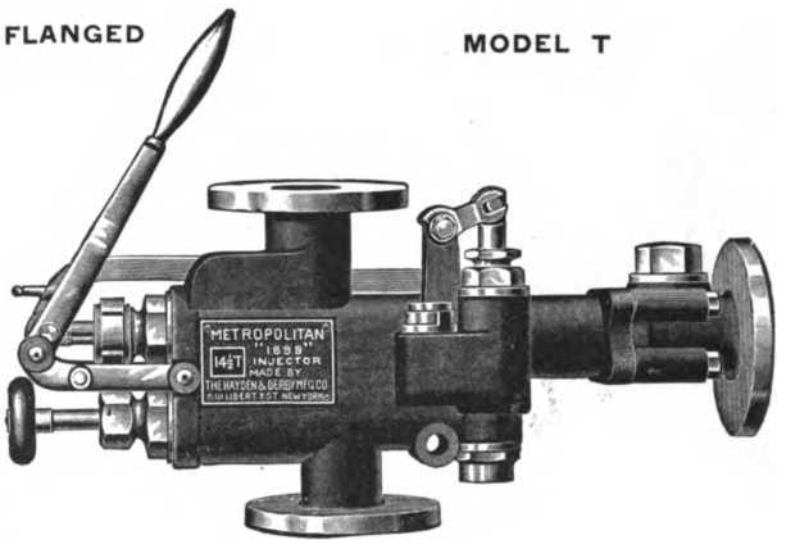


FIG. 2467

PRICES, FIG. 2467

Sizes.	Prices, Model T, Flanged	Size of all Pipe Connections.	Size of Overflow or Waste Pipe.	Capacity per Hour with 100 lbs. Steam Pressure. Gallons.	Capacity per Hour with 175 lbs. Steam Pressure. Gallons.	Horse Power for the Ordinary Type of Boiler and Engine.	Horse Power on a Basis of 30 lbs. Evaporation per H. P. per Hour.
11½	$85 00	1½	1¼	1,350	1,550	130 to 170	180 to 235
12½	100 00	1½	1¼	1,800	2,070	170 " 230	235 " 300
13½	120 00	2	1½	2,350	2,675	230 " 300	300 " 400
14½	135 00	2	1½	2,900	3,275	300 " 375	400 " 500
15½	165 00	2½	2	3,600	3,975	375 " 500	500 " 650
16½	220 00	2½	2	4,300	4,750	500 " 650	650 " 800

METROPOLITAN DOUBLE TUBE INJECTOR

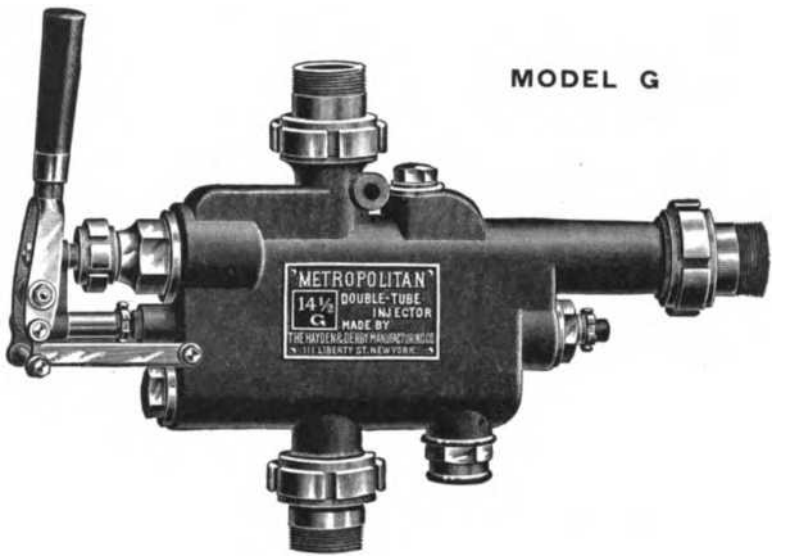


FIG. 2468

PRICES, FIG. 2468

Sizes.	Prices, Model G.	Size of all Pipe Connections.	Size of Overflow or Waste Pipe.	Capacity with 80 lbs. Steam Pressure, 2 ft. Lift. Gallons.	Horse Power for the Ordinary Type of Boiler and Engine.	Horse Power on a Basis of 30 lbs. Evaporation per H. P. per Hour.
2½	$18 00	½	¾	120	8 to 15	12 to 20
4½	20 00	½	¾	165	15 " 20	20 " 28
5½	25 00	¾	¾	250	20 " 30	28 " 40
6½	30 00	¾	¾	350	30 " 45	40 " 55
7½	40 00	1	¾	500	45 " 65	55 " 80
8½	45 00	1	¾	600	65 " 80	80 " 110
9½	55 00	1¼	1	800	80 " 100	110 " 145
10½	60 00	1¼	1	1,000	100 " 130	145 " 180
11½	75 00	1½	1¼	1,300	130 " 170	180 " 235
12½	90 00	1½	1¼	1,750	170 " 230	235 " 300
13½	110 00	2	1½	2,300	230 " 300	300 " 400
14½	125 00	2	1½	2,850	300 " 375	400 " 500
15½	150 00	2½	2	3,500	375 " 500	500 " 650
16½	200 00	2½	2	4,200	500 " 650	650 " 800
17½	250 00	3	2½	4,700	650 " 775	800 " 950
18½	300 00	3	2½	5,500	775 " 950	950 " 1,200

U. S. AUTOMATIC INJECTOR

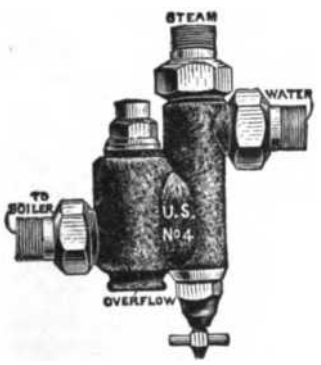


FIG. 2469

The U. S. is automatic, with wide open suction. With throttled suction it is automatic at any pressure sufficient to enable injector to get the water. It works equally well as a lifting injector or as a non-lifter.

PRICES, FIG. 2469

Sizes.	All Pipe Connections. Inches.	Capacity.* Gallons per Hour, Maximum.	Capacity.* Gallons per Hour, Minimum.	Horse Power.	Each.
00	¼	36	15	1 to 4	$13 00
0	⅜	65	28	3 " 8	14 00
1	⅜	90	40	6 " 10	16 00
2	½	125	60	8 " 15	18 00
3	½	170	75	15 " 20	20 00
4	¾	250	125	20 " 30	25 00
5	¾	340	140	30 " 40	30 00
6	1	475	250	40 " 60	40 00
7	1	575	300	60 " 70	45 00
8	1¼	750	350	70 " 95	55 00
9	1¼	920	450	85 " 120	60 00
10	1½	1,350	675	120 " 165	75 00
11	1½	1,750	850	165 " 220	90 00
12	2	2,375	1,000	220 " 295	110 00
13	2	2,820	1,300	295 " 375	125 00
14	2	3,400	1,700	375 " 460	150 00
15	2½	3,650	1,800	460 " 500	175 00
16	2½	4,000	1,950	500 " 600	200 00

*The capacity is tested on a 4 ft. lift with steam at 80 lbs. In ordering always bear in mind that longer lift decreases capacity.

PENBERTHY AUTOMATIC INJECTOR

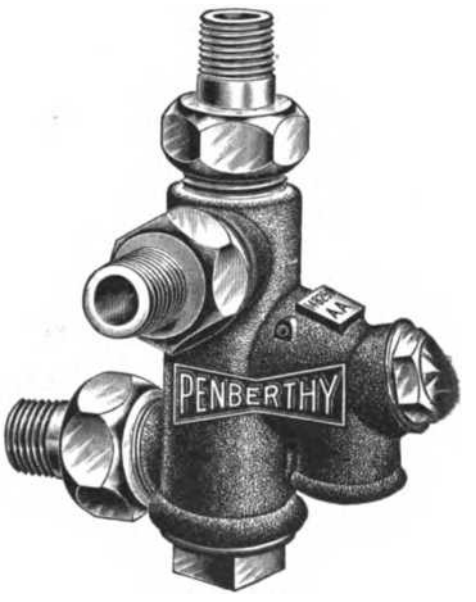


FIG. 2470

PRICES, FIG. 2470

Sizes.	Each.	Horse Power.	Pipe Connections. Inches.	Capacity per Hour—1 to 3 ft. Lift, 60 to 100 lbs. Steam Pressure. Maximum. Gallons.	Capacity per Hour—1 to 3 ft. Lift, 60 to 100 lbs. Steam Pressure. Minimum. Gallons.
O	$15 00	3 to 6	¼	60	40
OO	16 00	4 " 8	⅜	80	55
A	18 00	8 " 16	½	135	70
AA	20 00	12 " 22	½	180	100
B	25 00	17 " 32	¾	260	140
BB	30 00	20 " 45	¾	355	170
C	40 00	40 " 65	1	475	300
CC	45 00	45 " 80	1	600	350
D	55 00	50 " 100	1¼	800	425
DD	60 00	75 " 135	1¼	1,000	525
E	75 00	100 " 180	1½	1,400	800
EE	90 00	115 " 255	1½	1,900	900
F	110 00	160 " 320	2	2,400	1,300
FF	125 00	200 " 400	2	3,000	1,600
G	150 00	300 " 500	2½	3,600	2,000
GG	200 00	375 " 600	2½	4,200	2,500

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KORTING UNIVERSAL DOUBLE TUBE INJECTOR

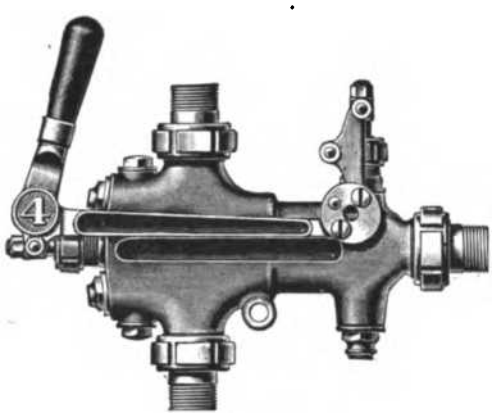


FIG. 2471

PRICES, FIG. 2471

Sizes. No.	Prices of Injector.	Capacities in Horse Power for ordinary Tubular Boilers.	Capacities based on 30 lbs. Water Evaporated per Horse Power per hour for Water Tube Boilers.	Gallons per hour.	Pipe Connections. Inches.	Iron Strainer.	Brass Dirt Stop.	Drip Funnel.
00	$20 00	5 to 8	7 to 12	50	⅛	$0 40	$1 00	$0 40
0	21 00	12 " 16	15 " 20	110	¼	40	1 25	40
1	23 00	20 " 30	28 " 40	160	⅜	40	1 50	50
2	28 00	35 " 40	40 " 50	250	½	50	2 00	60
3	38 00	50 " 65	55 " 70	350	¾	60	2 50	80
3½	46 00	75 " 90	80 " 110	500	¾	60	2 50	80
4	55 00	100 " 120	120 " 130	625	1	75	3 00	80
5	60 00	125 " 140	135 " 150	850	1¼	1 00	4 00	1 00
6	65 00	160 " 190	165 " 200	1,050	1¼	1 00	4 00	1 00
7	85 00	200 " 240	220 " 250	1,400	1½	1 20	5 00	1 20
8	100 00	260 " 290	275 " 320	1,850	1½	1 20	5 00	1 20
9	120 00	300 " 350	325 " 400	2,300	2	1 50	7 00	1 40
10	135 00	360 " 400	425 " 500	2,800	2	1 50	7 00	1 40
12	165 00	530 " 600	550 " 650	3,600	2½	2 40	10 00	2 00
14	250 00	700 " 800	750 " 900	4,700	3	3 00	15 00	4 00
16	300 00	900 " 1,000	950 " 1,200	6,000	3	3 00	15 00	4 00
20	450 00	1,450 " 1,800	1,600 " 2,000	11,000	4	4 00	23 00	6 00

THE METROPOLITAN 1898 LOCOMOTIVE INJECTORS

MODEL I

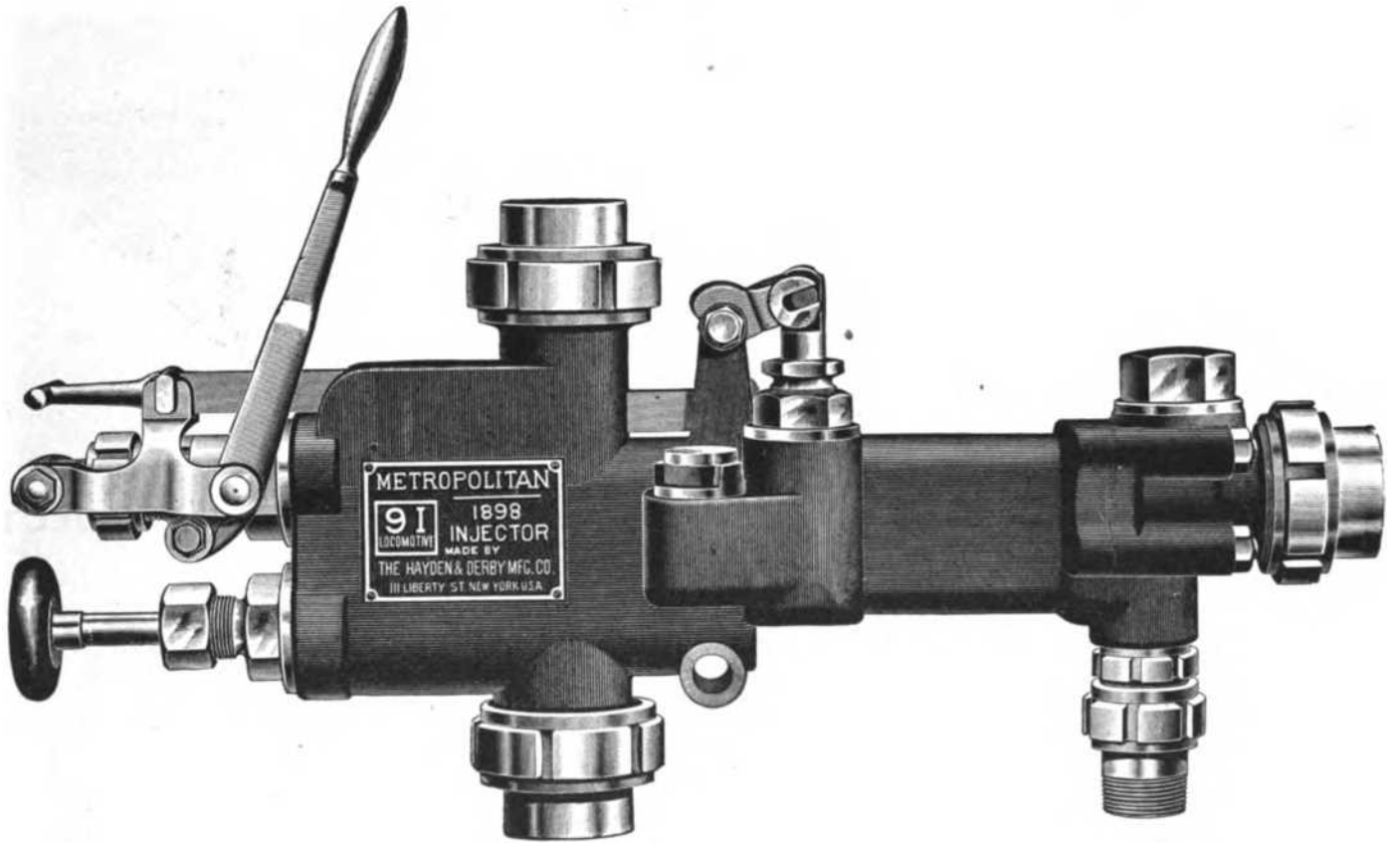


FIG. 2472

Size.	Model.	Capacity Gallons per hour with Steam Pressure of 200 Lbs.	Prices.	Sizes of Pipe Connections. Steam. Iron.	Steam. Copper.	Suction. Iron.	Suction. Copper.	Delivery. Iron.	Delivery. Copper.	Overflow Pipe.
6	Model I	1,360	$90 00	1¼	1½	1½	1¾	1¼	1½	1
7	Model I	1,900	110 00	1¼	1½	1½	1¾	1¼	1½	1
8	Model I	2,450	125 00	2	2	2	2¼	2	2	1¼
9	Model I	3,090	140 00	2	2	2	2¼	2	2	1¼
10	Model I	3,735	160 00	2	2¼	2	2¼	2	2¼	1½
11	Model I	4,265	190 00	2	2¼	2	2¼	2	2¼	1½

In ordering always specify whether the pipe connections are for iron or copper pipes. The sizes for copper pipe given above are outside diameters of same. The nipples are always bored to suit the above figures unless advised to the contrary. When the pipe connections are not specified we furnish nipples for copper pipes. When ordered we supply extension handles so that the Injector can be set outside of the cab and operated by means of the extension handles. Unless so specified we always send Injector without extension handles.

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THE METROPOLITAN 1898 LOCOMOTIVE INJECTOR

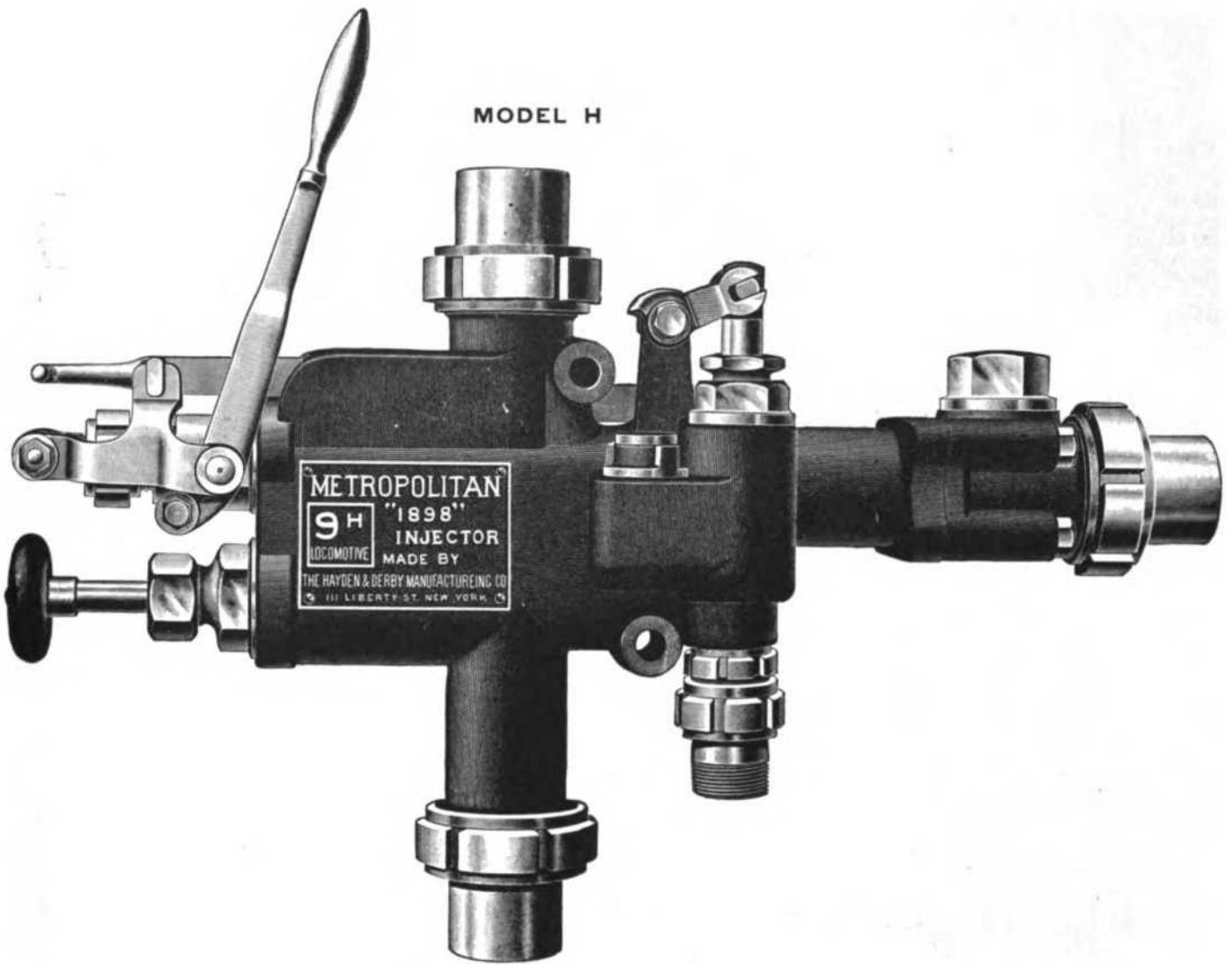


FIG. 2473

In ordering always specify whether the pipe connections are for iron or copper pipes. The sizes for copper pipes given are outside diameters of same. The nipples are always bored to suit the above figures unless advised to the contrary. When the pipe connections are not specified we furnish nipples for copper pipes. When ordered we supply extension handles so that the injector can be set outside of the cab and operated by means of the extension handles. Unless so specified we always send injector without extension handles.

Size.	Model.	Capacity gallons per hour with steam pressure of 200 lbs.	Price.	SIZE OF PIPE CONNECTIONS						
				Steam.		Suction.		Delivery.		Overflow Pipe.
				Iron.	Copper.	Iron.	Copper.	Iron.	Copper.	
4	Model H	720	$60 00	1	1⅛	1	1⅛	1	1⅛	¾
5	Model H	1,045	75 00	1¼	1½	1¼	1½	1¼	1½	¾
6	Model H	1,360	90 00	1¼	1½	1¼	1½	1¼	1½	¾
7	Model H	1,900	110 00	1½	1¾	1½	1¾	1½	1¾	1
8	Model H	2,450	125 00	2	2	2	2¼	2	2	1¼
9	Model H	3,090	140 00	2	2	2	2¼	2	2	1¼
10	Model H	3,735	160 00	2	2¼	2	2¼	2	2¼	1½
11	Model H	4,265	190 10	2	2¼	2	2¼	2	2¼	1½
12	Model D	5,100	250 00	2½	2¾	3	3	3	3	2
13	Model D	5,900	300 00	2½	2¾	3	3	3	3	2

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HANCOCK LOCOMOTIVE INSPIRATOR

PRICES, FIG. 2474

Size.	Each.	Capacity in Gallons per Hour with 210 lbs. Steam Pressure.	PIPE CONNECTIONS — Steam. Iron.	Steam. Copper.	Suction. Iron.	Suction. Copper.	Delivery. Iron.	Delivery. Copper.	Overflow. Iron.	Overflow. Copper.
5	$75 00	1,210	1¼	1½	1¼	1½	1¼	1½	1¼	1½
6	90 00	1,647	1¼	1½	1¼	1½	1¼	1½	1¼	1½
7	110 00	2,151	1½	1¾	1½	1¾	1½	1¾	1½	1¾
8	125 00	2,723	2	2	2	2¼	2	2	1½	1¾
9	140 00	3,034	2	2	2	2¼	2	2	1½	1¾
9½	140 00	3,362	2	2	2	2¼	2	2	1½	1¾
10	160 00	4,068	2	2¼	2½	2¾	2	2¼	1½	1¾
11	190 00	4,450	2	2¼	2½	2¾	2	2¼	1½	1¾

TYPE "A"

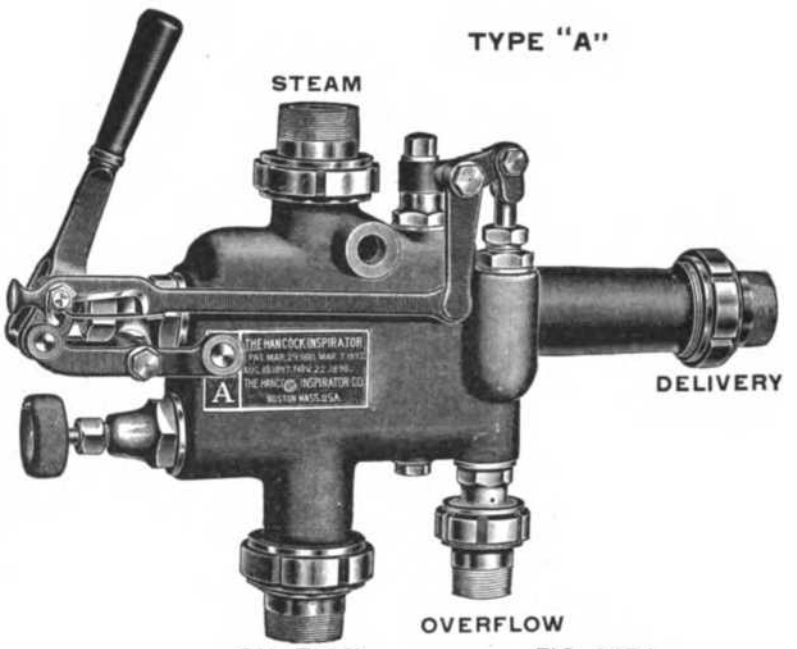


FIG. 2474

TYPE "B"

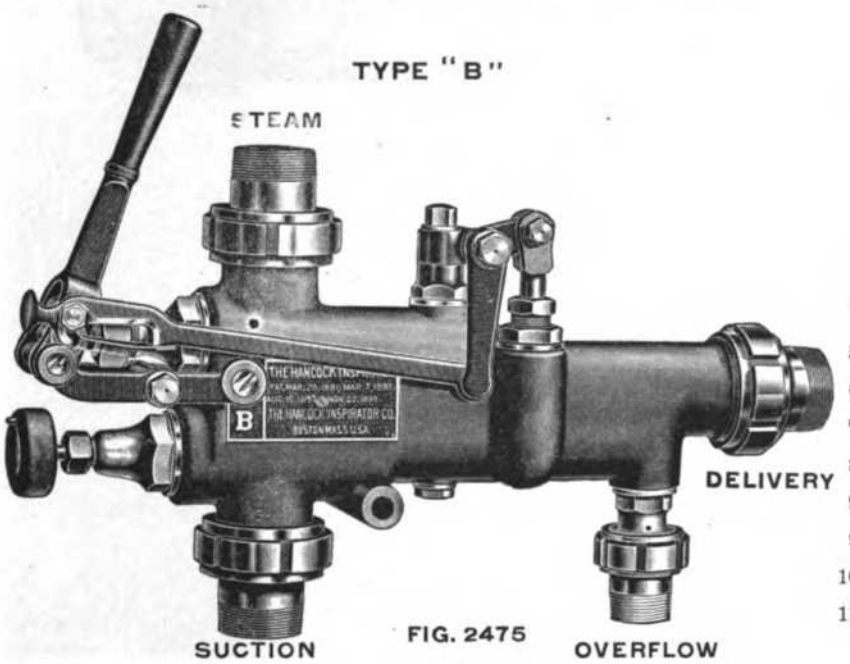


FIG. 2475

PRICES, FIG. 2475

Size.	Each.	Capacity in Gallons per Hour with 210 lbs. Steam Pressure.	PIPE CONNECTIONS — Steam. Iron.	Steam. Copper.	Suction. Iron.	Suction. Copper.	Delivery. Iron.	Delivery. Copper.	Overflow. Iron.	Overflow. Copper.
5	$75 00	1,210	1½	1¾	1½	1¾	1½	1¾	1½	1¾
6	90 00	1,647	1½	1¾	1½	1¾	1½	1¾	1½	1¾
7	110 00	2,151	1½	1¾	1½	1¾	1½	1¾	1½	1¾
8	125 00	2,723	2	2	2	2¼	2	2	1½	1¾
9	140 00	3,034	2	2	2	2¼	2	2	1½	1¾
9½	140 00	3,362	2	2	2	2¼	2	2	1½	1¾
10	160 00	4,068	2	2¼	2½	2¾	2	2¼	1½	1¾
11	190 00	4,450	2	2¼	2½	2¾	2	2¼	1½	1¾

PIPE CONNECTIONS, FIG. 2476

Size.	Steam. Iron.	Steam. Copper.	Suction. Iron.	Suction. Copper.	Delivery. Iron.	Delivery. Copper.	Overflow. Iron.	Overflow. Copper.
6	1¼	1½	1¼	1½	1¼	1½	1¼	1½
7	1½	1¾	1½	1¾	1½	1¾	1½	1¾
8	1½	1¾	1½	1¾	1½	1¾	1½	1¾
9	2	2	2	2¼	2	2	1½	1¾
9½	2	2	2	2¼	2	2	1½	1¾

PRICES, FIG. 2476

Size.	Each.	Capacity in Gallons per Hour with 210 lbs. Steam Pressure.
6	$90 00	1,647
7	110 00	2,151
8	125 00	2,723
9	140 00	3,034
9½	140 00	3,362

TYPE "D"

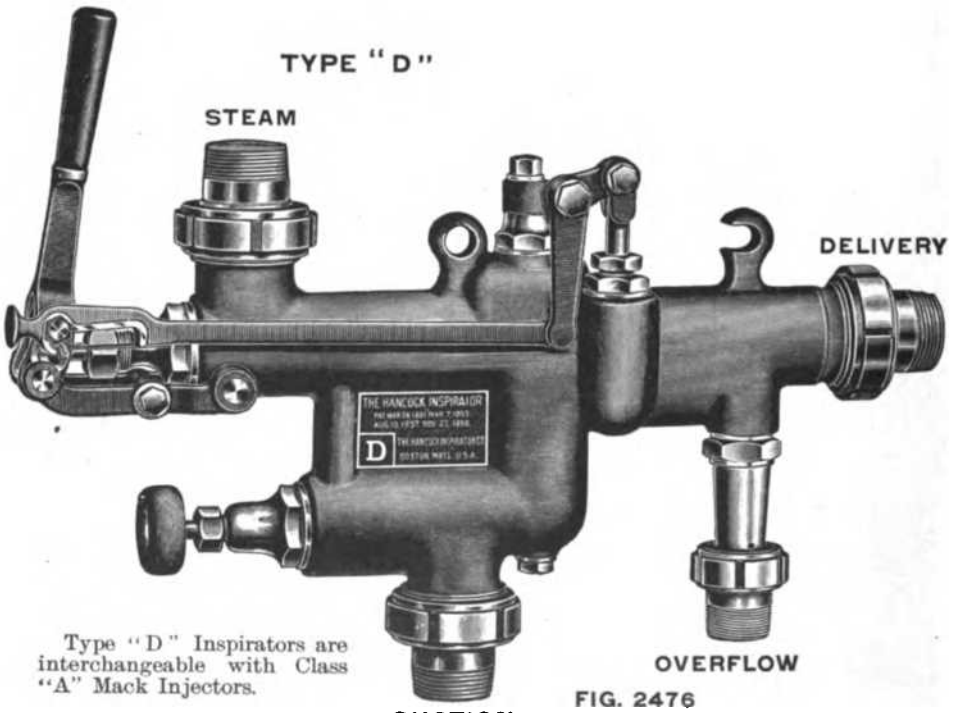


FIG. 2476

Type "D" Inspirators are interchangeable with Class "A" Mack Injectors.

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THE HANCOCK INSPIRATOR

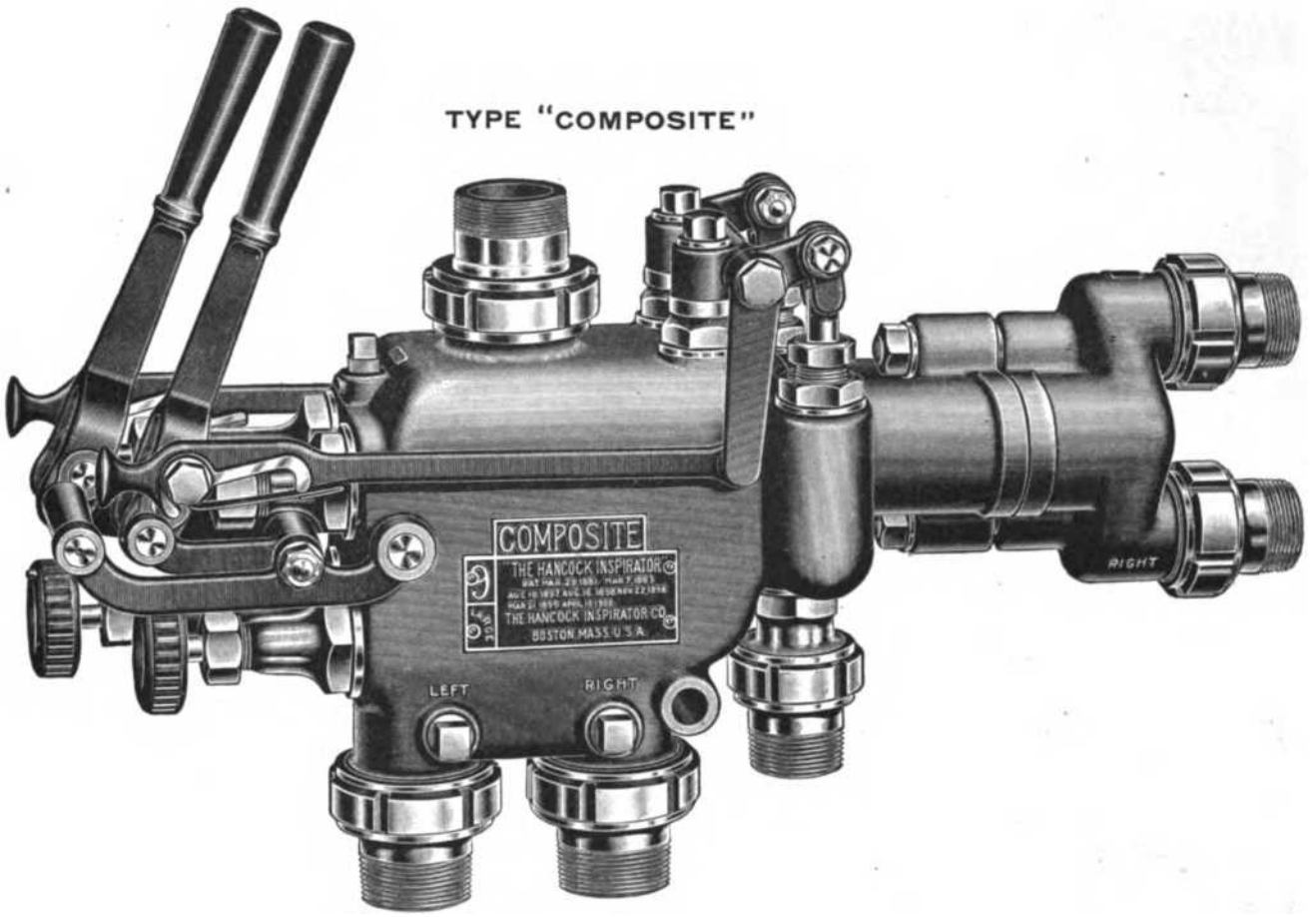


FIG. 2477

Each and every part of a "Composite" Type Inspirator that is subject to wear and renewal is identical in design and interchangeable.

PRICES AND CAPACITIES, FIG. 2477

Size of Body.	Size Number of Tubes.	Each.	Capacity in Gallons per Hour with 160 Pounds Steam Pressure	PIPE CONNECTIONS							
				Steam		Suction		Delivery		Overflow	
				Iron.	Copper.	Iron.	Copper.	Iron.	Copper.	Iron.	Copper.
Small	1½ x 1½	$100 00	400 x 400								
"	1½ x 2	100 00	400 x 523								
"	1½ x 3	110 00	400 x 818	1	1¼	1	1¼	1	1¼	1	1¼
"	2 x 2	115 00	523 x 523								
"	2 x 3	120 00	523 x 818								
"	3 x 3	125 00	818 x 818								
Medium	4 x 4	120 00	1082 x 1082								
"	4 x 5	135 00	1082 x 1180								
"	5 x 5	150 00	1180 x 1180								
"	5 x 6	165 00	1180 x 1605								
"	5 x 7	185 00	1180 x 2045	2	2	1½	1¾	1½	1¾	1½	1¾
"	6 x 6	180 00	1605 x 1605								
"	6 x 7	200 00	1605 x 2095								
"	7 x 7	220 00	2095 x 2095								
Large	7 x 8	235 00	2095 x 2651								
"	7 x 9	250 00	2095 x 2954								
"	8 x 8	250 00	2651 x 2651								
"	8 x 9	265 00	2651 x 2954	2	2¼	2	2¼	2	2	1½	1¾
"	9 x 9	280 00	2954 x 2954								
"	9½ x 9½	280 00	3274 x 3274								
Special	8 x 10	285 00	2651 x 3961								
"	8 x 11	315 00	2651 x 4215								
"	9 x 10	300 00	2954 x 3961								
"	9½ x 10	300 00	3274 x 3961	2½	2¾	2½	2¾	2	2¼	2	2
"	9 x 11	330 00	2954 x 4215								
"	10 x 10	320 00	3961 x 3961								
"	10 x 11	350 00	3961 x 4215								

When ordering, state size of body—*i. e.*, small, medium, large, or special—also the size number of tubes, and whether connections are for iron or copper pipe. The sizes for copper pipe given above are outside diameters. When not specified, we furnish nipples for copper pipe. Also state if it is necessary to locate inspirator outside of cab, as we furnish special cab lever extension handles, rods, and joints for this purpose.

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THE HANCOCK DOUBLE CHECK VALVE, WITHOUT STOP VALVE



FIG. 2478

PRICES AND CONNECTIONS

For Double Check Valve adapted to the back head of boiler.

Size.	Each	Pipe Connections. Iron. Inches.	Pipe Connections. Copper. Inches.	Ball Joint. Outside Diam. Inches.	Ball Joint. Inside Diam. Inches.	Flange. Diam. Inches.	Flange. Thickness. Inch.
6	$40 00	1½ or 2	1¾, 2 or 2¼	4¾	3	7¼	⅞

PRICE LIST AND CONNECTIONS WITH STOP VALVE

Size.	Each.	Pipe Connections. Iron. Inches.	Pipe Connections. Copper. Inches.	Ball Joint. Outside Diam. Inches.	Ball Joint. Inside Diam. Inches.	Flange. Diam. Inches.	Flange. Thickness. Inch.
6	$50 00	1½ or 2	1¾, 2 or 2¼	4¼	3	7¾	⅞

HANCOCK MAIN (BOILER) CHECK VALVE

INTERIOR

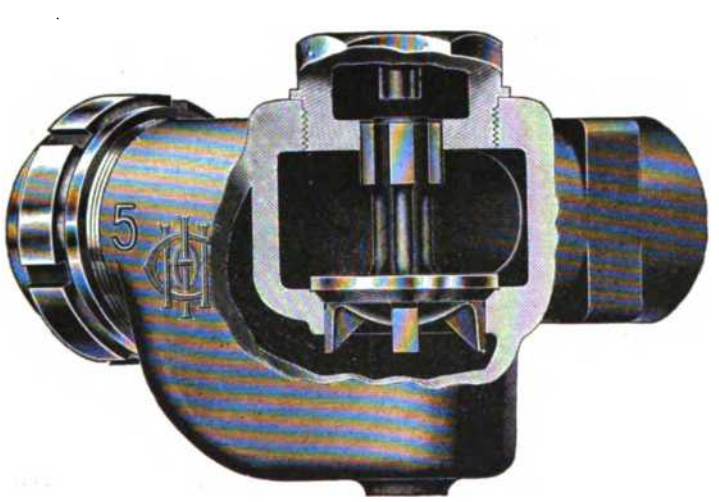


FIG. 2479

EXTERIOR



FIG. 2480

PRICES, FIGS. 2479 AND 2480

Right or Left Hand. Size.		PIPE CONNECTIONS. Iron. Inches.	PIPE CONNECTIONS. Copper. Inches.	*BOILER SHANK OR FLANGE. Outside Diam. Inches.		*BOILER SHANK OR FLANGE. Inside Diam. Inches.	†Each.
1	Fig. 2479	¾	⅞	1	Iron Pipe Size.	⅞	$6 00
2		1	1¼	1¼		1⅛	8 00
3		1¼	1½	1½		1⅜	10 00
4		1½	1¾	2		1¾	12 00
5		2	2	2		1¾	20 00
6		2	2¼	2½		2 1/16	21 00
3	Fig. 2480	1¼	1½	5½	Flange.	1⅜	14 00
4		1½	1¾	5½		1¾	16 00
5		2	2	6½		2 1/16	25 00
6		2	2¼	6½		2 1/16	26 00
7		2½	2¾	7¼		2⅝	

*Main check valves with boiler shanks or flanges of any desired length or diameter will be furnished upon special order.

†Price includes coupling nut and nipple for either iron or copper pipe.

Main check valves, either flanged or screwed, with connections and goose necks at the bottom, which can be used for either right or left hand, will be furnished upon special order.

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EXTERIOR

INTERIOR

HANCOCK MAIN STEAM VALVE

PRICES, FIG. 2481

Size.	Pipe Connections. Iron. Inches.	Copper. Inches.	Boiler Shank. Outside Diam. Inches.		Inside Diam. Inches.	Each.
1	¾	⅞	1	Iron Pipe Size.	⅞	† $10 00
3	1¼	1½	1½		1⅜	14 00
4	1½	1¾	2		1 11/16	18 00
5	2	2	2		1¾	24 00
6	2	2¼	2½		2 1/16	26 00

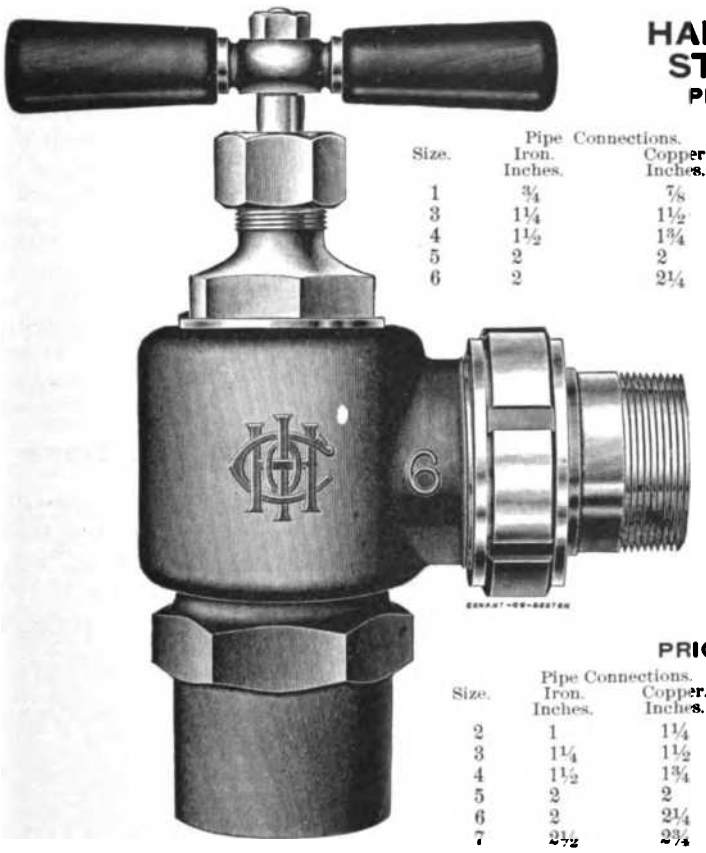


FIG. 2481

MALE UNION INLET AND OUTLET

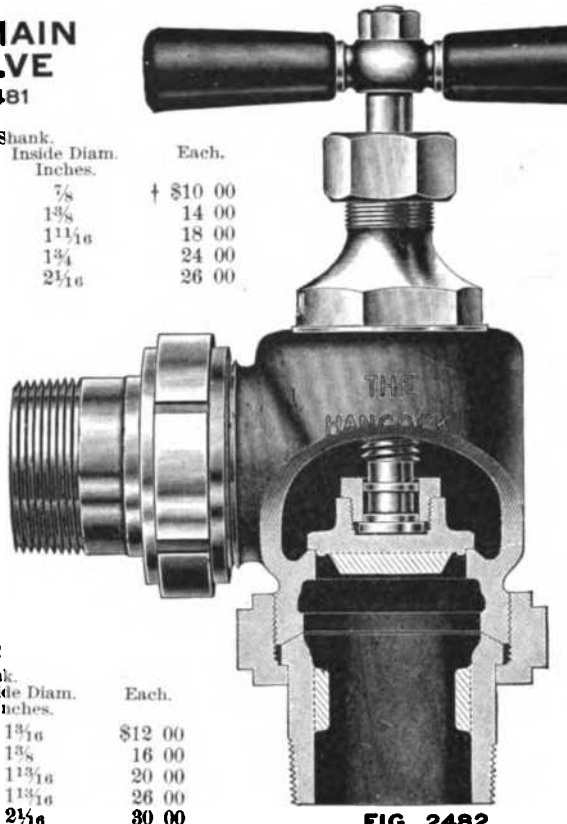


FIG. 2482

PRICES, FIG. 2482

Size.	Pipe Connections. Iron. Inches.	Copper. Inches.	Boiler Shank. Outside Diam. Inches.		Inside Diam. Inches.	Each.
2	1	1¼	1¼	Threaded Nipple for Iron Pipe.	1 3/16	$12 00
3	1¼	1½	1½		1⅜	16 00
4	1½	1¾	2		1 13/16	20 00
5	2	2	2		1 13/16	26 00
6	2	2¼	2½		2 1/16	30 00
7	2½	2¾	3		2 11/16	40 00

† Price includes coupling nuts and nipples for either iron or copper pipe.
Sizes 1 to 4 inclusive are furnished with a special high grade rubber wheel.
Sizes 5, 6, and 7 are made with a "T" handle of special design, which facilitates their manipulation under high steam pressure.
Main steam valves with boiler shanks or flanges of any desired length or diameter will be furnished upon special order.

THE HANCOCK LOCOMOTIVE HOSE STRAINER

The Locomotive Hose Strainer here illustrated consists of a perforated copper plate in a metal frame which fits into grooves in the body. The perforated copper plate rests at such an angle that coal or other sediment from the tank will drop below it and not interfere with the water way. By removing the cap, the frame and perforated copper plate can be taken out and cleaned. The copper plate can also be removed from the frame. The cap is fitted with a ground joint, and the seat is also located so as to be protected from damage.

This cap is held in place by means of a yoke and set screw. This set screw is of composition, with a broad shoulder under the head, and is so fitted that when it is screwed up sufficiently to make a tight joint on the cap, the collar brings up on the yoke; this allows it to be screwed up as hard as is necessary to prevent its jarring loose or inflicting any injury to the cap or yoke.

The strainer is furnished either right or left hand, with the inlet end blank or threaded to fit hose couplings in use, and with the suction or feed pipe end blank or fitted for the size of iron or copper pipe to be used.

The simplicity of its construction and its great convenience to locomotive engineers will recommend this strainer as a valuable improvement.

PRICE, $17.00

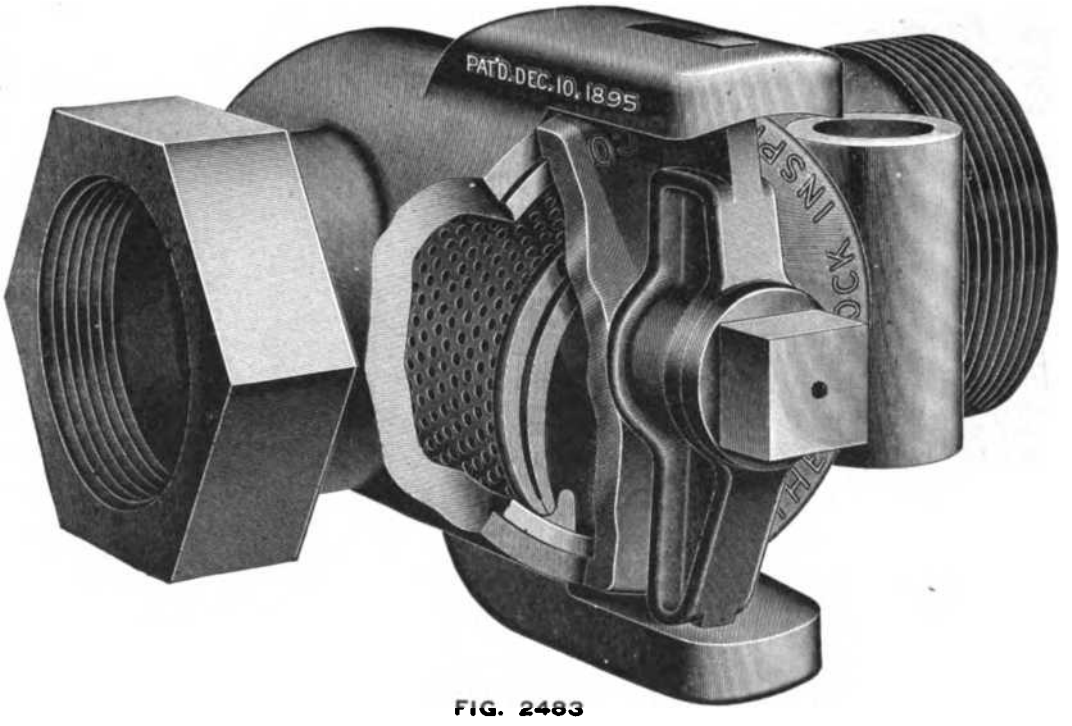


FIG. 2483

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THE HANCOCK BOILER WASHER



FIG. 2484

A perfectly simple and durable apparatus for washing boilers. Will either lift water from 15 to 20 feet or take it under a head. At a steam pressure of 100 pounds the temperature of the delivery water will be about 120 degrees Fahrenheit, or as hot as it can be conveniently handled. The hose or delivery end of the boiler washer is left blank to be threaded to fit hose couplings in use, or will be threaded as desired.

PRICES, CAPACITIES, AND SIZES OF PIPE CONNECTIONS

Sizes.	Each.	Capacity per Hour. Steam Pressure 60 Lbs. Gals.	PIPE CONNECTIONS. Steam, Inches.	Suction and Delivery, Inches.	Discharge Nozzle for end of Delivery Hose, Inches.
Small	$35 00	2,200	¾	1½	¾
Medium	40 00	3,900	1	2	1
Large	50 00	6,000	1¼	2½	1¼

HANCOCK EJECTOR

DESCRIPTION, FIG. 2485

Sizes 1, 2, 3 and 4 are made entirely of brass. Sizes 5, 6 and 7 have iron bodies and brass unions for steam and suction connections. Sizes 8, 9, 10 and 11 have iron bodies with brass unions for steam connection only. Sizes 5, 6, 7, 8, 9, 10 and 11 made entirely of brass.



FIG. 2485

PRICES, FIG. 2485

Sizes.	Each.	PIPE CONNECTIONS. Steam, Inches.	Suction and Delivery, Inches.	Capacity per Hour. Steam Pressure, 60 lbs. Gallons.
1 Brass	$8 00	¼	½	244
2 "	10 00	⅜	¾	550
3 "	15 00	½	1	977
4 "	20 00	¾	1¼	1,525
5 Iron	25 00	¾	1½	2,200
6 "	35 00	1	2	3,900
7 "	45 00	1¼	2½	6,000
8 "	55 00	1½	3	8,800
9 "	70 00	2	4	15,600
10 "	110 00	2½	5	24,300
11 "	160 00	2½	6	35,000

H-D 1898 EJECTOR

MODEL P

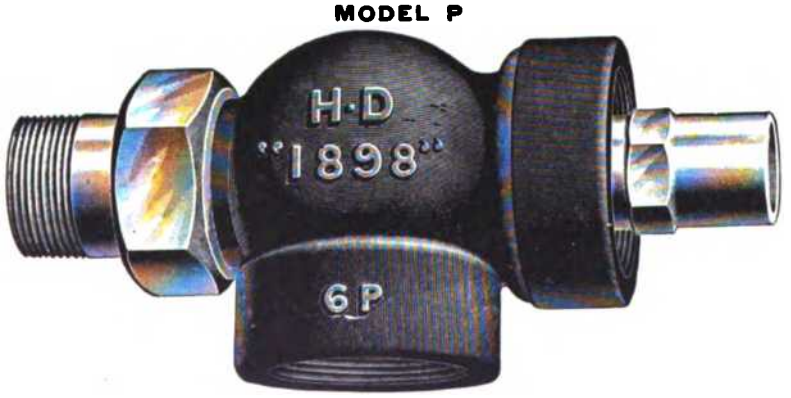


FIG. 2486

PRICES, FIG. 2486

Sizes.	Model P.	PIPE CONNECTIONS. Steam.	Suction and Delivery.	Capacity per Hour. with 50 lbs. Steam Pressure. Gallons.
1	$8 00 Brass	⅜	½	250
2	10 00 "	½	¾	500
3	15 00 "	¾	1	960
4	20 00 "	1	1¼	1,300
5	25 00 "	1¼	1½	2,000
6	35 00 Iron	1¼	2	4,000
7	45 00 "	1½	2½	8,000
8	55 00 "	2	3	11,000
9	70 00 "	2½	4	15,000

Sizes Nos. 6, 7 and 8 have iron body, balance brass. Size No. 9 has brass tubes, balance iron. Sizes Nos. 6, 7, 8 and 9 made entirely of brass, to order. Special all iron ejectors made to order.

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H-D EJECTOR

PRICES, FIG. 2487

Sizes.	Model C.	Pipe Connections. Steam.	Suction and Delivery.	Capacity per Hour with 50 lbs. Steam Pressure.
No. 1 Brass	$8 00	⅜	½	250 gals.
" 2 "	10 00	½	¾	500 "
" 3 "	15 00	¾	1	960 "
" 4 "	20 00	1	1¼	1,300 "
" 5 "	25 00	1¼	1½	2,000 "
" 6 Iron	35 00	1¼	2	4,000 "
" 7 "	45 00	1½	2½	8,000 "
" 8 "	55 00	2	3	11,000 "
" 9 "	70 00	2½	4	15,000 "
" 10 "	175 00	4	6	45,000 "

Size No. 6 has iron body, balance brass.
Sizes Nos. 7 and 8 have iron bodies and delivery connections, balance brass.
Size No. 9 has brass tubes, balance iron.
Size No. 10 has iron body, brass tubes, all connections flanged.
Sizes Nos. 6, 7, 8, 9 and 10 made entirely of brass to order.

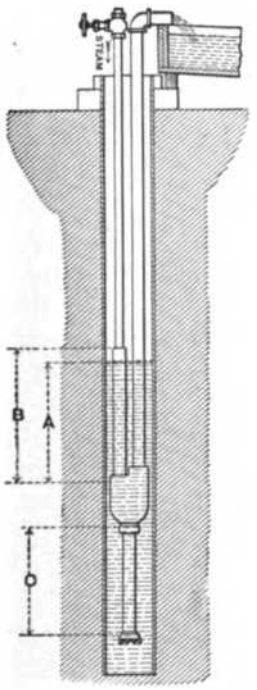
MODEL C



FIG. 2487

H-D DRIVE WELL EJECTOR

DESCRIPTION, FIG. 2488



SECTION

Showing the usual method of connecting the H-D Drive Well Ejector.
Distance A.—Never to be over 20 feet.
Distance B.—Must be greater than the high water mark.
Distance C.—Must not exceed 18 feet.

The H-D Drive Well Ejectors are designed to bring the largest possible instrument into a pipe of specified diameter.

The size of the ejector must not be larger than the flow of the well. The ejector must be placed so that when starting it will be under water, and the steam pipe covering should be long enough so that at high water it will project out of the water. After being started the ejector will work with the lift up to 18 feet if elevation is not too great, but ejector should not be more than 20 feet under high water mark. This gives a total variation of water of about 35 feet. To operate, open steam valve full, and if water does not come close the valve and open slowly until wide open.

The following table will show what these ejectors will elevate when located so they lift one foot.

Steam pressure	25	50	75	100	125
Vertical lift	1 foot	1 foot	1 foot	1 foot	1 foot
Elevation above the ejector	25 feet	50 feet	80 feet	140 feet	175 feet
Degrees of heat added	55°	60°	65°	75°	110°

PRICES, FIG. 2488

Sizes.	Model R.	Steam Pipe, Inside Casing.	Steam Pipe, Outside Casing.	Suction and Delivery.	Steam Pipe Casing.	Minimum Diameter of Wells.	Capacity with 75 lbs. Steam Pressure, Lifting 1 ft., Elevating 25 feet.
2	$15 00	⅜	½	¾	¾	3	400 gals.
3	20 00	½	¾	1	1	4	800 "
4	30 00	¾	1	1¼	1¼	4½	1,200 "
5	40 00	1	1¼	1½	1½	5	1,800 "

All sizes made entirely of brass.

MODEL R



FIG. 2488

FLAT STRAINERS FOR INJECTORS AND EJECTORS

Made of brass with brass wire screen.

PRICES, FIG. 2489

Size of Pipe Connections.	For Metropolitan Automatic Injectors.	For Metropolitan D. T. Injectors and Metropolitan "1898" Injectors.	For H-D Ejectors.	Each.
½	2 -3 / 3½-4	2½- 4½	1	$0 80
¾	5- 6	5½- 6½	2	40
1	7- 8	7½- 8½	3	50
1¼	9-10	9½-10½	4	60
1½	11-12	11½-12½	5	80
2	13-14	13½-14½	6	1 00
2½	....	15½-16½	7	1 25
3	....	17½-18½	8	1 75
4	....	.....	9	2 50

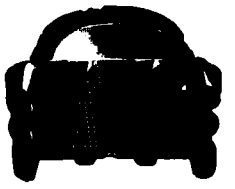


FIG. 2489



FIG. 2489 A

UNION STRAINERS

FOR INJECTORS AND EJECTORS

This form of strainer screws on to the injector or ejector, and by removing the cap the screen can be withdrawn for cleaning. Made entirely of brass.

PRICES, FIG. 2489 A

Size of Pipe Connections.	For Metropolitan Automatic Injectors.	For Metropolitan D. T. Injectors and Metropolitan "1898" Injectors.	For H-D Ejectors.	Each.
½	2 -3 / 3½-4	2½- 4½	1	$4 00
¾	5-6	5½- 6½	2	5 00
1	7-8	7½- 8½	3	6 00
1¼	9-10	9½-10½	4	7 50
1½	11-12	11½-12½	5	9 00
2	13-14	13½-14½	6	12 00



FIG. 2489 B

DRIP FUNNELS

FOR INJECTORS

All injectors should have the overflow exposed so that the operator can see if it is being properly operated. These funnels are made to screw on to the overflow pipe and catch the waste. Made of brass.

PRICES, FIG. 2489 B

Sizes of Pipe Connections.	For Metropolitan Automatic Injectors.	For Metropolitan D. T. Injectors and Metropolitan "1898" Injectors.	Each.
¾	2-4	2½-8½	$1 00
1	5-6	9½-10½	1 25
1¼	7-8	11½-12½	1 50
1½	9-10	13½-14½	1 75
2	11-12	15½-16½	2 00
2½	13-14	17½-18½	2 50

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STANDARD BOILER OIL INJECTOR

FOR STEAM BOILERS



FIG. 2490

DESCRIPTION, FIG. 2490

The Standard Boiler Oil Injector is intended to be attached to the feed water pipe of steam boilers to feed boiler oil into same, which effectually removes existing incrustations and prevents the formation of new scale; also preventing foaming, pitting and leaky joints.

A—Oil reservoir.
B—Sight feed
C—Oil drop regulating valve.
D—Stop valve.
E—Filling plug.
F—Drain valve.
G—Sight feed drain valve.
H—Plug to renew sight feed glass.
J—Union connection.

All injectors have ¾ inch pipe connection on shank.

PRICES, FIG. 2490

Capacity	½ Pt.	1 Pt.	1 Qt.	½ Gal.	1 Gal.	1½ Gal.	2 Gals.
Iron, brass trimmings.....each,	....	....	....	$16 50	$19 50	$22 50	$30 00
Brass, part finished..... "	$7 50	$10 00	$13 50				
Brass, all finished..... "	8 00	10 60	14 25				
All finished and nickeled.. "	8 50	11 20	15 00				
Suitable for boilers..... H.P.	10	25	75	100	150	200	250

Reservoirs above one quart are of cast iron, and have lugs on body for bolting to place; smaller sizes have a brace stud and lock nut at lower end of oil chamber for same purpose. Full directions how to attach and operate sent with each injector.

THE BUFFALO BOILER OIL INJECTOR

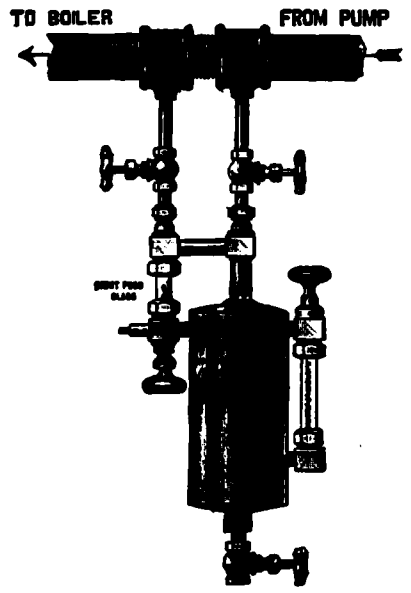


FIG. 2493

DESCRIPTION, FIG. 2493

For feeding kerosene oil by the drop for the removal and prevention of scale in steam boilers.

This injector is used to clean and keep clean any boiler to which it is attached, no matter what kind of water is used.

It will not injure any boiler or connections.

It will stop boilers from foaming or priming.

It will stop pitting or corrosion.

It will remove all grease from boilers, where condensed water is used. (This makes it especially valuable to steamboat and tug owners who use condensers and are troubled with this tenacious and expensive non-conductor of heat.)

	Price.		Price.
1 pt.,	$15 00	1 qt.,	$20 00
½ gal.,	25 00	1 gal.,	30 00

Larger sizes to order.

IMPROVED BOILER OIL FEEDER

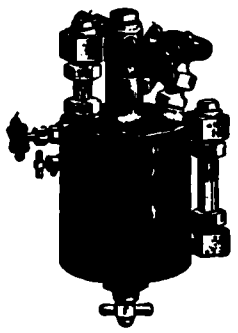


FIG. 2494

This feeder has a self-closing ball valve which prevents any waste of oil or water, should the glass break. This valve is placed within the attaching shank. Should the sight or gauge glass break, the sudden flow of water towards the fractured part causes the ball to roll into the bearing or globe seat and thus effectually closes the passage perfectly tight. The extended shank on valve is designed to keep the ball off its seat until the pressure is equalized, after which the valve is drawn back full stroke.

Tube and bonnet will interchange and can be transposed to make front or rear connections—whichever is most convenient.

PRICES, FIG. 2494

Capacity	1 Qt.	½ Gal.	1 Gal.
Iron body, brass trimmings, with gauge glass and ball check.....each,	$16 50	$19 50	$24 00
Iron body, brass trimmings, without gauge glass or ball check.....each,	13 50	16 50	19 50

EMERALD BOILER OIL INJECTOR

FOR LOCOMOTIVE AND STATIONARY BOILERS



FIG. 2492

BULL'S EYE



FIG. 2491

DESCRIPTION, FIG. 2492

The Emerald Boiler Oil Injector is specially designed for locomotives, but is also suitable for stationary and traction engine boilers. This cup has the improved Bull's Eye sight feed, which is compact, strong and safe. When a glass breaks it is only necessary to replace the entire Bull's Eye by using an ordinary monkey wrench. For prices of extra Bull's Eyes see list below. The sight feed is also provided with an improved safety shield, which can be kept closed to protect against breakage of glasses and severe weather.

A—Oil reservoir.
C—Oil drop regulating valve.
D—Main stop valve.
E—Filling plug.
F—Drain valve.
H—Bull's Eye sight feed.
J—Union connection.
L—Shield over sight feed.

All injectors have ¾ inch pipe connection on shank.

PRICES, FIG. 2492

Capacity	½ Pt.	1 Pt.	1 Qt.	½ Gal.	1 Gal.	1½ Gals.	2 Gals.
Iron, brass trimmings..each,	....	....	....	$16 50	$19 50	$22 50	$30 00
Brass, part finished..... "	$7 50	$10 00	$13 50				
" all " ..... "	8 00	10 60	14 25				
All finished and nickel plated..... "	8 50	11 20	15 00				
Extra Bull's Eyes..... "	30	30	30	30	30	30	30

All of the brass cups have brace stud and lock nut on lower end of reservoir; the iron body cups, lugs on back of reservoir, to permit of their being securely braced or bolted in place. Full directions how to attach and operate sent with each injector.

KEROSENE OIL INJECTOR

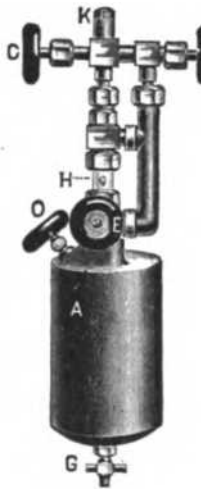


FIG. 2495

DESCRIPTION, FIG. 2495

A—Body of oil injector.
C—Valve to close oil passage.
D—Valve to close water passage.
E—Feed regulating valve.
G—Drain valve.
H—Sight feed glass.
K—Connection to steam or water pipe—one inch iron pipe size.
O—Filler plug.

If pump is used for feeding water to the boiler, attach the oil injector to the feed pipe between the pump and the boiler, and preferably on the boiler side of the check. If an injector is used to supply water to the boiler, the Kerosene Oil Injector may be attached either to the steam supply or to the water feed. When attachment is made to a horizontal pipe, the connection from the oil injector should always be made to the under side of same and never into the top, as kerosene will not pass downward through water unless forced by a current. Where a special attachment is required, please send us a rough diagram, giving location of boiler, pump and feed pipe, and we will suggest best methods of attachment. All pipes used in connecting the oil injector to the feed pipe should be so arranged that the route of the oil will always be in an upward direction, otherwise it will trap and back down.

When making attachment be sure and join the parts of the injector together in same position as shown in cut.

When necessary to remove oil injector, for any cause, close valves C and D and unscrew nuts at BB.

For 80 to 100 horse power boiler, use one quart of kerosene per day until scale drops off; after that about eight drops per minute will be sufficient for most boilers; but when badly scaled, or where high pressure of steam is carried, a larger quantity should be used.

PRICES, FIG. 2495

Pint	$15 00
Quart	20 00
Half gallon	25 00
Gallon	30 00

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WATER PRESSURE EJECTOR OR CELLAR DRAINER

WORKED BY WATER PRESSURE

DESCRIPTION, FIG. 2496

They will eject double the quantity of water that it takes to operate them, and can be used to a great advantage in draining excavations, cellars, cesspools, etc., where water pressure can be had and the elevation is not too high for the pressure obtained.

They are operated either by a valve in the pressure pipe, or by an automatic float valve and float connected as shown in the cut. The float and valve are so constructed and arranged that when the water has reached a certain level or entirely drained, as the case may be, the valve is closed, thereby shutting off the pressure and stopping a useless waste of water.

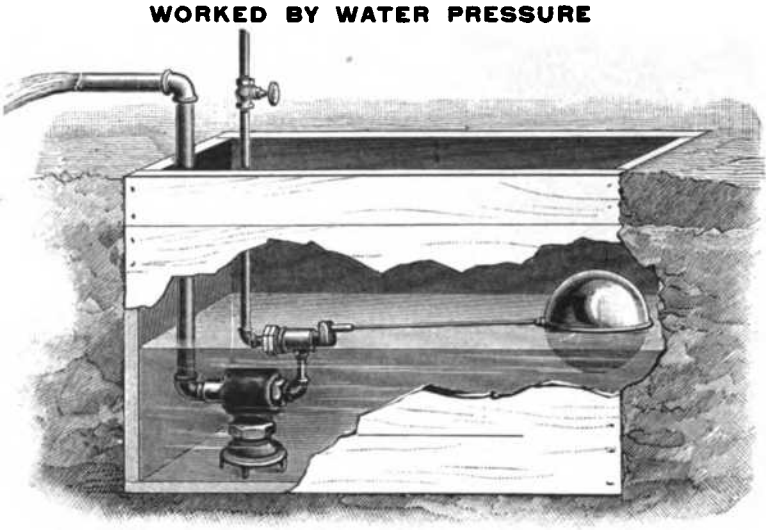


FIG. 2496

DIMENSIONS AND PRICES

Number	20	22	24
Capacity, gallons per hour	375	600	1275
Size of water pressure pipe	½ inch	¾ inch	1 inch
Size of delivery pipe	1 inch	1½ inch	2 inch
Prices	$18 00	$28 00	$38 00
Prices of auto. float valve and float, extra	12 00	14 00	16 00

AUTOMATIC EDUCTOR OR CELLAR DRAINER

OPERATED BY WATER OR STEAM PRESSURE

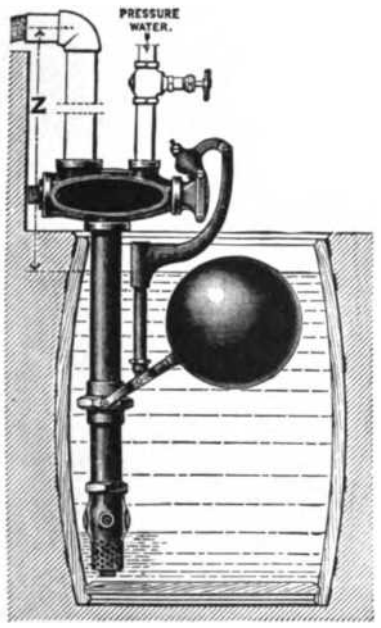


FIG. 2497

DESCRIPTION, FIG. 2497

This machine is entirely automatic and will elevate water to a height according to whatever water pressure is obtainable. Its operation is simple, for, when in position the rising of the water will lift the float which opens the valve, and the action of the pressure water will discharge the contents from cellar or pit when the float will fall and shut off the pressure water. The suction valve at bottom of machine effectually prevents any pressure water from getting into cellar in case of insufficient pressure from water mains.

The water pressure should never be less than five times the counter pressure, and it is desirable that it should be more, for example, if the discharge is 4 feet above where the drainer is placed, the pressure water at the instrument, when in operation, should be not less than 10 lbs. It requires ½ gallon of pressure water for each gallon of water discharged.

PRICES, FIG. 2497, WITHOUT BOX OR TANK

Size Suction and Discharge, Inches.	Prices of Automatic Drainer.	Prices of Drainer, Not Automatic.	Capacity per Hour Gallons.	Diameters of Water Pressure Pipe. Inches.
¾	$30 00	$12 00	250	⅜
1	35 00	14 00	500	½
1¼	45 00	20 00	675	¾
1½	55 00	25 00	1000	¾
2	70 00	40 00	2000	1
2½	100 00	50 00	3000	1¼

We furnish this drainer including the automatic starting valve, float, foot valve, and strainer, also pipe connection in suction pipe as shown in illustration.

We also furnish drainer without automatic attachment but including foot valve and strainer. See price list.

When ordering, state whether for water or steam pressure.

AUTOMATIC CELLAR DRAINER

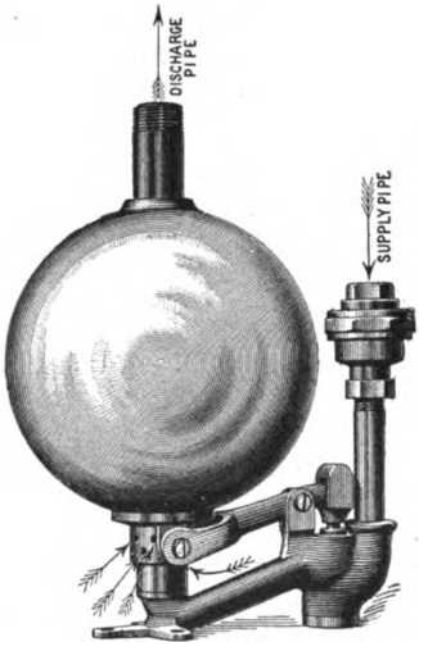


FIG. 2499

Size No. 1, $25.00 Size No. 2, $35.00

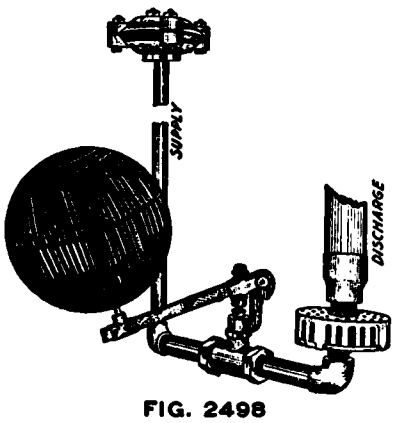


FIG. 2498

CLIMAX CELLAR DRAINER

DESCRIPTION, FIG. 2498

The Climax Cellar Drainer is made for draining cellars, wheel pits, furnace pits, cesspools, foundations, etc. It is also desirable and largely used for removing waste water from kitchens below level of sewer and removing drippings from ice boxes, and for any purpose where it is necessary to remove water economically from one level to a higher one.

It can be operated by either water pressure or steam.

The drainer without automatic movement we do not recommend for cellar or any place where water comes unexpectedly and irregularly, and at such times as some one about the premises cannot always be cognizant that attention to drainer is necessary, and give it promptly. For contractors and builders this drainer will prove a very economical means for keeping foundations free from water.

PRICES, FIG. 2498

Size.	Pressure, Lbs.	Lift, Feet.	Capacity Per Hour, Gallons.	Size Supply Pipe.	Size Discharge Pipe.	No. of Discharge Pipe.	With Automatic Movement.	Without Automatic Movement.
1	15 to 80	6 to 12	50 to 250	½	1	1	$25 00	$15 00
2	15 to 80	6 to 12	100 to 400	¾	1	2	40 00	25 00
3	15 to 80	6 to 12	150 to 600	1	1	3	55 00	35 00
4	15 to 80	6 to 12	200 to 800	1¼	1	4	80 00	50 00
5	15 to 80	6 to 12	275 to 1000	1½	1	5	110 00	70 00
6	15 to 80	6 to 12	350 to 1200	2	1	6	160 00	100 00

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CENTRIFUGAL SEPARATOR AND TRAP

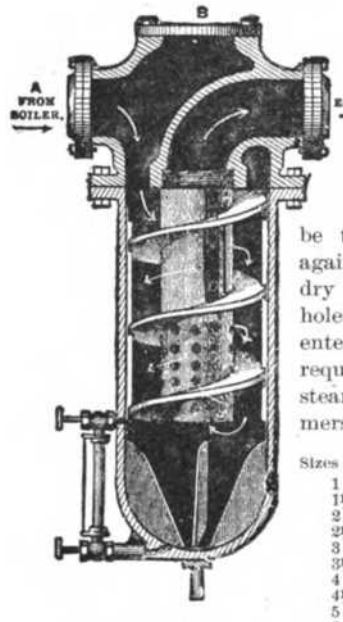


FIG. 2500

FOR SUPPLYING CLEAN AND DRY STEAM TO ENGINES, DRY HOUSES, ETC.

DESCRIPTION

Place separator as close to engine as possible, the steam taking a spiral course between the threads causes the water to be thrown by centrifugal force against the outer walls, while the dry steam goes through the small holes to center of pipe. Steam can enter at A or B, as convenience may require; also used in conveying steam long distances for steam hammers and dry houses.

Sizes of Steam Pipe. Inches.		Prices.
1	Screwed,	$25 00
1½	"	37 50
2	Flanged,	50 00
2½	"	62 50
3	"	75 00
3½	"	87 50
4	"	100 00
4½	"	112 50
5	"	125 00
6	"	150 00
7	"	175 00
8	"	200 00
9	"	250 00
10	"	500 00

Screwing flanges included with each flanged separator.

KEYSTONE STEAM SEPARATOR

DESCRIPTION

This separator is intended for separating water and impurities from steam in its passage from boiler. Made ready to apply, including standard pipe flanges interchangeable, water gauge and increased drip—ample size to separate large bodies of water, when occasion requires, and outlet large enough to allow its free passage rapidly.

Steam is admitted from either a horizontal or vertical connection.

The steam takes a direct course downward, and the steam inlet and outlet are of ample size to admit of passage of steam without any back pressure.

Does not contain obstruction of any kind that would have a tendency to impede the flow of the live steam—on the contrary, while it completely separates steam from water and impurities it permits the free passage of both.

A steam trap connected to drip pipe of this separator completes the apparatus and discharges the entrained water automatically, cost of which is in addition to price of separator.

The entrained water in separator is at the temperature of the steam therein and consequently very hot. If it is desired to save this and return it to the boiler, the trap should be made to discharge into a feed tank from which a pump is attached; the water in its pure and heated condition could be utilized again in boiler.

In connecting the Keystone please look for directions thereon.

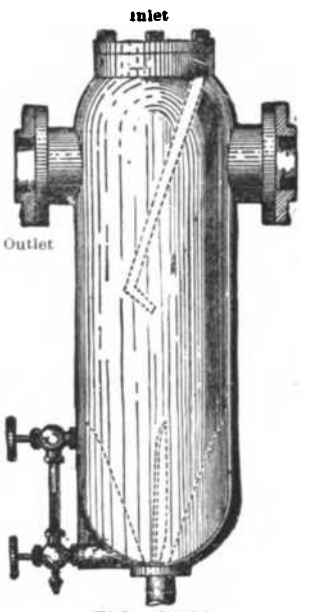


FIG. 2501

Size of Steam Pipe, Inches.		Prices.
1	Screwed,	$25 00
1½	"	37 50
2	Flanged,	50 00
2½	"	62 50
3	"	75 00
3½	"	87 50
4	"	100 00
4½	"	112 50
5	"	125 00
6	"	150 00

POTTER MESH SEPARATOR AND SUPERHEATER

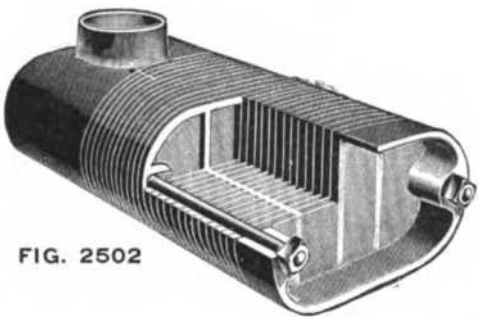


FIG. 2502

DESCRIPTION, FIG. 2502

The separator consists of a number of metal bands, with a piece of wire cloth between each pair, supported by heavy end castings. The whole is bolted together and fitted to the steam outlet, inside of the boiler. The shape of the separator can be altered to suit any conditions.

It is used in the boilers of office buildings, factories and power plants, steamboats, tugs, etc.

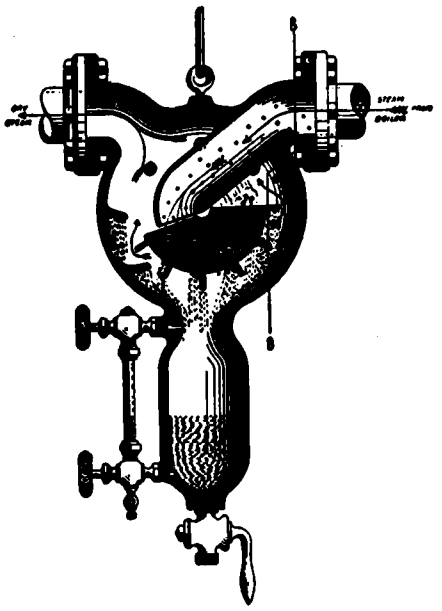
It is designed to be placed in the steam space of the boiler, or in the dome, thereby dispensing with dry pipes.

It will deliver dry steam at the boiler under all ordinary conditions of working (*i.e.*, with water in the boiler at the recognized safe working height), so long as the water line is below the bottom of the separator.

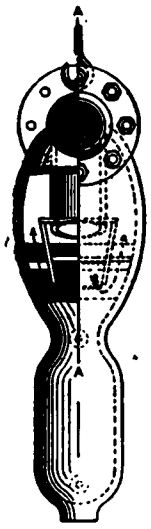
PRICES ON APPLICATION

JENNINGS' COMBINE SEPARATOR

HORIZONTAL FORM FOR EXHAUST OR LIVE STEAM



SECTIONAL VIEW FRONT
FIG. 2503



SIDE SECTIONAL VIEW

FIG. 2503

Methods: 1st. Expansion; 2d. Reverse of current; 3d. Centrifugal force; 4th Baffle or deflecting plates.

This combine separator separates the moisture and water from live steam, either the effects of condensation or priming, and purifies exhaust steam and delivers the same in condition to enter heaters, condensers or a system of coils or radiators for heating.

Separators from 2 inches to 9 inches, inclusive, are made of cast iron.

Prices, including compression flanges, and water gauge, horizontal type.

	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.	Ins.
Diameters of steam pipe..	2	2½	3	3½	4	4½	5	6	7	8	9
" " flanges.....	6½	8½	8½	10	10	11	11	13	14	16	16
Face to face of flanges...	12	15	15	19	19	23	23	26¼	27	32	32
Sizes of drip pipe.....	¾	1	1	1¼	1¼	1½	1½	2	2	2½	2½
Width of chamber.....	4⅜	7¾	7¾	11¼	11¼	14⅞	14⅞	15⅞	18⅝	21⅞	21⅞
Total height over all.....	20	28¼	28¼	37	37	44	44	56	60½	72	72
Prices, each.....	$40	50	60	70	80	95	110	140	160	200	240

Large sizes above 9 inches, built entirely of steel for excessively high pressures, producing quadruple effect—prices on application.

These separators should be used between the boiler and engine to insure the delivery of dry steam to the engine, also useful between high and low pressure cylinders of compound engines, and where exhaust steam is used for heating, and in many other places where it is desirable to have dry steam.

The above separators are tested for a safe working pressure of 125 lbs. For higher pressure they are made special, and will cost 10 per cent. of list additional.

We can furnish this separator in vertical form if desired, same list prices as above.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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NEW CENTURY IMPROVED STEAM SEPARATOR

PRICES, FIG. 2504

Size, Inches.	Each.	Face to Face Flanges, Inches.	Size, Inches.	Each.	Face to Face Flanges, Inches.
2	$30 00	11¾	6	$104 00	18
2½	35 00	11¾	7	120 00	18
3	45 00	14¼	8	145 00	21
3½	55 00	14¼	9	165 00	23½
4	64 00	16⅜	10	200 00	23½
4½	75 00	16⅜	12	250 00	25
5	83 00	17½			

We also make these separators in vertical patterns, price list same as above.

Sizes 14 to 20 inches made to order. All sizes have flange ends which are drilled to templet, unless otherwise ordered.

DESCRIPTION, FIG. 2504

These separators are very compactly built, giving economy of space with minimum weight, and at the same time are so scientifically constructed and proportioned as to secure the highest attainable efficiency in separating and removing all the water which is found entrained with steam, intercepting same into a chamber which does not present an excessive amount of condensation surface. This together with the fact that, while the baffling surface is amply sufficient, it is so arranged as to preserve the velocity of steam passing through separator without reduction of pressure.

A steam trap is absolutely necessary in connection with all steam separators to obtain best service.



FIG. 2504



FIG. 2505

DESCRIPTION, FIG. 2505

The inlet in this separator is lower than the outlet; the water, following the bottom of the horizontal pipe when it reaches the separator, is carried into the lower chamber and away through a trap, thereby preventing it reaching the engine.

When the engine is above the boiler level the water taken from the steam by this separator can be turned direct to the boiler.

This separator does not carry the steam into a large pot or tank and allow expansion to take place.

Guaranteed for any pressure up to 200 pounds.

These separators are furnished with flanges, extra heavy, with holes drilled and bolts fitted therein, and ready for the job.

PRICES, FIG. 2505

Size, Inches.	Weight, Pounds.	Distance between Flanges.	Each.	Size, Inches.	Weight, Pounds.	Distance between Flanges.	Each.
2	35	8½	$40 00	4½	90	14¼	$75 00
2½	45	9¾	45 00	5	125	15¾	80 00
3	50	9¾	50 00	6	160	18½	110 00
3½	60	12	60 00	7	220	19¾	125 00
4	80	12¾	70 00	8	300	22½	160 00

MARINE BOILER SEPARATOR

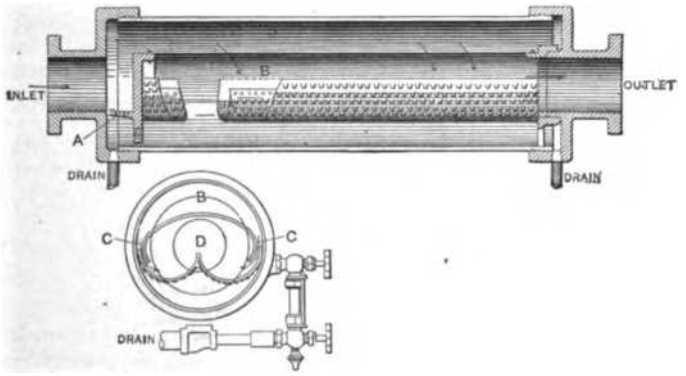


FIG. 2506

DESCRIPTION, FIG. 2506

The cut above shows a form of separator designed to take the place of the "dry pipe" in a marine boiler, though it can be used to advantage in land boilers, where there is not room for a separator near the machine in which steam is to be used.

The points to which we wish to call attention are: First, the form of lips "a" and "b," which prevent the water from entering the steam current in case the ship is tossing and throwing water against the exterior of separator. Second, that on account of the ample length, slots "c" are made very narrow and the full area of pipe maintained, which allows only limited quantities of water to enter at a time, in case of severe conditions. Third, that for the reason above given passage "c" can be made very narrow, reducing the steam to thin sheets, and on this account giving good results from the capillary and separating action of lining. Fourth, vertical partition "d," which is to prevent any water in one-half of chamber "e" being carried across up to the opposite steam current by the rolling of the ship. Fifth, that several drip pipes are provided to drain the water chamber in case ship is out of level the long way of boiler, and that the perforated plates are so made that any water passing through is trapped and cannot again enter the steam.

The machine will be constructed to meet all the requirements of marine service, and we shall be pleased to receive sketches of boilers and submit prices

VERTICAL STYLE

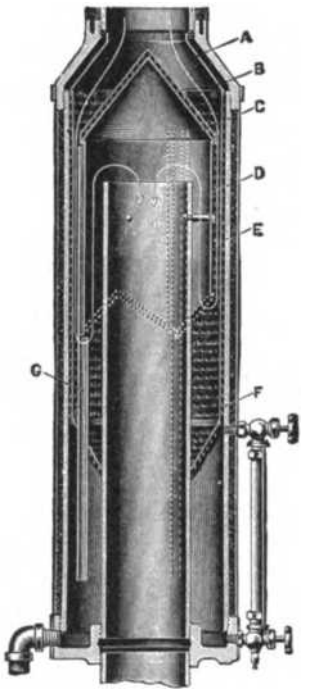


FIG. 2507

HORIZONTAL STYLE

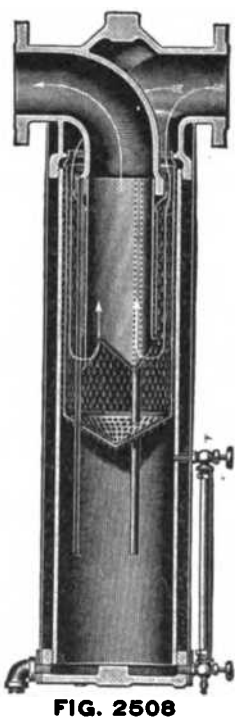


FIG. 2508

DESCRIPTION, FIGS. 2507 AND 2508

The points we wish to call attention to are: First, the internal arrangement; second, that it is designed to be placed next to the engine, when possible, giving no chance for condensation before steam is used; third, that as soon as a drop of water is separated it does not again come in contact with steam, and cannot be picked up and carried to the engine; fourth, the "whip snapping" action—that is, the steam passes down at a high velocity and then quickly reverses its direction, precipitating the moisture, which is heavier than the steam, to the water chamber; and fifth, the areas are so arranged as not to cause any loss in steam pressure. Prices on application.

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STRATTON SEPARATOR

CAST IRON

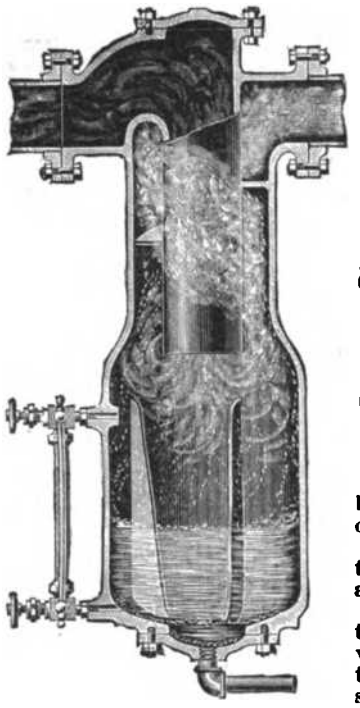


FIG. 2509

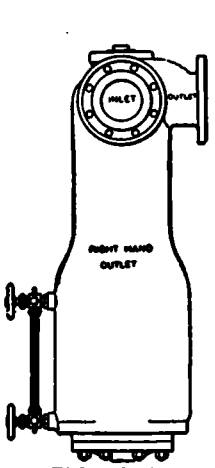


FIG. 2510

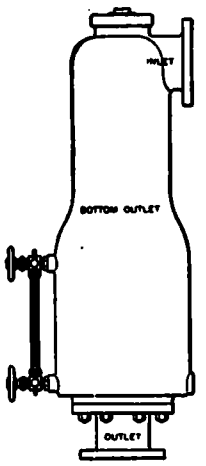


FIG. 2511

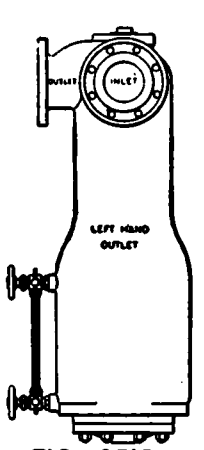


FIG. 2512

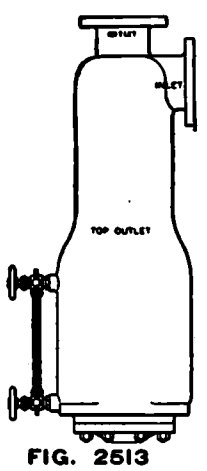


FIG. 2513

WROUGHT STEEL SHELLS

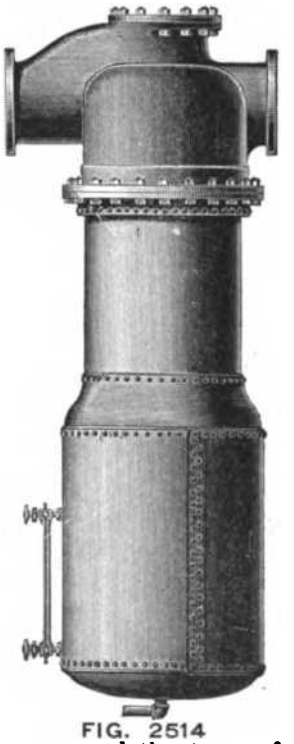


FIG. 2514

The above illustrations show how the standard pattern of the Stratton Separator may be changed in design to meet demands of special piping; all quotations however are on standard pattern unless otherwise stated.

The Stratton Separator is based on the principle that, if a rotative motion is imparted to the steam, all the liquid particles it may contain, being heavier than the steam, acquire centrifugal force and are projected to the outside of the current.

The current of steam on entering is deflected by a curved partition and thrown tangentially to the annular space at the side near to top of the apparatus. It is thus whirled around with all the velocity of influx, producing the centrifugal action which throws the particles of water against the outer cylinder. These adhere to the surface, so that the water runs down continuously in a thin sheet around the outer shell into the receptacle below, while the steam, following in a spiral course to the bottom of the internal pipe, abruptly enters it, and in a now dry condition passes upward and out of the separator, without having once crossed the stream of separated water, all danger of the steam taking up again such water after separation being entirely avoided. It is claimed that this construction enables the Stratton Separator, if properly drained, to separate from the steam large quantities of water, even though it be discharged into the apparatus in a solid stream, and it is therefore an absolute safeguard for the engine.

PRICES, FIG. 2509, CAST IRON SEPARATORS

Diameters of Steam Pipe, Inches.		Largest Diameter of Body, Inches.	Total Height Over All, Inches.	Size of Drip, Inches.	Distance Across Nozzles, Inches.	Distance Between Flanges, Inches.	Outside Diameter Flanges, Inches.	Approximate Shipping Weight, Pounds.	Each.
1	Screw Ends.	5¼	17	¾	6¼	....	....	35	$18 00
1½		6½	21	¾	7¼	....	....	50	22 00
2		7¾	25½	1	8⅜	....	....	80	28 00
2½		9⅛	30	1	11	....	....	130	35 00
3	Flanged Ends.	11	34	1¼	....	13¾	8½	250	60 00
3½		12½	38	1¼	....	15½	9	350	70 00
4		14⅜	41¾	1¼	....	16⅞	10	450	80 00
4½		15⅝	45 13/16	1¼	....	18½	10½	575	90 00
5		17⅛	49 13/16	1¼	....	20	11	700	100 00
6		20	57⅝	1½	....	23¾	13	1050	130 00
7		21⅝	65⅞	1½	....	28	14	1450	160 00
8		23⅝	74	1½	....	31	15	1950	200 00

PRICES, FIG. 2514, WROUGHT STEEL SHELLS

Diams. of Steam Pipe, Inches.	Largest Diameter of Shell, Inches.	Total Height Over All.	Size of Drip, Inches.	Distance Between Flanges, Inches.	Outside Diameter Flanges, Inches.	Approximate Shipping Weight, Pounds.	Each.
9	26⅝	6 ft. 10 in.	1½	36¼	16	1700	$280 00
10	28⅝	7 " 6 "	1½	38¾	17½	2250	330 00
12	33	8 " 10⅝ "	1½	45	19½	3350	420 00
14	36¾	10 " 1½ "	2	50½	22½	4300	540 00
16	42⅞	11 " 6¼ "	2	57½	25	5600	675 00
18	49	12 " 9½ "	2	63	27½	7500	830 00
20	55⅛	14 " 3 "	2½	70	29½	10250	1000 00

We can furnish separators with top or bottom outlet. Prices for these on application.

Every separator is tested to 180 pounds pressure; safe working pressure, 125 pounds. Special prices will be named on application for extra heavy separators for higher pressures.

STRATTON COMBINED SEPARATOR AND STEAM RECEIVER



FIG. 2515

This apparatus is constructed on the same principle as the Stratton Steam Separator, but the body is very much enlarged, thus providing a receiver of large capacity close to the engine. As the latter draws steam from this receiver it only lowers the pressure in it slightly during the period of admission; the steam always flowing continuously and in the same direction from the boiler to the receiver. This avoids the usual drop of pressure between the boiler and the engine which often amounts to over 10%, and the pressure shown by the indicator card is practically the same as that on the boiler gauge.

The arrangement of steam inlets and outlets on this type of separator and steam receiver can always be furnished in all the various combinations as shown for the standard separator.

PRICES, FIG. 2515

Diameters of Steam Pipe, Inches.	Total Height Over All, Feet.	Total Height Over All, Inches.	Height Center of Pipe to Bottom, Feet.	Height Center of Pipe to Bottom, Inches.	Distance Face to Face of Flanges, Inches.	Largest Diameter of Shell, Inches.	Capacity Cubic Feet.	Diameter of Flanges, Inches.	Size of Drain, Inches.	Approximate Shipping Weight, Pounds.	Each.
5	6	5	5	6½	20	23	11	11	1½	1000	$240 00
6	7	0	6	0½	23¾	26	16	13	1½	1400	272 00
7	7	9¼	6	8¾	28	28	21½	14	1½	1800	310 00
8	8	7	7	6	31	30	28	15	1½	2300	350 00
9	8	7¾	7	6¼	36¼	36	37½	16	2	2900	400 00
10	9	9½	8	6½	38¾	36	44	17½	2	3500	455 00
12	10	9	9	3¼	45	42	63½	19½	2	4200	580 00
14	11	7	9	11	50½	48	86	22½	2	5200	730 00

Above dimensions and price list are for standard pattern only. Special patterns at special prices. Water gauge and glass furnished with each apparatus. No companion flanges furnished unless specially ordered.

All receiver separators are high pressure construction, for 175 pounds per square inch working pressure.

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COCHRANE VERTICAL SEPARATOR

STANDARD FORM FOR OIL SERVICE OR LIVE STEAM

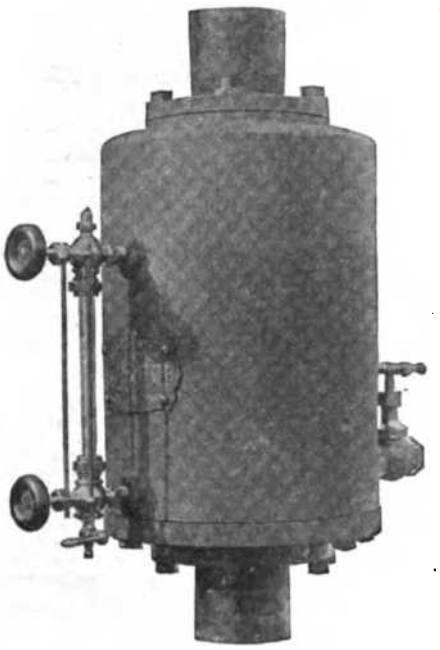


FIG. 2516

DESCRIPTION, FIG. 2516

This represents the standard form of the Cochrane Vertical Separators. This style is used for removing water from live steam when the current is descending a vertical pipe, and is limited to pressures not exceeding 100 lbs. per square inch.

PRICES ON APPLICATION

HIGH PRESSURE FORM FOR LIVE STEAM



FIG. 2517

DESCRIPTION, FIG. 2517

This represents the high pressure form of the Cochrane Vertical Separator, used in connection with steam pressures of 200 lbs. per square inch and under.

PRICES ON APPLICATION

COCHRANE HORIZONTAL SEPARATOR

FOR OIL SERVICE OR LIVE STEAM

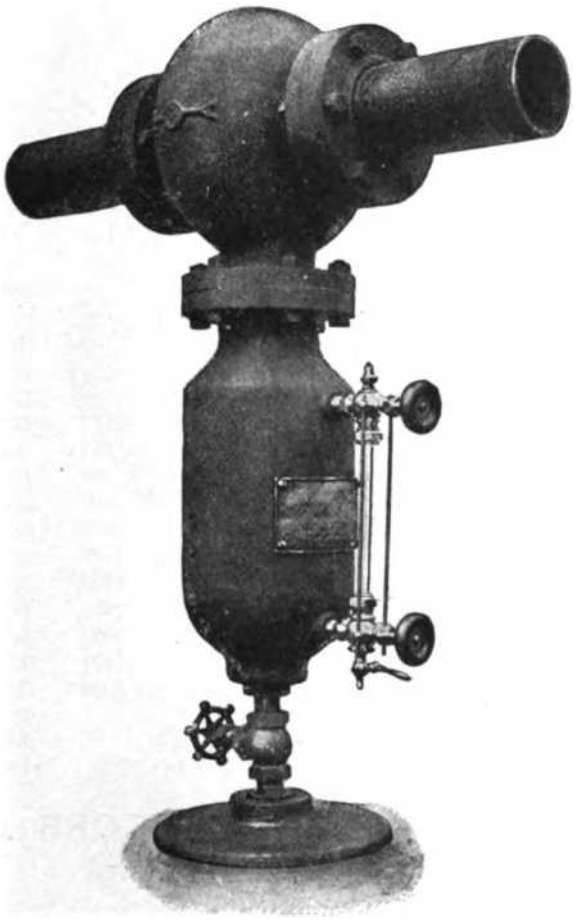


FIG. 2518

This represents the standard form of the Cochrane Horizontal Separators. This style is used for removing oil from exhaust steam, or water from live steam. When used for the latter service the pressure should not exceed 100 lbs. per square inch.

PRICES ON APPLICATION

HORIZONTAL IRON RECEIVER SEPARATOR

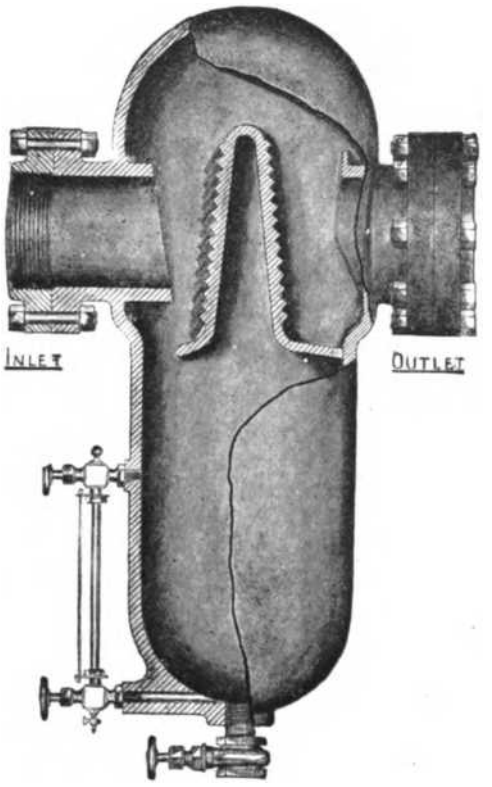


FIG. 2519

It is designed for excessive high pressure duty and where a large storage capacity is desired.

PRICES AND FULL PARTICULARS ON APPLICATION

In addition to the several forms of separators illustrated and briefly described, we can furnish separators to meet special requirements. We will promptly furnish drawings, specifications and estimates for separators of any desired metal—cast iron, cast steel, Government composition, wrought steel, or combinations of these—or for separators to specifications, for any pressure, cubical capacity or diameter of pipe, and to suit particular locations.

When writing for information, etc., unnecessary correspondence will be avoided by describing the particular service for which separator is to be used, and giving the approximate quantity of steam to be passed through the separator. The velocity of the steam passing through a separator should not exceed 6,000 feet per minute.

COCHRANE VERTICAL RECEIVER SEPARATOR

FOR LIVE STEAM SERVICE

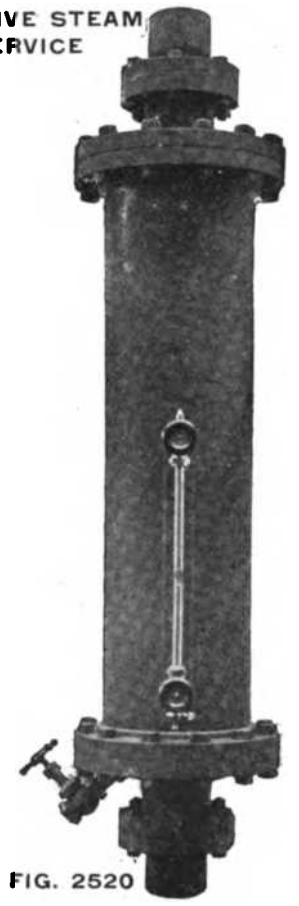


FIG. 2520

WROUGHT STEEL PIPE CONSTRUCTION

Built for any desired working pressure, and furnished with cast iron top and bottom heads and flanges, or with these parts of cast steel.

This type of the Cochrane Separator is particularly adapted for placing immediately over the throttle valve of engines. The distance from face to face of flanges can be increased or diminished to suit the space limitations, or give any desired cubical capacity.

PRICES ON APPLICATION

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BUNDY STEAM AND OIL SEPARATOR

DESCRIPTION, FIG. 2521

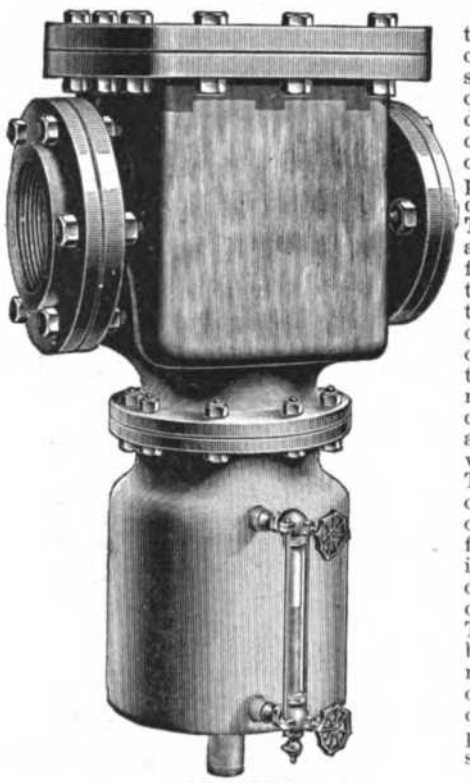


FIG. 2521

The Bundy Steam and Oil Separator is an appliance to be placed on any live steam line for the removal of entrained moisture, or on an exhaust pipe for the separation of cylinder oil, packing, graphite and other foreign substances held in suspension. It will deliver the steam in a purified condition, so that the condensation can be turned to practical use, instead of being thrown away, as is now done in most steam plants. This separator can also be used on pipes conveying ammonia gas, for the same purpose. The Bundy Oil Separator is a particularly valuable appliance when used in conjunction with an open feed water heater. It is placed on the exhaust line to purify the exhaust steam. The process of extraction in the Bundy Separator is effected by a series of separating plates, as shown in sectional cut, six or more in number, placed in a vertical position in the body of the separator through which the steam must pass. The plates consist of upright hollow columns, with openings at regular intervals for the admission of water, oil, etc., to the central duct which drains the same downwards to the receiver. The columns in these plates are set staggered; in other words, one column is set directly behind the open space between the two columns of the plate in front. The steam takes a zigzag course, and all of it comes into direct contact with the intercepting columns, thus insuring thorough treatment and complete removal of the undesirable ingredients. The plates are flanged at the bottom to form a barrier between the body of the separator and the receiver, which effectually prevents the picking up of the water and oil in the receiver by the steam and carrying the same forward into the steam pipe. No portion of the steam escapes this process of separation.

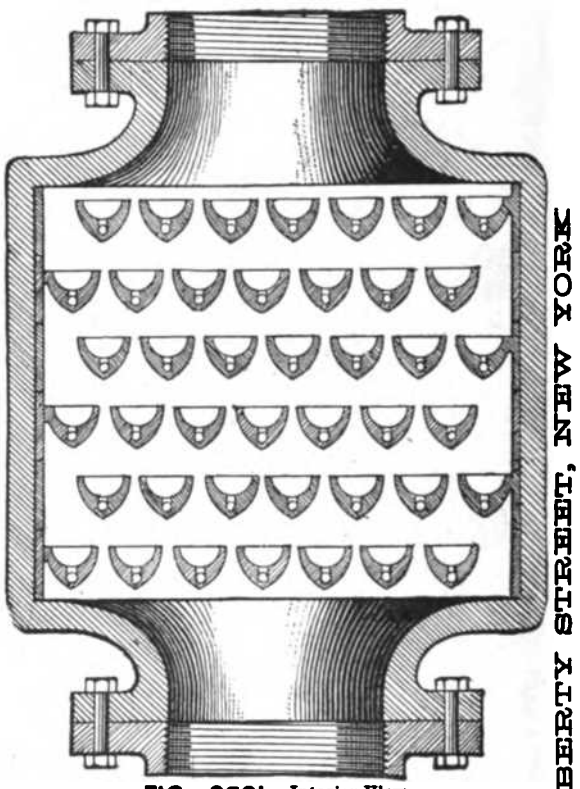


FIG. 2521.—Interior View.

The interior view. Showing nest of separating plates in position ready for use. Plates are easily removed for cleaning purposes, which is very essential in the case of oil separation from exhaust steam.

PRICES, BUNDY STEAM SEPARATOR (100 Series)

Sizes — Nos.	Sizes — Inches.	Dimensions in Inches — Total Height.	Height from Bottom of Receiver to Center of Opening.	Length from Face to Face of Pipe Flanges.	Diameters of Pipe Flange.	Drip Pipe, Inches.	Approximate Weight, Lbs.	Each.
101½	1½	28	20	13½	Tapped	¾	200	$40
102	2	28	20	13½	"	¾	204	40
102½	2½	28	20	13½	"	1	206	45
103	3	28	20	13½	"	1	208	50
103½	3½	33¼	25	16½	8½	1¼	380	60
104	4	33¼	25	16½	9	1¼	400	70
104½	4½	33¼	25	16½	9¼	1½	420	85
105	5	35½	26	16½	10	1½	460	100
106	6	35½	26	16½	11	1½	480	120
107	7	44¼	32	19¼	12½	2	910	140
108	8	44¼	32	19¼	13½	2	945	160
109	9	50¼	36½	20½	15	2	1200	180
110	10	50¼	36½	20½	16	2	1250	210
112	12	52	39	22½	19	2	1600	240
114	14	63½	50	24½	21	2	2100	280
116	16	65¾	51½	26½	23½	2	2400	360
118	18	68¼	53¼	26½	25	2	2550	440
120	20	75	56½	26½	27½	2	3800	520
122	22	75	56½	26½	29½	2	3900	600
124	24	75	56½	26½	31½	2	4000	680
126	26	95	69	26½	33	2		780
128	28	95	69	26½	35	2		900
130	30	95	69	26½	37	2		1100

PRICES, BUNDY OIL SEPARATOR (200 Series)

Sizes — Nos.	Sizes — Inches.	Dimensions in Inches — Total Height.	Height from Bottom of Receiver to Center of Opening.	Length from Face to Face of Pipe Flange.	Diameters of Pipe Flange.	Drip Pipe, Inches.	Approximate Weight, Lbs.	Each.
201½	1½	28	20	13½	Tapped	¾	200	$40
202	2	28	20	13½	"	¾	204	40
202½	2½	28	20	13½	"	1	206	45
203	3	28	20	13½	"	1	208	50
203½	3½	30¾	22½	16½	8½	1¼	340	60
204	4	30¾	22½	16½	9	1¼	352	70
204½	4½	30¾	22½	16½	9¼	1½	370	85
205	5	33	23½	16½	10	1½	400	100
206	6	33	23½	16½	11	1½	420	120
207	7	38¼	26	19¼	12½	2	710	140
208	8	38¼	26	19¼	13½	2	740	160
209	9	44¼	30½	20½	15	2	990	180
210	10	44¼	30½	20½	16	2	1040	210
212	12	46	33	22½	19	2	1250	240
214	14	48½	35	24½	21	2	1450	280
216	16	50¾	36½	26½	23½	2	1900	360
218	18	53¼	38¼	26½	25	2	2000	440
220	20	60	41½	26½	27½	2	3000	520
222	22	60	41½	26½	29½	2	3100	600
224	24	60	41½	26½	31½	2	3200	680
226	26	80	54	26½	33	2		780
228	28	80	54	26½	35	2		900
230	30	80	54	26½	37	2		1100

AUTOMATIC DISCHARGER FOR BUNDY STEAM AND OIL SEPARATORS

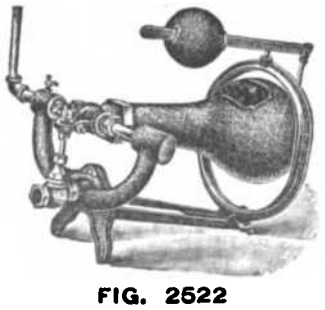


FIG. 2522

DESCRIPTION, FIG. 2522

All Bundy Steam and Oil Separators can be furnished with an automatic discharger, for automatically removing all water or oil as fast as it accumulates in the receiver. This safeguards against the flooding of the separator and prevents loss of steam. An advantage secured by the automatic discharger is the delivery of the water from the steam separator, which is absolutely pure and very hot, to the hot well. It may be placed at any convenient point below the receiver of the separator.

PRICES, FIG. 2522

Prices Fig. 2522 to be added to prices of separators above.

For Separators. Sizes, Inches.	Bundy High Pressure. No.	Bundy High Pressure. Each.	Bundy. No.	Bundy. Each.
2 to 3½	76	$70 00	52	$35 00
4 " 8	77	100 00	53	55 00
9 " 14	78	130 00	54	85 00
16 " 30	79	160 00	55	115 00

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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ACME SEPARATORS

FOR REMOVING WATER AND OIL FROM STEAM

DESCRIPTION, FIGS. 2523 AND 2524

The separator is made in two forms, the one adapted for horizontal pipes, the other for vertical pipes, and either form can be furnished, as desired. The vertical form of separator can be located directly above the throttle of the engine, and is of such shape as to harmonize with the steam piping; it does not have any part projecting away from the pipe line, and is especially suited for fine engine rooms. They have asbestos lagging, covered by polished sheet iron with brass bands giving the apparatus an elegant finish and fine appearance.

In order to insure the best operation of the separator, it should be connected with a discharge trap. These traps will receive the water as fast as taken out by the separator, and will remove it rapidly to any desired point. This separator is equally efficient for the removal of oil from the exhaust steam before it comes in contact with the feed water. For this purpose the separator should be located as near the engine as possible, and before the admixture of steam and feed water. In the case of a condensing plant, a special vacuum pump of small size, or its equivalent, may be required to remove the drip from the separator.

HORIZONTAL

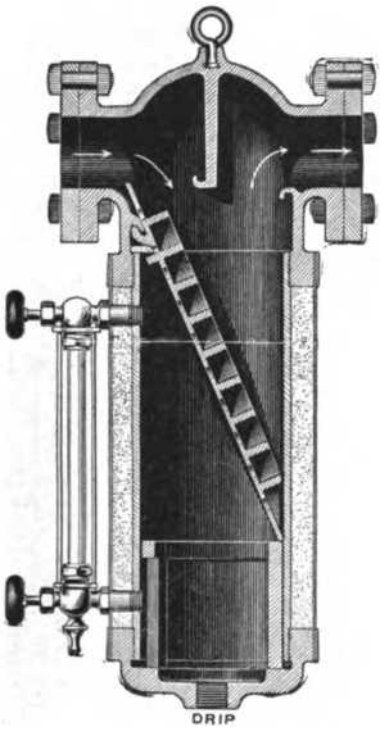


FIG. 2523

VERTICAL

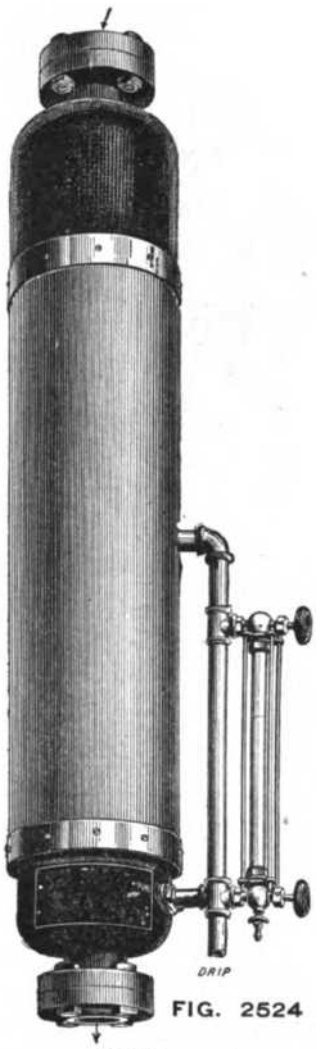


FIG. 2524

PRICES, FIG. 2523

Sizes of pipe, inches,	1½	2	2½	3	3½	4	4½	5	6	7	8	10
Length between flanges	11	11	11	11	14½	16½	16½	16½	19	19½	19½	25
Diameters of flanges	6	6	7	7½	8	10	10	10	11	14	14	16
Diameters of body, outside of lagging	9	9	9	9	14	16	16	16	18	18	18	24
Sizes of drip	¾	¾	¾	¾	¾	1	1	1¼	1¼	1½	1½	1½
Length from center of flanges to drip.	21½	21½	23½	23½	25½	27½	27½	27½	34½	41½	41½	45½
Prices, each	$28 00	40 00	45 00	50 00	60 00	75 00	90 00	105 00	125 00	150 00	180 00	250 00

PRICES, FIG. 2524

Sizes of pipe. inches,	1½	2	2½	3	3½	4	4½	5	6	7	8	10
Height between flanges	49	50	51	52	53	54	55	56	58	60	62	66
Diameters of flanges	6	6	7	7½	9	9	10	11	11	14	14	16
Diameters of body, outside of lagging	9	9	11	11	13	13	13	16½	16½	20	20	25
Sizes of dip	¾	¾	¾	¾	¾	1	1	1¼	1½	1½	1½	1½
Prices, each	$28 00	40 00	45 00	50 00	60 00	75 00	90 00	105 00	125 00	150 00	180 00	250 00

LIPPINCOTT STEAM SEPARATOR

AND EXHAUST OIL EXTRACTOR

DESCRIPTION, FIG. 2525

This separator was designed:

First, that it should be structurally strong, to withstand the high pressures in use, and the strains caused by expansion and contraction of long lines of pipe.

Second, to insure a free passage for the steam, so that there will be no fall in pressure.

Third, to divert the water and oil from the path of the steam immediately, and prevent any further contact.

In the Lippincott Separator, the water strikes a curved deflector, without any tendency to spray, and is instantly deflected down to the reservoir, while the steam readily passes around the sides of the deflector.

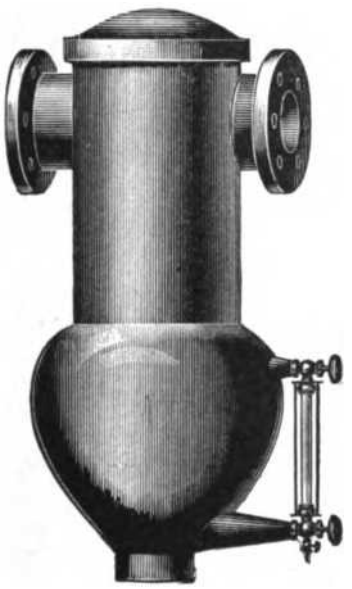
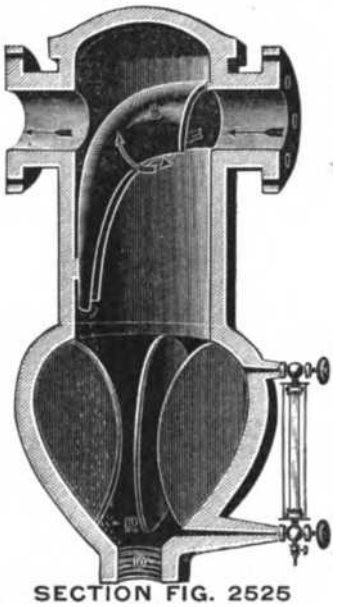


FIG. 2525



SECTION FIG. 2525

PRICES, FIG. 2525

Sizes of Pipe.	Each.	Sizes of Pipe.	Each.
1	$20 00	4½	$72 00
1¼	20 00	5	83 00
1½	25 00	6	104 00
2	30 00	7	120 00
2½	35 00	8	145 00
3	45 00	9	165 00
3½	52 00	10	185 00
4	64 00	12	215 00

LOWDEN EXTRACTOR AND SEPARATOR

DESCRIPTION, FIG. 2526

This extractor will separate and automatically discharge grease, oil, and grit from exhaust steam. It has automatic discharge and removable plates.

EXTRACTOR

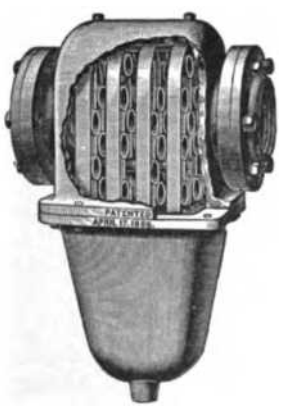


FIG. 2526

DESCRIPTION, FIG. 2527

This separator is constructed on the same principle as the extractor, Fig. 2526, but it is intended for use under boiler pressure, in removing entrained water from live steam, directly before it enters the engine cylinder.

SEPARATOR



FIG. 2527

PRICES, FIG. 2526

Sizes of Extractor or Exhaust Pipe, Inches.	Low Pressure Extractor.
2	$35 00
3	50 00
4	70 00
5	85 00
6	110 00
7	135 00
8	150 00
9	175 00
10	200 00
12	250 00
14	300 00
16	350 00

PRICES, FIG. 2527

Sizes of Separator or Steam Pipe, Inches.	High Pressure Separator.
2	$50 00
3	65 00
4	85 00
5	100 00
6	125 00
7	150 00
8	175 00
9	205 00
10	225 00
12	275 00
14	325 00
16	375 00

Special prices, etc., for larger sizes will be given on application.

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HINE'S ELIMINATORS

This eliminator is adapted for extracting oil from exhaust steam and water from live steam.

The vertical form can be used in many places where the horizontal pattern cannot. They are equally efficient, and many prefer them for live steam, as they can be placed immediately over the throttle.

HORIZONTAL

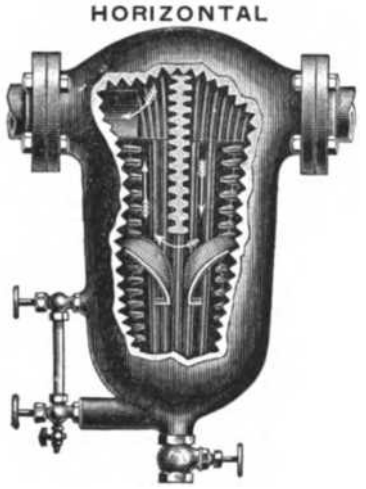


FIG. 2528

DIMENSIONS, FIG. 2528

Sizes of Pipe.	Prices, Figs. 2528 and 2529.	Face to Face, Ins.	Top to Center, Ins.	Center to Bottom, Ins.	Diam. of Fl'nges, Ins.	Drip. Ins.
1	$20	10	2⅞	12⅞	5	¾
1¼	20	11⅛	3	16¼	6	¾
1½	25	11⅛	3	16¼	6	¾
2	30	11	3¾	22½	7	¾
2½	35	11	3¾	22½	7	¾
3	45	14¼	4⅞	25⅞	8	1
3½	52	14¼	4⅞	25⅞	8	1
4	64	16½	5	30½	9½	1
4½	72	16½	5	30½	9½	1
5	83	17¾	5⅝	28	10	1¼
6	104	17⅞	6	32	11	1¼
7	120	20¾	7⅞	34⅛	13	1¼
8	145	20¾	7⅞	34⅛	13	1¼
9	165	24⅞	9¼	29⅜	17½	1½
10	185	24⅞	9¼	29⅜	17½	1½
12	215	28⅞	11⅛	33¾	19½	1½

DIMENSIONS, FIG. 2529

Face to Face, Ins.	Diam. of Body, Ins.	Diam. of Small Fl'ges, Ins.	Diam. of Large Fl'ges, Ins.	Drip. Ins.
16½	8	6	6	¾
20¼	10	7	8	¾
20¼	10	7	8	¾
22¾	12	8	9	¾
22¾	12	8	9	¾
24½	12¼	9½	11	1
24½	12¼	9½	11	1
26½	17	11	13	1
26½	17	11	13	1
28¼	19	13	15½	1¼
28¼	19	13	15½	1¼
36¼	22⅞	14⅝	17	1½
36¼	22⅞	14⅝	17	1½
43⅜	28	17	20	1½
43⅜	28	17	20	1½

VERTICAL

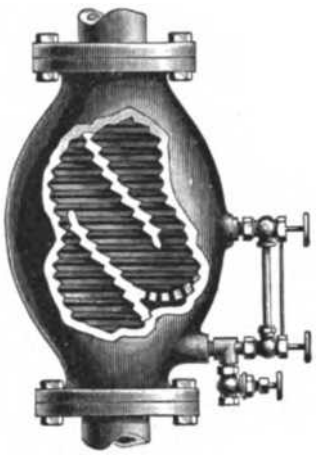


FIG. 2529

These prices include companion flanges, bolts, and water gauge.

CENTRIFUGAL STEAM SEPARATORS AND GREASE EXTRACTORS

VERTICAL



FIG. 2530

HORIZONTAL

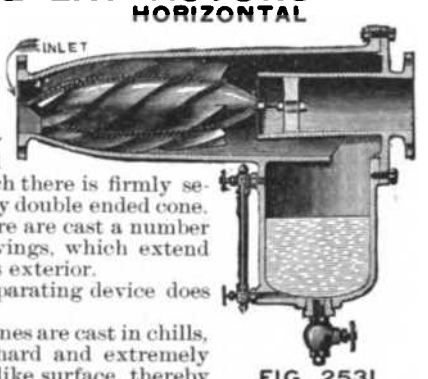


FIG. 2531

DESCRIPTION, FIGS. 2530 AND 2531

The separator consists of a shell or casing in which there is firmly secured a stationary double ended cone. On this cone there are cast a number of knife edged wings, which extend spirally along its exterior.

The cone or separating device does not rotate.

These spiral cones are cast in chills, giving them a hard and extremely smooth enamel like surface, thereby preventing friction or any obstruction to the free outward flow of water, grease, or other foreign matter in its separation from the steam.

PRICES, FIGS. 2530 AND 2531

Diameters of Steam Pipe.	Lengths between Pipe Flanges, Ins.	Largest Diameters of Separator, Ins.	Diameters of Pipe Fl'nges, Inches.	Approximate Shipping Weights, Pounds.	Each.
1½	17½	7	Pipe tap	35	$25 00
2	20½	8	"	65	32 00
2½	26½	8½	6½	115	40 00
3	30½	10	7½	190	50 00
3½	33	11¼	8	230	60 00
4	35½	12¼	9	280	73 00
4½	36½	13	9½	350	88 00
5	39	13¾	10½	425	106 00
6	42	15¼	11½	530	122 00
7	43½	17	13	680	140 00
8	46	18¼	14	900	160 00
9	47	20	16	1100	210 00
10	49	20½	17	1250	250 00
12	51½	22¾	19	1600	300 00
14	56	25¼	21	2500	400 00
16	59	28¼	23	3000	525 00
18	63	32	26	3600	750 00

CENTRIFUGAL GREASE EXTRACTORS

FOR CONDENSING ENGINES



FIG. 2532

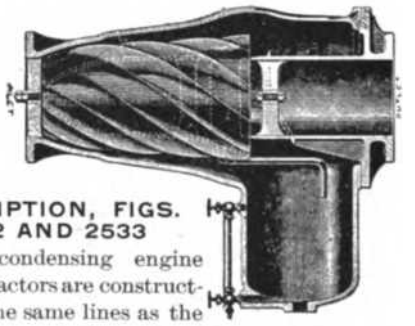


FIG. 2533

DESCRIPTION, FIGS. 2532 AND 2533

These condensing engine grease extractors are constructed along the same lines as the extractors, Figs. 2530 and 2531, having in their interiors the double end cone or separating device, which is stationary.

They have been designed to meet the requirements of both stationary and marine condensing engines, with a view to the complete elimination of the minutest particles of grease.

PRICES, FIGS. 2532 AND 2533

Diameters of Steam Pipe. Ins.	Lengths between Pipe Flanges, Ins.	Largest Diameters of Extractor, Ins.	Diameters of Pipe Flanges, Ins.	Approximate Shipping Weights, Pounds.	Each.
4	34½	12¼	9	280	$80 50
5	38½	13¾	10½	425	117 00
6	40	15¼	11½	530	134 00
7	42	18	13	680	154 00
8	45	19½	14	900	176 00
9	46½	22	16	1100	230 00
10	48	23½	17	1250	275 00
12	51	27	19	1600	330 00
14	55½	29	21	2500	440 00
16	58	34	23	3000	575 00
18	63	36½	26	3600	800 00

Special designs furnished. Prices on application.

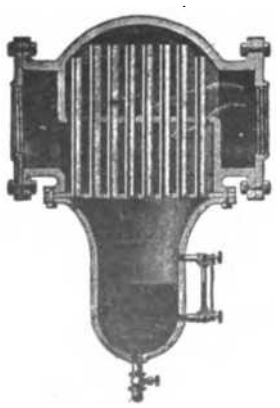


FIG. 2534

MULTITUBULAR OIL AND GREASE EXTRACTOR

DESCRIPTION, FIG. 2534

This extractor is intended for service where exhaust steam is used for heating or other purposes. The multitubular separator contains effective baffling surfaces, and a strong feature of it is that there is an absolute minimum of back pressure caused as each separator of a given size is sufficiently large to permit of a free and unobstructed flow of steam, free from all impurities.

PRICES, FIG. 2534

Sizes, Inches.	Each.	Face to Face Flanges, Inches.	Sizes, Inches.	Each.	Face to Face Flanges, Inches.
2	$30 00	7	6	$104 00	14
2½	35 00	7¼	7	120 00	15
3	45 00	8¾	8	145 00	16¼
3½	55 00	9¼	9	165 00	19
4	64 00	10½	10	200 00	19
4½	75 00	11¾	12	250 00	22
5	83 00	12¼			

Sizes 14 to 20 inches made to order. All sizes have flange ends which are drilled to templet, unless otherwise ordered.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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BUNDY EXHAUST HEAD

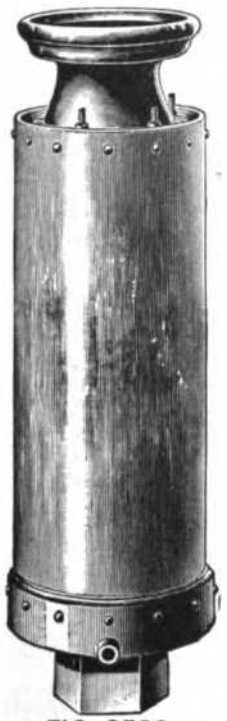


FIG. 2536

DESCRIPTION, FIG. 2536

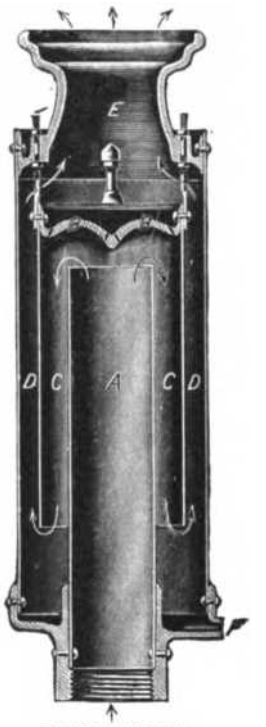
The Bundy Exhaust Head effectually prevents the escape of moisture and oil from the exhaust pipe, with its consequent and unavoidable injury to the roof and all parts of the building upon which it would fall.

A—Inner pipe. C—Intermediate pipe. E—Ornamental top.
B—Return plate. D—Outer pipe. F—Drip pipe connection.

PRICES, FIG. 2536

Sizes, Inches.	Drain Pipe, Inches.	Approximate Weight.	Each.	Sizes, Inches.	Drain Pipe, Inches.	Approximate Weight.	Each.
1½	¾	40	$20 00	8	1½	300	$90 00
2	¾	50	25 00	9	2	370	105 00
2½	1	60	25 00	10	2	500	125 00
3	1	80	30 00	12	2	500	150 00
3½	1	100	30 00	13	2½		175 00
4	1	100	40 00	14	2½		200 00
4½	1¼	140	40 00	15	2½		235 00
5	1¼	180	50 00	16	2½		250 00
6	1¼	180	60 00	17	3		270 00
7	1½	230	75 00	18	3		300 00

All sizes up to and including 4 inches are threaded for direct pipe connection; all other sizes are furnished with companion flanges.



SECTIONAL
FIG. 2536

SIMPSON'S CENTRIFUGAL EXHAUST HEAD

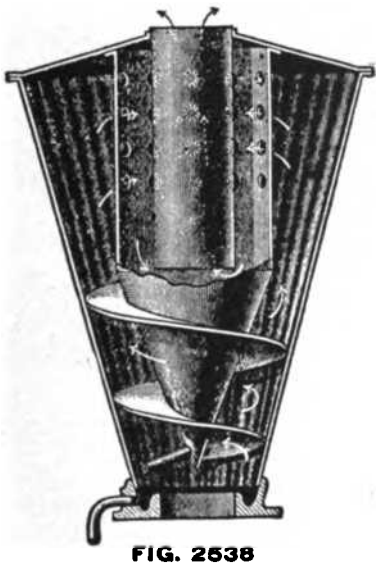


FIG. 2538

DESCRIPTION, FIG. 2538

It is adapted for rolling mills, blast furnaces, breweries, and manufactories using steam. It thoroughly entraps water and grease from the exhaust steam without back pressure.

PRICES, FIG. 2538

Size for iron pipe,	1	inch.	$18 00
" " " "	1½	"	22 00
" " " "	2	"	25 00
" " " "	2½	"	28 00
" " " "	3	"	30 00
" " " "	3½	"	35 00
" " " "	4	"	40 00
" " " "	4½	"	45 00
" " " "	5	"	50 00
" " " "	6	"	60 00
" " " "	7	"	70 00
" " " "	8	"	85 00
" " " "	9	"	110 00
" " " "	10	"	120 00
" " " "	12	"	150 00
" " " "	14	"	180 00
" " " "	16	"	220 00

Screwing flanges included with every head.

PEERLESS CENTRIFUGAL EXHAUST HEAD

DESCRIPTION AND PRICES, FIG. 2537

This exhaust head produces no back pressure, noise or vibration. Is light, compact, and offers a minimum exposed area to pressure of wind. Extracts all grease and water from the exhaust steam, whereby the surrounding space can be used for drying purposes. It is constructed of heavy sheet metal, and has a double shell or casing in which the spiral cone is secured. The inner shell or casing has a number of openings formed by cuts or slots, whose leading edges are turned outward so as to guide the water and heavier particles to the annular space between the inner and outer shells, where they are isolated from the ascending steam and flow to the base of the exhaust head.

The top or cover is secured by bolts, whereby it and the spiral cone can be removed, thus giving free access to the whole interior for inspection and cleaning. Due to its compactness, it is especially adapted for the exhaust pipes of high pressure tug boats and river steamers.

Sizes of Pipe, Inches.	Diameters, Inches.	Height, Inches.	Each.	Sizes of Pipe, Inches.	Diameters, Inches.	Height, Inches.	Each.
1½	6	14	$20 00	9	23	43	$105 00
2	7	17	22 00	10	24	47	120 00
2½	8	20	25 00	11	25	49	135 00
3	9	23	28 00	12	26	52	150 00
3½	10	26	32 00	13	28	54	170 00
4	10½	28	36 00	14	30	56	190 00
4½	11	30	40 00	15	32	58	225 00
5	12	32	50 00	16	34	60	240 00
6	15	35	60 00	17	36	62	270 00
7	17	37	70 00	18	38	64	300 00
8	20	40	85 00				

Prices for larger sizes given on application.

DESCRIPTION AND PRICES, FIG. 2539

It contains no baffle plates, produces no back pressure, insures perfect separation. The exhaust steam is admitted at the bottom. It passes up the interior pipes, is discharged tangentially close to the shell, and is thereby given a vigorous whirling motion. The entrained water, likewise the oil, flies outward, strikes the cool side and trickles down to the outlet at the bottom. The steam, now perfectly dry, finds ready escape through the central opening above.

Sizes of Exhaust Pipe, Inches.	Sizes of Drip Pipe, Inches.	Diameters of Flanges, Inches.	Weights, Lbs.	Each.
1 or 1½	¾		17	$20 00
2 or 2½	1		26	25 00
3 or 3½	1	Tapped.	45	30 00
4 or 4½	1		69	40 00
5	1¼		77	50 00
6	1¼	11	110	60 00
7	1¼	12½	135	75 00
8	1½	13½	200	90 00
10	2	16	260	125 00
12	2	19	365	150 00
14	2½	21	425	200 00
16	3	23½	575	250 00
18	3½	25	700	300 00
20	4	27½	850	360 00
22	4½	28½	1200	450 00
24	4½	32	1500	600 00
30	6	40	2500	900 00
36	7	46	4000	1200 00

Sizes up to and including 5 inches are tapped with standard steam pipe threads; larger sizes are provided with flanges as indicated in list. The dimensions of these flanges as regards diameter, thickness, size of bolt holes and diameter of bolt hole circle correspond to the joint standard adopted by the A. S. M. E. and the Master Steam and Hot Water Fitters' Association. The weights given are for heads, not packed; packing adds about 25 per cent.

EXHAUST HEAD

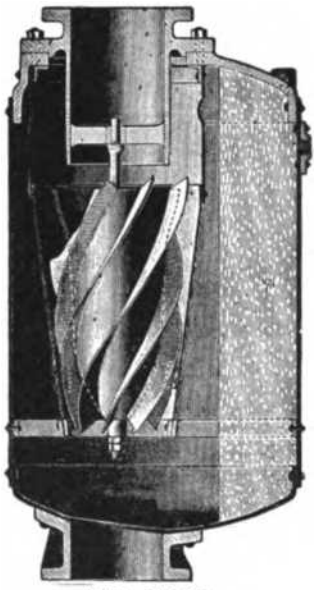


FIG. 2537

THE STURTEVANT EXHAUST HEAD

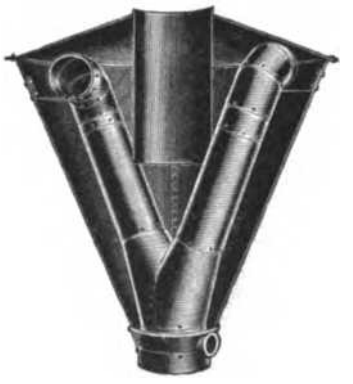


FIG. 2539

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SWEET'S DIRECT EXHAUST HEAD

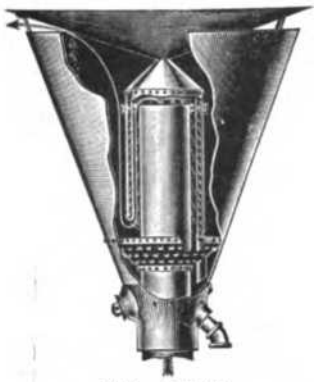


FIG. 2540

DESCRIPTION, FIG 2540

Sweet's Direct Exhaust Head has a substantial cast iron base to which is securely riveted the outer shell of heavy gauge steel; the inner pipe is of steel, forced into base by a hydraulic press; to this pipe are attached the cone and cylinder, and they in turn are fastened to the outer shell, the whole being tied together, forming a solid structure. Separation is caused by the steam passing over the sieves inside of the cylinder, which conduct the oil and water to the receiver chamber, and by quickly reversing the direction of steam, throwing the heavier particles downward.

PRICES

Sizes, Inches.	Each.	Drip, Inches.	Sizes, Inches.	Each.	Drip, Inches.
1–1½	$20 00	¾	10	$125 00	2
2–2½	25 00	¾	11—12	150 00	2
3–3½	30 00	1	13	175 00	2½
4–4½	40 00	1	14	200 00	2½
5	50 00	1¼	15	235 00	3
6	60 00	1¼	16	250 00	3
7	75 00	1¼	17	270 00	3½
8	90 00	1½	18	300 00	3½
9	105 00	1½	20	350 00	3½

TUBULAR EXHAUST HEAD

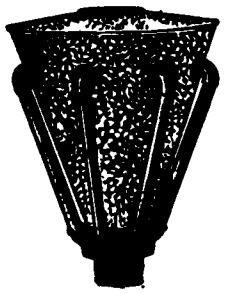


FIG. 2542

PRICES, FIG. 2542

Sizes, Inches.	Each.	Sizes, Inches.	Each.
1	$18 00	5	$50 00
1½	22 00	6	60 00
2	25 00	7	70 00
2½	28 00	8	85 00
3	30 00	9	105 00
3½	35 00	10	125 00
4	40 00	12	150 00
4½	45 00	14	180 00

IMPROVED EXHAUST PIPE HEAD

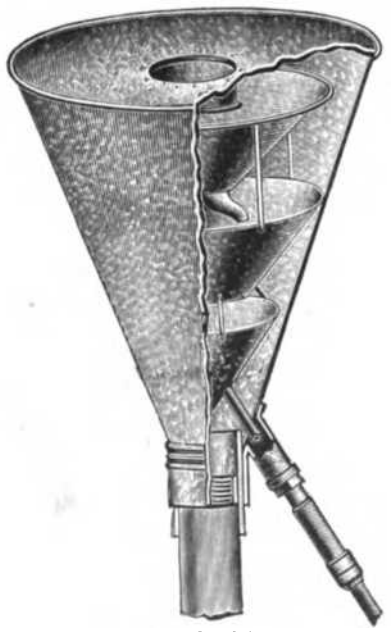


FIG. 2544

DESCRIPTION FIG. 2544

This head is applicable to all exhaust pipes, and is ready to be connected. Makes no noise. No back pressure.

PRICES

Diameter Exhaust Pipe.	Each.
1½	$20 00
2 or 2½	25 00
3 " 3½	30 00
4 " 4½	40 00
5	50 00
6	60 00
7	75 00
8	90 00
9	105 00
10	125 00
12	150 00
13	175 00
14	200 00
15	235 00
16	250 00
17	270 00
18	300 00

Special price on larger sizes.

In connecting drip, connect a small piece of *1 inch pipe about 6 inches long, to bushing; then slip a piece of 1½ inch pipe about 8 inches long over it, with a reducer *1½ to *1 inch, and then connect your drip pipe to same; at all events drip must be loose from drain.

N. B.—Expansion joint will answer.

*Larger or smaller, as the case may be.

LYMAN STEAM CONDENSING EXHAUST PIPE HEAD

PRICES, FIG. 2541

Size Exhaust Pipe, Inches.	Dimensions, Width.	Height.	Diameters of Drip Pipe, Inches.	Each.
1 or 1½	13	17	¾	$20 00
2 " 2½	16	21	1	25 00
3 " 3½	19	24	1	30 00
4 " 4½	22	28	1	40 00
5	25	32	1¼	50 00
6	29	36	1¼	60 00
7	33	42	1¼	75 00
8	36	46	1½	90 00
9	40	51	1½	105 00
10	44	55	2	125 00
11 " 12	48	61	2	150 00
13	52	65	2½	175 00
14	56	70	2½	200 00
15	61	74	3	235 00
16	64	80	3	250 00
17	68	85	3½	270 00
18	73	90	3½	300 00



FIG. 2541

BURT EXHAUST HEAD

PRICES, FIG. 2542A

Size of Exhaust Pipe, Inches.	Height, Inches.	Diam. Inches.	Size of Drip, Inches.	Each.
1 or 1½	16	10	¾	$8 00
2 " 2½	18	12	1	10 00
3 " 3½	20	14	1	12 00
4 " 4½	27	16	1	16 00
5	29	18	1¼	20 00
6	31	20	1¼	24 00
7	36	22	1¼	30 00
8	39	24	1½	36 00
9	43	26	1½	42 00
10	46	30	2	50 00
11	46	30	2	50 00
12	48	32	2	60 00
13	51	34	2	70 00
14	56	36	2½	80 00
15	59	39	2½	94 00
16	62	42	2½	100 00
17	69	45	3	108 00
18	76	48	3	120 00
19	79	50	3½	132 00
20	82	52	3½	144 00



FIG. 2542A

Heads up to 6 inches in diameter have a very heavy metal base. Sizes above 6 inches are fitted with extra heavy flanges. Prices on heads above 20 inches and up to 60 inches in diameter quoted upon application.

RUTZLER EXHAUST HEAD

PRICES, FIG. 2543

Size Exhaust Pipe, Inches.	Each.	Size Exhaust Pipe, Inches.	Each.
1½	$22 00	8	$85 00
2	25 00	9	100 00
2½	28 00	10	125 00
3	30 00	12	150 00
3½	35 00	14	180 00
4	40 00	16	220 00
5	50 00	18	300 00
6	60 00	20	360 00
7	75 00		

Sizes below 5 inches, screwed end. 5 inches and larger, flanged end. Companion flange and bolts furnished without additional charge.



FIG. 2543

KEYSTONE EXHAUST PIPE HEAD

DESCRIPTION, FIG. 2545

This head is made of heavily galvanized B. B. Iron, with an inverted head made of heavy B. B. Black Iron, painted; made without flange and ready to screw on wrought iron pipe. No flange or joint to make: ready for immediate use. No back pressure with these heads, and no spray on roof or sidewalk.

PRICES

Sizes, Iron Pipe, Inches.	Each.	Sizes, Iron Pipe, Inches.	Each.
1	$18 00	6	$60 00
1½	22 00	7	70 00
2	25 00	8	85 00
2½	28 00	9	110 00
3	30 00	10	120 00
3½	35 00	12	150 00
4	40 00	14	180 00
4½	45 00	16	220 00
5	50 00		



FIG. 2545

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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ASHCROFT STEAM OR PRESSURE GAUGES

WITH SINGLE BOURDON SPRINGS

These gauges are adapted for steam, air, gas, water and any fluid pressure that will not affect brass. They can be graduated to any pressure not above 500 pounds per square inch. These gauges have non-corrosive movements. Springs are made from carefully selected, seamless drawn tubing. Dials are made of brass and silvered, with the figures and letters cut deep and filled with black enamel. Connections on sizes 3 inches and over are ¼ inch male pipe thread at bottom of gauge, as shown in cut They are all accurately and correctly graduated by open mercury column. These gauges can be furnished with black dials and silvered letters and figures, with connection on back of case, with customer's name and address cut in dials, if so stated in order.

PRICES, FIG. 2546, INCLUDING COCK FOR EACH GAUGE

Dial, Size.	Iron Case, Brass Ring.	Iron Case, Nickeled Ring.	Brass Case.	Nickeled Case.	Brass Deep Case.	Nickeled Deep Case.
12 inches, each.....	$50 00	$51 50	$75 00	$79 00	$80 00	$84 00
10 "	32 00	33 00	40 00	43 00	44 00	47 00
8½ "	22 00	22 75	30 00	32 50	33 50	36 00
6¾ "	16 00	16 60	20 00	22 00	23 00	25 00
6 "	13 00	13 50	16 00	17 50	....	....
5½ "	10 00	10 25	12 00	13 25	....	....
5 "	8 00	8 20	11 00	12 00	....	....
4½ "	8 00	8 20	10 00	11 00	....	....
3½ "	7 00	7 18	9 00	9 75	....	....
2½ "	6 00	6 15	8 00	8 60	....	....

Siphons must be attached to these gauges when they are used for steam pressures to prevent anything but water entering the spring of the gauge. When ordering, do not fail to state the pressure per square inch to which you wish the gauges graduated. All pressure gauges, particularly when used under steam pressure, should be graduated to double their working pressure to ensure the greatest durability.



FIG. 2546

WITH DOUBLE BOURDON SPRINGS—LANE'S IMPROVEMENT

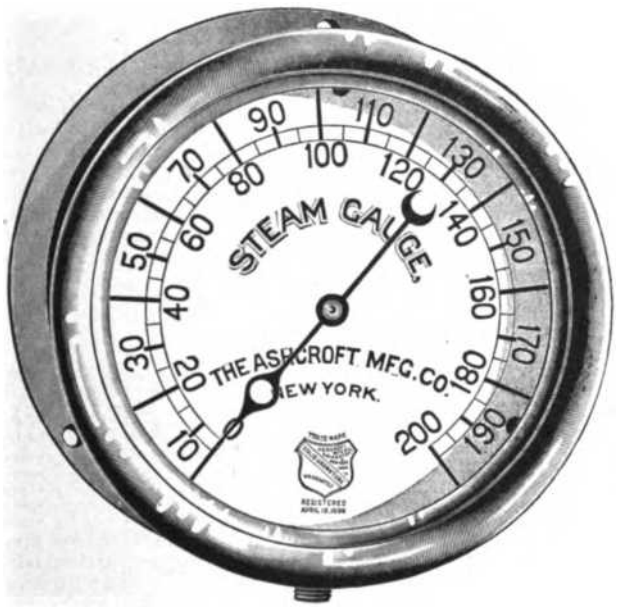


FIG. 2547

These gauges will give good service where it is impracticable to use a Single Spring Bourdon Gauge. They are so constructed that they will drain themselves, and, when subjected to vibration and general severe usage, will prove more reliable than a regular single spring gauge. These gauges have non-corrosive movements. Springs are made from carefully selected, seamless drawn tubing. Dials are made of brass and silvered, with the figures and letters cut deep and filled with black enamel. Connections on sizes 3 inches and over are ¼ inch male pipe thread at bottom of gauge, as shown in cut. They are all accurately and correctly graduated by open mercury column. These gauges can be furnished with black dials and silvered letters and figures, with connection on back of case, with customer's name and address cut in dials, if so stated in order.

PRICES, FIG. 2547, INCLUDING COCK FOR EACH GAUGE

Dial, Size.	Iron Case, Brass Ring.	Iron Case, Nickeled Ring.	Brass Case.	Nickeled Case.	Brass, Deep Case.	Nickeled, Deep Case.
12 inches, each.....	$55 00	$56 50	$80 00	$84 00	$85 00	$89 00
10 "	37 00	38 00	45 00	48 00	49 00	52 00
6½ "	25 00	25 75	34 00	36 50	37 50	40 00
6¾ "	18 00	18 60	22 00	24 00	25 00	27 00
6 "	15 00	15 50	18 00	19 50	....	....
5½ "	12 00	12 25	14 00	15 25	....	....
5 "	11 00	11 20	13 00	14 00	....	....
4½ "	10 00	10 20	12 00	13 00	....	....

Siphons must be attached to these gauges when they are used for steam pressures to prevent anything but water entering the spring of the gauge. When ordering, do not fail to state the pressure per square inch to which you wish the gauges graduated. All pressure gauges, particularly when used under steam pressures, should be graduated to double their working pressure to ensure the greatest durability.

ASHCROFT VACUUM GAUGES

WITH SINGLE BOURDON SPRINGS

These gauges are generally graduated to 30 inches, as shown in cut. These gauges have non-corrosive movements. Springs are made from carefully selected, seamless drawn tubing. Dials are made of brass and silvered, with the figures and letters cut deep and filled with black enamel. Connections on sizes 3 inches and over are ¼ inch male pipe thread at bottom of gauge, as shown in cut. They are all accurately and correctly graduated by open mercury column. These gauges can be furnished with black dials and silvered letters and figures, with connection at back of case, with customer's name and address cut in dials, if so stated in order.

PRICES, FIG. 2548. INCLUDING COCK FOR EACH GAUGE

Dial, Size.	Iron Case, Brass Ring.	Iron Case, Nickeled Ring.	Brass Case.	Nickeled Case.	Brass Deep Case.	Nickeled Deep Case.
12 inches, each.....	$50 00	$51 50	$75 00	$79 00	$80 00	$84 00
10 "	32 00	33 00	40 00	43 00	44 00	47 00
8½ "	22 00	22 75	30 00	32 50	33 50	36 00
6¾ "	16 00	16 60	20 00	22 00	23 00	25 00
6 "	13 00	13 50	16 00	17 50	....	....
5½ "	10 00	10 25	12 00	13 25	....	....
5 "	8 00	8 20	11 00	12 00	....	....
4½ "	8 00	8 20	10 00	11 00	....	....
3½ "	7 00	7 18	9 00	9 75	....	....
2½ "	6 00	6 15	8 00	8 60	....	....

When ordering note that the dials of these gauges are graduated to 30 inches. They can be graduated in equivalent pounds, if so stated when ordering.



FIG. 2548

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ASHCROFT AUXILIARY SPRING PRESSURE GAUGES



FIG. 2549

Siphons must be attached to these gauges when used on steam pressures to prevent anything but water entering the spring of the gauge.



FIG. 2550

Siphons must be attached to these gauges when used for steam pressures to prevent anything but water entering the spring of the gauge.



FIG. 2551

These gauges are adapted for use on steam fire engines, marine engines, and for high pressure service in general, where extreme accuracy and durability are required. We recommend them for use where single and double Bourdon Tube Gauges have been found wanting.

The construction of this style of gauge is the result of efforts to provide an accurate and durable gauge that would overcome the defect of permanent set of springs in gauges of the single or double Bourdon type, irrespective of their length or the method of connecting to their movements, or the cross section of their tubes, and the experience of our customers has demonstrated that this gauge is the most accurate and durable on the market. An independent co-operating spiral spring is applied to the free end of the single Bourdon tube, which enables the wearing and friction of joints to be reduced to the least possible number—two only. The Bourdon tube is short enough to drain itself, and the gauge is very quick to act, and responsive to the slightest change in pressure. It is graduated by open mercury column.

INCLUDING COCK TO EACH GAUGE

PRICES, FIG. 2549

Sizes, Dial.	Iron Case, Brass Ring.	Iron Case, Nickeled Ring.	Brass Case.	Nickeled Case.	Brass Deep Case.	Nickeled Deep Case.
12 inches	$55 00	$56 50	$80 00	$84 00	$85 00	$89 00
10 "	37 00	38 00	45 00	48 00	49 00	52 00
8½ "	25 00	25 75	34 00	36 50	37 50	40 00
6¾ "	18 00	18 60	22 00	24 00	25 00	27 00
6 "	15 00	15 50	18 00	19 50	.....	.....
5½ "	12 00	12 25	14 00	15 25	.....	.....
5 "	11 00	11 20	13 00	14 00	.....	.....
4½ "	10 00	10 20	12 00	13 00	.....	.....

When ordering, do not fail to state the pressure per square inch to which you wish the gauges graduated. All pressure gauges, particularly when used under steam pressure, should be graduated to double their working pressure to insure the greatest durability.

ASHCROFT COMPOUND PRESSURE AND VACUUM GAUGES

WITH SINGLE BOURDON SPRINGS

These gauges are used principally on compound engines, and are generally graduated to 60 pounds pressure and 30 inches vacuum, as shown in cut.

These gauges have non-corrosive movements. Springs are made from carefully selected seamless drawn tubing. Dials are made of brass and silvered, with the figures and letters cut deep and filled with black enamel. Connections on sizes 3 inches and over are ¼ inch male pipe thread at bottom of gauge, as shown in cut. They are all accurately and correctly graduated by open mercury column.

These gauges can be furnished with black dials and silvered letters and figures, with connection at back of case, with customer's name and address cut in dials, if so stated in order.

INCLUDING COCK FOR EACH GAUGE

PRICES, FIG. 2550

Sizes, Dial.	Iron Case, Brass Ring.	Iron Case, Nickeled Ring.	Brass Case.	Nickeled Case.	Brass Deep Case.	Nickeled Deep Case.
12 inches	$60 00	$61 50	$80 00	$84 00	$85 00	$89 00
10 "	40 00	41 00	50 00	53 00	54 00	57 00
8½ "	30 00	30 75	40 00	42 50	43 50	46 00
6¾ "	20 00	20 60	25 00	27 00	28 00	30 00
6 "	16 00	16 50	20 00	21 50	.....	.....
5½ "	14 00	14 25	16 00	17 25	.....	.....
5 "	14 00	14 25	16 00	17 25	.....	.....
4½ "	12 00	12 20	14 00	15 00	.....	.....
3½ "	10 00	10 18	12 00	12 75	.....	.....

When ordering, do not fail to state the pressure per square inch to which you wish the pressure side of the gauge graduated. All pressure gauges, particularly when used under steam pressure, should be graduated to double their highest working pressure to insure the greatest durability. The vacuum side of the gauge can be graduated in equivalent pounds, if so stated when ordering.

ASHCROFT COMBINATION WATER PRESSURE GAUGES

WITH SINGLE BOURDON SPRINGS

These gauges are made for use in waterworks, pumping stations, mines, etc., and have two sets of graduations, one showing pounds pressure to the square inch, and the other height of water in feet.

These gauges have non-corrosive movements. Springs are made from carefully selected seamless drawn tubing. Dials are made of brass and silvered, with the figures and letters cut deep and filled with black enamel. Connections on sizes 3 inches and over are ¼ inch male pipe thread at bottom of gauge, as shown in cut. They are all accurately and correctly graduated by open mercury column.

These gauges can be furnished with black dials and silvered letters and figures, with connection at back of case, with customer's name and address cut in dials, if so stated in order.

INCLUDING COCK FOR EACH GAUGE

PRICES, FIG. 2551

Sizes, Dial.	Iron Case, Brass Ring.	Iron Case, Nickeled Ring.	Brass Case.	Nickeled Case.	Brass Deep Case.	Nickeled Deep Case.
12 inches	$60 00	$61 50	$80 00	$84 00	$85 00	$89 00
10 "	40 00	41 00	50 00	53 00	54 00	57 00
8½ "	30 00	30 75	40 00	42 50	43 50	46 00
6¾ "	20 00	20 60	25 00	27 00	28 00	30 00
6 "	16 00	16 50	20 00	21 50	.....	.....
5½ "	14 00	14 25	16 00	17 25	.....	.....
4½ or 5 inch dial	12 00	12 20	14 00	15 00	.....	.....

When ordering, do not fail to state the pressure per square inch to which you wish the gauges graduated. All pressure gauges should be graduated to double their working pressure to ensure the greatest durability.

MANNING, MAXWELL, & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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ASHCROFT ALTITUDE GAUGES WITH SINGLE BOURDON SPRINGS

These gauges are used principally on hot-water heaters for showing the height of column of water in the reservoir or tank used with that system of heating. Their graduations are in feet, and generally for a maximum limit of 70 feet. The black hand is the operating one, and indicates the pressure. The index hand, which is painted red, can be placed at any desired pressure point on the dial to indicate the required height of the column of water in the reservoir or tank, and will remain stationary wherever it is set. The ring is fastened to the case with cotter pins, so that it can be easily and quickly removed.

These gauges have non-corrosive movements. Springs are made from carefully selected, seamless drawn tubing. Dials are made of brass and silvered, with the figures and letters cut deep and filled with black enamel. Connections on sizes 3 inches and over are ¼ inch male pipe thread at bottom of gauge, as shown in cut. They are all accurately and correctly graduated by open mercury column.

These gauges can be furnished with black dials and silvered letters and figures, with connection at back of case, with customer's name and address cut in dials, if so stated in order.

PRICES, FIG. 2552, INCLUDING COCK FOR EACH GAUGE

Size Dials, Inches.	Iron Cases, Brass Rings, Each.	Iron Cases, Nickeled Rings, Each.	Brass Cases, Each.	Nickeled Cases, Each.	Brass Deep Cases, Each.	Nickeled Deep Cases, Each.
12	$60 00	$61 50	$80 00	$84 00	$85 00	$89 00
10	40 00	41 00	50 00	53 00	54 00	57 00
8½	30 00	30 75	40 00	42 50	43 50	46 00
6¾	20 00	20 60	25 00	27 00	28 00	30 00
6	16 00	16 50	20 00	21 50	.....	.....
5½	14 00	14 25	16 00	17 25	.....	.....
4½ or 5	12 00	12 20	14 00	15 00	.....	.....

When ordering, do not fail to state the limit of feet to which you wish the gauges graduated. All pressure gauges, particularly when used under steam pressure, should be graduated to double their highest working pressure to insure the greatest durability.



FIG. 2552

ASHCROFT PYROMETER GAUGES WITH SINGLE BOURDON SPRINGS

This gauge has two sets of graduations, the inner showing pounds pressure per square inch and the outer the corresponding temperatures in degrees Fahrenheit of the steam pressure.

PRICES, FIG. 2553, INCLUDING COCK FOR EACH GAUGE

Size Dials, Inches.	Iron Cases, Brass Rings, Each.	Iron Cases, Nickeled Rings, Each.	Brass Cases, Each.	Nickeled Cases, Each.	Brass Deep Cases, Each.	Nickeled Deep Cases, Each.
12	$60 00	$61 50	$80 00	$84 00	$85 00	$89 00
10	40 00	41 00	50 00	53 00	54 00	57 00
8½	30 00	30 75	40 00	42 50	43 50	46 00
6¾	20 00	20 60	25 00	27 00	28 00	30 00
6	16 00	16 50	20 00	21 50	.....	.....
5½	14 00	14 25	16 00	17 25	.....	.....

A siphon must be attached to these gauges to prevent anything but water entering the spring of the gauge.

When ordering, do not fail to state the pressure per square inch to which you wish the gauges graduated. All pressure gauges, particularly when used under steam pressure, should be graduated to double their working pressure to insure the greatest durability.



FIG. 2553

ASHCROFT AUXILIARY SPRING LOCOMOTIVE GAUGES

The special improved construction of this style of gauge is the result of efforts to provide an accurate, sensitive and durable gauge that would be exempt from the annoyance of permanent set of springs and the inaccuracies arising therefrom, which frequently occur in all gauges of the single or double Bourdon Tube type, irrespective of the length or shape of their springs, the means employed for connecting them to their movements, or their cross-sectional shape, and the experience of our many customers in the long and continued use of these auxiliary spring gauges has demonstrated that they are the most accurate and durable pressure gauges for any and all kinds of service that have ever been offered to the public.

The auxiliary spring feature of this gauge consists of an independent co-operating spiral spring applied to the free end of the single Bourdon Tube, which enables the second Bourdon Tube to be dispensed with and reduces the number of joints subjected to wear and friction between the tube and the segment of the recording movement to the least possible number—two only. The Bourdon Tube is short enough to drain itself, the gauge is very quick to act, and will respond to the slightest change in pressure, either upward or downward. It is graduated by open mercury column.

PRICES, FIG. 2554
INCLUDING COCK AND COUPLING FOR EACH GAUGE AND WOODEN BLOCKS TO FORM AIR SPACE BACK OF GAUGE

Size Dials, Inches.	Iron Case, Brass Rings, Each.	Iron Case, Nickeled Rings, Each.	Brass Cases, Each.	Nickeled Cases, Each.
6¾	$18 00	$18 60	$22 00	$24 00
6	15 00	15 50	18 00	19 50
5½	12 00	12 25	14 00	15 25
5	11 00	11 20	13 00	14 00
4½	10 00	10 20	12 00	13 00

A siphon must be used with these gauges.

When ordering, do not fail to state the pressure per square inch to which you wish the gauges graduated. All pressure gauges, particularly when used under steam pressures, should be graduated to double their working pressure to insure the greatest durability.



FIG. 2554

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ASHCROFT DOUBLE SPRING LOCOMOTIVE GAUGES



FIG. 2555

We can furnish these gauges graduated to any pressure up to 500 pounds per square inch.

These gauges have non-corrosive movements. Springs are made from specially prepared, highly tempered, seamless drawn tubing. Movements and springs are removed from all contact with back of case. Elastic packing rings hermetically seal the gauge cases, making them impervious to moisture and dust. Figures on dial are cut large and deep, and filled with black enamel. Teeth in segments and pinions are cut on improved gear cutters. Face of segment is very broad and the teeth deep, thus preventing lost motion from wear.

PRICES, FIG. 2555

Including cock and coupling for each gauge, and wooden blocks to form air space back of gauge.

Size Dial, Inches.	Iron Case, Brass Ring. Each.	Iron Case, Nickeled Ring. Each.	Brass Case. Each.	Nickeled Case. Each.
4½	$10 00	$10 20	$12 00	$13 00
5	11 00	11 20	13 00	14 00
5½	12 00	12 25	14 00	15 25
6	15 00	15 50	18 00	19 50
6¾	18 00	18 60	22 00	24 00

A siphon must be used with these gauges.

When ordering, do not fail to state the pressure to which you wish us to graduate the gauges.

ASHCROFT STEAM HEAT GAUGES
FOR SERVICE ON RAILROADS

These gauges are for use on the steam heating service of locomotives and cars. They can be graduated to pressures as high as 300 pounds to the square inch. They are also used in the caboose to determine the air-break pressure. The general construction is of our usual high standard. They are all graduated by open mercury column.

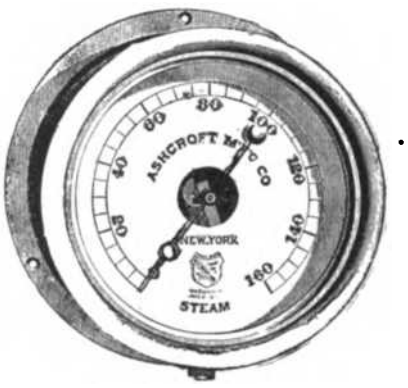


FIG. 2556

PRICES, FIG. 2556

Including cock for each gauge.

Size Dial, Inches.	Iron Case, Brass Ring. Each.	Brass Case. Each.	Nickeled Case. Each.
4½	$8 00	$10 00	$11 00
5	8 00	11 00	12 00
5½	10 00	12 00	13 25
6	13 00	16 00	17 50
6¾	16 00	20 00	22 00

A siphon must be used with these gauges when used on steam pressures.

When ordering, do not fail to state the pressure per square inch to which you wish the gauges graduated. All pressure gauges, particularly when used under steam pressure, should be graduated to double their working pressure to insure the greatest durability.

ASHCROFT DUPLEX AIR BRAKE GAUGES
WESTINGHOUSE TYPE

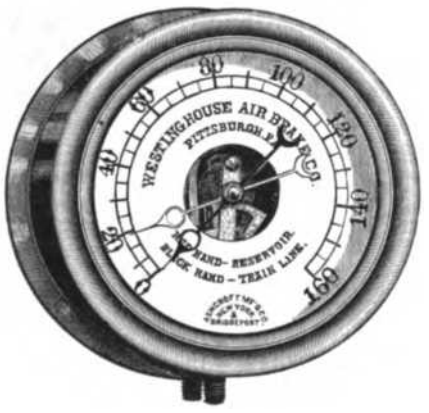


FIG. 2557

This gauge is especially constructed to withstand the severe usage to which it is subjected on a locomotive engine, for air brake pressure indications.

Its interior mechanism consists, in part, of two separate sets of Bourdon double-tube springs, which are independently connected to their recording movements, the train line pressure operating one set and the reservoir pressure operating the other. The springs are so connected to their movements as to permit the use of a single graduated scale on the dial for indicating the true pressure operating each set, a red-painted hand denoting the reservoir pressure, and a black hand the train-line pressure. The springs are our well-known, solid drawn, seamless tubing. The special movements, and every detail of the gauge, including the workmanship and finish, receive special and careful attention.

PRICES

5½ inch dial, brass deep case..... $20 00 each

ASHCROFT FARM ENGINE AND PORTABLE ENGINE GAUGES
WITH AUXILIARY SPRINGS

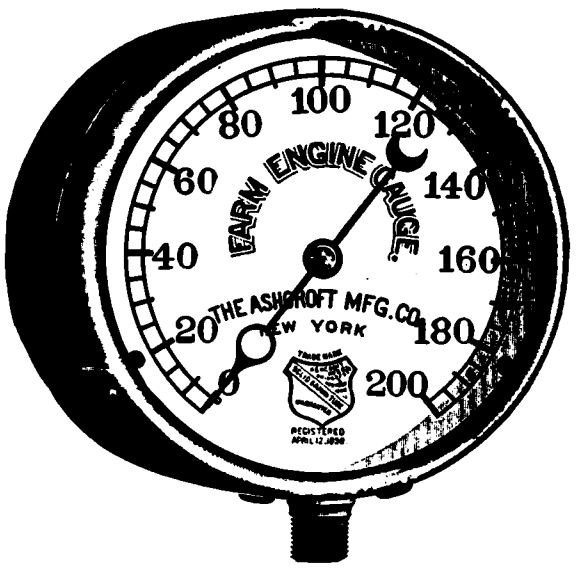


FIG. 2558

Connections are ¼ inch male pipe thread. Rings fit close and are held by screws. Back of case is without flange. Movements are non-corrosive. Springs are made from carefully selected, seamless drawn tubing. Dials are made of brass and silvered, with the figures and letters cut deep and filled with black enamel.

PRICES, FIG. 2558, INCLUDING COCK FOR EACH GAUGE

	Each.
4½ inch dial, iron case, brass ring	$8 00
5 " " " " " "	8 00
4½ " " " " nickel "	8 20
5 " " " " " "	8 20

A siphon must be used with these gauges to prevent anything but water entering spring of the gauge.

When ordering, do not fail to state the pressure per square inch to which you wish the gauges graduated. All pressure gauges, particularly when used under steam pressure, should be graduated to double their working pressure to insure the greatest durability.

These gauges can be furnished with black dials and silvered letters and figures, with customer's name and address cut in dials, and with ⅜ inch pipe thread connection, if so stated in order.

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ASHCROFT AMMONIA GAUGES WITH STEEL SPRINGS

These gauges are adapted for use with ammonia and all other fluids and gases that affect brass.

They have non-corrosive movements specially prepared to withstand the oxidizing action of ammonia gases. Springs are made from solid bar steel, carefully bored out, bent, tempered, and tested. Dials are silvered, with the figures and letters cut deep and filled with black enamel. Connections are ¼ inch male pipe thread at bottom of gauge, as shown in cut. They are all graduated by open mercury column.

These gauges can be furnished with black dials and silvered letters and figures, with connection at back of case, with customer's name and address cut in dials, if so stated in order.

PRICES, FIG. 2559

Size Dial, Inches.	Iron Case and Ring, Each.	Iron Case, Nickeled Ring, Each.
8½	$45 00	$45 75
6¾	40 00	40 60
6	35 00	35 50
5½	30 00	30 50
5	30 00	30 50
4½	25 00	25 50
3½	25 00	25 50

Prices on iron cocks for use with ammonia gauges will be given on application.

When ordering, do not fail to state the pressure per square inch to which you wish the gauges graduated. All pressure gauges, particularly when used under steam pressure, should be graduated to double their working pressure to insure the greatest durability.

If a double scale, showing both pressure and vacuum, is required, as shown in cut, do not fail to so state in order.



FIG. 2559

ASHCROFT HYDRAULIC GAUGES WITH STEEL SPRINGS

These gauges can be graduated to any pressure not exceeding 20,000 pounds per square inch and are used mostly on hydraulic presses.

They have non-corrosive movements. Springs are made from solid bar steel, carefully bored out, bent to shape, tempered, and tested. The dials are of silver finished metal, with the figures and letters cut deep and filled with black enamel. Connections are ½ inch male pipe thread at bottom of gauge, as shown in cut. The hexagon nut on the socket is provided for the use of a wrench when securing the gauge in place.

These gauges can be furnished with black dials and silvered letters and figures, with customer's name and address cut in dial, if so stated in order.

PRICES, FIG. 2560

Size Dial, Inches.	Iron Case, Brass Ring. Each.	Iron Case, Nickeled Ring. Each.	Brass Case. Each.	Nickeled Case. Each.
12	$110 00	$111 50	$125 00	$129 00
10	90 00	91 00	100 00	103 00
8½	70 00	70 75	80 00	82 50
6¾	50 00	50 60	60 00	62 00
6	35 00	35 50	40 00	41 50
5	30 00	30 50	35 00	36 00
4½	25 00	25 50	30 00	31 00
3½	22 00	22 50	26 00	26 75

A maximum hand can be attached to these gauges to show at any time the highest pressure to which the gauge has been subjected. Maximum hand, $5.00 extra.

Special prices on hydraulic gauges with brass springs, graduated to not over 1,000 pounds, will be given on application.

These gauges can be graduated to show corresponding pressure in tons on any given sized ram, without extra charge.

When ordering, do not fail to state the pressure per square inch to which you wish the gauges graduated. All pressure gauges should be graduated to double their working pressure to insure the greatest durability.

If a double scale showing pounds pressure per square inch and tons on ram is required, state the diameter of the ram and the number of tons to which we shall graduate the gauges.



FIG. 2560

ASHCROFT HYDRAULIC COCKS
FOR USE WITH HYDRAULIC GAUGES

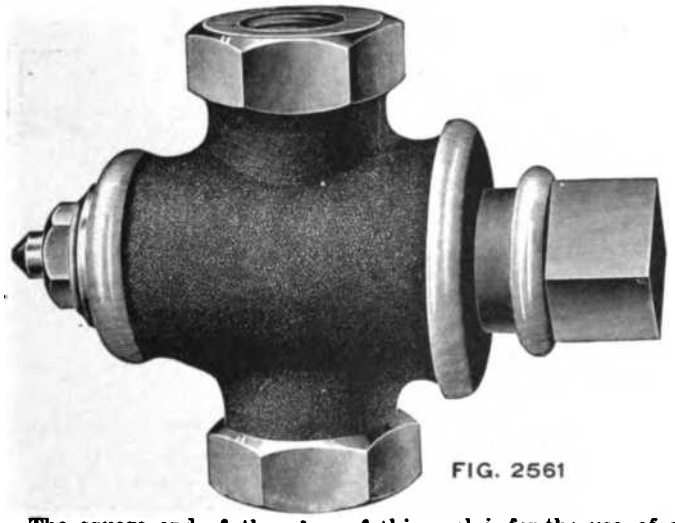


FIG. 2561

The square end of the plug of this cock is for the use of a wrench to open and close it.....Price, each, $8.00

ASHCROFT HYDRAULIC CHECK VALVES

In the general use of hydraulic gauges the pressure is exhausted so suddenly as to cause a severe shock to their interior springs which soon weakens them, besides injuring the other working parts of the gauges. To prevent the injurious effects of such shocks and allow of a more gradual exhausting of the pressure, we recommend with every hydraulic gauge the use of these special check valves.

PRICE, EACH, $2.50

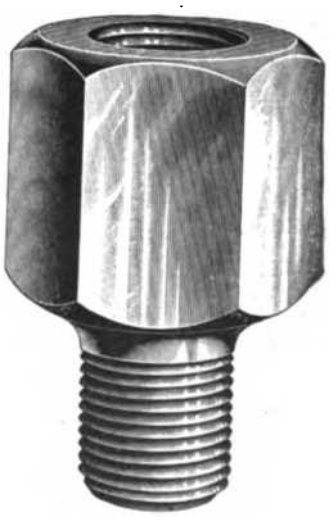


FIG. 2562

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ASHCROFT TEST GAUGES, WITH SINGLE BOURDON SPRINGS



FIG. 2563

All of the Ashcroft test gauges are graduated and adjusted with the utmost care and precision by an open mercury column, and all users of pressure gauges will find a test gauge of material service to them in determining what errors, if any, exist in their gauges. The interior mechanism of these gauges is of fine and delicate workmanship. The gauge hand is made sufficiently delicate to indicate the slightest change in pressure, and the graduations of the dials are made for as close reading as their varied sizes will permit.

PRICES FIG. 2563. INCLUDING COCK FOR EACH GAUGE

Size Dial. Inches.	Brass Case. Each.	Nickeled Case. Each.
10	$50 00	$53 00
8½	40 00	42 50
6¾	30 00	32 00
6	25 00	26 50
5½	20 00	21 25
4½	16 00	17 00
3½	14 00	14 75
3	14 00	14 60

A siphon must be used with these gauges when used on steam pressures to prevent anything but water entering the spring of the gauge.

When ordering do not fail to state the pressure per square inch to which you wish the gauge graduated. Test gauges should be graduated to about 25 per cent. beyond their highest working pressure to insure the greatest durability.

These gauges cannot be graduated to more than 1,000 pounds; for higher pressure, prices will be given on application.

ASHCROFT INSPECTORS' TEST GAUGES



FIG. 2564

This gauge was designed more particularly to meet the requirements of steam boiler inspectors, and is made as light as possible for convenience in carrying.

PRICE, FIG. 2564

3-inch dial, nickeled brass case, with small nickeled union cock.....each, $14 60

ASHCROFT GAUGE HAND PULLERS

DESCRIPTION, FIGS. 2565 AND 2566

These hand pullers will be found very convenient in quickly and easily removing the hands from gauges.

PRICES, FIGS. 2565 AND 2566

Hand Puller No. 1, Fig. 2565, for all gauges up to 8½ inches.....each, $1 50

Hand Puller No. 2, Fig. 2566, for all larger sizes..... " 8 00

NO. 1



FIG. 2565

NO. 2



FIG. 2566

ASHCROFT MERCURY GAUGES

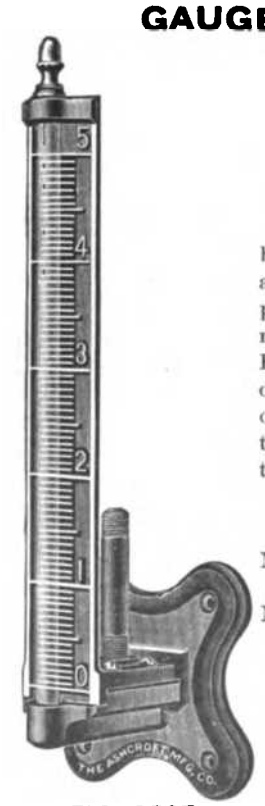


FIG. 2567

DESCRIPTION, FIG. 2567

We can furnish this gauge for both 5 and 10 pounds pressure, and they are used mostly on gas pressures, but are adapted for many other low pressure uses. Before connecting it pour into the connecting nipple sufficient mercury to have it appear in the glass tube at the zero graduation on the scale.

PRICES

Mercury Gauge, scaled to 5 pounds.....each, $5 00

Mercury Gauge, scaled to 10 pounds..... " 8 00

ASHCROFT STEAM GAUGE COCKS

T HANDLE GAUGE COCK

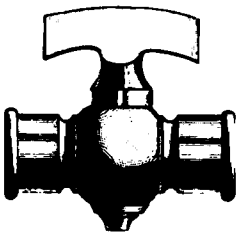


FIG. 2568

UNION GAUGE COCK

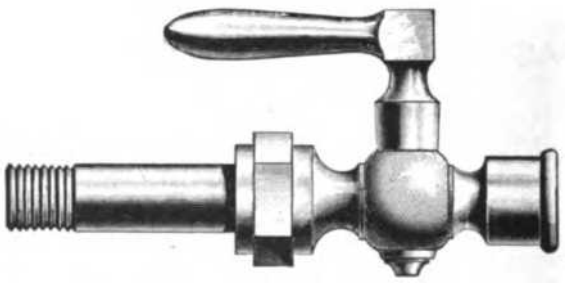


FIG. 2569

PRICES, FIGS. 2568 AND 2569

Gauge Cocks.	Fig.	Brass.	Nickel Plated.
Small T Handle.	2568	$0 50	$0 75
Large " "	2568	1 00	1 50
Small Union.	2569	1 50	2 00
Large "	2569	2 00	2 50

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ASHCROFT COIL PIPE SIPHONS

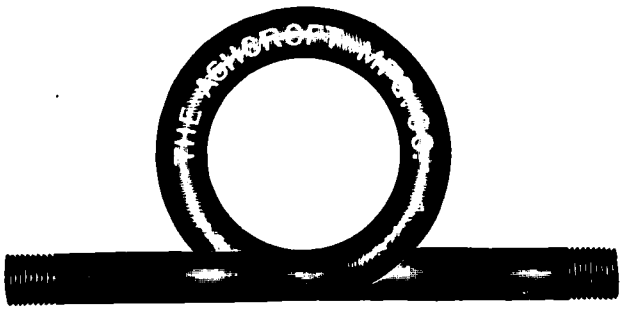


FIG. 2570

A Siphon of some character must be used on every steam gauge to prevent anything but water entering the gauge spring; the shape of siphon, as shown in cut is the one generally used, but they can be bent into any shape required.

PRICES

Iron	Pipe Siphon	.....	each,	$0 25
Brass	" "	.....	"	1 00
Nickeled	" "	.....	"	1 50

ASHCROFT STEAM GAUGE SIPHON COCKS

SPECIALLY ADAPTED FOR PORTABLE AND TRACTION ENGINES

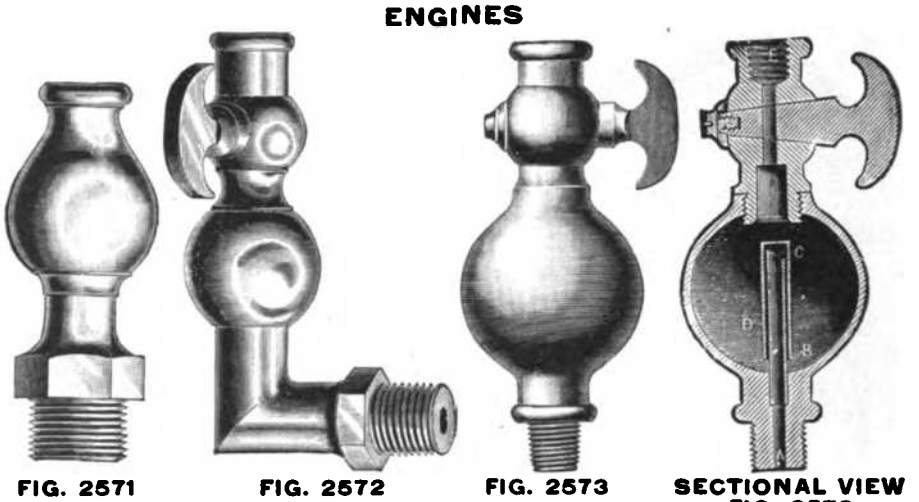


FIG. 2571 FIG. 2572 FIG. 2573 SECTIONAL VIEW FIG. 2573

The sectional cut shows a loose cap over the pipe which extends into the globe chamber: this deflects the entering steam to the bottom, where it condenses in the chamber, and thus effectually prevents any live steam from reaching the spring of the gauge. The cap over pipe falls as pressure is removed, making a siphon which is self-emptying.

PRICES

				Brass.	Nickel-plated.
Straight Siphon,	without cock,	Fig. 2571	..... each,	$1 00	$1 50
" "	with " "	2573	..... "	1 50	2 00
Elbow "	without " "	2572	..... "	1 25	1 75
" "	with " "	2572	..... "	1 50	2 00

FRAMES FOR SETS OF INSTRUMENTS

IN MAHOGANY, OAK, BLACK WALNUT, OR CHERRY

For engine rooms of steamships, waterworks, mills, electric plants, mines, factories, and office buildings.

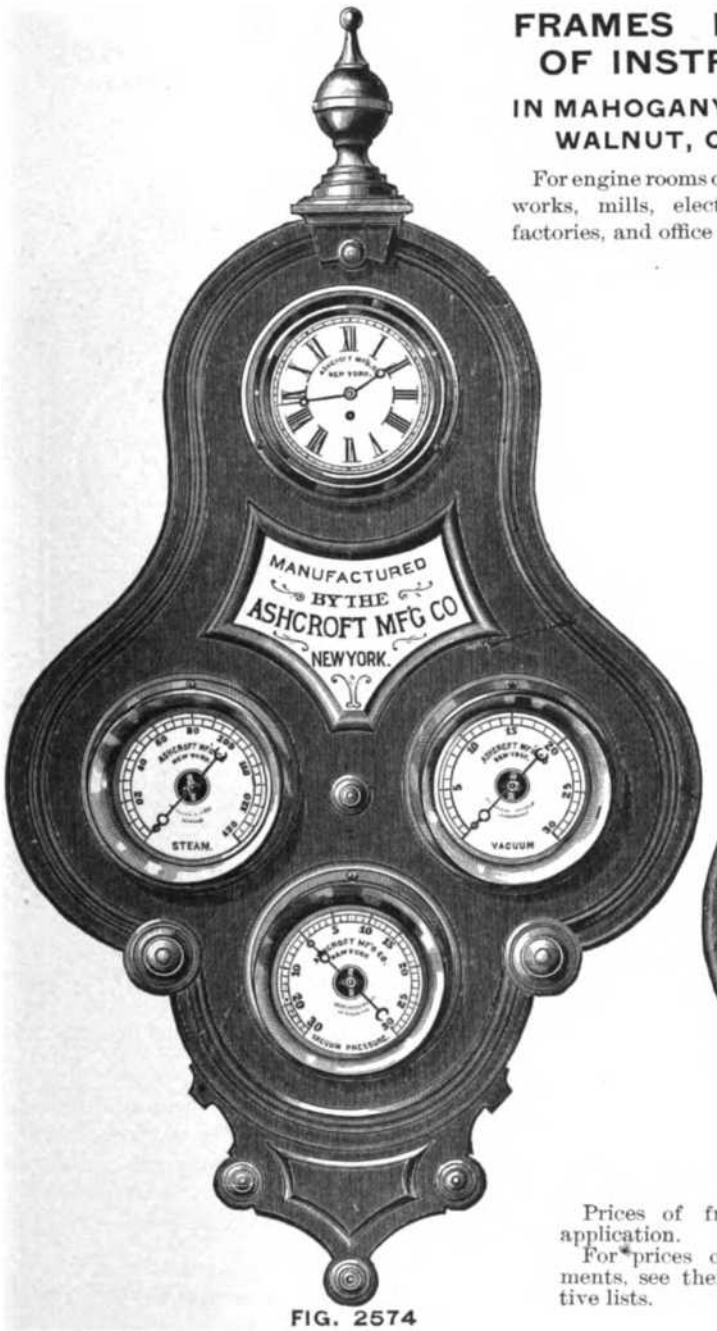


FIG. 2574

Prices of frames on application.

For prices of instruments, see their respective lists.



FIG. 2575

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FRAMES AND SLABS FOR SETS OF INSTRUMENTS

For engine rooms of waterworks, electric plants, mills, factories, mines, and office buildings.

MAHOGANY, OAK, BLACK WALNUT, OR CHERRY FRAMES

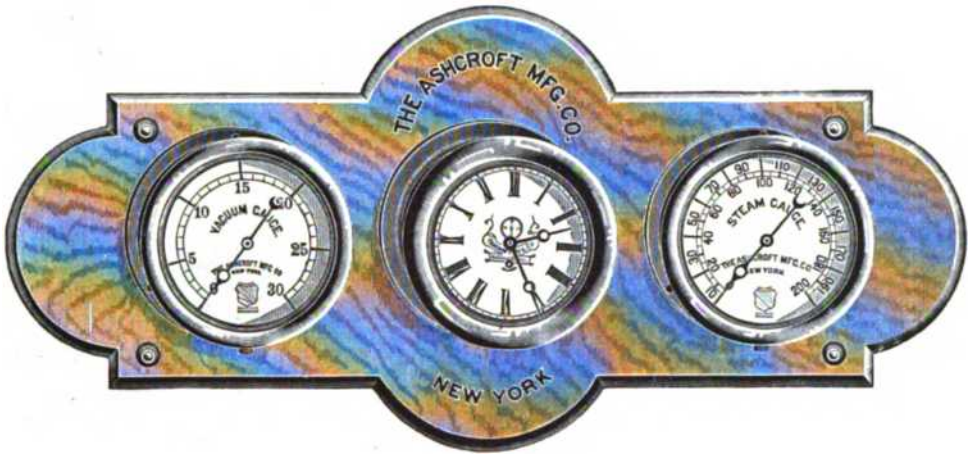


FIG. 2576

OAK, BLACK WALNUT, AND CHERRY FRAMES

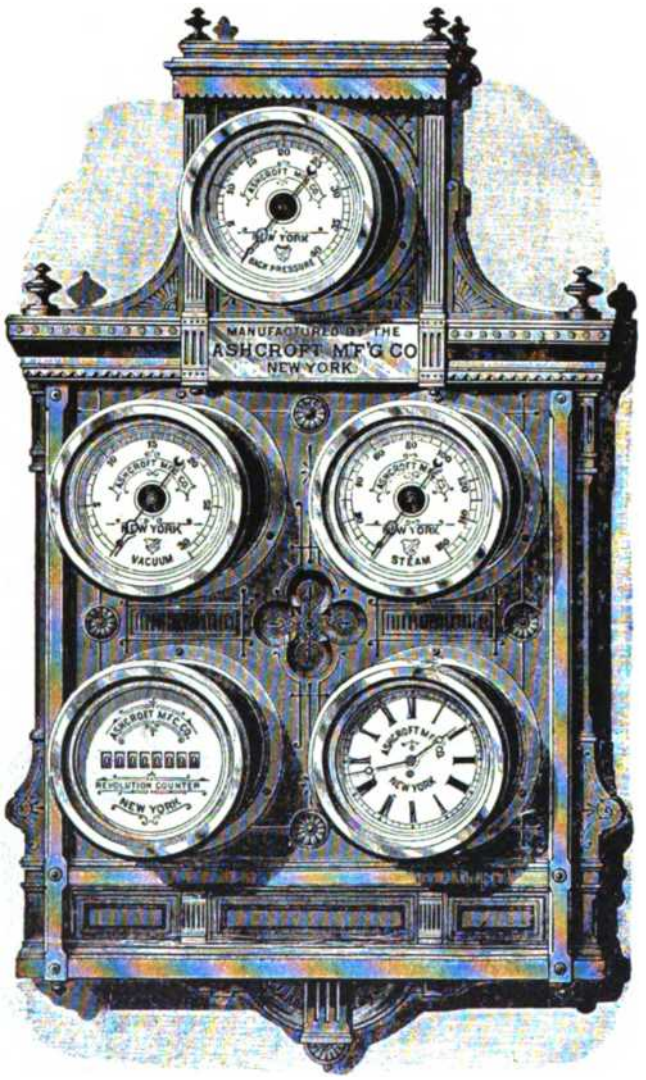


FIG. 2577

STONE, SLATE, AND MARBLE SLABS

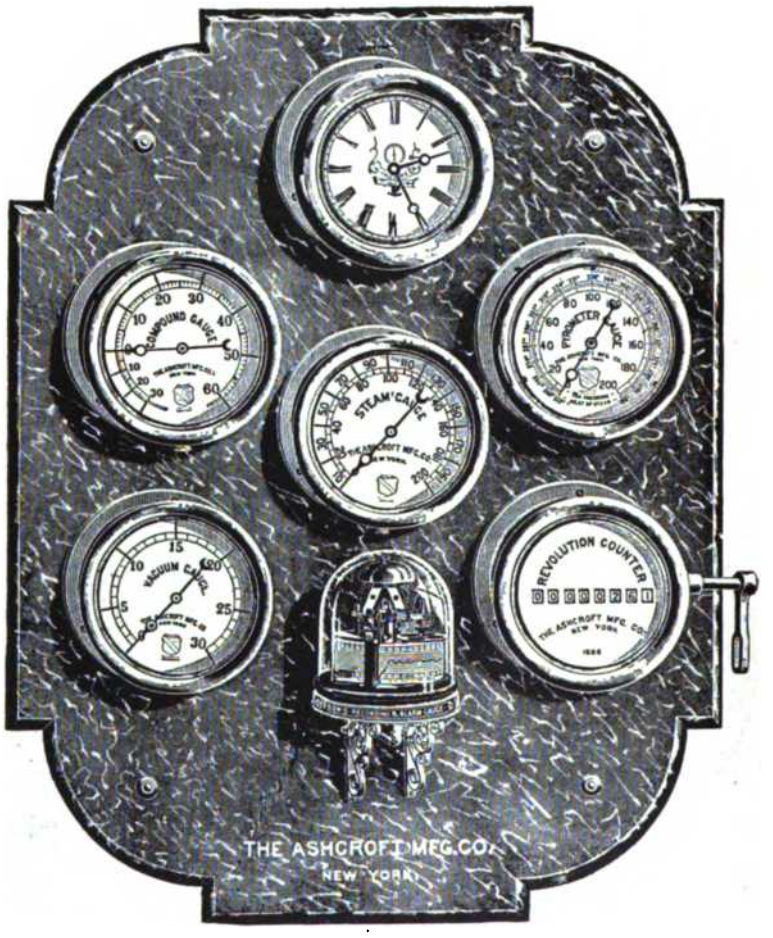


FIG. 2578

PRICES, FIGS. 2576 TO 2578

For prices of instruments, see their respective lists. Prices of Frames and Slabs on application.

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ASHCROFT INSPECTORS' TEST PUMPS AND GAUGES

IN MOROCCO CASE

This complete outfit will be found a very convenient portable apparatus for testing gauges. The pump is good and strong, and the case is fitted with a substantial lock.

PRICE, EACH, $45.00

This set consists of :

1 nickel-plated test pump.
1 " " 3 inch dial test gauge, 300 pounds.
1 " " union cock.
2 " " ¼ hexagon couplings.
1 " " steam gauge hand remover.
1 " " hand set.

This set, in velvet-lined morocco case, weighs 8 pounds.



FIG. 2579

ASHCROFT SCREW TEST PUMPS AND GAUGES

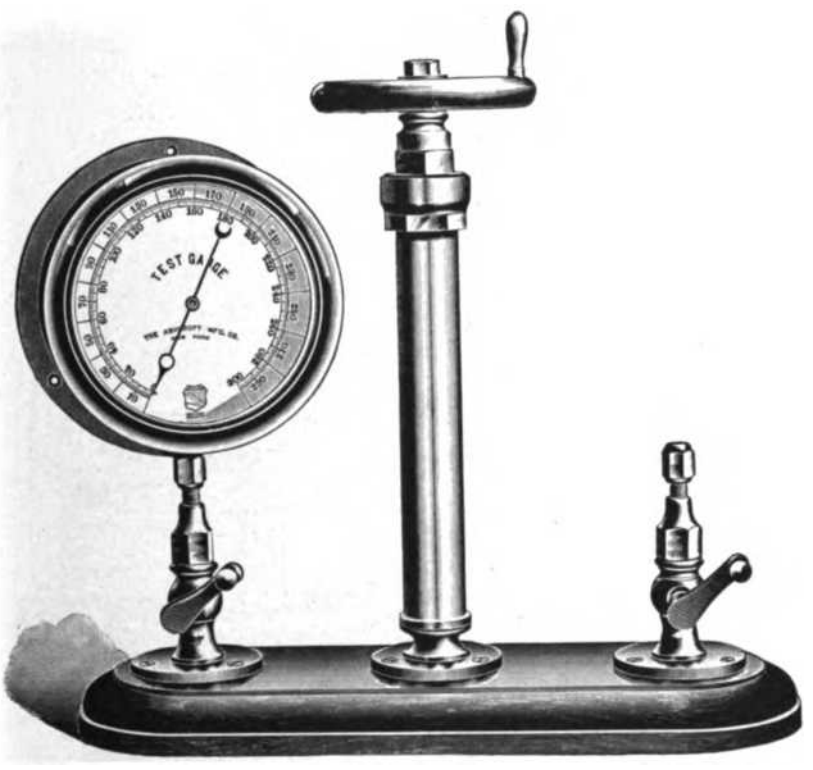


FIG. 2580

This cut shows a screw handle style of portable test pump for testing pressure gauges one at a time, in comparison with a test gauge. It is well and substantially made and is mounted on a black walnut base.

PRICES	Each.
Test pump, complete with 8½ inch brass case test gauge, graduated to 300 pounds in 1 pound marks	$90 00
Test pump, complete with 6¾ inch brass case test gauge, graduated to 300 pounds in 1 pound marks	80 00
Test pump only, no gauge	50 00

Prices on pumps of this design for pressures above 300 pounds will be given on application.

ASHCROFT LEVER HANDLE TEST PUMPS AND GAUGES

DESCRIPTION, FIG. 2581

This lever handle style of test pump is mounted on a black walnut stand, with its gauge fittings on a separate black walnut shelf, which can be stationed in any desired location.

The pump is intended principally for use in testing pressure gauges, for which the shelf has three separate connections, so that two gauges can be compared with the test gauge at the same time, this test gauge being mounted on the central fitting.

The pump is operated by the lever handle, and is a very complete apparatus, particularly desirable to anyone having quantities of gauges that require frequent testing. The fittings are all heavy and substantial.

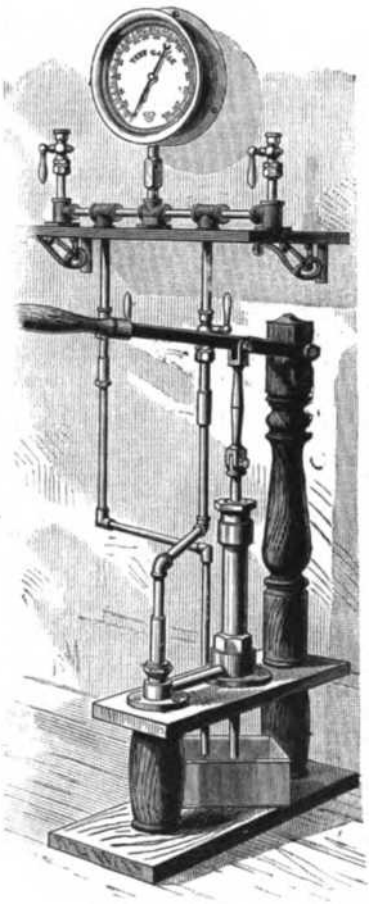


FIG. 2581

	Each.
Test pump, complete with 8½ inch brass case test gauge, graduated to 300 pounds in 1 pound marks	$100 00
Test pump, complete with 6¾ inch brass case test gauge, graduated to 300 pounds in 1 pound marks	90 00
Test pump only, no gauge	60 00

Prices on pumps of this design for pressures above 300 pounds will be given on application.

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ASHCROFT GAS FITTERS' PROVING PUMPS

WITH MERCURY GAUGE

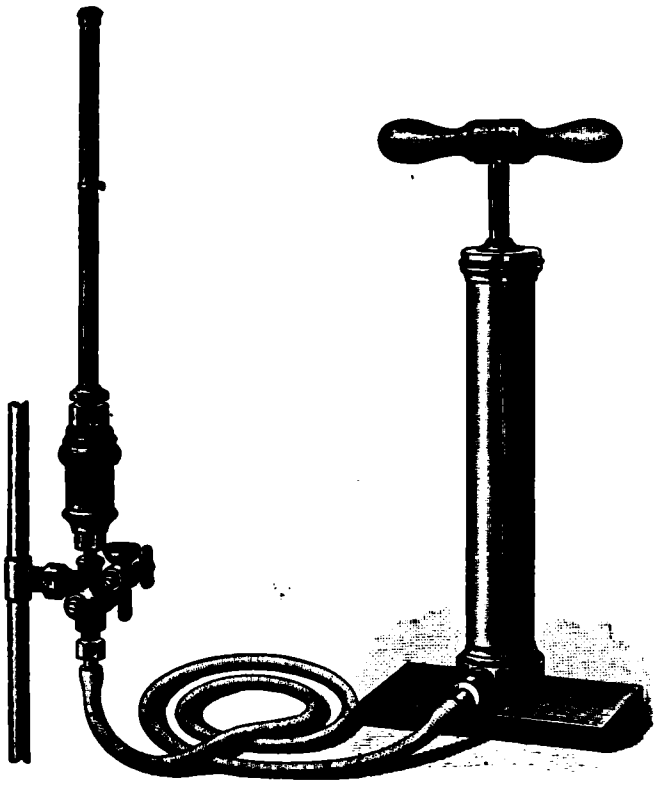


FIG. 2582

PRICES, FIG. 2582

Pump and Mercury Gauge and Ether Cup, as above	each,	$16 00
Pump and Hose only	"	8 00
*Mercury Gauge and Ether Cup and Cock	"	8 00

*The Ether Cup and Cock is cast solid to the Mercury Gauge.

WITH SPRING TEST GAUGE

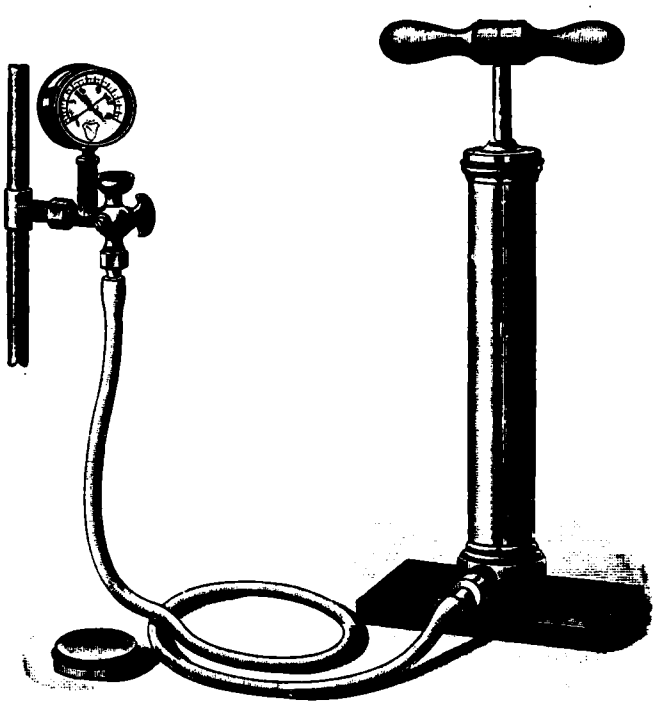


FIG. 2583

PRICES, FIG. 2583

Pump and Spring Gauge and Ether Cup, as above	each,	$16 00
Pump and Hose only	"	8 00
Brass Case Gauge, 2½-inch dial, with brass cover	"	5 00
Ether Cup and Cock	"	3 00

EDSON PRESSURE RECORDING GAUGES

ALARM GAUGE

STYLE NO. 1



FIG. 2584

DESCRIPTION, FIGS. 2584 AND 2585

These gauges are well known throughout the world, and for over twenty-five years have been extensively used on all classes of work. The different styles are adapted for steam, air, gas, water, ammonia, and any fluid pressure, and as a source of economy we recommend their use to any one desiring an infallible record of pressures carried by day and night.

They are largely used by pipe lines, waterworks, gas companies, breweries, bleacheries, cotton mills, electric light and power companies, paper makers, sugar refineries, and in the steam plants of steel makers, hotels, office buildings, ice manufacturers, and steam users in general. The records obtained for each twenty-four hours should be filed away daily for future reference as a record of pressures carried at any time, and the use of these gauges in connection with an intelligent engineer will insure steady steam, proportionate economy in coal consumption, and a record of pressures that will often prove an arbitrator in disputes.

We furnish them for pressures up to 1,500 pounds to the square inch, and also for vacuum as well.

Styles Nos. 1, 2, and 3 can be used on steam, air, gas, water, and all fluid pressures excepting ammonia.

PRICES, FIG. 2584

Style No. 1 is provided with electric bell for sounding the alarm when a certain high pressure is reached. If so ordered, this style can be furnished with electric bell for low pressure only. For $5.00 extra this style can be furnished with bell for both high and low pressures.

Price ..... each, $85 00

Style No. 2 is arranged to ring an electric bell placed at a distance (5 miles if necessary) when a certain high pressure is reached. If so ordered, this style can be arranged to ring an electric bell for low pressure only. For $5.00 extra this style can be arranged to ring bell at both high and low pressures.

Price ..... each, $80 00

Style No. 3 has no alarm. Price ..... " 75 00

AMMONIA GAUGE

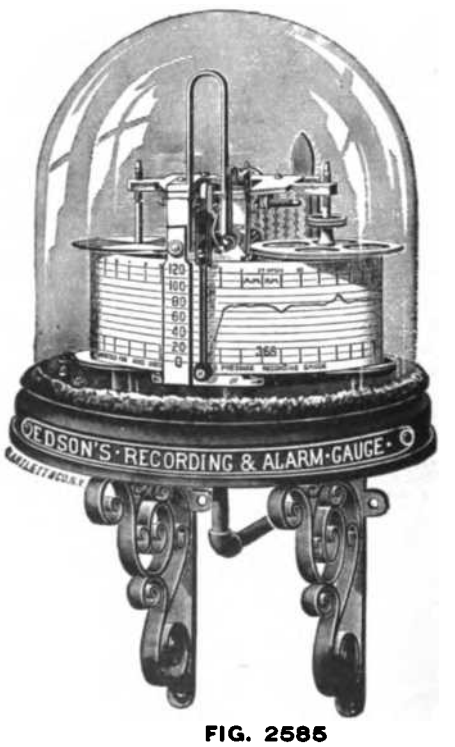


FIG. 2585

PRICE, FIG. 2585

Each $100 00

In ordering, state whether the gauge is to be used for high or low ammonia pressure.

Prices on all above include one year's supply of charts, numbered consecutively for each day in the year, and ruled to the special scale of the instrument; one special album for filing away charts daily as records are made upon them; one lot of shelf and brackets.

These recorders have a chart speed one-half inch per hour, which can be made one inch per hour, if stated in the order.

In ordering, always state the working pressure, and whether high and low alarms are required.

These gauges can also be furnished to record vacuums. Full details and prices on application.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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BRISTOL'S PRESSURE RECORDING GAUGES

DESCRIPTION, FIG. 2586

STANDARD 8 INCH CHART

Makes continuous record day and night of steam, water, oil, gas or air pressure. Handsomely finished in nickel plate.

For electric switch or gauge boards. When it is desired that piping should not be exposed to view, these gauges are made with the pipe connection on back instead of at bottom as shown in illustration.

LIST OF SIZES

Gauge Nos.		Chart Graduated to	Chart.	Total Range.
1,000	For working pressure to 100 lbs.	10 lbs. per square inch	24 hour	0 to 150 lbs.
1,001	For " " " 170 "	10 " " " "	24 "	0 to 250 lbs.
1,002	For " " " 13 atmospheres.	½ atmosphere,	24 "	0 to 17 atmos.

PRICES

	Each.
Nickel plate, complete, including ink and 100 charts	$40 00
Nickel front only, including ink and 100 charts	35 00
Aluminum Case, reducing weight one-half (extra)	8 00
Electric Alarm Attachment (extra)	15 00
Special Chart to order (extra)	25 00
Additional Charts, per hundred	1 25
Special Recording Gauge Ink, per bottle	40

ROUND PATTERN

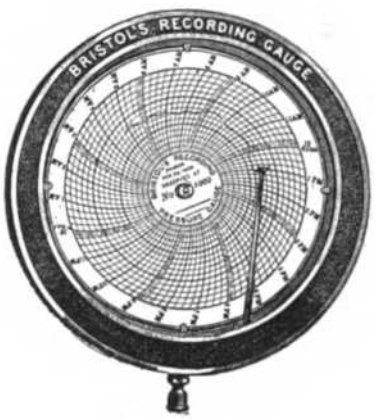


FIG. 2586

PRESSURE



FIG. 2587

ELECTRICITY

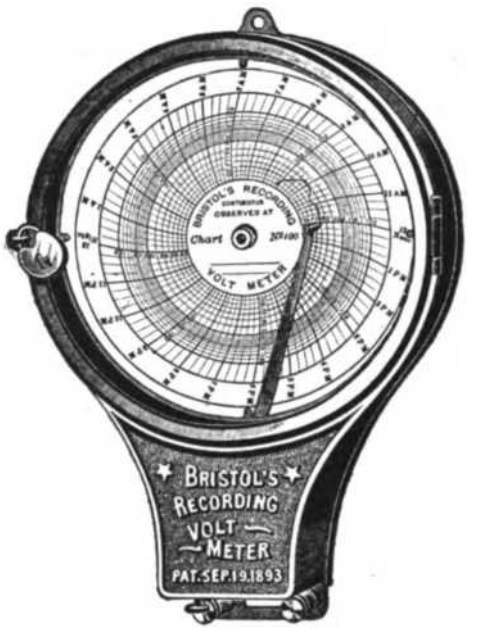


FIG. 2588

NICKEL PLATED CASES

PRICES, FIG. 2587

RECORDING VACUUM GAUGES

Gauge Nos.		Chart Graduated to	Total Range.	Each.
93	For full vacuum	1 inch head of mercury	0 to 30 inch vacuum	$50 00
20	For gas or air	1 " " water	0 to 24 " "	
22	" "	1/10 " " "	0 to 4 " "	

RECORDING COMBINATION VACUUM AND PRESSURE GAUGES

Gauge Nos.		Chart Graduated to	Total Range.	Each.
18	For gas or air	1/10 inch head of water	2 inch vacuum to 4 inch pres.	$50 00
95	" "	½ " " "	6 " " 6 " "	
53	Vacuum graduated in inches mercury. Pressure in lbs. per sq. in. Total range full vacuum to 100 lbs. pressure			50 00
83	For gas or air. Chart graduated to 1 centimeter head of water. Total range 20 cm. vacuum to 15 cm. pressure			50 00

RECORDING PRESSURE GAUGES FOR AMMONIA

Gauge Nos.		Graduated to	Total Range.	Each.
69	For working pressure to 30 lbs. Steel tube	2 lbs. per sq. in.	0 to 46 lbs.	$60 00
48	" " " 300 " "	10 " " "	0 to 400 "	

RECORDING PRESSURE GAUGES

Gauge Nos.		Chart Graduated to	Total Range.	Each.
14	For gas or air	1/10 inch head of water	0 to 4 inches	$50 00
68	For working pressure to 30 lbs.	2½ lbs. per sq. in.	0 to 45 lbs.	50 00
35	For " " " 150 "	10 " " " "	0 to 200 "	50 00
64	For " " " 750 "	50 " " " "	0 to 1000 "	50 00
50	For 40 feet head of water	2 feet head	0 to 60 "	50 00
61	For working pressure to ¾ atmos.	1/20 atmos.	0 to 1 atmos.	50 00
66	For gas or air	1/5 cm. head of water	0 to 10 cm	50 00
32	For " " "	½ " " " "	0 to 20 "	50 00

All above have 24 hour charts.

Above prices include ink and 100 charts with each instrument.

Polished Aluminum Cases, reducing weight one-half (extra)	$15 00
Electric Alarm Attachment (extra)	15 00
Special Chart to order (extra)	25 00
Additional Charts, per hundred	1 25
" " (copying ink), per hundred	1 50
Special Recording Gauge Ink, per bottle	40

In ordering gauges, state maximum working pressure or vacuum.

PRICES, FIG. 2588

RECORDING VOLTMETERS FOR DIRECT CURRENT

Voltmeters, Nos.		Working Range to	Total Range.	Each.
104	For direct current	25 volts.	0 to 26 volts.	$60 00
115	For " "	115 "	0 to 125 "	60 00
117	For " "	280 "	0 to 280 "	60 00
118	For " "	275 "	0 to 300 "	60 00
170	For "	" Scale nearly uniformly divided.	0 to 6 "	60 00
120	For "	" " in both directions from zero.	—5 to + 5 volts.	65 00

RECORDING VOLTMETERS FOR ALTERNATING CURRENT

Voltmeters, Nos.		Working Range to	Total Range.	Each.
216	For alternating current.	65 volts.	0 to 70 volts.	$60 00
213	For " "	225 "	0 to 250 "	
214	For " "	1,200 "	0 to 1,300 "	

RECORDING AMPERE METERS FOR DIRECT CURRENT

Amperes, Nos.		Working Range to	Total Range.	Each.
432	For direct current	9 amperes.	0 to 10 amperes.	$60 00
461	For " "	55 "	0 to 60 "	
471	For " "	165 "	0 to 180 "	70 00
481	For " "	550 "	0 to 600 "	80 00
475	For " "	270 "	0 to 300 "	
493	For " "	2,200 "	0 to 2,400 "	90 00

All above have 24 hour charts excepting No. 117, that has 15 minute chart.

Above prices include ink and 100 charts with each instrument.

Damping Device (extra)	$8 00
Aluminum Cases, reducing weight one-half (extra)	12 00
Carrying Case for Electrical Instrument (single compartment), (extra)	9 00
" " " " " (double "), (")	10 00
Special Chart made to order (extra)	25 00
Additional Charts (one color), per hundred	1 25
" " (copying ink) " "	1 50
Special Recording Instrument Ink, per bottle	40

Special finish or copper electro plate instead of nickel plate to order.

Above is only partial list of Ranges we can furnish. Complete list sent on application. Special Ranges made to order.

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BRISTOL'S RECORDING THERMOMETERS

NO. 605

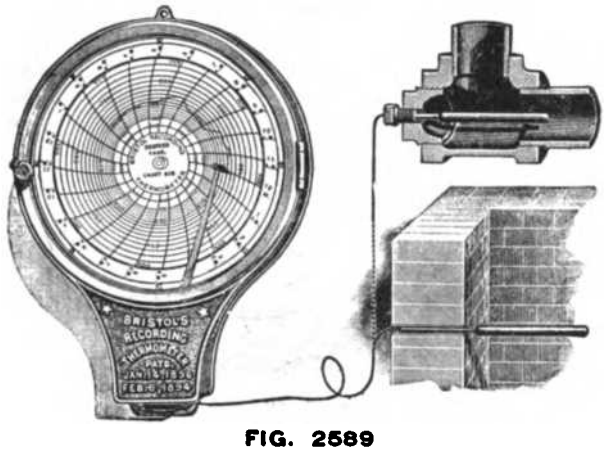


FIG. 2589

RECORDING THERMOMETERS
FOR OVENS AND CLOSED SPACES

PRICES, FIGS. 2589 AND 2590

	Each.
Thermometer No. 701—For working range to 120° Fahr. Chart graduated to 5°. 24 hour Chart. Total range, 0° to 130°	$60 00
Thermometer No. 700—For working range to 100° Fahr. Chart graduated to 2°. One week Chart. Total range, 32° to 110°	60 00

NO. 701



FIG. 2590

	Prices, Each.
Thermometer No. 618—For working range to 155° Fahr. Chart graduated to 5°. 12 hour Chart. Total range, 32° to 175°	$60 00
Thermometer No. 607—For working range to 212° Fahr. Chart graduated to 5°. 24 hour Chart. Total range, 32° to 230°	60 00
Thermometer No. 603—For working range to 310° Fahr. Chart graduated to 5°. 24 hour Chart. Total range, 32° to 330°	$60 00
" " 613— " " 650° " Uniformly divided. 24 " " " " 40° to 800°	70 00
" " 614— " " 180° Reaumur. 1° divisions. 24 " " " " 0° to 88°	60 00
" " 605— " " 480° Fahr. Chart graduated to 5°. 24 " " " " 32° to 500°	60 00

PRICES INCLUDE INK AND 100 CHARTS WITH EACH INSTRUMENT

Electric alarm attachment, extra, net.....$10 00
Special chart made to order, extra, net.....15 00
Additional charts.....75 cents per hundred
Special recording instrument ink.....25 cents per bottle

RECORDING THERMOMETERS SPECIAL FOR ATMOSPHERIC RANGES

	Prices, Each.
Thermometer No. 621—For atmospheric temperatures. Graduated to 2° Fahr. 7 day extra large Chart. Total range, 20° to 110°	$65 00
" " 622— " " " 2° " 7 " " " " " " 60° to 125°	65 00

These thermometers are constructed so that the recording part may be located within doors and 20 feet distant from the point at which the temperature is to be measured.

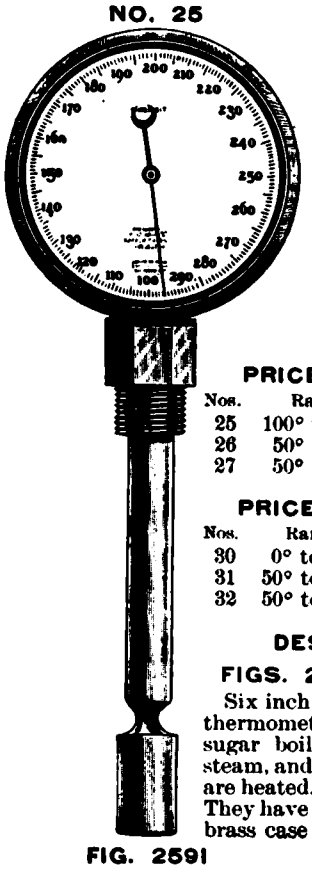
PRICES INCLUDE INK AND FIFTY 7 DAY CHARTS

Additional charts (two colors).....$2 00 per hundred.
Special recording instrument ink.....25 cents per bottle

Above is partial list; write for complete list of ranges. Special ranges made to order.

THERMOMETERS
FOR MECHANICAL USES

NO. 25



PRICES, FIG. 2591

Nos.	Ranges.	Each.
25	100° to 300° Fahr.	$11 00
26	50° to 250° "	11 00
27	50° to 150° "	11 00

PRICES, FIG. 2592

Nos.	Ranges.	Each.
30	0° to 400° Fahr.	$11 00
31	50° to 250° "	10 00
32	50° to 150° "	10 00

DESCRIPTION
FIGS. 2591 AND 2592

Six inch extensions. These thermometers are for use in sugar boilers, hot water and steam, and places where liquids are heated. ¾ inch pipe fitting. They have four inch metal dial, brass case and extension.

FIG. 2591

NO. 31

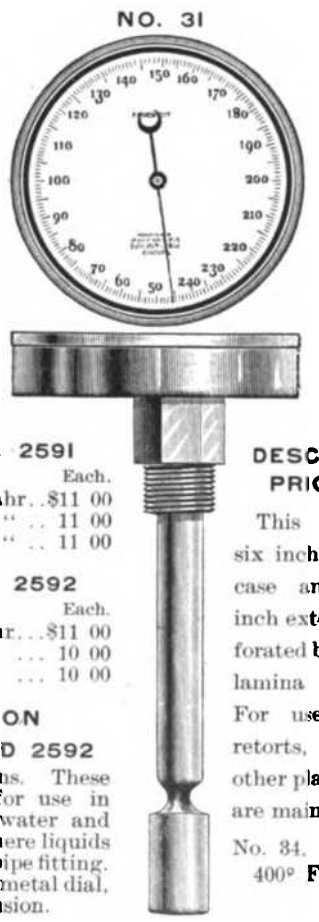


FIG. 2592

DESCRIPTION AND PRICE, FIG. 2593

This thermometer has six inch metal dial, brass case and extension, five inch extension. Brass, perforated brass shell to protect lamina when in position. For use in bake ovens, retorts, japan ovens, and other places where dry heats are maintained.

No. 34. Range 0° to 400° Fahr...Each, $16 00

NO. 34



FIG. 2593

HIGH TEMPERATURE THERMOMETERS

NO. 95

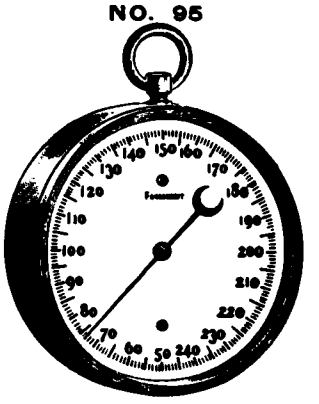


FIG. 2594

DESCRIPTION AND PRICES

These thermometers have a brass four inch metal dial, and are specially made to indicate extremely high temperatures. They are well adapted for drying rooms, and places where a high temperature is maintained.

Nos.	Ranges.	Each. Brass.	Nickel or Black.
95	50° to 250° Fahr.	$4 00	$4 25
96	100° to 300° "	5 00	5 25
97	0° to 400° "	6 00	6 25
98	100° to 500° "	7 00	7 25

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THERMOMETERS

STANDARD THERMOMETERS

NO. 60

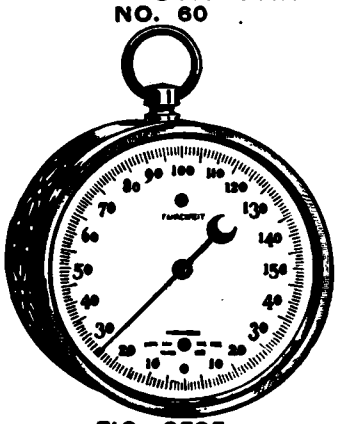


FIG. 2595

NO. 65

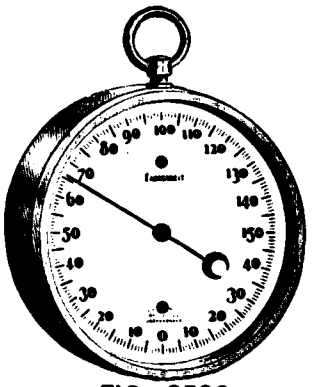


FIG. 2596

Fig. 2595 is an extremely sensitive thermometer, and is of unsurpassed value where a very sensitive instrument is needed.

Fig. 2596 is a solid brass case thermometer, absolutely dust proof.

PRICES, FIGS. 2595 AND 2596

Nos.	Size of Dials.	Ranges.	Cases.	Each.
60	4 inches	50° to 150° Fahr.	Brass	$2 50
65	4 "	"	"	1 50
66	4 "	"	Nickel	1 75
67	4 "	"	Black	1 75

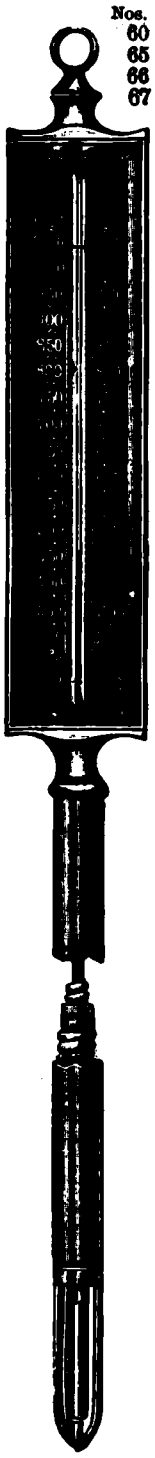


FIG. 2602

RAILROAD THERMOMETERS

NO. 3

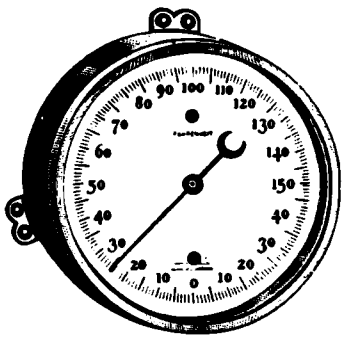


FIG. 2597

NO. 4

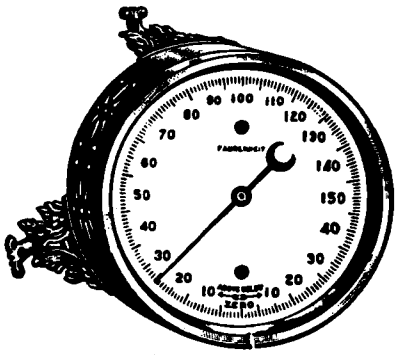


FIG. 2598

These thermometers have a four inch dial, are neat and ornamental in appearance, and will be appreciated by railroad men as an improvement over the old style. They are reliable for use on street railways as well as on railroads, and No. 4 is especially adapted for use in parlor, sleeping and private cars.

PRICES, FIGS. 2597 AND 2598

Nos.	Range.	Style of Case.	Each.
3	0° to 150° Fahr.	Solid brass	$2 25
4	"	Perforated brass	3 50

No. 4 can be had in nickel, black, or copper bronze, if desired.

FLUE GAS THERMOMETERS

PRICE, FIG. 2602

Fig. 2602. Flue gas thermometers for flues, uptakes, chimneys, etc., graduated to 1,000 degrees Fahr. ..... each. $50.00

MEDIUM GRADE THERMOMETERS

PRICES, FIGS. 2600 AND 2601

Ordinary or water boil scale. Tubes mounted with clasps on heavy metal scales.

Nos.		Japanned Cases, Per doz.	Heavy Copper Cases, Per doz.
17	8 inch	$6 00	$10 50
18	10 "	9 00	14 00
19	12 "	12 00	17 50
	HIGH RANGE SCALE		
20	10 inch to 300°	11 00	16 00
21	12 " 350° or 400°	14 00	19 50

STANDARD GRADE THERMOMETERS

Ordinary or water boil scale. Japanned tin case thermometers, made with extra heavy cases, seasoned tubes, and divided with great care, warranted correct.

Nos.		Japanned Cases, Per doz.	Heavy Copper Cases, Per doz.
22	8 inch	$9 00	$13 50
23	10 "	12 00	17 00
24	12 "	15 00	20 50
25	14 "	18 00	24 50
	HIGH RANGE SCALE		
26	10 inch to 300°	$13 00	$18 00
27	12 " 350° or 400°	16 00	21 50
28	14 " 350° " 400°	20 00	26 50

Any of above Nos. furnished with the permanent black scales. Add to list price $1 00 doz.

MARINE ENGINEER'S THERMOMETERS

PRICES, FIGS. 2603 TO 2605

Fig. 2603. 10 inch copper case thermometer, with heavy brass scale, graduated to 20° F. ..... Per doz., $24 00

Fig. 2604. Uptake thermometer, scale ranging to 300° or 400° F., highly polished brass case ..... Each, 10 00

Fig. 2605. Hot well thermometer, with shield, made of solid brass casting, highly polished ..... Each, 30 00

Fig. 2605. Hot well thermometer, with red colored column and glass cylinder inclosing scale ..... Each, 35 00

The red colored column greatly facilitates reading.

JAPANNED TIN AND COPPER CASE THERMOMETERS

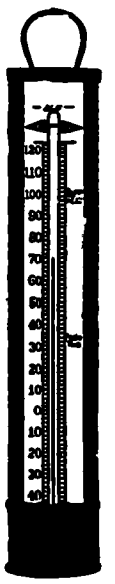


FIG. 2600

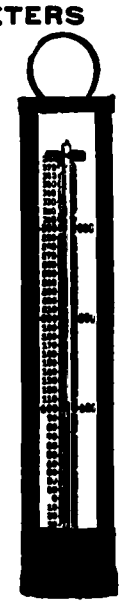


FIG. 2601

COPPER CASE

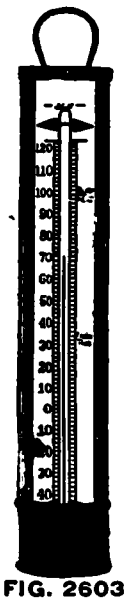


FIG. 2603

UPTAKE



FIG. 2604

HOT WELL

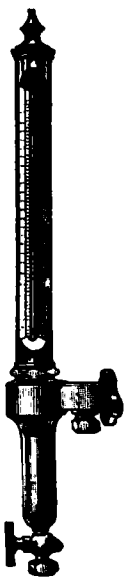


FIG. 2605

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MARINE ENGINEERS' THERMOMETERS, SALINOMETERS, SALINOMETER POTS, ETC.

STEAM PIPE THERMOMETER

SALINOMETER HYDROMETER

SALINOMETER THERMOMETER

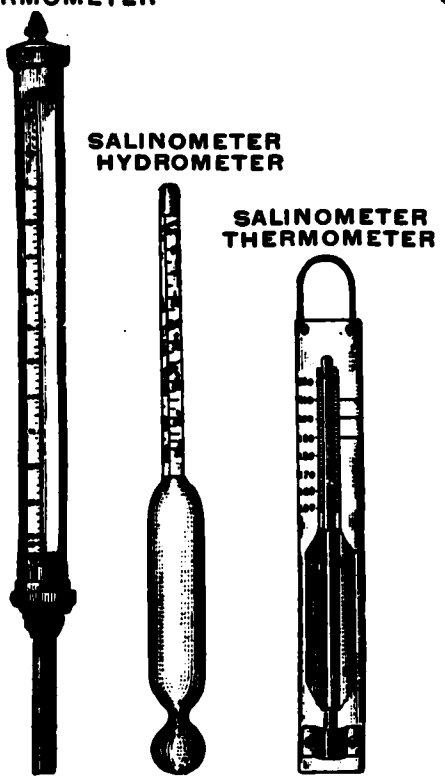


FIG. 2606 FIG. 2607 FIG. 2608

PRICES, FIGS. 2606 TO 2610

Fig. 2606. Steam pipe thermometer, scale ranging to 300°, 400°, 500° or 600° F., in finely polished brass sliding case, ¾ inch pipe thread connection .....each, $20 00

Fig. 2607. Salinometer hydrometer, made of heavy glass, stem ranging from 0-32 to 5-32.....per doz., 10 00

Fig. 2608. Salinometer thermometer, with spring on back, to fit into salinometer pot.. per doz., 20 00

Fig. 2609. Copper salinometer pot, made of heavy copper, highly polished..per doz., 48 00

Fig. 2610. Long's salinometer pot, complete, with thermometer and glass hydrometer. Made of solid brass casting, highly polished .....each, 36 00

LONG'S SALINOMETER POT

COPPER SALINOMETER POT

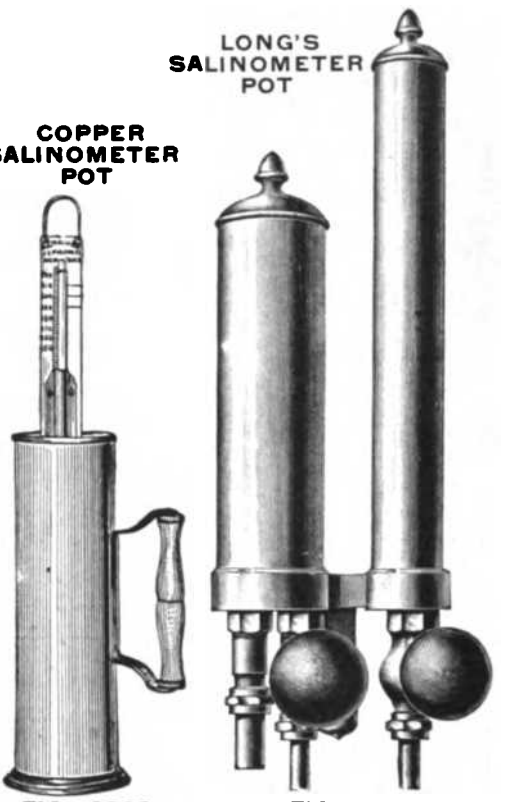


FIG. 2609 FIG. 2610

MERCURIAL VACUUM GAUGE

MERCURY BATH THERMOMETERS

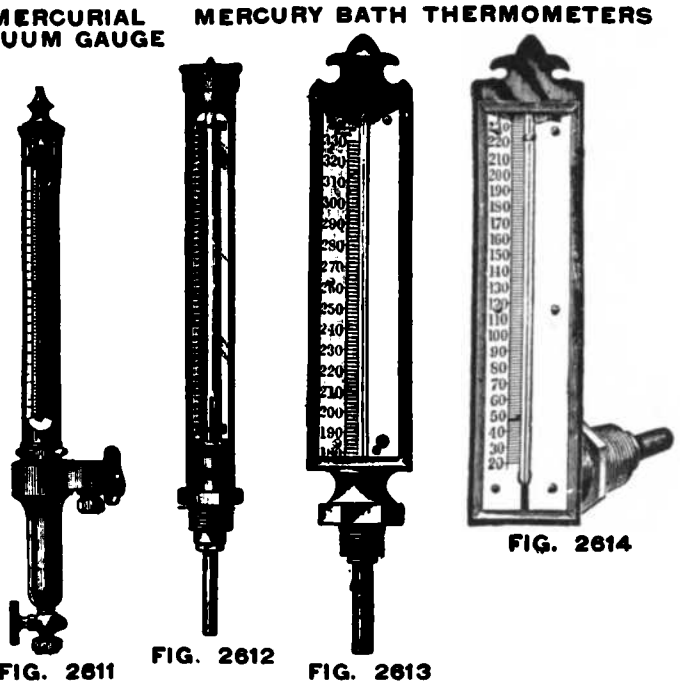


FIG. 2611 FIG. 2612 FIG. 2613 FIG. 2614

PRICES, FIGS. 2611 TO 2614

Each.

Fig. 2611. Mercurial vacuum gauge for condensers, graduated 17 to 31 inches, of improved construction. Cylindrical brass case with sliding shield. Brass base with single cock, highly finished, with black scale..... $30 00

The following mercury bath thermometers can be graduated for injection water, outboard delivery, feed water, feed tanks, steam pipes, brine pumps, etc.:

Each.

Fig. 2612. Cylindrical brass case thermometer, scale case 9 inches long by 1⅛ inches diameter, with sliding shield, with ¾ inch standard pipe thread..... $12 00

Fig. 2612. Cylindrical brass case thermometer, scale case 15 inches long by 2 inches diameter, extra strong, with sliding shield, with 1 inch standard pipe thread 22 50

Fig. 2613. Triangular or V shape brass case thermometer, with straight stem, with removable glass front, 7 inch scale case, with ¾ inch standard pipe thread..... 13 50

Fig. 2614. Triangular or V shape brass case thermometer, with angle stem, with removable glass front, 7 inch scale case, with ¾ inch standard pipe thread..... 16 50

HYDROMETER CANS

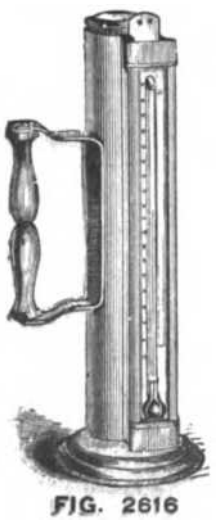


FIG. 2616

PRICES, FIG. 2616

Nos. Each.

585. Copper hydrometer can, with thermometer, correction scale for whiskey (proof scale), 10° below to 25° above proof..... $5 00

536. Copper hydrometer can, with thermometer, three correction scales, 50° below to 10° below, 10° below to 25° above, and 25° above to 100° above proof..... 7 00

537. Copper hydrometer can, with thermometer, for use for spirit hydrometers 4 50

520. Copper hydrometer can, with standard ivory thermometer as used by the United States Revenue Department 8 10

528. Copper hydrometer can, with medium grade ivory thermometer as used by the United States Revenue Department 6 00

STANDARD GRADE HYDROMETERS



FIG. 2615

No.		Prices, Per Doz.
480.	Acid hydrometer, 0 to 70°, in single degrees	$18 00
481.	Acid hydrometer, 0 to 50°, in half degrees	30 00
484.	Acid hydrometer, 0 to 25°, in quarter degrees	36 00
487.	Acid hydrometer, 0 to 10°, in tenth degrees	48 00
495.	Alkali hydrometer, 0 to 50°, in single degrees	18 00
496.	Ammonia hydrometer, 0 to 30°, in half degrees	30 00
497.	Bark hydrometer, 0 to 60°, in single degrees	18 00
498.	Lye hydrometer, 0 to 50°, in single degrees	18 00
43½.	Milk hydrometer, Board of Health	18 00
378.	Syrup hydrometer, 0 to 50°, in single degrees	18 00
500.	Spirit hydrometer, 100° below to 100° above proof	18 00
499.	Glue hydrometer, 0 to 25°, in half degrees temperature 150° F.	30 00
505.	Specific gravity hydrometer, 700° to 1000°	36 00

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MERCURIAL BAROMETERS

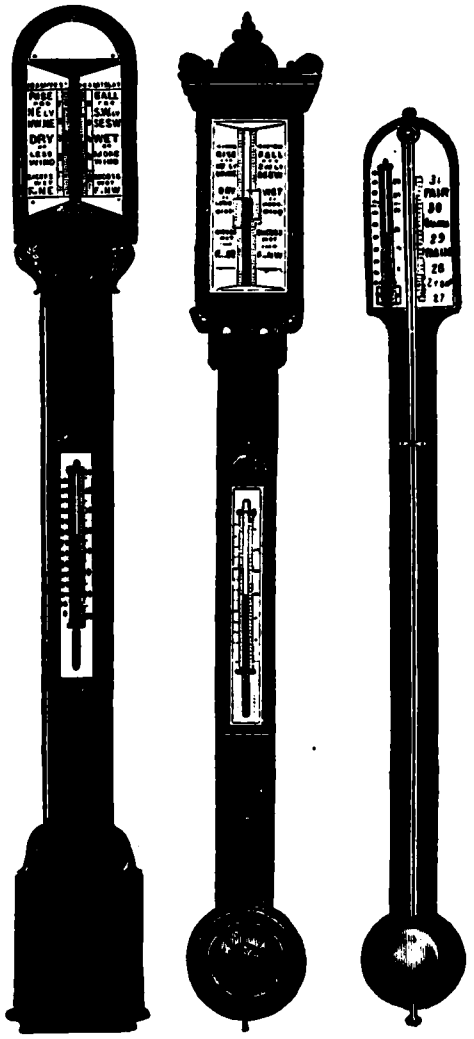


FIG. 2617 FIG. 2618 FIG. 2619

PRICES, FIGS. 2617 TO 2619

Fig. 2617. Round top barometer, with fine porcelain scales and thermometer, Vernier, with rack and pinion adjustment, either in fine oak or French walnut.....$50 00
Fig. 2618. Carved top barometer, porcelain scale and thermometer, Vernier, with rack and pinion adjustment, either in fine oak, French walnut or cherry ... 40 00
Fig. 2619. Model round top barometer, porcelain scale and thermometer, Vernier, with rack and pinion adjustment, either in oak, walnut or cherry 16 00

ASHCROFT PYROMETERS

HORIZONTAL VERTICAL





DESCRIPTION, FIGS. 2621 AND 2622

For bakers' ovens, oil and tar stills, drying and Japan ovens, boiler flues, chimneys, etc, These pyrometers have ¾ inch pipe connections, and are made with an iron tube outside and graphite stem inside, and we can furnish them for temperatures up to 2,000° Fahr. Unless specially made, the entire length of stem should be inserted in the heat.

In ordering, please state—1st For what purpose desired; 2d Height of temperature required; 3d Length of stem; 4th What style, horizontal or vertical.

FIG. 2621 FIG. 2622

PRICES, FIGS. 2621 AND 2622

Brass case, 6 inch dial, each.....$30 00
Iron " 6 " " 25 00

ANEROID BAROMETERS

DESCRIPTION, FIG. 2620

This instrument possesses many advantages on account of its portable form and the facility with which it may be shipped or carried without danger of injury or loss of adjustment.

It is sensitive and responds readily to changes in atmospheric pressure, and it is only necessary to secure great accuracy to have the instrument occasionally compared with and adjusted to a standard mercurial barometer.

The instrument has, therefore, on account of its simplicity, come into very general use; it is practically the only portable form of barometer. It is especially adapted to the requirements of civil engineers, tourists, ship captains and similar occupations, for measuring altitudes or determining atmospheric pressure on shipboard.



FIG. 2620

Nos.		Each.
635.	Aneroid Barometer, 8 inch, highly finished brass case, with suspensory ring, open silvered metal dial, exposed movement, two curved thermometers reading to scales Fahrenheit, Reaumer and Centigrade, beveled glass front, in velvet lined leather case	$32 00
636.	Aneroid Barometer, 6½ inch, same as No. 635	25 00
637.	Aneroid Barometer, 5 inch, same as No. 635, with one thermometer	20 00
638.	Aneroid Barometer, 5 inch, same as No. 635, without thermometer	18 00

SHIPS' CLINOMETER



FIG. 2623

DESCRIPTION AND PRICE, FIG. 2623

This instrument has been designed for especial use on ships to show the exact movement of the vessel when rolling in a seaway or when listing to port or starboard.

For trimming a ship in harbor, or at all times or places where it is essential that the vessel should be kept as level as possible, it will be found invaluable, as the slightest movement to either side will be shown on the dial.

Should any of the fluid be lost by evaporation or otherwise, it can be easily replaced by unscrewing cap on top of the Clinometer, and putting in the required amount by means of the special glass filler furnished with each instrument.

Ships' Clinometer, mounted in oxidized metal case, complete with filler and one bottle of fluid, 8 inch dial, each $40 00

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CALORIMETERS

IMPROVED SEPARATING

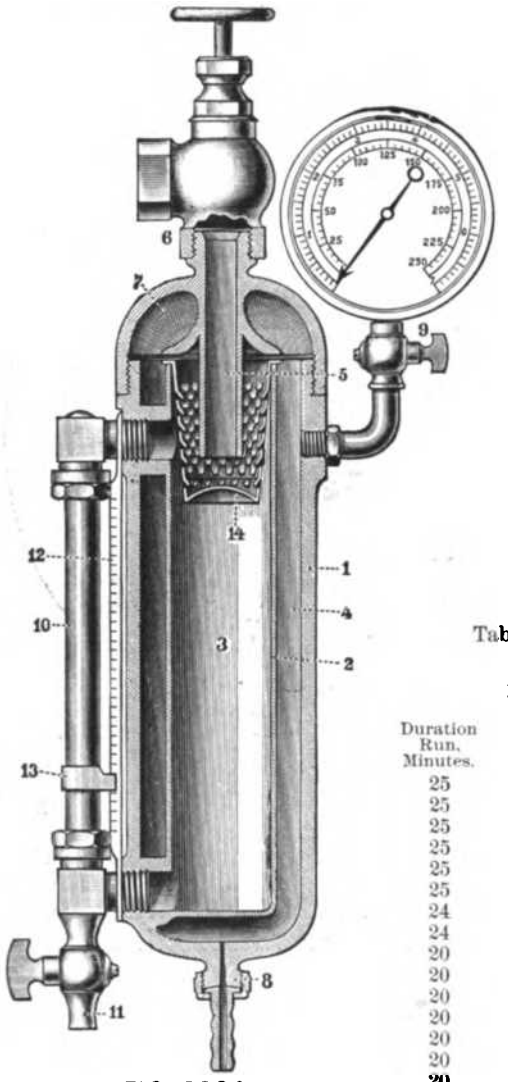


FIG. 2624

DESCRIPTION, FIG. 2625

Table showing the limits of the Throttling Calorimeter.

Pressure Lbs. per Square Inch. Absulute.	Guage.	Maximum Per Cent. of Priming.	Quality of the Steam, Per Cent.
300	285.3	07.7	92.3
250	235.3	7.0	93.0
200	185.3	6.1	93.9
175	160.3	5.8	94.2
150	135.3	5.2	94.8
125	110.3	4.6	95.4
100	85.3	4.0	96.0
75	60.3	3.2	96.8
50	35.3	2.3	97.7

PRICE, $20.00

THROTTLING

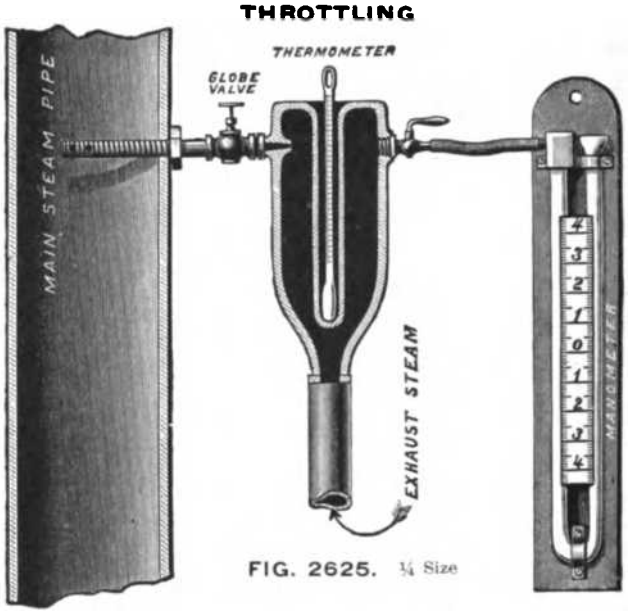


FIG. 2625. ¼ Size

DESCRIPTION, FIG. 2624

Table giving results of examination of quality of steam discharged from inner to outer vessel,

Determination of Quality with Separating Calorimeter.

Duration Run, Minutes.	Guage Pressure, Pounds.	Pounds Separated Water in Run.	Pounds Condensed Steam in Run.	Quality Steam, Per Cent.
25	81.5	1.15	4.45	79.46
25	78.2	0.15	5.20	97.2
25	80.8	0.525	4.25	89.005
25	79.5	0.150	4.75	96.94
25	78.5	0.300	5.000	94.34
25	77.6	0.150	5.45	97.32
24	79.5	1.8	4.55	71 65
24	78.5	1.4	4.90	77.77
20	83.5	1.15	4.1	77.67
20	81.6	1.70	4.75	73.64
20	74.8	0.65	3.95	85.87
20	82.0	0.85	3.95	82.29
20	82.6	0.35	4.15	92.22
20	81.5	0.20	3.95	95.15
20	81.4	2.20	4.325	66.28
20	80.3	0.30	4.55	93.81
20	82.0	0.20	4.65	95.8
20	81.1	0.20	4.40	95.7

Determination of Quality of Steam Discharged by Separating Calorimeter with Throttling Calorimeter.

Temperature in Calorimeter.	Quality Steam in exhaust from Separating Calorimeter.	No. of Observations.
281.	99.95	6
281.3	100.00	6
286.5	100.00	6
281.8	99.95	6
282.8	100.00	6
282.3	100.00	6
280.1	99.94	6
279.5	99.9	6
286.5	100.00	5
282.7	99.98	5
283.7	100.05	5
286.8	100.05	5
285.6	100.0	5
285.2	100.05	5
283.1	100.0	5
282.8	100.0	5
282.8	99.98	5
284.0	100.0	5

Average of 18 trials, involving 98 observations, 99.998.

PRICE OF CALORIMETER, INCLUDING PRESSURE GAUGE AND ANGLE VALVE, $50.00

WATCHMAN'S PORTABLE WATCH



FIG. 2626

DESCRIPTION, FIGS. 2626 TO 2628

The following are the principal features of this Portable Watch:

1st. To duplicate the key the dies and matrix must be used. Keys can not be purchased without application by the proper authorities.

2d. The case is made of aluminum, for lightness and to prevent tarnishing or injury from acids or grease.

3d. The dial is arranged for twenty-four hours. This gives a record for the Sunday registering when necessary.

4th. The mechanism that does the marking is on the key, which runs through a little house of steel, so made that the key fits exactly and has but one motion. The house is separated from the movement and tightly closed so that no dust or dirt can affect the works. Dirt or dust getting into the house would not affect the marking, as there are no springs, cams or levers within. The watchman carries it by a strap over his shoulders, on the right or left hand side, to suit his convenience.

6th. The key chain is riveted in a small iron box, about the size of a match safe, so that even when open and exposed to the weather no rain can get into the box. This also protects the keys. The box is screwed fast from inside and a private seal made over the screws to prevent the watchman from taking it down.

7th. The registering is made by embossing the numbers of the station into the dial whenever he turns the keys.

8th. They are made in two sizes for nine and sixteen stations. marking in one line from center. The 16 key watch can be arranged for 31 stations.

9th. A timepiece dial shows the watchman the time to start on his rounds, and the time he should take in making such rounds, which prevents his rushing to the stations without seeing everything along his route.

Where it is desired or necessary to use a twelve hour watchman's dial they will be furnished.

The movement is of the finest quality and jeweled, and is far enough away from the case to prevent its injury by sudden jarring.

The cases are aluminum and can not be bent or broken.

Weight of 9 key watch, about 18 oz. Weight of 16 key watch, about 22 oz. Others weigh from 3½ to 6 lbs.

IRON BOX

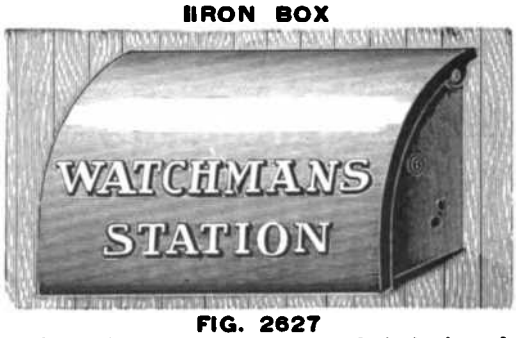


FIG. 2627

Cut of box in which each key chain is riveted. The box is fastened from within with two screws, which are sealed, so that it can not be removed without detection. Specially adapted to outside stations.

KEY AND CHAIN

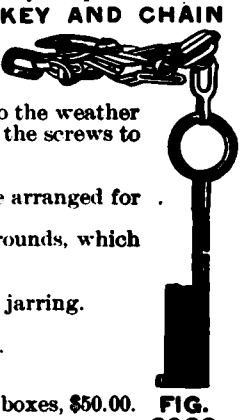


FIG. 2628

PRICES

Portable watch complete with 9 keys and 9 iron station boxes, $45.00. Portable watch complete with 16 keys and 16 iron station boxes, $50.00.

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STANDARD ELECTRIC WATCHMAN'S CLOCKS AND SYSTEMS

DESCRIPTION, FIGS. 2629 AND 2630

Are used for the protection of buildings in all parts of the world.

May be operated by the Magneto or Battery Systems, or by the electric lighting current of the building.

The circuit embraces the various stations (any number desired) which the watchman should visit. By inserting and turning his key at each station he makes the record on the paper dial in the clock, showing the time and order of his visits.

Can be furnished combined with an eight-day time clock in handsomely finished cases in all kinds of wood.

Send for catalogue containing full description.

Prices on application.

THE GUARDIAN

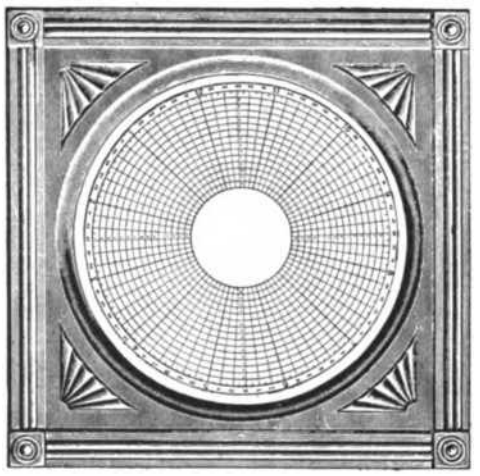


FIG. 2629

Watchman's register, very handsome finish.

Eight-day movement.

Size, 12 inches by 12 inches.

STANDARD

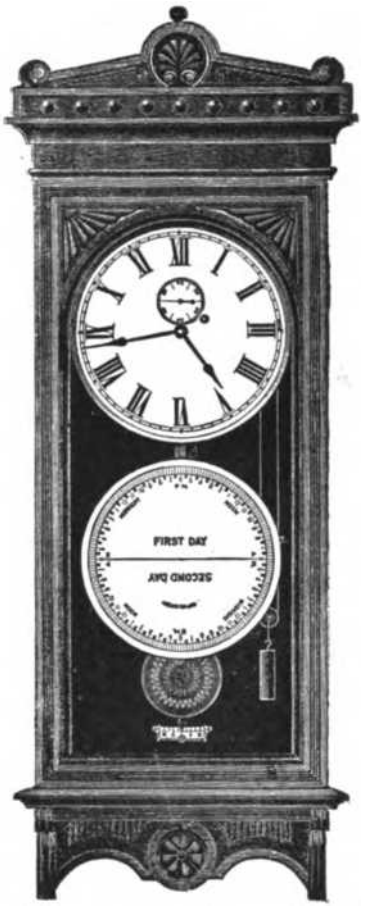


FIG. 2630

Watchman's register combined with an eight-day clock, handsomely finished.

Size, 48 inches by 18 inches, 12 inch dial.

STANDARD STATIONARY WATCHMAN'S CLOCKS

DESCRIPTION, FIGS. 2631 AND 2632

These two clocks are one-station watchman's clocks. The case is of oak, with glass front, handsomely finished, dust proof, with an excellent eight-day movement. The record is always visible and cannot be tampered with.

This system consists in having one of these clocks at each station.

The watchman presses the button at each visit.

PRICES, FIG. 2632

Register combined with eight-day time clock.

The register of this clock has a seven (7) day dial—need be changed only once a week.

Price, with one year's supply of paper dials, complete, $20.00.

THE COMBINATION

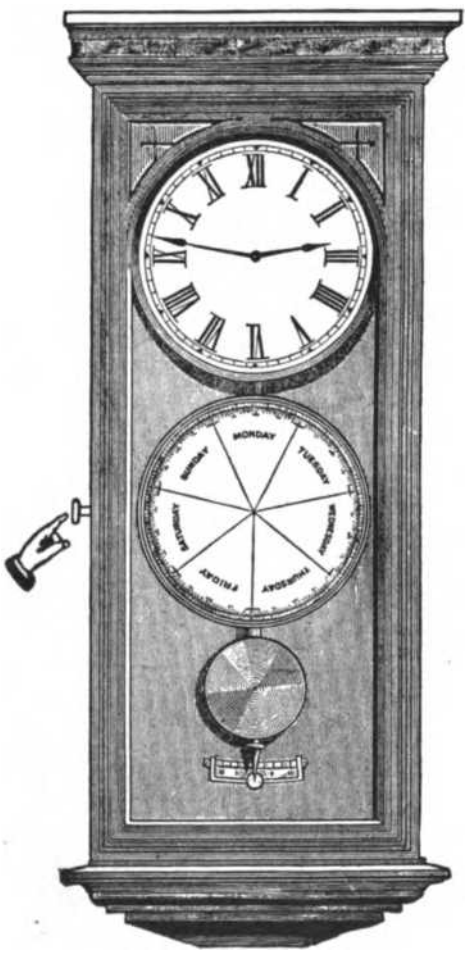


FIG. 2632

Size, 36 inches by 16 inches. 12 inch dial.

THE ALERT

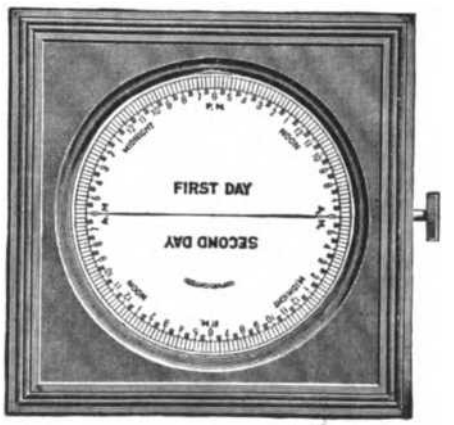


FIG. 2631

PRICES

Size, 11 by 11 inches.

This register has a two (2) day dial, divisions for day and night service.

Price with one year's supply of paper dials, complete, $12.00.

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STANDARD PORTABLE WATCHMAN'S CLOCKS

THE NUMERAL

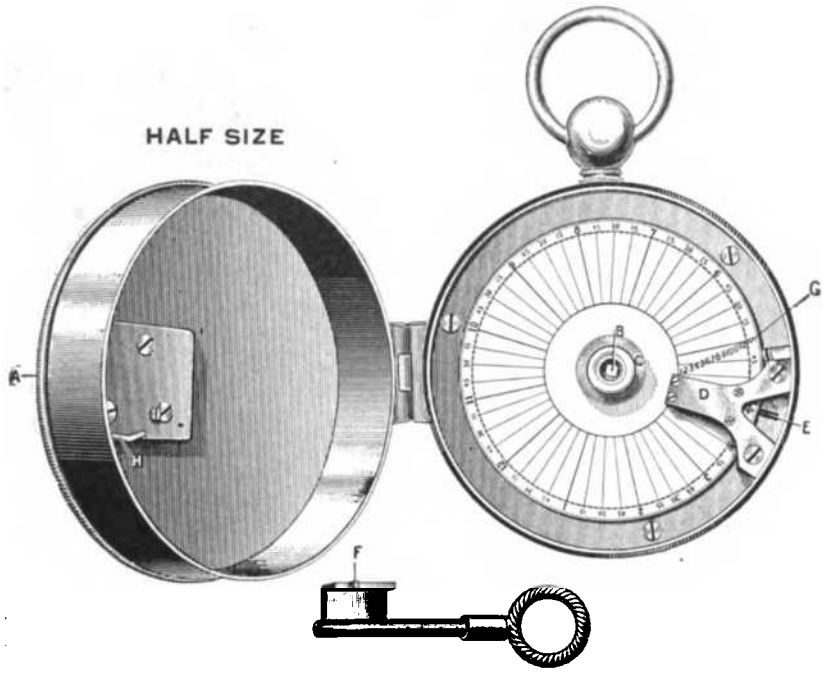


FIG. 2633

THE EXCELSIOR

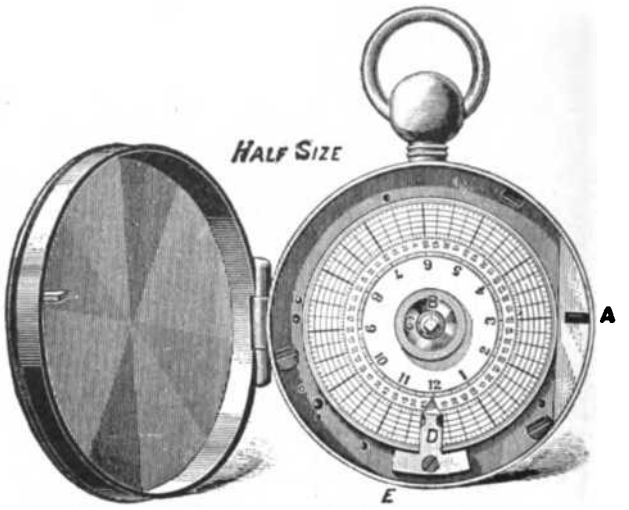


FIG. 2634

THE RIVAL

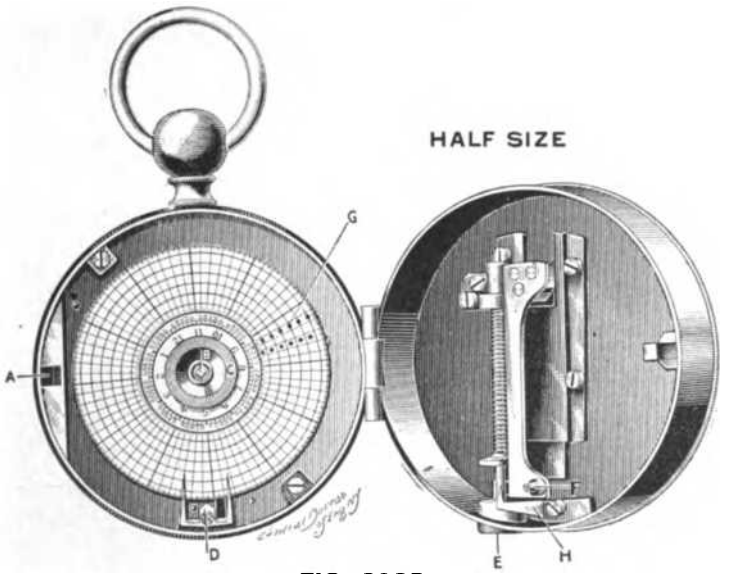


FIG. 2635

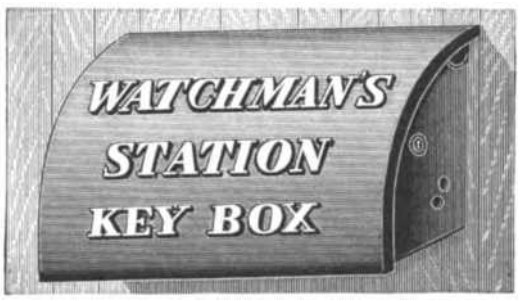


FIG. 2636

Made of Iron. Size 4 by 2 inches.

DESCRIPTION AND PRICES, FIGS. 2633 TO 2636

Three (3) styles of portable clocks from 3 to 4 inches in diameter and 1¾ inches in thickness.

Inclosed in aluminum or brass cases, finely finished. The brass case is much more durable, but a little heavier.

The clock is carried by the watchman, who makes the record by inserting and turning the keys, one of which is securely attached at each station he is required to visit.

The key of the Numeral prints the number of the particular key on the dial, that of the Excelsior makes different punctures, and that of the Rival, various marks at the division on the dial, indicating the time when made. The movements of these clocks are entirely separate and distinct from the recording mechanism, finely finished throughout, 11 ruby jewels with lever escapement, and absolutely dust-proof, being covered with an extra brass cap, as in the finest English watches, and will run at least 60 hours without rewinding.

Price with pouch, box of 400 paper dials, and 12 different keys, with chains for 12 stations.

Complete	$50 00
Complete for 6 Stations	45 00
Station Boxes, extra, each,	25

Additional keys can be furnished at small extra charge. Each clock of the above system is fitted with the Safety Lock Attachment, a device for recording the opening and closing of the case, thus showing any unauthorized opening.

Send for catalogue containing full description.

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WATCHMAN'S IMPROVED TIME DETECTOR

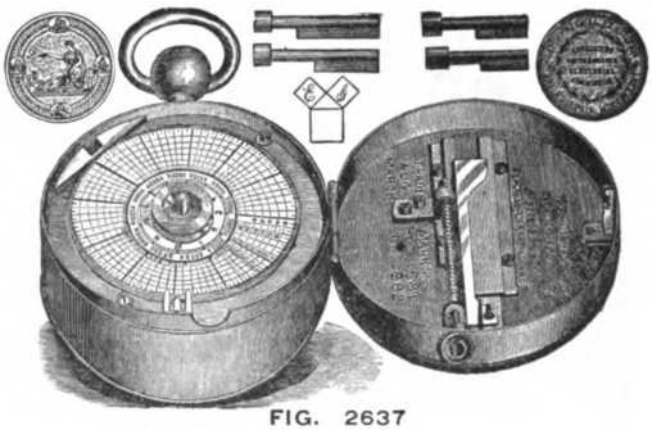


FIG. 2637

This clock is operated by twelve different keys. Nos. 1 to 6 mark between the circles 1, 2, 3, 4, 5, 6, on a paper disk, which is slowly revolving; the remaining six keys, Nos. 7 to 12, make a figure on the line of the circle, so that one does not conflict with the other.

The safety lock attachment is important, because it prevents dishonest watchmen from opening the watch with false keys and marking the dials without making their rounds. It is provided with an additional stationary marker (little knife in the cover), which marks the dial in the outside circle, showing at once any attempt of the watchman to open the watch.

In these instruments the marking apparatus is in the cover of the case, the watch movement being separate, and, therefore, safe from dust entering the keyhole.

On the different stations of the watchman's beat keys are fastened to indicate the stations up to twelve or more.

The watchman in the evening receives the watch locked in a pouch, properly wound and set.

In making his rounds, the watchman, on arriving at the station, will insert the key in the keyhole and turn it to the right once, and on so doing a figure is to be punched on the dial at the minute the hand on the watch indicates.

PRICES

With pouch box of dials, and 12 different keys for 12 stations, complete..... $75 00
With pouch box of dials, and 24 different keys for 24 stations, complete..... 100 00

The person in charge of the watch, on receiving it in the morning from the watchman, can see in a moment how often he was at the different stations, and the exact minute he was at each. If the watchman failed to visit all, the fact will be shown on the dial.

The watch clocks are as reliable as the best lever watch, and are warranted in every case to be in perfect order.

DUPLEX COUNTER

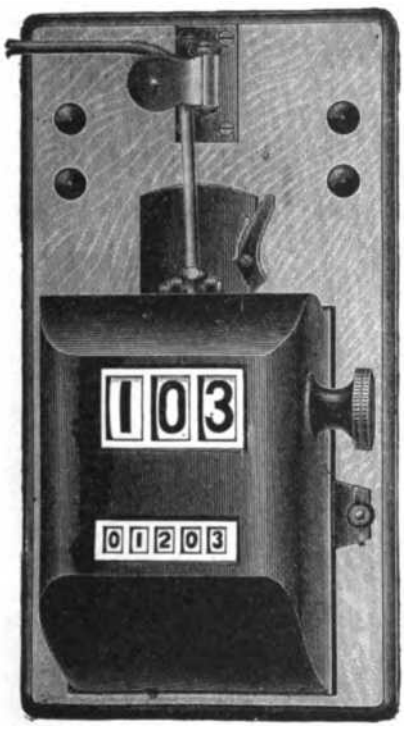


FIG. 2638

DESCRIPTION, FIG. 2638

This machine is adapted to keep separate record of each lot of goods handled, and also a total record of the whole. It is operated by simply pulling cord until the bell rings, and registers simultaneously on both main train of figures and on totalizing train. The main train will register to 1,000, and then reset itself automatically to zero, or it can be reset at any time by pulling out knob and turning forward to zero. The totalizing train can not be changed without taking the machine apart, but continues registering up to 100,000 and then resets itself automatically to zero, thus making an accurate and reliable total record. These machines are finished in fine ebony enamel, and attached to hard wood base. Dimensions, 7 x 5 x 5 inches, without board.

PRICE, COMPLETE AS PER CUT, READY FOR USE, $20 EACH.

CHICAGO TIME RECORDER

Numerical or Key Recorder



FIG. 2639

DESCRIPTION, FIG. 2639

This Time Recorder is made in three styles, comprising the card system, key system, and autograph. Prices and full particulars on application.

SIMPLEX COUNTER



FIG. 2640

DESCRIPTION, FIG. 2640

One train of figures. Registers to 100,000, and then resets automatically to zero. Can not be changed except by taking apart. Operated by pulling chain until bell rings. Finished in fine enamel, imitation of mahogany.

Dimensions, 6 x 3 x 3 inches.

PRICE, COMPLETE AS PER CUT, READY FOR USE, $10 EACH

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CALENDAR REGULATOR



FIG. 2643

OFFICE REGULATOR

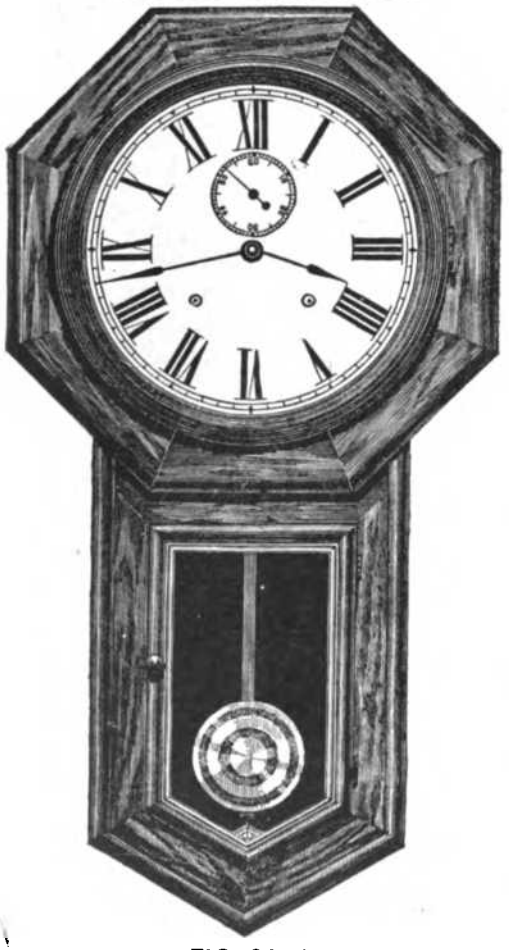


FIG. 2646

CALENDAR CLOCK

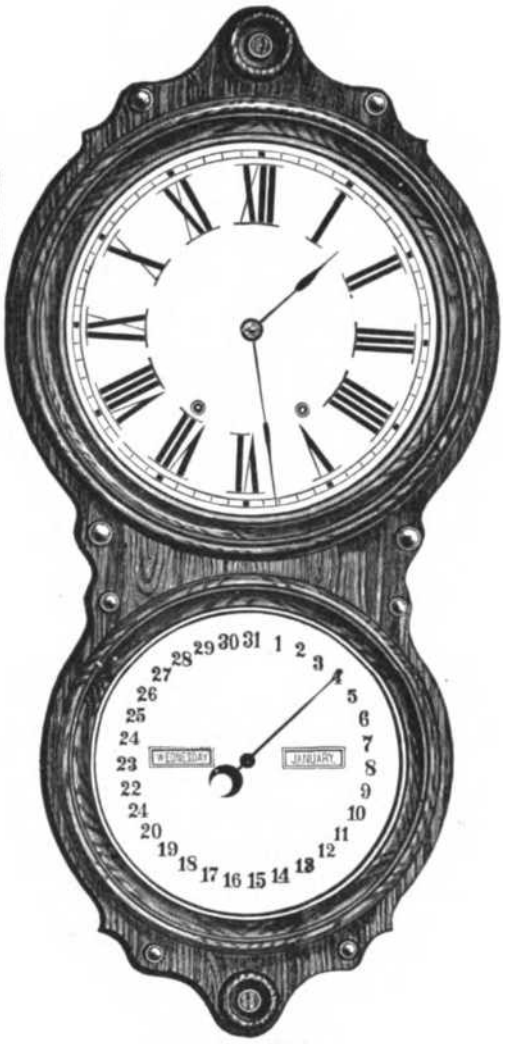


FIG. 2644

PRICES, FIG. 2643

Black walnut or ash case, 32 inches high; dial 12 inches.

8 day time and calendar.....$9 90
8 day time, calendar and strike.....11 00
Gong, 30 cents list additional.

PRICES, FIG. 2644

Perpetual calendar.

Rosewood, walnut or oak case, 32 inches high, time dial 12 inches, calendar dial 10 inches.

8 day spring, time.....$18 50
8 " " strike, cup bell.... 20 00

PRICES, FIG. 2645

Perpetual calendar.

Walnut, cherry, oak and old oak case, 49 inches high; both dials 12 inches.

8 day weight, time.....$44 00

PRICES, FIG. 2646

Rosewood, walnut and oak case, 32 inches high; dial 12 inches.

15 day spring, time.....$11 50
8 day spring strike, cathedral bell... 12 70

PRICES, FIG. 2647

Rosewood case, height 21½ inches; gilt frame, 10 inch dial.

8 day time.....$5 75
8 day time strike..... 6 85

WITH CALENDAR

8 day time.....$6 25
8 day strike..... 7 35

Alarm 50 cents, gong 30 cents, list additional

CALENDAR REGULATOR

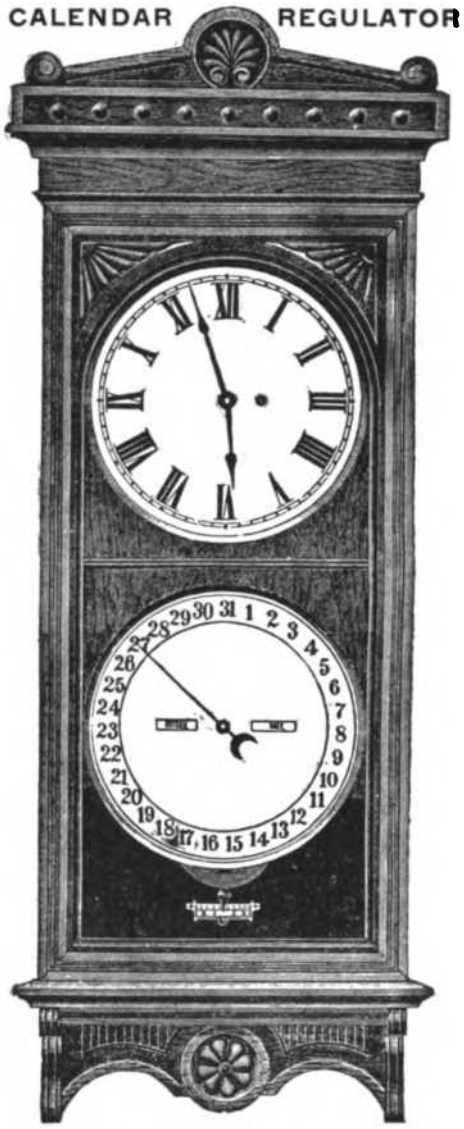


FIG. 2645

OCTAGON DROP

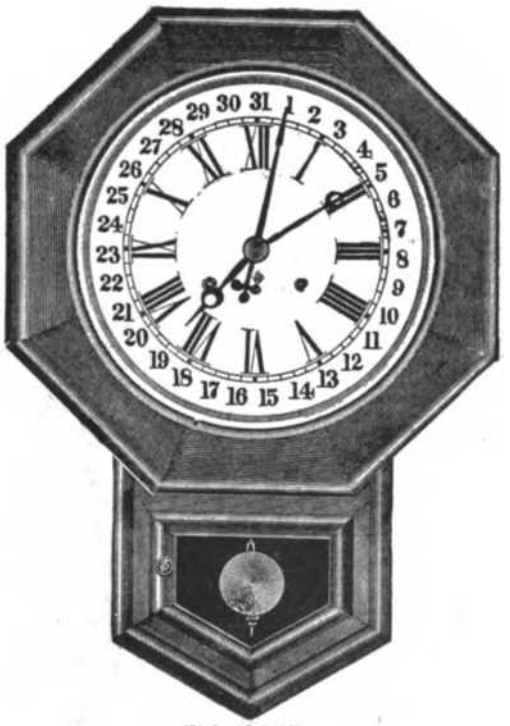


FIG. 2647

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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ASHCROFT LOCOMOTIVE MARINE AND ENGINE ROOM CLOCKS

DESCRIPTION, FIG. 2648

These clocks are designed for use in engine rooms in general, for marine service, and for use on locomotives. They are eight-day time.

They are made up in heavy brass cases. Dials are made of copper, silvered, and engraved. Rings are hinged and locked. Movements are of the different prominent makes.

The Howard and Harvard are full jeweled movements; are chronometer balanced, and are fitted with patent regulators.

We can also furnish clocks with Yankee movements. Prices on application.

Unless otherwise ordered, these clocks always have deep cases. The depth of the Howard and Seth Thomas movements will not admit of their being used in any but a deep case, but the Harvard movement, which is of less depth, can be furnished in the regular standard size gauge case, if so called for in order.

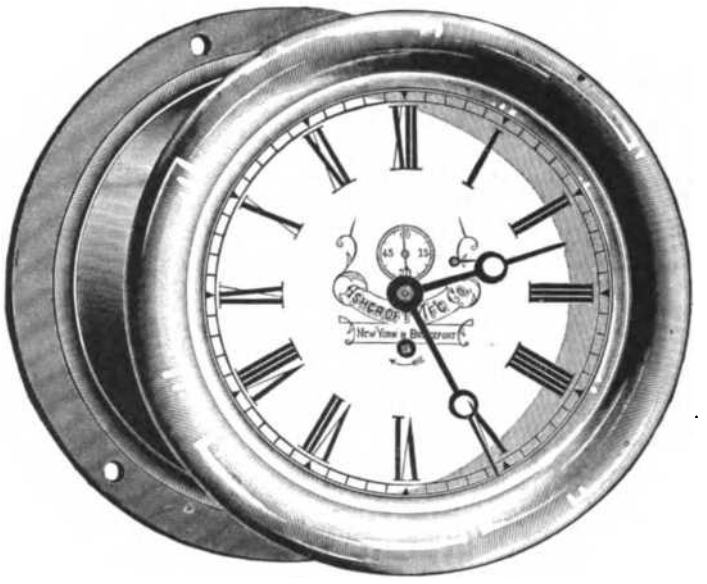


FIG. 2648

PRICES, FIG. 2648

Sizes, Inch Dial.	Movements.	Brass Cases. Each.	Nickel Plated Cases. Each.	Sizes, Inch Dial.	Movements.	Brass Cases. Each.	Nickel Plated Cases. Each.
5	Harvard	$35 00	$36 00	8½	Seth Thomas	$55 00	$57 50
5½	"	38 00	39 25	10	"	65 00	68 00
6	"	40 00	41 50	12	"	90 00	94 00
6¾	"	45 00	47 00	6¾	Howard	70 00	72 00
8½	"	55 00	57 50	8½	"	80 00	82 50
10	"	65 00	68 00	10	"	90 00	93 00
12	"	90 00	94 00	12	"	110 00	114 00
6¾	Seth Thomas	45 00	47 00				

ASHCROFT REVOLUTION COUNTERS

WITH ROUND CASE

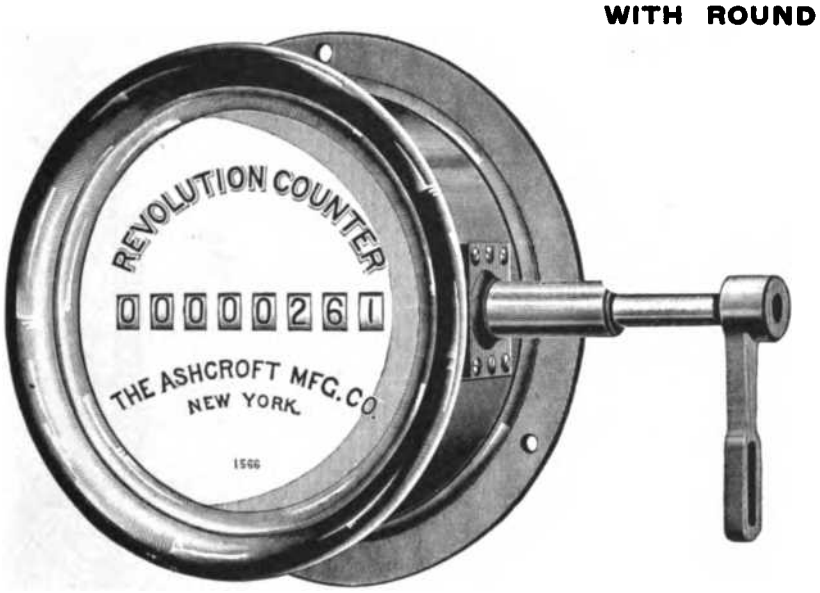


FIG. 2649

PRICES, FIG. 2649

Sizes, Inch Dial.	Wheels.	Brass Deep Cases. Each.	Nickeled Deep Cases, Each
12	8	$110 00	$114 00
10	8	95 00	98 00
8½	8	80 00	82 50
12	6	100 00	104 00
10	6	85 00	88 00
8½	6	70 00	72 50
6¾	6	60 00	62 00

PRICES, FIG. 2650

Sizes. Inches.	Figures.	Counting.	Plain. Each.	Resetting, Each.
4½ x 1¾	4	10,000	$13 50	$17 50
5 x 1¾	5	100,000	16 00	20 00
5½ x 1¾	6	1,000,000	20 00	24 00
6 x 1¾	7	10,000,000	24 00	28 00
7 x 2½	4	10,000	20 00	24 00
8 x 2½	5	100,000	24 00	28 00
9 x 2½	6	1,000,000	28 00	32 00
10 x 2½	7	10,000,000	32 00	36 00

DESCRIPTION, FIG. 2649

These counters are used largely on marine engines, in pumping stations, or wherever a record of revolutions is desired.

Its construction is such that either a reciprocating or continuous movement of the crank shaft will transmit a positive rotating motion to the decimal wheels. This is accomplished through the medium of the verge movement, which consists of a verge wheel rigidly attached to the initial decimal wheel ; a sliding plate placed transversely to such verge wheel.

The rings are connected to the cases by strong, substantial, and mechanically fitted hinges; cases are equipped with lock and key, and the whole interior mechanism is of our latest and best production.

These instruments are driven from their right hand side, as shown in cut, but they can be furnished with their driving crank on the left hand side when so ordered.

The lubricating facilities of the counters are such that the oil has free access to all the frictional surfaces.

WITH SQUARE CASE



FIG. 2650

DESCRIPTION, FIG. 2650

These counters are constructed without springs, are perfect in action, and durable. They are operated by the lever at the right hand side, and have a positive motion.

They should be connected in the same position as shown in cut, with the lever on a dead center to the rod that can be fastened to operate it.

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MOSCROP CONTINUOUS SPEED RECORDER

FOR STEAM, ELECTRIC, AND CABLE ENGINES AND WATER MOTORS

DESCRIPTION, FIGS. 2651 AND 2652



FIG. 2651

The recorder consists of an iron case with glass sides containing an eight-day pendulum clock, which moves a continuous paper band upon which is made the autographic record, by an inked marker actuated by the motion of the governor balls which rise and fall under varying speeds. Figure 2652 gives a side view, with part of the frame removed, showing the clock movement and the interior construction of the recorder. The belt A, from the shaft whose revolutions it is desired to record, is brought under the idler pulleys in the rear of the base of the instrument to a horizontal pulley that should be speeded at 84 to 96 revolutions per minute, the best possible speed being 90.

The pulley is secured to an upright shaft B, rising through the center of the instrument; to this shaft is attached a pair of governor balls which rise by centrifugal force when the central shaft is revolved. The upward motion of these balls is transmitted through a sleeve covering the central shaft to a bell crank in the rear of the clock movement; attached to this bell crank is an arm carrying a marker; when the engine has attained the standard speed, the marker comes up to the central longitudinal line D on the paper. From D to E on the paper is shown record of uneven speed, while from E to F is a record such as would be made by a uniform speed. Should the speed of the engine be increased 3 per cent., the marker would pass over the paper to the next parallel line to the left; each variation, as recorded by the marker, passing from one parallel line to another, denotes an increase or decrease of speed from the standard of 3 per cent.

When the engine is stopped the marker is pushed entirely off the paper, and it cannot return to make any record until the engine has been started again. As each space on the paper between the perforations indicates an hour in time, the length of the interval between the starting and stopping of the engine is thus recorded, also the exact moment of all variations of speed. The paper band furnished with each instrument is sufficiently long to last for a three months' run. Floor space occupied by recorder, 1 foot 9 inches square; height, 4 feet 6 inches.

PRICE, $200.00 EACH

When ordering a recorder, state the exact diameter of shaft and the revolutions per minute, and a pulley will be sent with the machine to drive it at the required speed, provided pulley is not too large to hang in the 1 foot 6 inches square of base.

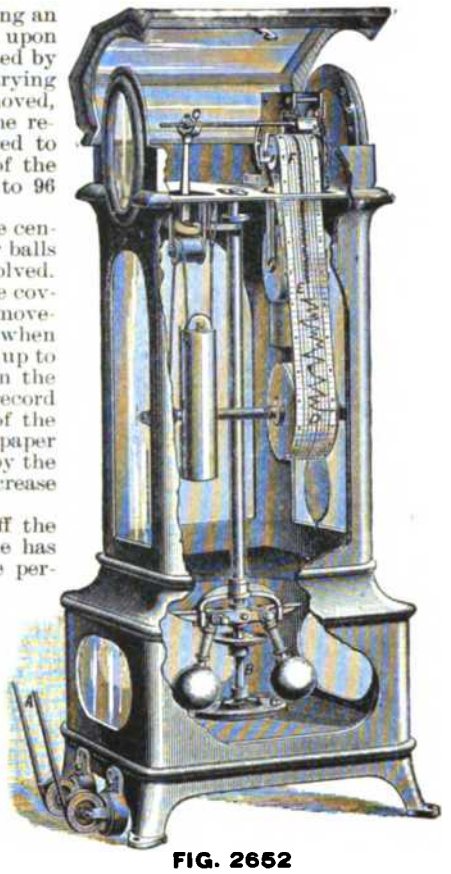


FIG. 2652

RAILWAY SPEED RECORDER

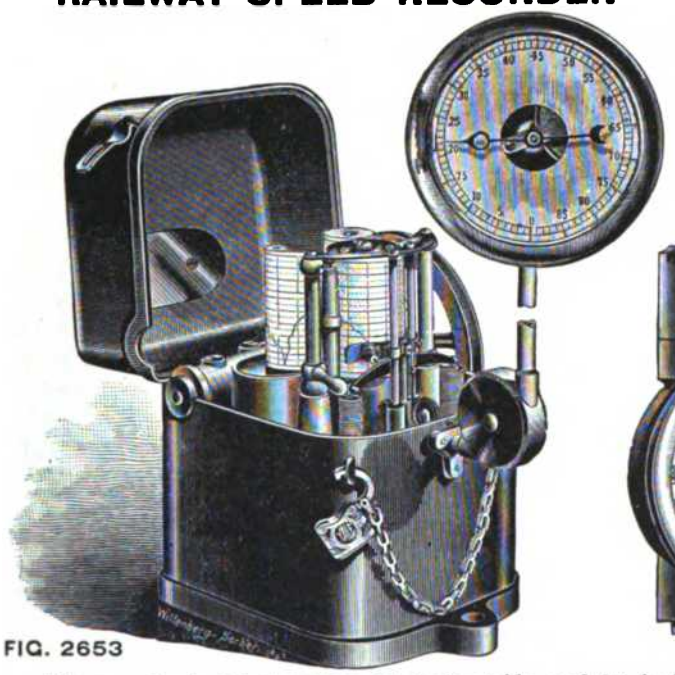


FIG. 2653

The recorder is 9 inches long, 7½ inches wide, and 9¼ inches high.

It is designed to meet the demand of railway officials for an accurate speed recorder and indicator, that can readily be applied to locomotives or cars, and not only record on paper, but indicate on a dial similar to a steam gauge the speed in miles per hour. When the recorder is attached to a locomotive, the indicator is placed in the cab so that the engineer can see at a glance the actual speed he is running as easily as he can see by the steam gauge how much steam he is carrying. When attached to a car, the indicator is placed anywhere to suit the convenience of the parties using it.

The recorder is arranged to carry a ribbon of paper from one spool to another at the rate of one-half inch per mile, and a line is traced on this paper with a metallic pencil, showing, by its distance from the base line, the exact speed at which the train passes any point on the road, the number and location of stops, the distance traveled, and the location and speed of any backward movement that may have been made. **It records and indicates from 0 up to 90 miles per hour. Further information and prices furnished on application.**

PORTABLE TACHOMETERS

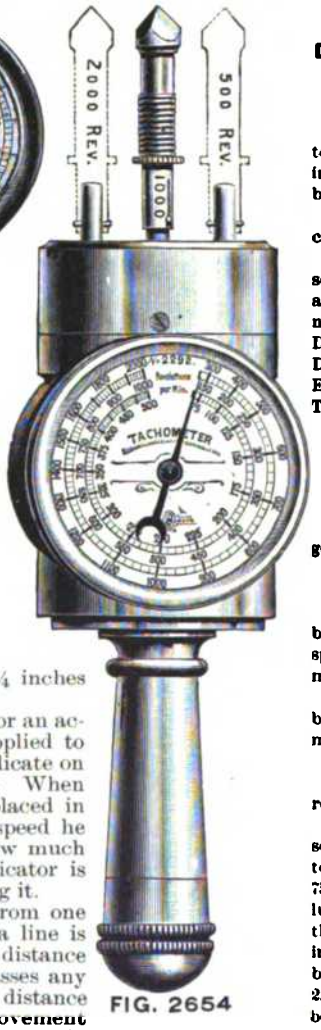


FIG. 2654

DESCRIPTION, FIGS. 2654 AND 2655

By applying these instruments by hand to the center of rotating shafts they will instantly and correctly indicate the number of revolutions of the shaft per minute.

They are furnished in elegant morocco cases for easy transportation.

On unscrewing the end of handle a set screw will be found, by means of which any lost motion may be taken up when necessary.

Diameter of Dial..... 3 inches
Depth of Case..... 4 "
Entire Length..... 10 "
Total Weight, including Morocco Case..... 5 lbs.

PRICES

Fig. 2654 is provided with three scales generally reading from

60 to 300 revolutions per minute
120 " 600 " "
600 " 3,000 " "

but are made to order for any desired speeds not exceeding 3,000 revolutions per minute.

The point only is detachable and may be fastened to any one of the three arbors marked to correspond with speed on dial.

Price, $60.00

Fig. 2655 has one scale from 100 to 1,000 revolutions per minute.

With this Tachometer are furnished 2 sets of geared wheels in proportion of 1 to 2, by means of which speeds between 75 and 500, respectively, 300 and 2,000 revolutions may be indicated in such a way that when using the gear marked 500 the indications of the pointer must be divided by 2, and when using the gear marked 2,000 the indications of the pointer must be multiplied by 2.

These gear wheels are easily attached to an arbor and held in position by a locknut provided for that purpose.

Price, $55.00



FIG. 2655

MANNING, MAXWELL & MOORE, 85, 87, AND

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STATIONARY TACHOMETER

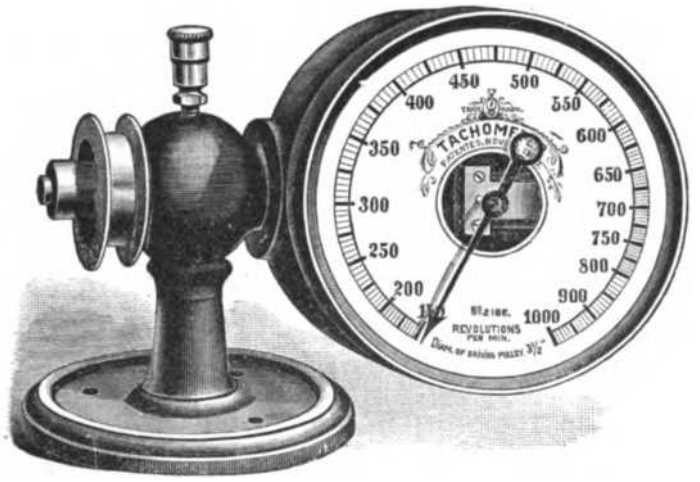


FIG. 2656

These instruments have been designed for the purpose of ascertaining at a glance the number of revolutions made by rotating shafts. Their construction is based upon centrifugal power, and they consist of a case in which are mounted a pendulum ring, in connection with a fixed shaft, a sliding rod and an indicating movement.

The apparatus is very sensitive and will indicate the slighest deviation in speed. All internal parts require no oiling.

These Tachometers have been applied, with great success, to electric light engines, flour and cotton mills, and can be used to advantage on all machinery of which it is essential to know, at all times, the exact speed at which it is moving.

It is very important that the belt by which this instrument is driven be very smooth and pliable; an endless rubber belt answers the purpose best; if a joint is made it should be made without lapping.

The diameter of the driving pulley is marked on the dial.

The motion may be in either direction, and the apparatus may be placed in a vertical or horizontal position, or at any desired angle between these positions.

Tachometers of this class, with dials:

From about 30 to 300 revolutions per minute.
" " 40 " 400 " " "
" " 50 " 500 " " "
" " 100 " 1,000 " " "
" " 200 " 2,000 " " "

are kept in stock; instruments for other speeds are made to order.

In ordering, it should be stated for what speed the Tachometer is wanted.

The Tachometer can in many cases be belted to existing pulleys, and wherever this is desirable the diameter of such pulleys should be stated in order.

	Each.
5½ inch dial, up to 2,000 revolutions per minute	$55 00
7½ " " " " "	60 00

COMBINED RECORDING AND INDICATING TACHOMETER

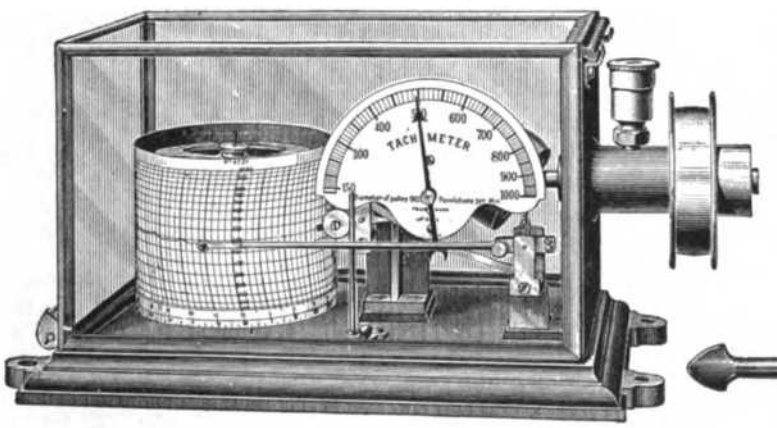


FIG. 2658

This instrument is similar in construction to Recording Tachometer, but of a different form and provided with a separate scale and indicating pointer. The drum containing the clock movement has a diameter of 5 inches, and carries a chart of 15⅝ inches long and 3 inches wide, arranged for 24 hours. The indicating scale has a radius of 2¾ inches.

The instrument is placed on a metal base, with lockable glass cover. It is of very handsome appearance and the finest of workmanship and finish.

PRICE, $120.00 EACH

RECORDING TACHOMETER

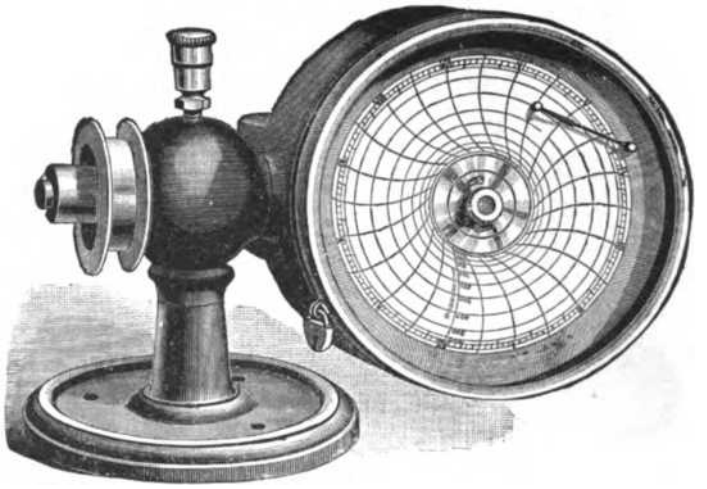


FIG. 2657

This instrument has been designed for the purpose of furnishing a true record of the fluctuations of speed in steam engines, dynamos, flour and cotton mills, and all such machinery of which it is essential to know, at all times, the exact speed at which they are moving.

The construction of the Recording Tachometer is based upon the same centrifugal power employed in the Indicating Tachometer. It consists of a case in which are mounted a pendulum ring, in connection with a fixed shaft and a sliding rod, to the end of which is attached a lever and marking pointer. The fixed shaft has a pulley, by which the motion is imparted to the pendulum ring, and subsequently by the sliding rod to the marking mechanism.

A clock movement is provided, which carries a disk and a chart, making one revolution every 24 hours. The radial lines on the chart correspond to the hours of the day, while the circular lines indicate the number of revolutions per minute. The line marked by the pencil on pointer records the fluctuations of speed.

The apparatus is very sensitive, and care should be taken to have the driving belt smooth and flexible; an endless rubber belt answers the purpose well. The diameter of driving pulley is marked on dial.

The motion can be in either direction, and the apparatus may be placed in a vertical or horizontal position, or any desirable angle between those positions. No oiling of internal parts is required; the pulley shaft has to be oiled in usual manner; an oil cup is provided for the purpose.

	Each.
Diameter of dial, 10 inches	$120 00

In ordering, state approximate number of revolutions to be indicated.

HEATH'S SELF-TIMING AND REGISTERING SPEED INDICATOR

DESCRIPTION, FIG. 2659

1st. The setting pin, A, should be pressed firmly inward until it stops, which will set the hands at 0 and wind the power spring.

2d. The point being attached as in the cut, or in case the shaft runs in the direction followed by the hands of a watch, to the upper pinion, is then placed in the center of the shaft to be timed, brought as nearly as possible in line with it, and held with just enough firmness to prevent slipping.

3d. The starting pin, B, should then be pressed firmly inward and released, which will start the hands, and at the same time release the time train.

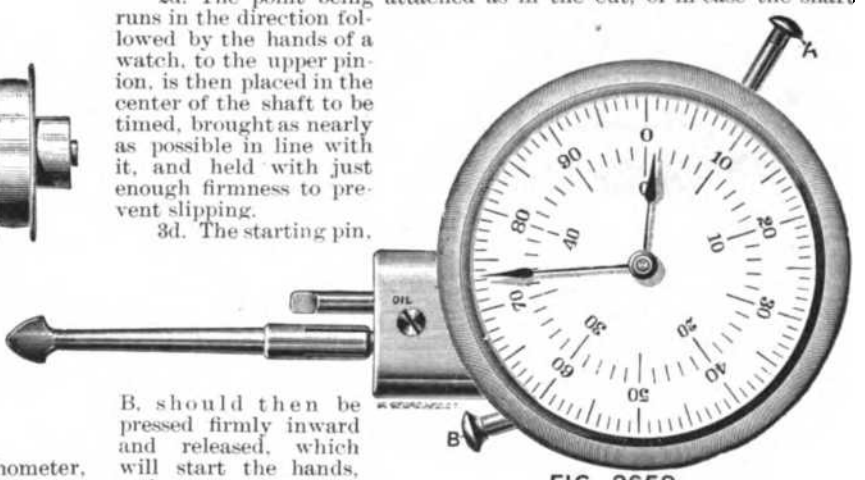


FIG. 2659

The instrument must now be held steadily in place until the hands stop, when the rate of speed may be read on the dial, the outer graduated circle indicating revolutions, the inner one, hundreds of revolutions.

The time train runs for half a minute, but the instrument registers the revolutions for a full minute.

PRICE, $20.00 EACH

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SPEED COUNTERS

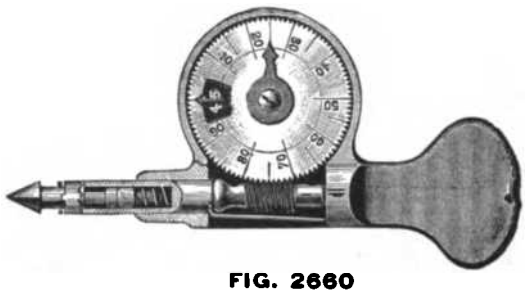


FIG. 2660

The upper dial is graduated for 100 revolutions, and registers units; the lower dial is graduated for 49 revolutions of the top dial, and registers hundreds, making a continuous count of 4,900 possible.

The reading on the under dial is through the opening in the upper dial. The index finger indicates the count on the upper dial; for instance, if the point in the opening through the upper dial indicates 45 on the lower dial, and the index finger points to 25 on the upper dial, the reading will be 4,525 revolutions.

PRICE EACH, $1.00

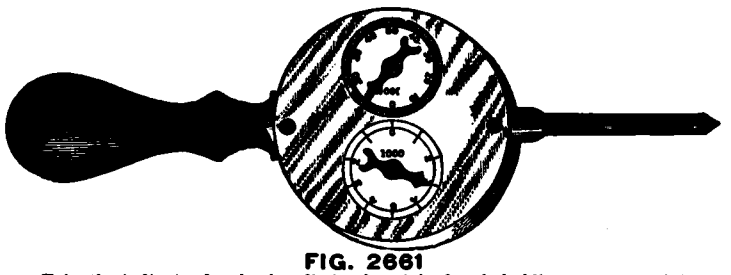


FIG. 2661

Take the indicator by the handle in the right hand, holding your watch in the left, press the point of the spindle gently against the end and center of the shaft. To every hundred revolutions of the shaft the Hundred Pointer will make one revolution, while the Thousand Pointer will indicate one number, the dial being marked into ten parts. It may be applied to a shaft revolving either to the right or left.

Price, full nickeled, rosewood handle.....$6 00

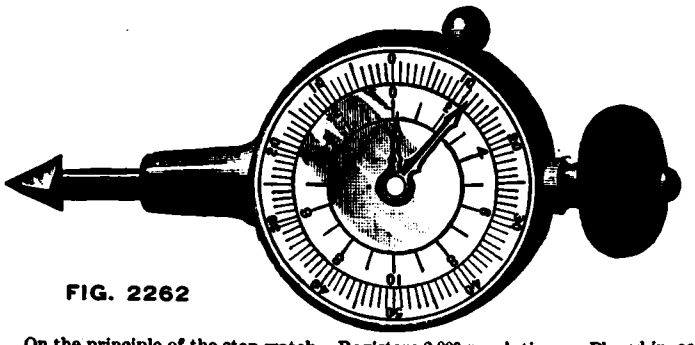


FIG. 2262

On the principle of the stop watch. Registers 2,000 revolutions. Placed in contact with a shaft, it revolves without moving the hands on the dial, and when the second hand of your watch reaches a suitable point, connect the registering mechanism instantly, without looking from the watch, by moving the stud at the side toward the handle; at the expiration of a given time remove the counter, and the revolutions made by the shaft will be accurately registered on the dial.

PRICE, EACH, $6.00

WEISS DOUBLE SPEED ALARM INDICATOR



FIG. 2663, FRONT VIEW

The bell rings when either hand is at its zero and afterward at every hundred revolutions of the spindle. A shaft turning to the left is registered by the shorter hand, stamped L, and the inner dial, a shaft turning to the right by the longer hand, marked R, and the outer dial.

PRICE, EACH, $1.50

SINGLE SPEED INDICATOR

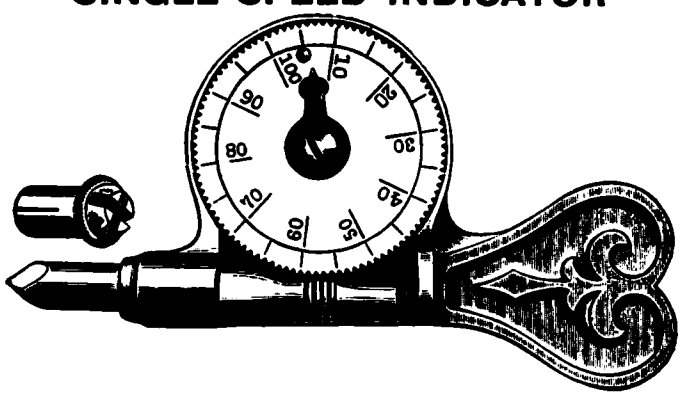


FIG. 2665

PRICES, NICKEL PLATED

With steel split cap for pointed centers.....per dozen, $11 00
With plain cap..... " 10 00

SINGLE SPEED INDICATOR



FIG. 2664

Single Speed Indicator.....Each, $0 75

IMPROVED SPEED INDICATORS

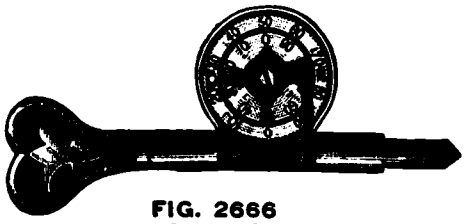


FIG. 2666

PRICE, $1.00

DESCRIPTION, FIG. 2667

To set indicator, bring raised pin on the large dial and hole in small dial together and use as usual. Right hand running shafts are counted by outside figures, and left hand shafts by reading inside figures. This indicator runs up to two thousand; it is adapted to pointed or hollow centers, and has a raised sight on the dial so as to count by touch. It may be applied to the shaft revolving either to the right or left.

Price, nickel plated, with split cap for pointed centers, each.....$1 50

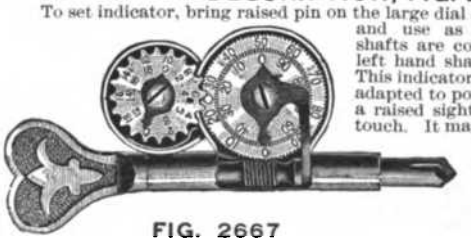


FIG. 2667

REGISTERING SPEED INDICATOR

DESCRIPTION, FIG. 2668

The instrument will register 5,000 revolutions. The large dial is graduated into one hundred lines, each one representing a revolution of the spindle. The small dial has fifty lines cut upon its face, each representing one hundred revolutions of the spindle (or one complete turn of the large dial). It has a hard rubber handle, making a safe insulator when used on electrical machinery.

PRICES

In pasteboard box.....$3 00
In leatherette case..... 3 50

Sent in pasteboard box unless otherwise ordered

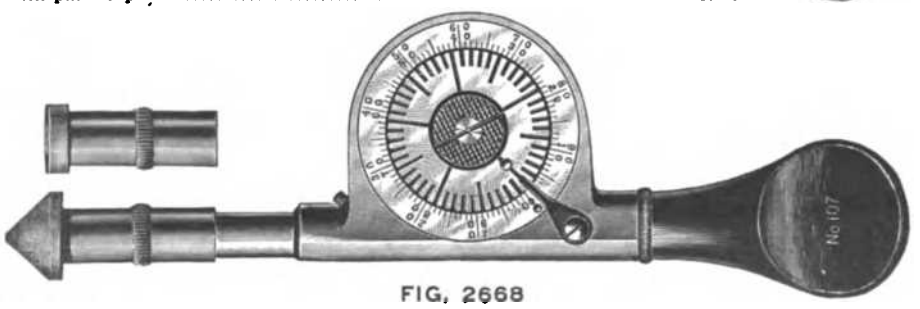


FIG. 2668

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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HIGH SPEED INDICATOR

DESCRIPTION, FIG. 2669

This indicator may be run at highest speed required without heating, and this on account of the frictionless bearing against which the inner end of the spindle revolves.

The working parts of this instrument are encased, and the dial plate has two rows of figures, reading right or left, as the shaft may run.

The inner plate is frictionally clamped to the revolving gear by a checked wafer head screw. By a pressure and twist with the thumb the plate is loosened, when the O mark may be instantly moved to agree with the starting point, thus saving time revolving the spindle to bring it there.

Price, $1.00. In leatherette case, $1.50.

The indicator in pasteboard box will be sent unless otherwise ordered.

We supply the indicators with a spindle 7½ inches long for use on dairy machines, etc., for 50 cents extra.

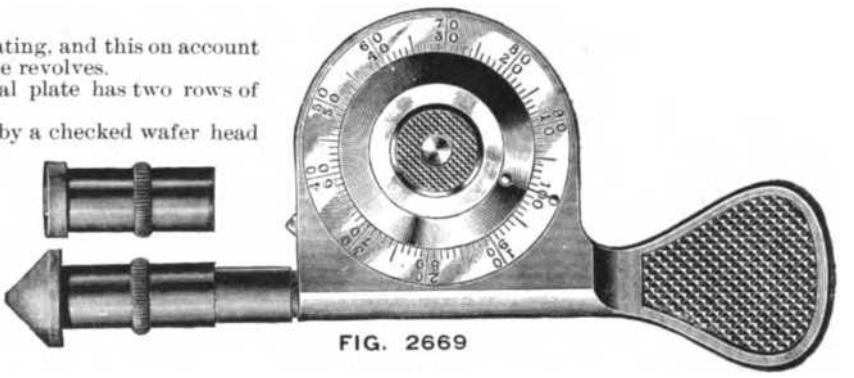


FIG. 2669

PARAGON BALL BEARING SPEED INDICATOR

DESCRIPTION AND PRICES, FIG. 2670

The Paragon Ball Bearing Speed Indicator registers continuously from 0 to 5000 revolutions per minute and then goes on and repeats, but if continuous counting is not required the register is easily and instantly turned to zero for a fresh start.

It has a pistol form grasp by which the contact is made, and a trigger form lever for starting and registering dial, just the form of mechanical appliance to secure accuracy at starting and stopping.

The spindle of this instrument may be placed in position and may be running all right, but no count will be made until the trigger is pulled.

It is provided with ball bearings to take up the end-thrust friction. The latter disappears as a defect and overcomes the liability of slipping at the contact point and making an incorrect record.

It is also provided with worm gears to actuate the dial. No matter in which direction the shaft turns, the registering dial always turns and counts in one direction, so that its recordings do not have to be read backwards.

We furnish with each Indicator one of the following styles of contact points. When ordering, be particular to state which one is desired.

No 1. Extra contact point (for large deep centers).
No. 2. " " " rubber faced, pin center (for hardened and ground shafts).
No. 3. Extra contact points, concaved rubber (for pointed centers).
No. 4. " " " screw driver (for slotted centers or screw heads).

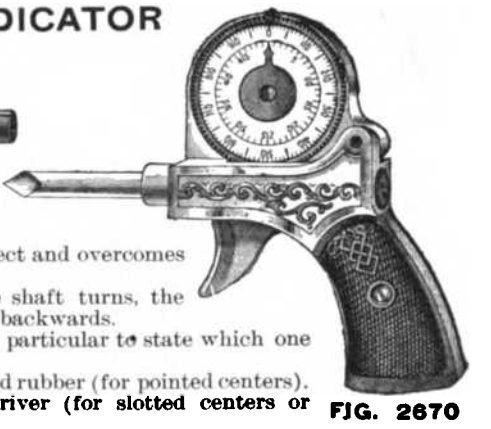


FIG. 2670

The Indicator, together with its equipment and one extra contact point of any of the above styles you may select, packed in solid leather plush lined case, 6 in. long, 3½ in. wide and 1¼ in. deep; weight, including equipment, 14 ozs. Complete, $12.00. Additional contact points, 75 cents extra.

HAND TALLY REGISTER

DESCRIPTION AND PRICES, FIGS. 2671 AND 2672

The register in use is held in position as shown in the cut to the left. The middle finger of the left hand is passed through the ring on the back to prevent accidental dropping from the hand and to better hold it in position so as to bring the pusher directly under the thumb.

These little registers are positive in their action and can be set to zero at will. They are simple in construction, can be carried in the pocket, are about the size of an ordinary watch, and weigh about six ounces. They are used by railroad, telegraph and steamboat men for checking or tallying ties, telegraph poles and passengers, and all kinds of freight, by cattle men for counting cattle and sheep, by lumbermen, loggers and timber estimators, and by detectives and spotters, and at places of amusement for counting the people going in and out. In fact, they can be used for any purpose where a correct count is desired to be kept.

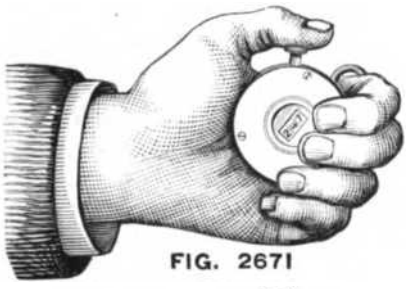


FIG. 2671

No.				Each.
00	records	to	100	$2 00
0	"	"	1,000	2 50
1	"	"	10,000	3 50



FIG. 2672

WIRE MEASURING MACHINE

DESCRIPTION, FIG. 2673

This wire measuring machine consists of a measuring wheel 12 inches in circumference, over which and between it and a grooved presser wheel the wire to be measured passes; a set of recording wheels, connected by gearing with the measuring wheel, and an automatic brake which is released at the moment of the passage of the end of the wire, instantaneously stopping the movement of the measuring and recording wheels, and holding them fixed until the brake is released by the introduction of a new piece of wire.

The recording wheels are released through the movement of a lever and the wheels set to zero by hand.

	Prices.
To measure in 3 figures	$30 00
" " 4 "	32 00
" " 5 "	34 00
" " 6 "	36 00

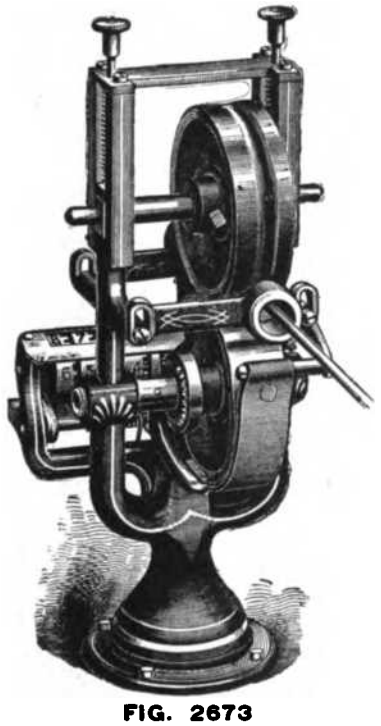


FIG. 2673

WIRE WINDING AND RECORDING MACHINE

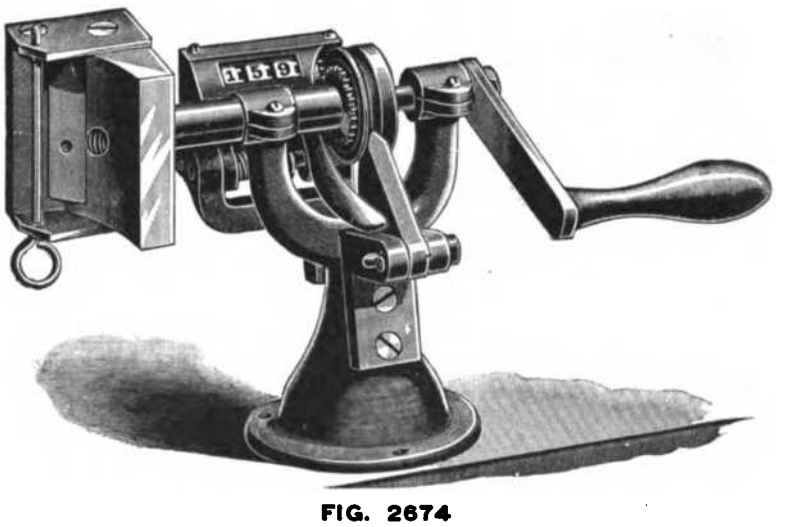


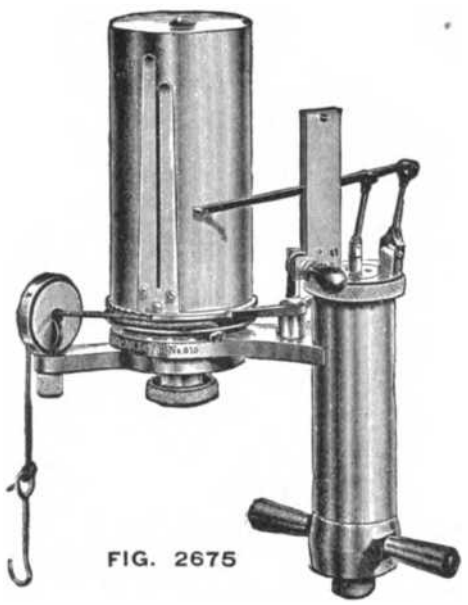
FIG. 2674

This machine is for recording revolutions of winding spindles, armatures or bobbins.

For 3 figures, $10.00; 4 figures, $11.00; 5 figures, $12.00; 6 figures, $13.00.

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TABOR STEAM ENGINE INDICATORS


FIG. 2675

PRICE, FIG 2676

Tabor Indicator, as shown, fully nickel plated, with one cylinder spring, one boxwood scale, two straight cocks, 100 cards, two screwdrivers, one bottle porpoise oil, two wrenches, one extra drum spring, all inclosed in a substantial, well finished black walnut box, with nickel plated trimmings.

EACH, $115.00

One three-way cock, in place of two straight cocks, will be furnished without extra charge, if called for.

PRICE, FIG. 2675

Tabor Indicator, as above shown, fully nickel plated, with one cylinder spring, one boxwood scale, two straight cocks, 100 cards, one screwdriver, one bottle of porpoise oil, two wrenches, one extra drum spring, all inclosed in a substantial, well finished, black walnut box, with nickel-plated trimmings,

PRICE, EACH $85.00

One three-way cock, in place of the two straight cocks, will be furnished without extra charge, if called for.

WITH HOUGHTALING REDUCING MOTION

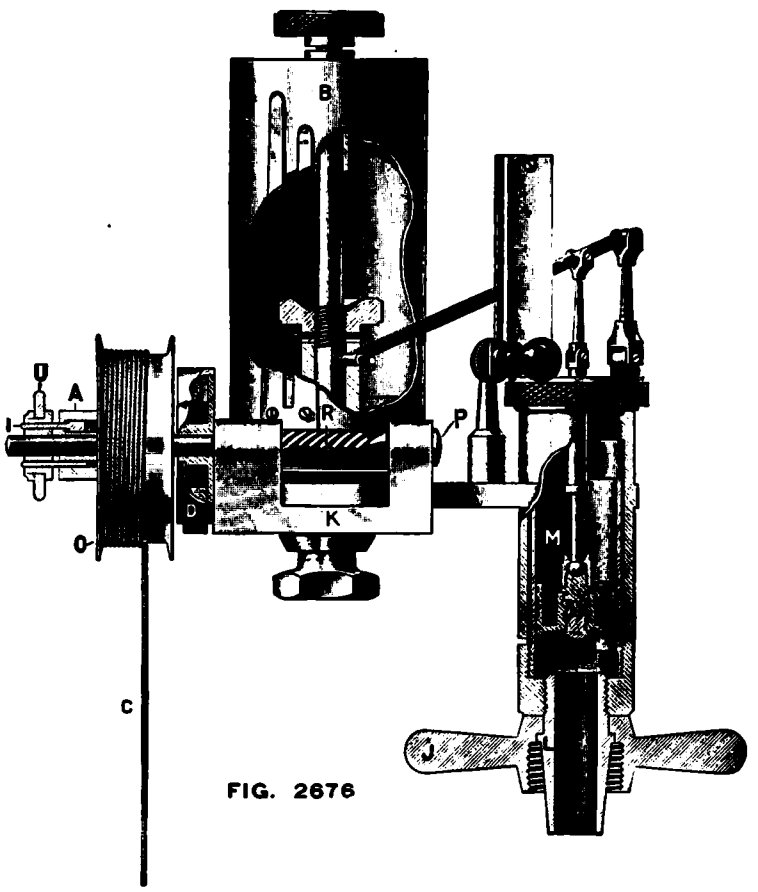
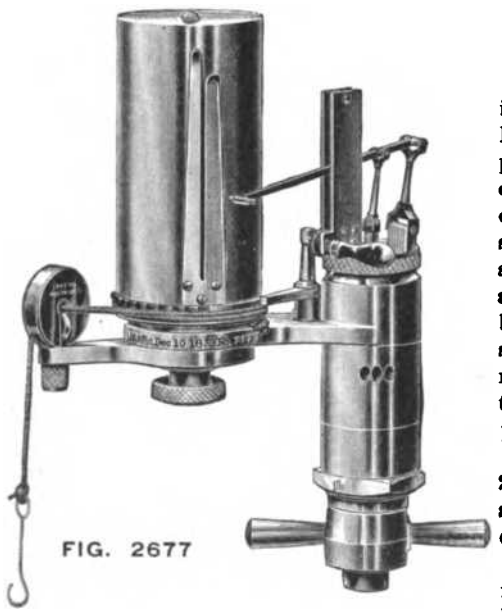


FIG. 2676

TABOR STEAM ENGINE INDICATORS, NAVY PATTERN

STANDARD SIZE INDICATOR


FIG. 2677

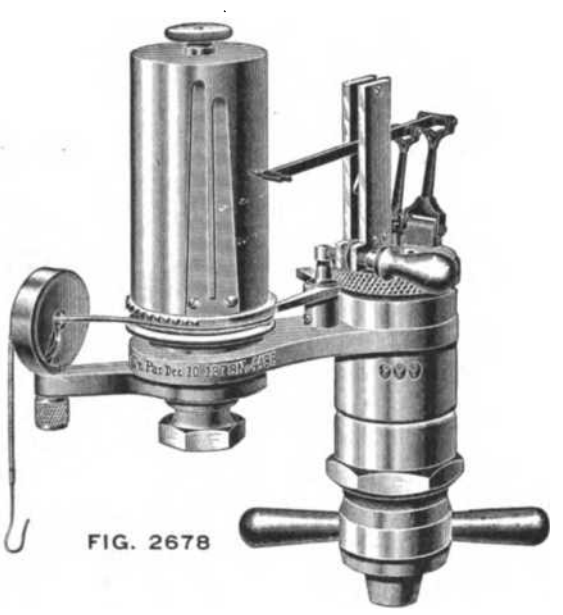
DESCRIPTION, FIGS. 2677 AND 2678

In the special Navy Pattern Indicator, which is used extensively in the United States, English, Russian and Japanese navies, an improved device is employed by which the escaping steam from the indicator can be discharged away from the operator in any desired direction. This improved device consists of a chambered swivel ring fitting loosely around the body of the instrument into which, by means of holes drilled through the top, the steam that passes by the piston escapes. This ring has a series of holes drilled through it for the final escape of the steam to the atmosphere.

The Special Navy Pattern Indicator (Fig. 2677) is used on the main engines of battleships, cruisers, monitors, etc., and has paper drum 2 1/32 inches in diameter.

Fig. 2678 illustrates a smaller sized special navy pattern indicator, in which are embodied all the qualities and improved features of the indicator shown in Fig. 2677. The paper drum on this indicator is 1½ inches in diameter and 2⅞ inches high, and the reduced size enables it to be used in smaller space than is required for the larger instrument and for the highest speeds. This instrument is used largely on torpedo boats.

SMALL DRUM INDICATOR


FIG. 2678

Either one of these instruments can be furnished complete with the Houghtaling Reducing Motion (Fig. 2676) if so called for in order.

PRICES ON APPLICATION.

With each outfit of indicators we furnish, without charge, Houghtaling's book on the "Steam Engine Indicator and Its Appliances," a valuable publication of 300 pages, describing the operation of the indicator on all classes of engines.

MANNING, MAXWELL & MOORE, 85, 87 AND 89 LIBERTY STREET, NEW YORK

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TABOR COMBINED STEAM AND GAS ENGINE INDICATORS

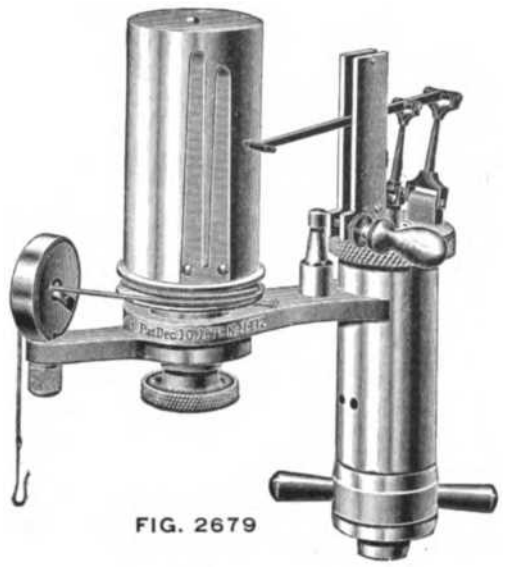


FIG. 2679

PRICE, FIG. 2679

Tabor indicator, as above, fully nickeled, with one ¼ inch area and one ½ inch area piston, one cylinder spring, one boxwood scale, two straight cocks, 100 cards, one screw-driver, one bottle of porpoise oil, two wrenches, one extra drum spring, all inclosed in a substantial and nicely polished black walnut box, with nickel-plated trimmings. Each, $100.00.

One three-way cock in place of the two straight ones will be furnished without extra charge if called for.

DESCRIPTION, FIG. 2680

These indicators are adapted for use on ice and refrigerating machinery. All their parts that are liable to be affected or injured by the action of the ammonia gases are made of steel. They can be furnished complete with the Houghtaling reducing motion, if so called for in order.

PRICES, FIG. 2680

Tabor indicator, as above, fully nickeled, with one cylinder spring, one boxwood scale, two straight cocks, 100 cards, one screw-driver, one bottle of porpoise oil, two wrenches, one extra drum spring, all inclosed in a substantial, well-finished black walnut box, with nickel-plated trimmings. Each, $125.00.

THE TABOR ENGINE INDICATOR

FOR USE WITH AMMONIA GAS PRESSURES

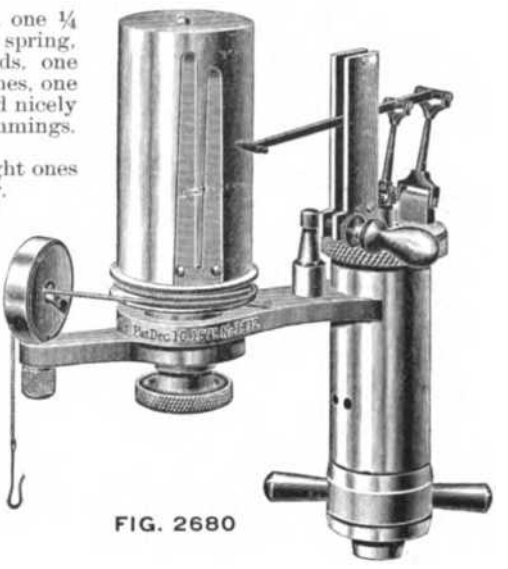


FIG. 2680

DRUM STOP ATTACHMENT FOR TABOR STEAM ENGINE INDICATORS

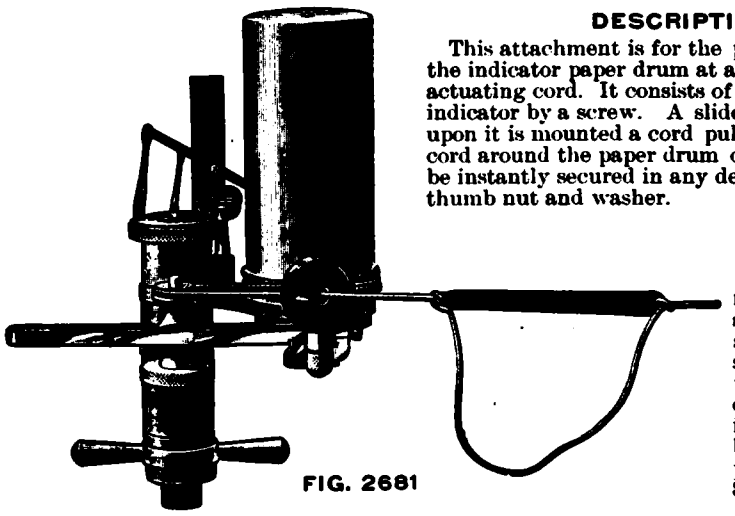


FIG. 2681

PRICE OF DRUM STOP ATTACHMENT, $5.00 EACH

With each outfit of indicators we furnish, without charge, Houghtaling's book on the "Steam Engine Indicator and Its Appliances," a valuable publication describing the operation of the indicator on all classes of engines.

TABOR STEAM ENGINE INDICATORS

FITTED WITH HOUGHTALING REDUCING MOTION AND ELECTRIC ATTACHMENT

DESCRIPTION, FIG. 2681

This attachment is for the purpose of starting and stopping the indicator paper drum at all times without unhooking the actuating cord. It consists of an arm attached to a part of the indicator by a screw. A slide is adjustable on the arm, and upon it is mounted a cord pulley for directing the actuating cord around the paper drum of the indicator. This slide can be instantly secured in any desired position on the arm by the thumb nut and washer.

PRICES, FIG. 2682

Tabor indicator, as above, fully nickeled, with one cylinder spring, one boxwood scale, two straight cocks, 100 cards, two screw-drivers, one bottle of porpoise oil, two wrenches, one extra drum spring, all inclosed in a substantial, well-finished black walnut box with nickel-plated trimmings. Each, $140.00.

Tabor indicator, as above, but without the Houghtaling reducing motion. Each, $110.00.

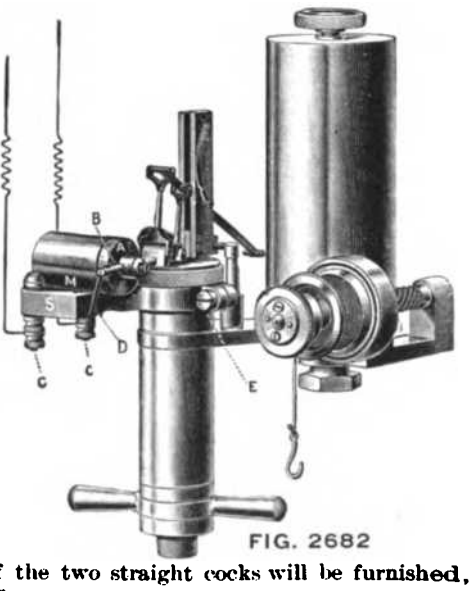


FIG. 2682

One three-way cock in place of the two straight cocks will be furnished, without extra charge, if called for.

PRICES FOR PARTS AND EXTRAS

TABOR STEAM ENGINE INDICATORS

Steel scales, 7 graduations	each	$1 50
Nickeled elbows	"	2 50
Double carrying pulleys	"	3 00
Parallel rule	"	7 00
Metallic cards	per 100	75
Plain "	"	40
Cord, warranted non-stretchable	per hank	50
Drum spring	each	40
Houghtaling's book on the "Steam Engine Indicator and Its Appliances"	"	2 00

LAZY TONGS OR PANTOGRAPHS

DESCRIPTION, FIG. 2683

There are various devices used to reduce engine strokes to conform to the travel of the drum of an indicator not equipped with the reducing motion. The cut, Fig. 2683, one-sixth actual size, is one of the appliances frequently used to obtain the necessary motion (on a reduced scale) between the paper drum and the engine cross-head. This device is pivoted at the end (B) by a stud and winged thumb nut to a block of wood or angle iron secured to the floor of the engine room, while the end (A) is fitted in a suitable piece secured to the cross-head of the engine. The actuating cord from the indicator is attached to the cord pin (E) on the cross-bar (C D). This cross-bar may be moved in different positions with relation to the center (B) by changing the screws (C and D), and the cord-pin (E) must always be placed in a line with the centers (A and B). The position of the cross-bar (C D) in relation to (B) determines the length of travel of the cord-pin (E), and consequently the length of the diagram. This lazy tongs can be used to obtain any desired reduction of motion of the engine piston, of various length strokes up to 72 inches.

PRICE, $10.00 EACH

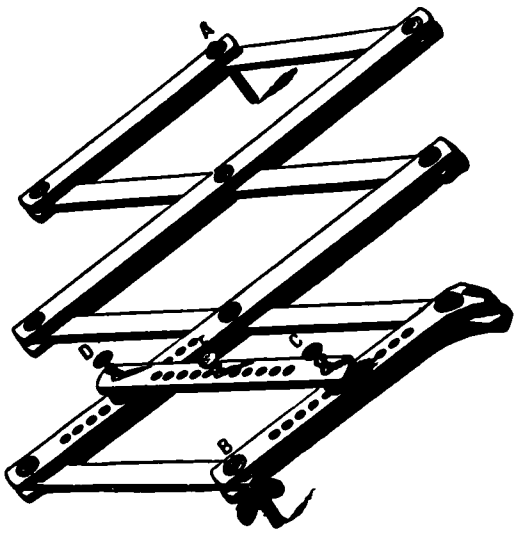


FIG. 2683

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STEAM ENGINE INDICATOR APPLIANCES

ASHCROFT REDUCING WHEELS

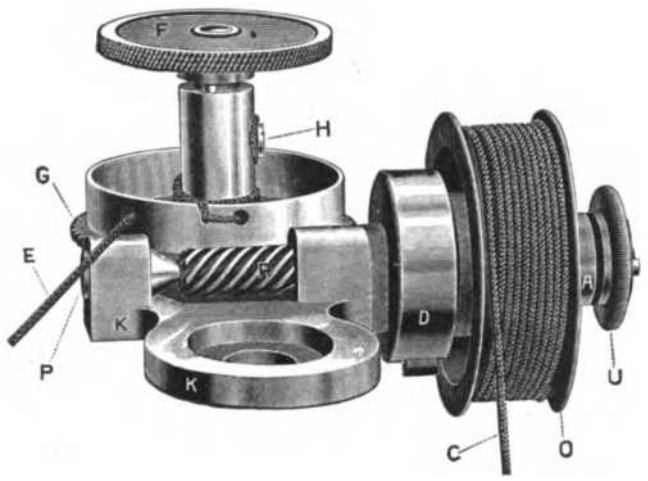


FIG. 2684

DESCRIPTION, FIG. 2684

To insure an accurate reduction of the stroke of an engine to the desired length of the indicator diagram to be taken therefrom, a reliable reducing motion is essential. The "wheel" has proved a reliable and satisfactory reducing motion.

The illustration herewith represents an independent reducing wheel, so made that it can be applied not only to the Tabor Indicators, but to some of the other indicators now on the market. This device can be secured directly to an indicator, or it can be located at any convenient suitable position away from it, and will work satisfactory in either position.

PRICE, $25.00 EACH

STRAIGHTWAY COCKS

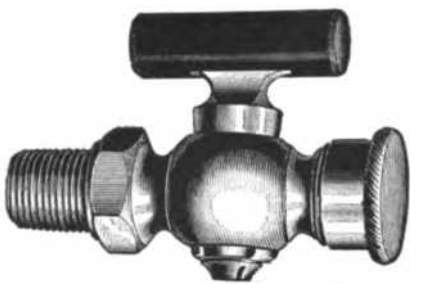


FIG. 2685

Price.....each, $2 75

THREE-WAY COCKS

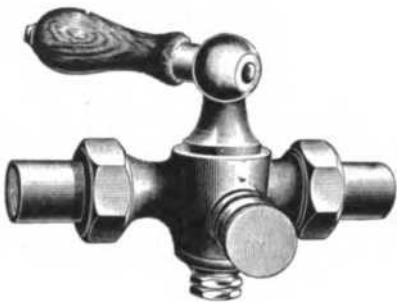


FIG. 2686

Prices, Brass.. ..... each, $6 00
Nickeled..... " 7 00

BOXWOOD SCALES

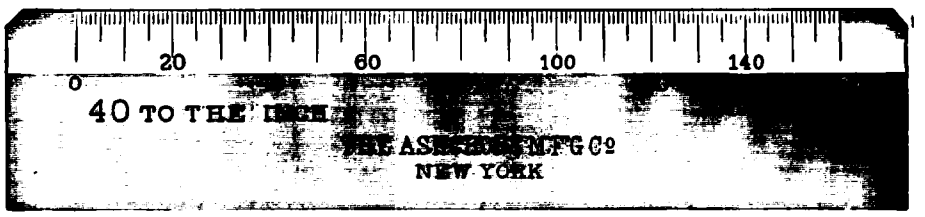


FIG. 2687

PRICE, 50 CENTS EACH

These scales are graduated in 8, 10, 12, 15, 16, 20, 24, 30, 32, 40, 48, 50, 60, 64, 80, 100, 120, 150, and 200 parts to the inch, and we also have a full line graduated in millimeters to the French standards.

COFFIN AVERAGERS OR PLANIMETERS

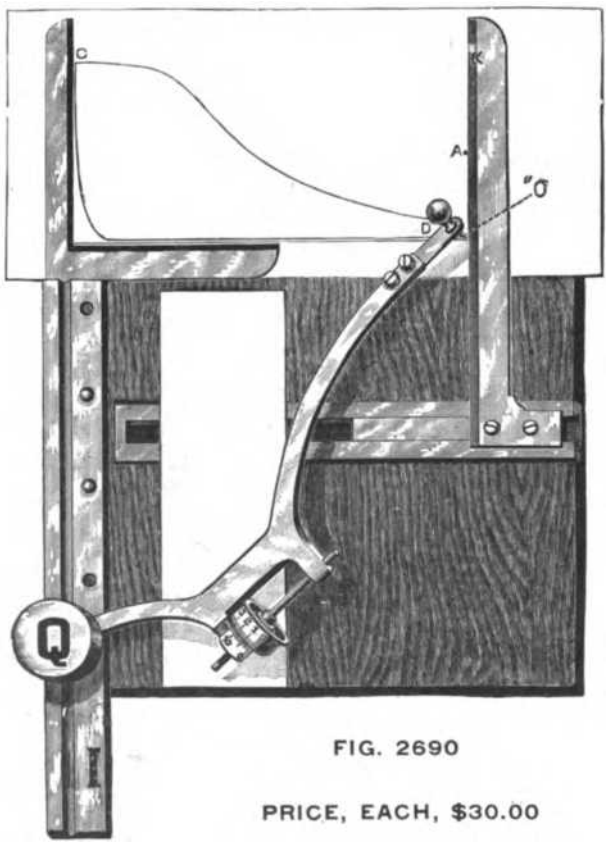


FIG. 2690

PRICE, EACH, $30.00

This instrument is a great saver of time in computing indicator diagrams, as by its use both its areas and mean effective pressures are reliably and quickly ascertained without any mathematical calculations whatever. It is designed to measure the areas of irregular figures, and is operated by moving a tracer, with which it is fitted, over the line of diagram, recording the area upon a graduated wheel.

CYLINDER SPRINGS



FIG. 2688
PRICE, $5.00 EACH

Scale of Springs	Maximum safe pressures to which they can be subjected. Lbs. Pressure per Sq. In. To 200	To 300
8	10	6
10	15	10
12	20	15
16	28	22
20	40	32
24	48	40
30	70	58
32	75	62
40	95	80
48	112	95
50	120	100
60	140	115
64	152	125
80	180	145
100	200	160
120	240	195
150	290	250
200	375	330

ASHCROFT CARRYING PULLEYS



FIG. 2689
PRICE, $2.50 EACH

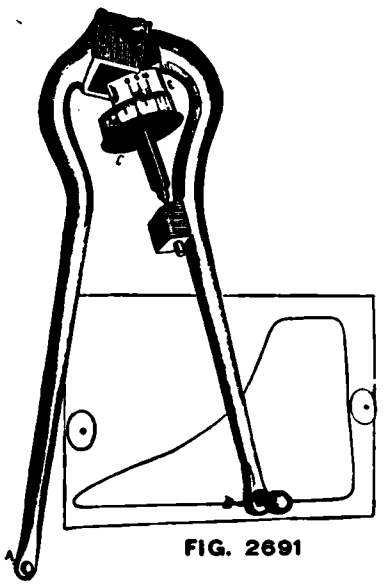


FIG. 2691

AMSLER PLANIMETERS

FOR MEASURING THE AREAS OF CARDS FROM STEAM ENGINE INDICATORS

It is necessary first to make sure that the instrument is in good condition. The roller-wheel ought to play easily without touching the vernier. The pivots ought to turn very easily, but without dead motion or backlash. The needle point ought to project but very little. The outside edge of the roller-wheel especially is very delicate, and will bear neither the least injury nor spot of rust upon its rolling surface. It is very necessary that the arms and tracer should not be bent, and that, if using No. 8, the sliding bar should be in its proper position. Care should also be taken to have a flat, even surface for the roller-wheel to travel upon.

Price.....each, $15 00
" (With Extended Arm)..... " 30 00

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JUDSON STANDARD AND SPRING GOVERNORS

CLASS B, STANDARD

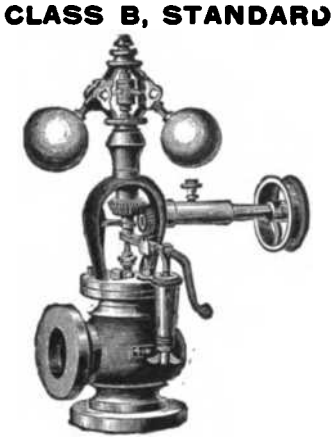


FIG. 2692
MEDIUM SPEED

CLASS B, SPRING

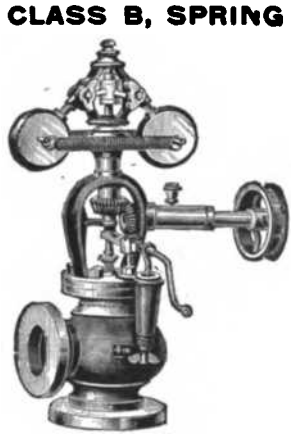


FIG. 2693
HIGH SPEED

CLASS A, STANDARD



FIG. 2694
MEDIUM SPEED

CLASS A, SPRING



FIG. 2695
HIGH SPEED

VARIOUS STYLES OF VALVE CHAMBERS FOR JUDSON GOVERNORS

13 A



FIG. 2696

13 B



FIG. 2697

13 C.



FIG. 2698

13 A—Angle chamber, base and side flanged from 2¼ to 12 inches.
13 B— " " " flanged, side screwed from ½ to 2½ "
13 C— " " " screwed, " " ½ to 2½ "
13 D—Horizontal chamber, flanged from 2½ to 12 inches.
13 E— " " screwed " ½ 2 "

Governors with angle chambers and flanged base will be sent in all cases unless otherwise ordered.

For prices and sizes of Judson Standard and Spring Governors see bottom of page.

13 D

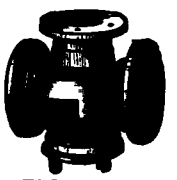


FIG. 2699

13 E

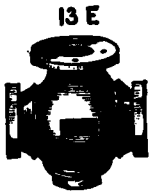


FIG. 2700

PICKERING STANDARD AND SPRING GOVERNORS

CLASS B
WITH SPEEDER

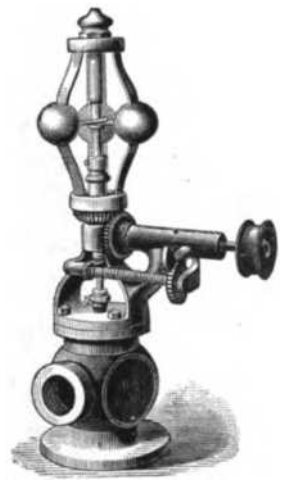


FIG. 2701

CLASS B
WITH SPEEDER AND SAWYERS' LEVER



FIG. 2702

HORIZONTAL

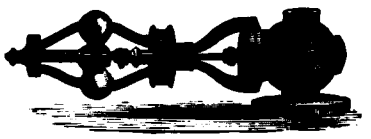


FIG. 2703

This Horizontal Governor may be ordered with either straightway or angle valve chamber, and with or without speeder.

CLASS A
WITH SPEEDER, SAWYER'S LEVER AND AUTOMATIC STOP

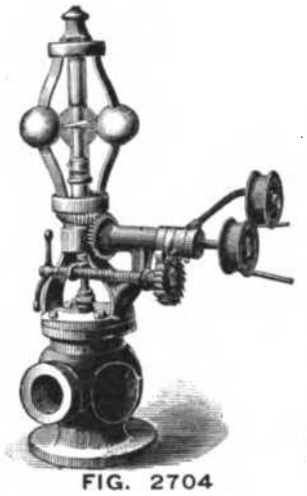


FIG. 2704

Arranged for use with horizontal belt. If vertical belt is to be used, specify in ordering.

STRAIGHT-WAY VALVE CHAMBER



FIG. 2705

PRICES, FIGS. 2692 TO 2705

All Class A governors have automatic stop, and Class B without automatic stop.

In ordering governors, state which class is wanted, whether standard or spring, plain or finished, and with or without improved angle or globe stop valve, and whether screwed or flanged.

Size of Governor, Diameter of Opening.	½	¾	1	1¼	1½	2	2¼	2½	2¾	3	3½	4	4½	5	5½	6	7	8	9	10
Class B, plain.each,	$14 00	16 00	18 00	21 00	25 00	30 00	35 00	40 00	45 00	50 00	60 00	71 00	83 00	94 00	108 00	122 00	150 00	185 00	215 00	240 00
" finished ...	16 00	18 00	20 00	24 00	29 00	34 00	40 00	45 00	51 00	58 00	69 00	81 00	94 00	106 00	121 00	136 00	166 00	202 00	235 00	260 00
Class A, plain	....	....	21 00	24 50	29 50	36 00	42 00	48 00	53 00	59 00	71 00	83 00	96 00	109 00	124 00	140 00	170 00	210 00	241 00	270 00
" finished ...	....	....	23 00	27 50	33 50	40 00	47 00	53 00	59 00	67 00	80 00	93 00	107 00	121 00	137 00	154 00	186 00	227 00	261 00	290 00

ANGLE OR GLOBE STOP VALVES

Angle or globe stop valves, flanged.....	$6 00	8 00	9 75	11 50	12 50	15 50	18 00	22 00	25 00	32 00	38 00	44 00	50 00	80 00	103 00	140 00	180 00
Extra for finished hand wheel.....	....	1 50	1 75	1 75	2 00	2 00	2 50	2 50	3 50	3 50	4 50	4 50	4 50	6 00	6 00	8 00	8 00

All governors are complete with speeder, turned flanged pulley, Sawyer's lever.

In ordering, if we are informed of speed of engine and diameter of pulley on engine shaft from which governor is driven, will put proper size of pulley on governor, otherwise the standard size of pulley will be furnished with each governor. When stop valves are ordered, angle will be sent unless globe is specified. Speed of each governor stamped on revolving head.

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GARDNER STANDARD AND SPRING GOVERNORS

STANDARD

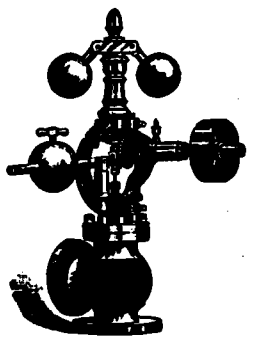


FIG. 2706
Class A—With automatic safety stop and speeder.

STANDARD

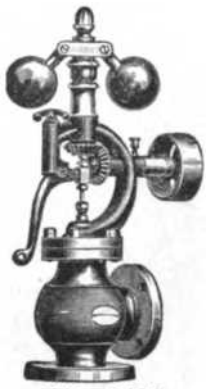


FIG. 2707
Class B — With speeder and Sawyer's lever.

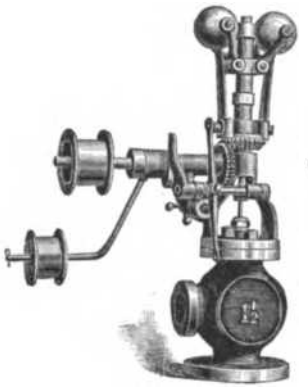


FIG. 2708
Class A — Spring with speeder, hand lever and automatic stop.

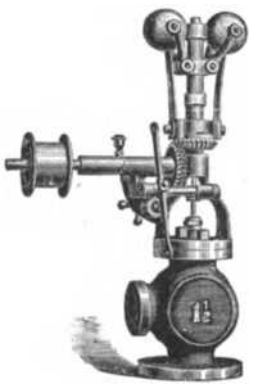


FIG. 2709
Class B — Spring, with speeder and hand lever.

HORIZONTAL SPRING

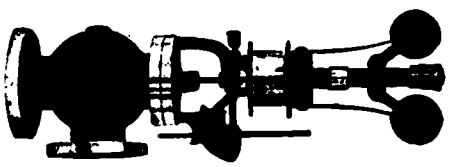


FIG. 2710

This governor has the position of pulley fixed, so in ordering be sure and give speed of engine and diameter of pulley on engine shaft, so we can put properly proportioned pulley on the governor. Governors are furnished with straightway or angle valve chambers and flanged or screwed openings, as may be desired. They are suitable for either horizontal or vertical steam pipes.

DESCRIPTION, FIGS. 2706 TO 2709

Standard governors are recommended for slow and medium speed engines, and spring governors for high speed and portable engines. Class A governors can be arranged for either vertical or horizontal belt, but in the absence of any instructions to the contrary we always send them arranged for horizontal belts. If, therefore, you wish a Class A governor, either spring or standard, to be driven by a vertical belt, please be particular to so state because they have to be especially arranged for that position,

VALVE CHAMBERS—FOR USE ON GARDNER GOVERNORS

E

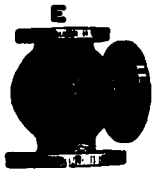


FIG. 2711

F



FIG. 2712

G



FIG. 2713

H



FIG. 2714

I



FIG. 2715

The cuts above show the different styles of valve chambers used on Gardner Governors. We furnish Gardner Governors with any of the above chambers and, in addition, can make flanges square, triangular or oblong, and of such diameters as are suited for the engines. When sending templets for drilling of flanges on chambers E and F, be sure and mark on templet of base flange the relative position of the steam inlet. In all orders for Gardner Governors, be particular to state if plain or finished is wanted: the style, spring or standard; the class, A or B; and style of valve chamber, as per cuts lettered above.

WATERS GOVERNORS

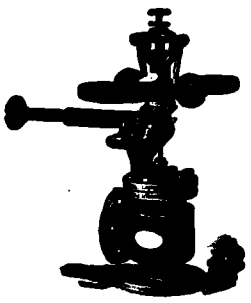


FIG. 2716
Shows the style including and above 1½ inches.



FIG. 2717
Shows the style including and below 3½ inches, flanged base.



FIG. 2718
Shows the style including and below 3½ inches, screw base.



FIG. 2719
Shows the style of governor for horizontal steam pipe flanged or screwed, as desired.

HORIZONTAL

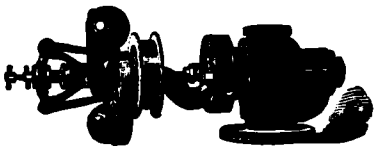


FIG. 2720
Made in sizes ½, ¾, 1, 1¼, 1½ & 2 in.

VALVE CHAMBERS



FIG. 2721



FIG. 2722

Figs. 2721 and 2722 show different styles of valve chambers, which we furnish with either vertical or horizontal tops, having one or both openings screwed or flanged. Fig. 2721 up to and including 2 inches. Fig. 2722 up to and including 10 inches.

PRICES, FIGS. 2706 TO 2720

All class A governors have automatic stop, and class B without automatic stop.

In ordering governors, state which class is wanted, whether standard or spring, plain or finish stop valve, and whether screwed or flanged.

Size of Governor, Diameter of Opening.	½	¾	1	1½	2	2¼	2½	3	3½	4	4½	5	6	7	8	9	10
Prices Class B, plain	$14 00	16 00	18 00	25 00	30 00	35 00	40 00	50 00	60 00	71 00	83 00	94 00	122 00	150 00	185 00	215 00	240 00
" B, finished.	16 00	18 00	20 00	29 00	34 00	40 00	45 00	58 00	69 00	81 00	94 00	106 00	136 00	166 00	202 00	235 00	260 00
" A, plain...	....	....	21 00	29 50	36 00	42 00	48 00	59 00	71 00	83 00	96 00	109 00	140 00	170 00	210 00	241 00	270 00
" A, finished.	....	....	23 00	33 50	40 00	47 00	53 00	67 00	80 00	93 00	107 00	121 00	154 00	186 00	227 00	261 00	290 00

ANGLE OR GLOBE STOP VALVES

Prices Angle or Globe Stop Valves, flanged..	....	....	....	$8 00	9 75	11 50	12 50	18 00	22 00	25 00	32 00	38 00	50 00	80 00	103 00	140 00	180 00
Extra for finished hand wheel.....	....	....	....	1 50	1 75	1 75	2 00	2 50	2 50	3 50	3 50	4 50	4 50	6 00	6 00	8 00	8 00

All governors are complete with speeder, turned flanged pulley, Sawyer's lever. In ordering, if we are informed of speed of engine and diameter of pulley on engine shaft from which governor is driven, we will put proper size of pulley on governor, otherwise the standard size of pulley will be furnished with each governor. When stop valves are ordered, angle will be sent unless globe is specified.

MANNING, MAXWELL & MOORE, 85, 87 AND 89 LIBERTY STREET, NEW YORK

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MONARCH STEAM ENGINE GOVERNORS

CLASS A
With automatic safety stop, speed adjuster and valve lever.

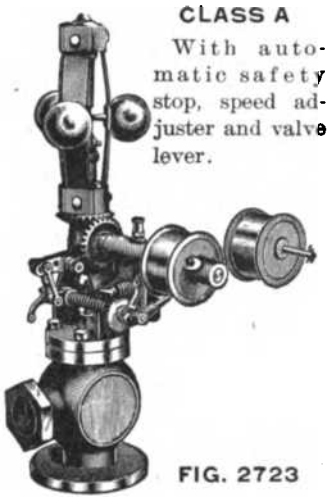


FIG. 2723

CLASS B, HORIZONTAL

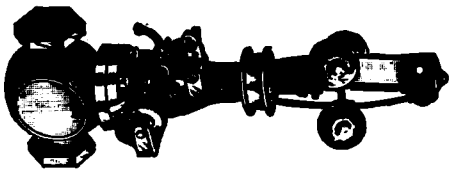


FIG. 2724

CLASS B
With speed adjuster and valve lever.

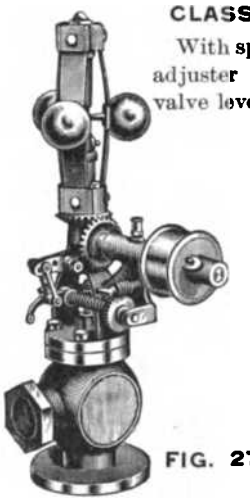


FIG. 2725

DESCRIPTION, FIGS. 2723 TO 2725

This type of governor governs all types of engines. The throw of the valve may be adjusted independently of the radial throw of the governor balls without affecting the normal speed of the engine, so that for a given radial movement of the governor balls the valve throw may be made greater or less, to suit the conditions resulting from the particular type of engine or from the peculiar circumstances under which the engine may be working.

The automatic stop of this governor is positive and has many advantages.

SPECIAL VALVE CHAMBERS FOR MONARCH GOVERNORS

STYLE C



FIG. 2726

STYLE D

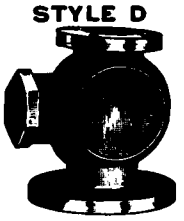


FIG. 2727

STYLE E

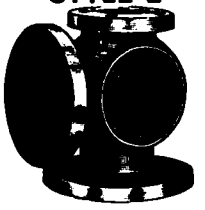


FIG. 2728

STYLE F



FIG. 2729

STYLE G

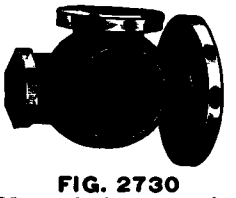


FIG. 2730

STYLE H

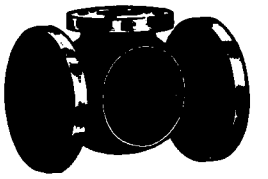


FIG. 2731

We can furnish Monarch Governors with any of the above valve chambers. When ordering Monarch Governors be particular to state which style of chamber is desired.

PRICES, FIGS. 2723 TO 2725

Class A governors have automatic stop. Class B without automatic stop.

Sizes of Governor.	½	¾	1	1¼	1½	2	2¼	2½	3	3½	4	4½	5	6	7	8	9	10
Class A, plain.....	$16 50	$18 50	$21 00	$24 50	$29 50	$36 00	$42 00	$48 00	$59 00	$71 00	$83 00	$96 00	$109 00	$140 00	$170 00	$210 00	$241 00	$270 00
Class B, "	14 00	16 00	18 00	21 00	25 00	30 00	35 00	40 00	50 00	60 00	71 00	83 00	94 00	122 00	150 00	185 00	215 00	240 00
Class A, finished..	18 50	20 50	23 00	27 00	33 50	40 00	47 00	53 00	67 00	80 00	93 00	107 00	121 00	154 00	186 00	227 00	261 00	290 00
Class B " ..	16 00	18 00	20 00	24 00	29 00	34 00	40 00	45 00	58 00	69 00	81 00	94 00	106 00	136 00	166 00	202 00	235 00	260 00

When ordering above governors be particular to state the class wanted and whether plain or finished; also style of valve chamber.

WRIGHT IMPROVED STEAM ENGINE GOVERNORS

CLASS B, PLAIN GOVERNOR WITH SPEEDER AND SAWYER'S LEVER

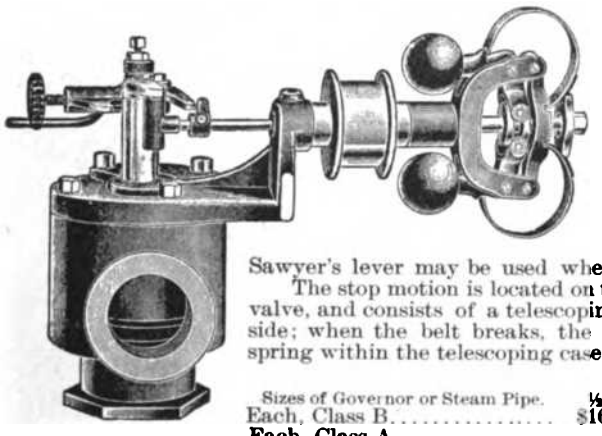


FIG. 2732

DESCRIPTION, FIGS. 2732 AND 2733

The valve is of the rotary type; it has a long and slightly tapered stem which is ground to a steam fit in a sleeve forming a part of the seat; its upper end rests upon a screw by which it is so nicely adjusted in its bearings as to prevent both friction and the escape of steam; after the screw is once properly set it will need no further attention.

The speed of the engine is varied by changing the tension of the springs by means of the cap and adjusting screw which hold them in place; this method of adjustment is preferable, but the little hand wheel near the Sawyer's lever may be used when it is not convenient to stop the engine.

The stop motion is located on the rod imparting motion from the balls to the valve, and consists of a telescoping case held together by a latch on its under side; when the belt breaks, the lever carrying the idler pulley drops, this releases the latch, and a compressed spiral spring within the telescoping case forces it apart and thus closes the valve.

CLASS A, WITH AUTOMATIC STOP, SPEEDER AND SAWYER'S LEVER

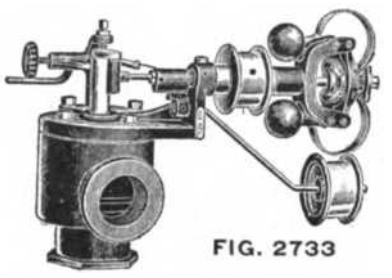


FIG. 2733

PRICES, FIGS. 2732 AND 2733

Sizes of Governor or Steam Pipe.	½ in.	¾ in.	1 in.	1¼ in.	1½ in.	2 in.	2½ in.	3 in.
Each, Class B.....	$16 00	$18 00	$20 00	$22 00	$25 00	$30 00	$40 00	$50 00
Each, Class A.....	....	20 00	23 00	25 50	29 50	36 00	48 00	59 00

Screwed inlet and outlet will be sent unless otherwise ordered.

AUTOMATIC EMERGENCY AND SAFETY SHUT OFF VALVE



FIG. 2734

By the use of this valve the steam is almost instantly shut off on the main near the boilers—or wherever the valve is located—whenever there is a break in the pipe or at the engine sufficient to create a greater demand for steam than usual, which would tend to lower the pressure, while the high pressure steam from the boiler side of the valve, acting under a piston, closes the valve. In addition to this valve being always ready to close automatically in case of accident, it may be closed instantly by raising a lever on a small gate valve by opening a small lever valve near the ending, which is a very desirable feature, as oftentimes some accident to the machinery may be avoided were it possible for the engineer to shut off the steam at once. An electric attachment is furnished with these valves if desired, see Fig. 2735, making a perfect engine stop, which can be operated from any part of the mill, as will be seen by referring to the cut. The valves are constructed with a screw and hand wheel, by which they can be opened and closed in the same manner as the ordinary shut off valve. Prices and further information on application.

AUTOMATIC ENGINE STOP AND SAFETY DEVICE

This simple machine is electrically controlled, and when attached to the emergency shut off valve, see Fig. 2734, or any simple form of balance valve, is arranged to shut the engine down from distant points by means of push buttons. It also records by means of annunciators the room from which the engine is stopped, so that the engineer can locate the trouble.

Price, $100 00.

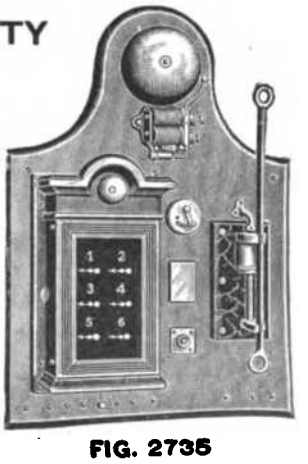


FIG. 2735

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WRIGHT'S PATENT AUTOMATIC SAFETY STOP AND SPEED LIMIT

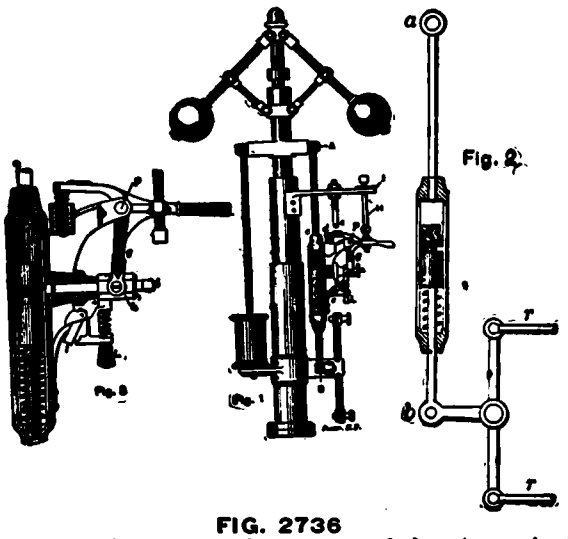


FIG. 2736

The Wright Automatic Safety, being located in governor spindle, does not require any driving devices that increase the number of dangerous parts to the engine, but its location insures instantaneous stopping of steam valves, and consequently the engine is brought to a state of rest in the shortest time possible.

A piece is cut out of the side rod of the ordinary governor and replaced by the device shown in Fig. 1. At A the upper portion of the side rod is screwed solidly into the casting and the lower portion surrounded with a coiled spring, as shown in Fig. 2, which tends to draw it into the casting, shortening the distance ab. Normally the end B of the rod is locked in a position which holds the spring in compression, as shown in Fig. 3; the distance ab is positive, and the governor controls the speed of the engine by operating the double bell crank in the ordinary way. Should the range of the governor balls exceed a fixed limit in either direction, the latch holding the rod B in position is tripped; the spring draws the rod into the casting, pulling up the lever arm at B and throwing the reach rods rr so as to prevent the steam valves from hooking on. Fig. 1 shows the device attached to an ordinary ball governor. It is screwed to the side rod at c and moves up and down with it. Should the governor balls rise too high, as from an excess of speed, the point d comes in contact with the stationary stop e, and d is depressed, turning the lever about the point p and withdrawing the latch by means of the arm g, as is better shown in the section Fig. 3. Should the governor balls fall below a predetermined plane, as by the breaking of the governor belt or a derangement of the driving mechanism, the moving part H comes in contact with the stationary stop I, and the same action is produced. A cord may be attached to D and led in any desired direction, and this, when pulled upon, will in an obvious manner trip the latch and shut the engine down quickly in case of accident, without obliging the engineer to go within the danger line to get at the throttle. In order to prevent the device from operating when the engine is shut down, preventing the steam valves from hooking on when it is attempted to start up, in other words, to serve the purpose of the pin used with the ordinary Corliss governor and usually left in position, rendering the safety stops inoperative, the latch L, Fig. 1, is provided. Just before shutting down the engineer pulls this latch into position, where it is held by the swinging latch l. In doing so he removes the connection between the collar h and the bolt i, so that when the governor comes down and the rod H is stopped at I the collar is simply slid over the bolt without withdrawing it. The latch L, however, is carried with the collar to the right, disengaging itself from l, so that when the pressure on I is removed as the governor rises, when the engine is started up, the connection between h and i is made again automatically, and the device is in operative condition without any attention from or dependence upon the memory of the engineer. Write for catalogue and full particulars. Price, $200.00.

HAIGHT'S CYLINDER SPRINGS

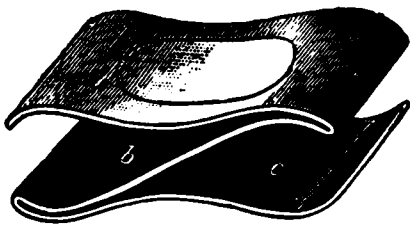


FIG. 2737

75 cents per inch of diameter of cylinder, when the packing space is 4 inches or less.

If over 4 inches in depth, add 25 cents per inch and for every fraction of an inch.

JONES' PISTON SPRINGS



FIG. 2738

In ordering springs, send always the following dimensions: Diameter of cylinder, thickness of packing rings, depth and width of packing space.

Depth of packing space:
5 inches and under, $1 25 per in. dia. of cyl.
Over 5 inches..... 1 50 " " "

LASHER'S PISTON SPRINGS



FIG. 2739

In ordering, specify diameter of cylinder, thickness of packing rings, depth and width of packing space.

Depth of packing space:
5 inches and under, $1 25 per in. dia. of cyl.
Over 5 inches..... 1 50 " " "

CONDENSER FERRULES
FOR PACKING SURFACE CONDENSERS

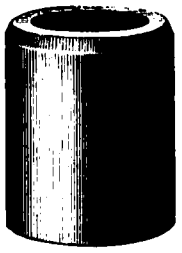


FIG. 2740

These ferrules are made of hard vulcanized fiber, and are rolled accurately, both internally and externally, so as to fit snugly on the tubes and into the recesses in the tube sheets or heads. As they will expand when wet fully 30 per cent. in thickness of shell, they are certain to make a tight fit without driving or upsetting. Being entirely uninjured by hot or cold water, whether salt or fresh, and unaffected by grease of any sort, or alkaline solutions, they will last as long as the condenser and never leak.

PRICES ON APPLICATION

Brass ferrules, all sizes.
Paper ferrules, all sizes.
Wood ferrules, prices according to size.

CAR BOX PACKING HOOKS AND SCREWS

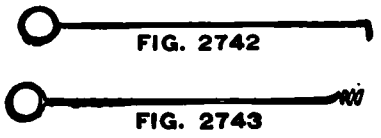


FIG. 2742

FIG. 2743

Price, each, 80 cents.

ELASTIC YARN BALL JOURNAL PACKING



FIG. 2741

These balls are made of wool yarn, spun with extra twist for lubricating R. R. car journal boxes, locomotive engines, driving box cellars, truck box cellars and factory journals. The natural spring of the yarn, which is spun especially for this purpose, together with the method of constructing the balls or wad, gives sufficient resistance at all times to prevent their shifting or sinking away.

Can not be wasted in packing, as four balls pack a box, and no oil is wasted in running.

It is always ready and no one can under or over pack with it.



FIG. 2741A

It has no loose particles to get under the brasses, or threads that can be worked out of the box by the outward thrust, which is very strong under certain conditions, and does often pull waste or other fibrous materials out of the box, especially with light laden car in going around curves, also when cars are extra heavily loaded. Balls not being tightly packed can stand the additional compression without stopping the flow of oil.

By its use hot boxes can be avoided, and the journal can at all times be seen and felt, its condition known, and the rear part of the journal can be oiled as well as the front.

The manner of applying is very simple. To pack a standard axle box: Take 4 of the standard balls, each weighing about 4 ounces, saturate them with oil in the same manner as loose waste is saturated. After saturation place two on each side of axle, extending them under so as to meet each other.

After being placed in the boxes they should not be stirred up with the packing iron, as is done with loose waste.

The first application of oil ought to cover 6,000 miles or more without additional oil.

These balls are made in the following sizes:

4 inches, 3½ inches, 2½ inches and 2 inches diameter. Prices on application.

We can furnish to order any size required.

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SAUNDERS' CORRUGATED COPPER WIRE PACKING

For steam, gas, air or water joints, and all kinds of union coupling.

Special Notice.—Should the joints leak when pipes have cooled after this packing has been used for the first time, tighten them until leaking stops, and they will remain perfectly tight in future. The sizes given on price list are inside diameters.

CORRUGATED WIRE PACKING IN BUNDLES

Of about 25 lbs. each or less.

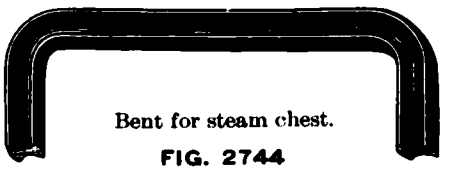
PRICE, FIG. 2745

Nos.	Per lb.
1, 2, 3	$1 00

No. 1 is the smallest and No. 3 the largest.

PRICES, FIG. 2746

Inside Diameters.	For Union.	Per Hundred.
9/16	1/4	$1 62½
11/16	3/8	1 62½
13/16	1/2	1 87½
1	3/4	2 00
1¼	1	2 35
1 9/16	1¼	3 07½
1⅞	1½	3 70
2 5/16	2	4 50



Bent for steam chest.

FIG. 2744

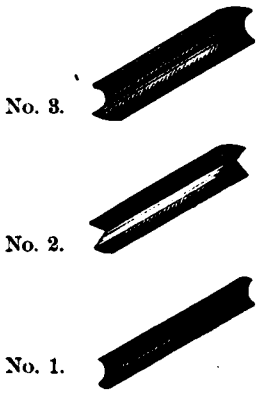


FIG. 2745

Shows the corrugated wire packing as sold in bundles.

Cuts show gaskets as sold ready for use. From ¼ in. to 17 in.

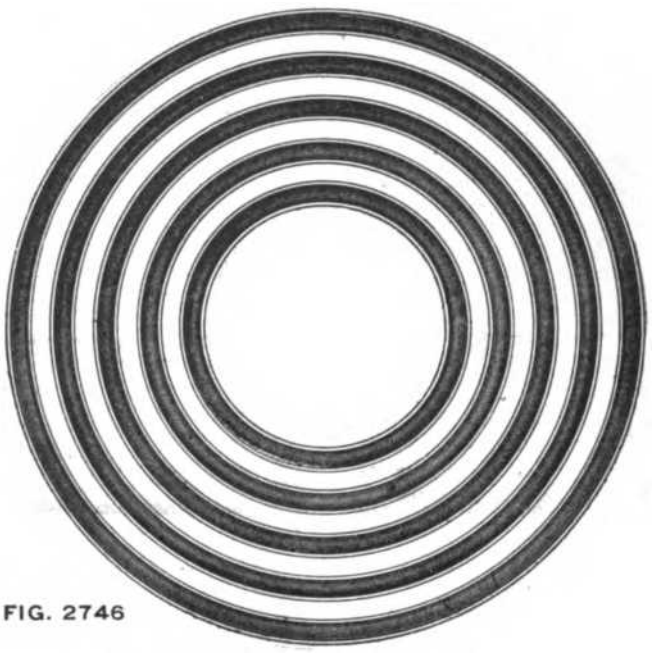


FIG. 2746

CORRUGATED COPPER GASKETS

DESCRIPTION FIGS. 2747 AND 2748

This metallic gasket may be used in place of rubber or other destructible materials in general use for packing. It consists of thin sheet copper stamped with concentric corrugations. Three to six corrugations are all that are necessary, so that the space within the bolt holes determines the width of the gasket. In cases where the flanges are thin, and for this reason liable to bend when the bolts are tightened, it is advisable to extend the copper gasket to the full width of flange. This will, of course, require the cutting of bolt holes in the gasket. Connections made with these gaskets will not blow out after continued use, for each corrugation makes the entire circle of the flange, and so long as the contact is kept complete by compression the joint can not leak. This gasket never blows out like rubber. It may be put in place while steam is leaking through valve. Answers well on pipes in which steam is alternately on and off, for it is not impaired by the repeated expansion and contraction.

Price, per square inch of actual surface, 2c.

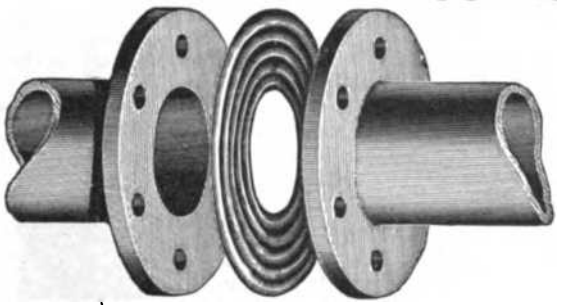


FIG. 2747

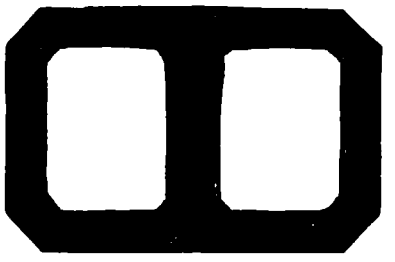


FIG. 2748

THE McKIM PATENT GASKET

As used for Steam, Water, Gas, Air, etc.



FIG. 2749

DESCRIPTION FIG. 2749

This gasket is made of rubber incased in soft rolled copper, extra annealed, so that they will accommodate themselves to faced or rough joints, and capable of withstanding abnormal pressure, temperature or circulation. For lip and flange unions, plain or ball joints, all classes of flanged and valve fittings, man and handhole plates, drum heads, water and oil tanks, steam traps, steam, hydraulic and oil pumps, all classes of standard machinery for railroads and steamship lines, pipe lines, long steam, gas and water lines, laundry and other special machinery, cylinder heads, etc. Joints made up with McKim Gaskets will stand in alternate circulation.

DESCRIPTION, FIG. 2750

This gasket is made of a special packing incased in a soft rolled metal impervious to chemical action and sufficiently ductile and elastic to make a tight and lasting joint without straining the bolts or union. For ice machinery, cold storage plants, breweries, laboratories, smelters and refineries, soap and lard manufactories, chemical works, oil refineries, etc. As this gasket is a combination of materials specially prepared to effectually resist all classes of chemical circulation, each class taken individually, it is highly important for us to know all data referring to circulation and pressure, and at what temperatures chemicals are employed, that we may furnish a gasket for the duty required. As nearly all gaskets for chemical circulation are used in special unions and flanges, we only quote a few sizes, based on standard unions and flanges, to show approximate price of gasket as compared with standard gaskets for steam and other circulation.

As used for Ammonia, Alkalies, Gases, Acids.

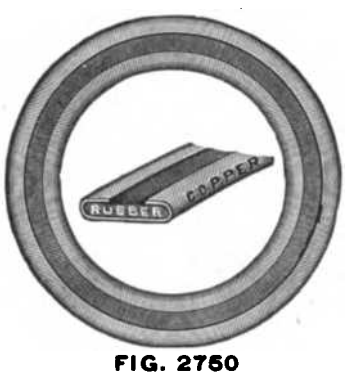


FIG. 2750

PRICES, FIG. 2750

Sizes of Pipe, Inches, Lip Union.	Per 100.	Sizes of Pipe, Inches, Flanged Union.	Per 100.	Sizes of Pipe, Inches, Flanged Union.	Per 100.
3/8	$1 25	2	$10 00	7	$55 00
1/2	1 50	2½	13 00	8	69 00
3/4	1 75	3	15 00	9	87 00
1	2 50	4	20 00	10	98 00
1¼	3 25	5	36 00	12	123 00
1½	4 15	6	47 00	14	176 00

PRICES, FIG. 2749

Gaskets for Standard mall Lip unions	Sizes of Pipe, inches	1/4	3/8	1/2	3/4	1	1¼	1½	2	2½	3	3½	4	4½	5	6	7	8	9	10	12	14	15	16
	I. D. Gaskets "	9/16	9/16	13/16	15/16	1 5/16	1 11/16	1 15/16	2 7/16	2 15/16	3 5/16													
	O. D. Gaskets "	7/8	1 1/16	1 5/16	1½	1 13/16	2 1/16	2½	2 15/16	3 5/8	4 1/16													
Prices per 100		$1 00	1 20	1 50	2 25	2 75	3 00	3 50	3 75	4 50	6 00													
Flanged unions Standard	I. D. Gaskets, inches	....	....	....	....	1½	1 5/8	2	2½	3	3 5/16	4⅛	4 21/32	5⅛	5 11/32	6¾	7 13/16	8¾	10	11	13			
	O. D. Gaskets "	....	....	....	....	2⅝	2⅞	2⅞	3¼	3 13/16	4½	5	5⅝	6⅛	6⅝	8	9½	10¼	12	13·	14⅝			
Prices, each		....	....	....	....	$0 04	0 05	0 08	0 10	0 12	0 14	0 18	0 22	0 25	0 32	0 39	0 54	0 62	0 74	0 90	1 10			
Flanged fittings Standard & extra heavy	I. D. Gaskets, inches	....	....	....	....	....	....	....	3	3¾	4¼	5⅛	5⅝	5½	6⅛	7	8⅛	9	10⅝	11⅛	13¾	15⅝	16½	17⅝
	O. D. Gaskets "	....	....	....	....	....	....	....	4	4¾	5¼	6¼	6⅝	6⅞	7⅝	8⅝	9⅞	10⅞	12⅝	13¼	16	17⅝	18⅞	20⅛
Prices, each		....	....	....	....	....	....	....	$0 12	0 16	0 20	0 25	0 34	0 38	0 47	0 55	0 68	0 75	0 90	1 00	1 25	1 60	1 90	2 15

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MERWARTH METALLIC GASKET

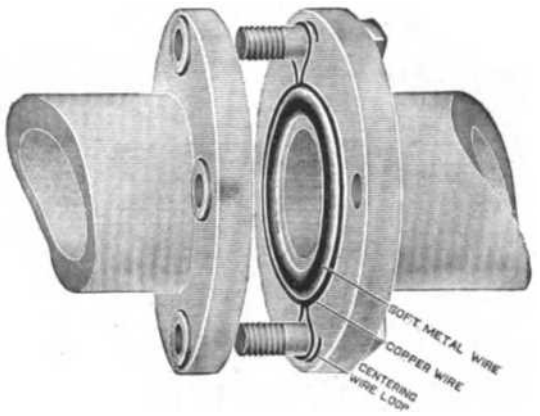


FIG. 2751

May be used repeatedly. Easy to apply. Will stand highest steam and water pressure. Made any shape or size. In ordering give diameter of bolt circle and size of bolts. Prices per inch diameter of gasket, 6 cents.

ECLIPSE SECTIONAL RAINBOW GASKET

The Eclipse gasket is red in color and composed of the celebrated rainbow packing compound. It will not harden under any degree of heat, or blow out under the highest pressure, and can be taken out and repeatedly replaced. Joints can be made in from three to five minutes.

The Eclipse gasket can be readily fitted to any size man or handhole plate in use, and a perfectly tight joint can be made in all cases where the plain and simple directions, which accompany each box, are followed.

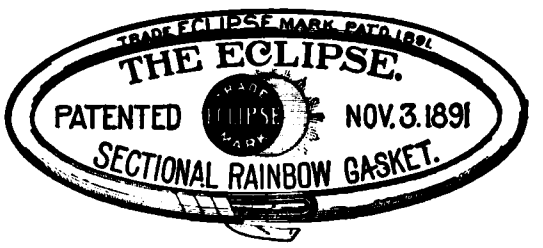


FIG. 2752

LENGTH AND WEIGHT PER BOX

⅜ inch diameter	pipe unions	36 feet.	3¼ lbs.	Price per pound, $1.00.
½ " "	handhole plates	36 "	5¼ "	
⅝ " "	manhole plates	24 "	6 "	
¾ " "	manhole plates	18 "	5¾ "	
⅞ " "	extra large manhole plates	12 "	5½ "	
1 " "	extra large manhole plates	12 "	7 "	

A special size of ¼ inch Eclipse, 48 feet in box, weight about 1 pound. Price per pound, $2.00.

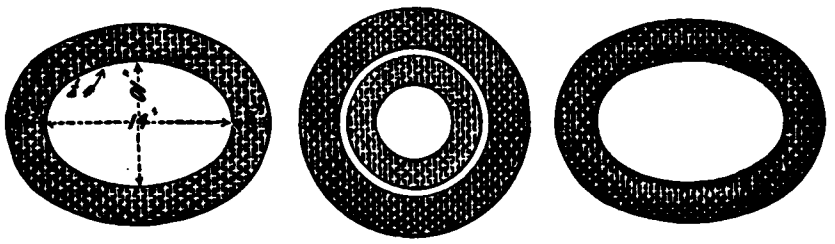


FIG. 2753

ASBESTO-METALLIC GASKETS

PRICES, FIG. 2753

Made from asbesto-metallic sheeting and tape. Absolutely perfect joint. Manhole, mudhole, and other joints made of this material may be frequently broken without impairing their efficiency.

In ordering, inside and outside dimensions as well as thickness, should be given. Price per pound, $1.50.

GASKETS

CLOTH INSERTION SPLICED OR MOULDED

Regular sizes and thicknesses, 90 cents per pound.

Thin sizes (1/16 or less), $1.00 per pound.



FIG. 2754

WIRE INSERTION

We cut gaskets from wire insertion packing, for use in places where the heat is so intense as to make the use of cloth insertion impracticable. Price per pound, $1.00.

USUDURIAN

Also from sheet. Price per pound, $1.50.

TUBING FOR GASKETS

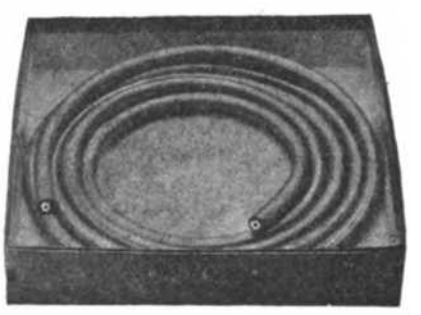


FIG. 2755

This tubing for gaskets is made from the celebrated Black Hawk compound, red inside, with a black semi-vulcanized cover, which prevents it from sticking. It is not affected by any degree of steam heat. It will make a tight joint, no matter how rough the surface may be, and will not blow out.

One of the principal advantages of this tubing is that it can be cut to any length desired in order to fit any size of manhole or handhole, plate or pipe flange. The cut ends are joined together with a metal core, thus making a continuous gasket. It is put up in convenient boxes with metal core and tape. Made in sizes ⅜, ½, ⅝, ¾, and 1 inch. Price per pound, $1.00.

'96 STANDARD GASKETS

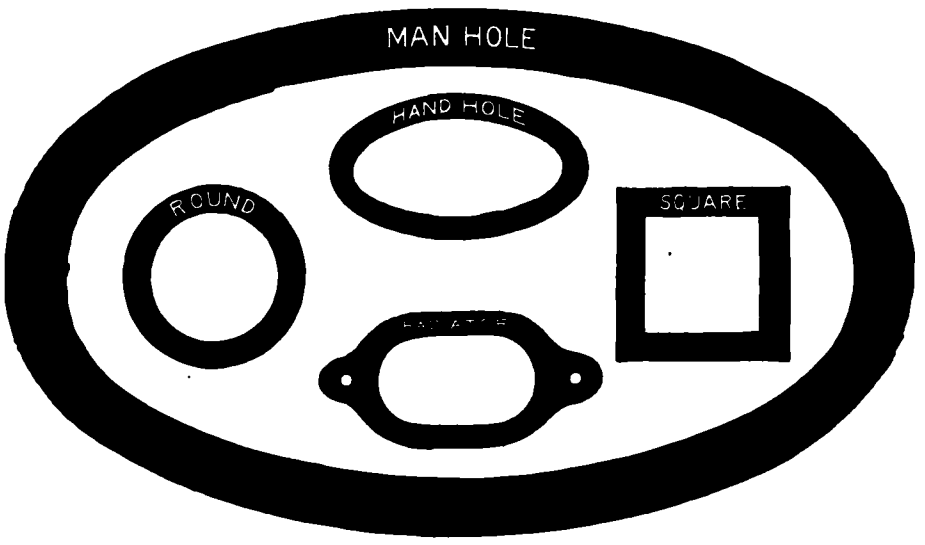


FIG. 2756

PRICE, $1.00 PER POUND

ASBESTO-METALLIC GASKETS



FIG. 2757

These gaskets are made from sheet packing, and are adapted for all kinds of high pressure work. They withstand heat and moisture without injury, and are very flexible and strong. They are also compressible, so that they conform to irregular surfaces without injury. They do not blow out.

Regular shapes and sizes, per pound, $1.50.

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ASBESTO-METALLIC ASBESTOS AND RUBBER CLOTH PACKING

This packing is made from Asbestos yarn and strands of fine brass wire, firmly interwoven, and coated with a special rubber composition.

It is made for high pressure steam work, and is especially adapted for this purpose because of its great strength, elasticity and heat resisting properties.

It adapts itself to all uneven surfaces and makes a superior flat packing for steam and air tight joints. It is sold in sheet and roll form, one, two and three ply, 40 inches wide. Prices on application.

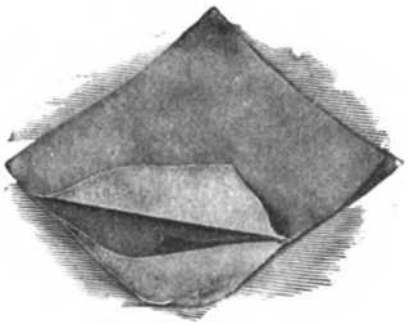


FIG. 2758

ASBESTOS AND RUBBER CLOTH

This flat form of packing is made similar to the asbesto-metallic sheet, but does not contain the wire. It is very elastic, easily cut into desired shapes and suitable for all steam packing purposes. Prices on application.

RUBBERBESTOS SHEET PACKING

A perfect combination of asbestos and rubber. Durable, heat proof, and can be re-used several times.

Never hardens in steam joints.

Sizes, 1/64, 1/32, 1/16, 3/32, 1/8, 3/16, 1/4 inch,

PRICE, 60C. PER POUND

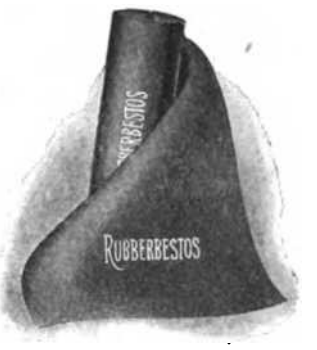


FIG. 2759

RAINBOW PACKING

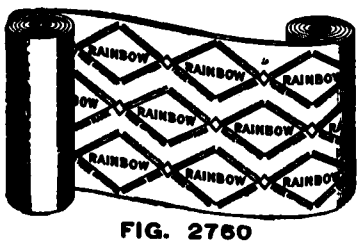


FIG. 2760

This packing is especially adapted for very high pressure, and is not affected by any degree of steam heat It will not harden under any degree of heat, or blow out under the highest pressure, and will make an air, steam, hot or cold water joint equally well.

It is not affected by oils, ammonia, liquors, steam, heat or alkalies. It will not harden or crack.

Joints should be faced with plumbago, lampblack or chalk. This packing can be taken out and repeatedly replaced.

Made in rolls of about 200 lbs. each, 1/32, 1/16, 3/32, 1/8, 5/16, 1/4, 5/8, 1/2 inch.

PRICE, $1.00 PER POUND

USUDURIAN SHEET PACKING



FIG. 2764

Is an unvulcanized, self-vulcanizing rubber packing.

It packs any kind of steam, hot air or hot water joints, and is a non-conductor.

It is particularly adapted to packing steam chest covers and all superheated steam joints, as it will not burn or char.

The genuine Usudurian is adapted to all the uses that packing is put to, and when applied in an unvulcanized state readily accommodates itself to any unevenness in the surfaces it is placed between.

PRICE, 80C. PER POUND

CLOTH INSERTION SHEET PACKING

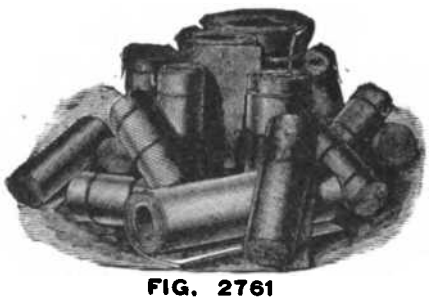


FIG. 2761

For steam joints and weather strips.

Made with cloth insertion, cloth one side or both sides.

PRICES, PER POUND

Thickness.	1-Ply.	2-Ply.	3-Ply.	4-Ply.
1/64 inch	$0 70	....	....	....
1/32 "	65	....	....	....
1/16 "	60	$0 63	$0 66	....
3/32 "	55	58	61	....
1/8 "	. . .	55	58	$0 61
3/16 "	....	....	55	58
1/4 "	....	....	....	55

Each cloth, whether insertion or on outside, to count as one ply.

There is one ply of cloth to every 1/16 inch thickness.

Three cents per pound additional will be charged for each extra ply of cloth.

WIRE INSERTION SHEET PACKING

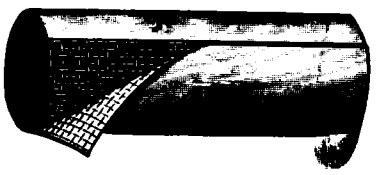


FIG. 2762

Made in 1/16, 1/8, 3/16 and 1/4 inch thicknesses.

PRICE, 80C. PER POUND.

PURE GUM SHEET AND VALVE PACKING



FIG. 2763

Furnished in full sheets, 36 or 40 in. width, and in all thicknesses.

Valves cut from sheet stock any size desired; waste charged.

PRICE, $1.40 PER POUND

VALVES FOR ALL KINDS OF PUMPS

Cold water No. 2 is a soft valve suitable for heavy work and gritty water.

Cold water No. 3 is a soft valve for light service.

Condenser valve No. 1 is a red valve, which is suitable for any kind of condenser.

Condenser Valve No. 2 is a soft gray valve used extensively in air pumps and condensers in cotton mills, electric light plants, pumping stations, etc.

No. 6 valve is a soft valve for mining purposes, and will stand the action of acids, oils, etc.

Valves for special pumps used in mines, steamships, iron furnaces, etc., made to order. Please specify the work they have to do, and we will furnish the proper article.

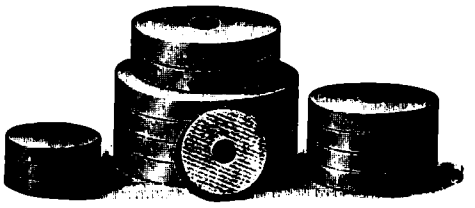


FIG. 2765

Hot water No. 1 is a hard valve for hot water at high temperature and heavy work.

Hot water No. 2 is a hard valve for hot water at high temperature and light work.

Hot water No. 3 is a semi-hard valve for heavy duty on steam feed pumps using gritty water. This is an excellent all-round hot or cold water valve.

Cold water No. 1 is a soft valve made from high grade rubber, suitable for marine pumps.

PRICES ON APPLICATION

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VALVE STEM PACKING

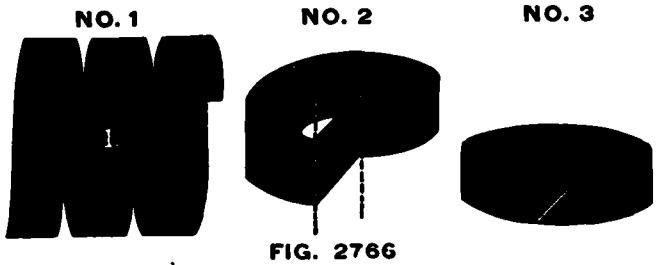


FIG. 2766

The composition of which it is composed makes it desirable for the stuffing boxes of valves used on steam, oil, acid, gas or water. It is adapted to use on naphtha pumps. We furnish it in square strips for the plungers of hot water pumps.

Coils ⅛ inch thick are suitable for ¼, ⅜ and ½ inch valves.
" 3/16 " " ¾ and 1 inch valves.
" ¼ " " 1¼, 1½ and 2 inch valves.

Method of applying the packing: First, having cut the end of the coil at an angle, spring it around the spindle once; then cut a corresponding angle, as shown in cut No. 2, between the dotted lines at the lap; then spring the packing back, and you have the ring ready to put in the stuffing box, as shown in No. 3. Screw the nut down until there is no leak.

PRICE, $1.00 PER POUND

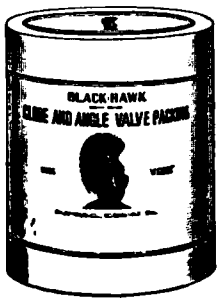


FIG. 2767

GLOBE AND ANGLE VALVE PACKING

This is an asbestos cord, lubricated with a chilled oil, and has a rubber and fine plumbago cover. It does not become hard nor decompose when in use.

It is adapted for general use in engine rooms, for globe and angle valves, radiator valves, sight feed lubricators, etc.

1/16 and ⅛ inch sizes put up in 1 pound boxes.
¼ and ⅜ inch sizes put up in 2 pound boxes.

PRICE, $1.00 PER POUND

METALLIC STOP VALVE PACKING

FOR HIGH PRESSURE

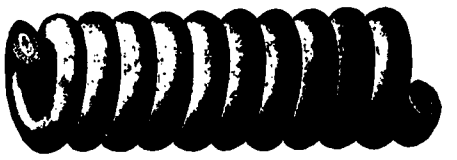


FIG. 2768

This is a round packing made with a core and is wrapped with a specially woven metallic fabric, which has been treated with rubber and other ingredients, to render it impervious to the action of steam, sulphur, etc., and to prevent corrosion. It is also impregnated by a new process, with the highest grade air floated plumbago, which prevents the packing from sticking to the valve stem. It is suitable for stop valves, throttle valves, and is a good packing for pumps working under a standing high pressure. Made straight or spiral. Put up in boxes.

PRICE, $1.50 PER POUND

HYDRAULIC RED CORE PACKING

This core is semi-vulcanized, and is surrounded with the finest grade of flax, specially treated with a preparation which preserves the life of the packing and reduces the friction to a minimum.

This packing is adapted for all kinds of both centrifugal and plunging pumps, for cold water, ammonia, etc.

Put up in boxes.

PRICE, $1.25 PER POUND



FIG. 2769

HIGH PRESSURE PACKING

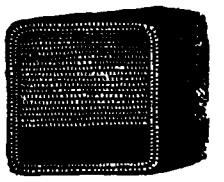


FIG. 2770

This packing is made round or square, in spiral form of wire-inserted asbestos cloth, with a rubber cushion at the back. It is adapted for high pressure marine work, steam feeds, and triple expansion and tandem compound engines; also for hydraulic stuffing boxes, on coast defence disappearing gun carriages. It is made in all sizes, either spiral or ring shapes, and put up in convenient boxes.

PRICE, $1.50 PER POUND

WATERPROOF HYDRAULIC PACKING

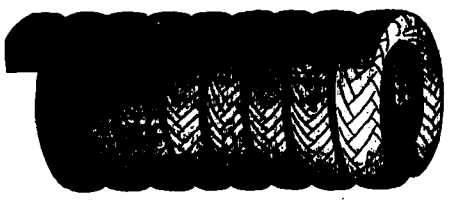


FIG. 2771

This hydraulic packing is made of the best flax, lubricated with a waterproof compound, which is strictly free from acid. These goods are furnished on rod and stuffing box measurements only, as they must be an exact fit to give the desired results. Use a caliper and be sure to give exact measurements.

We furnish this packing in either coil, spiral, or ring form. Instructions for using will be sent in each package.

PRICE, $1.00 PER POUND

AMMONIA PACKING

FOR AMMONIA USE ONLY

This packing is made in spiral form or in molded open rings, cut on the bias. It is lubricated with a special compound which will not saponify when it comes in contact with ammonia. It is made of the finest grade of cotton yarn in combination with a flexible metallic core, and will stand any amount of oil without dissolving.



FIG. 2772

PRICE, $1.50 PER POUND

METALLIC PISTON PACKING

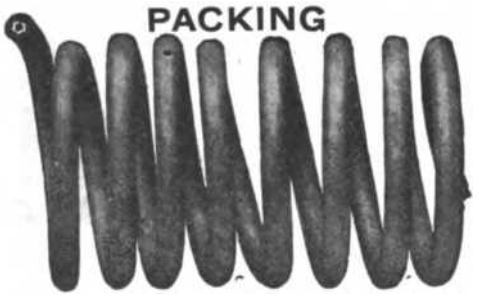


FIG. 2773

This is a round packing made in spiral form. It is a combination of metal, rubber, duck and plumbago cover, with a special metallic core, cured under great pressure. It is adapted for use on pistons and valve rods, Corliss valve stems, centrifugal dryers, and steam end of pumps. It has great durability. It is made in all sizes from ¼ inch to 2 inches, and put up in boxes.

PRICE, $1.50 PER POUND

COMMON SENSE METALLIC PACKING



FIG. 2774

It consists of a granulated metallic substance inclosed in a cotton tube, and is packed in layers, alternating with a soft metal ring. When applied, the granulated coils are firmly packed in place, hammered down solid and even all around the rod, thus perfectly adjusting themselves to both rod and box and at the same time forming a firm steadiment to the rod.

PRICE, PER POUND—½ in. and over **$1.25**

ASBESTO-METALLIC PACKING

FOR PISTON RODS OF HIGHEST PRESSURE ENGINES



FIG. 2775

This is a packing of great flexibility, exceeding elasticity and unusual strength. This packing is made from asbesto-metallic cloth, between each lamination of which is inserted fine wire gauze cloth, thereby gaining exceptional strength. It is suitable for all kinds of joints, high, low and wet pressure steam. Made in sizes from ⅜ up to and including 2 inches diameter. In boxes, 5, 10 and 15 pounds.

PRICE, $1.00 PER POUND

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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TRIPP METALLIC PACKING

FOR PISTON RODS, VALVE STEMS, PISTONS, AND PISTON VALVES

The cut illustrates the style of packing especially designed for piston rods of stationary and marine engines, one side showing a section of the packing complete, applied to the rod, and the other a view of the same with one of the packing segments removed. The packing rings in Fig. 2776, consisting of four segments, are virtually a solid piece of metal, susceptible of opening and closing, and adjusting itself to any slight variations of the rod. The steam, acting upon the packing, makes it perfectly automatic, and when not under pressure it is held in position to receive steam by the spiral and grip springs. We can furnish the Tripp Metallic Packings for cylinders. This cylinder packing is similar in construction to the rod packing, but is composed of more pieces, the number varying in proportion to the size of the cylinder. It is geometrically perfect, and is so constructed that the weight of the piston will not cause any more wear on the bottom of the cylinder than on the top or sides, as no one of the pieces can move independent of all the others. This packing when applied to the piston of a cylinder with a perfectly round bore will never need renewal, and will last the life of the engine. Further information and prices on application.

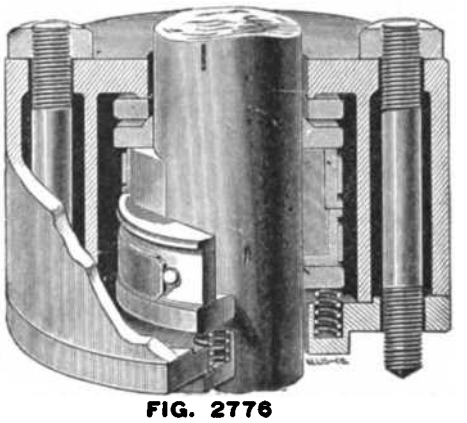


FIG. 2776

PARTICULARS REQUIRED WHEN ORDERING

Diameter of face of stuffing box.
Diameter of inside of stuffing box.
Depth of stuffing box.
Clearance between face of stuffing box and cross head
No.....and size of stud bolts.
Distance between centers of bolts.
Location of stud bolts.
Length of stud bolts.
Horizontal engine.
Marine "
Upright "

Send wire gauge exact diameter of rod.

METALLIC PACKINGS FOR EVERY CLASS OF SERVICE

MARINE AND STATIONARY

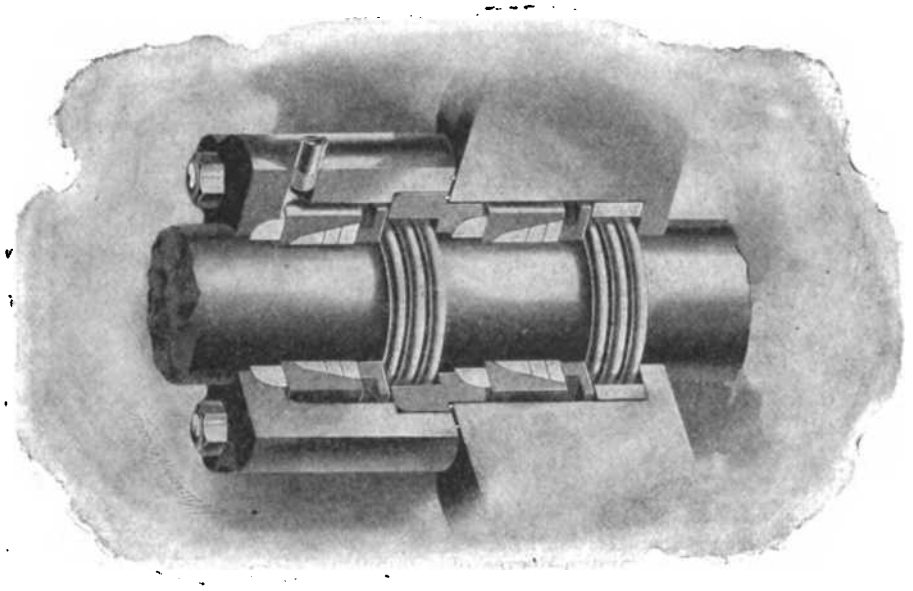


FIG. 2777

LOCOMOTIVE

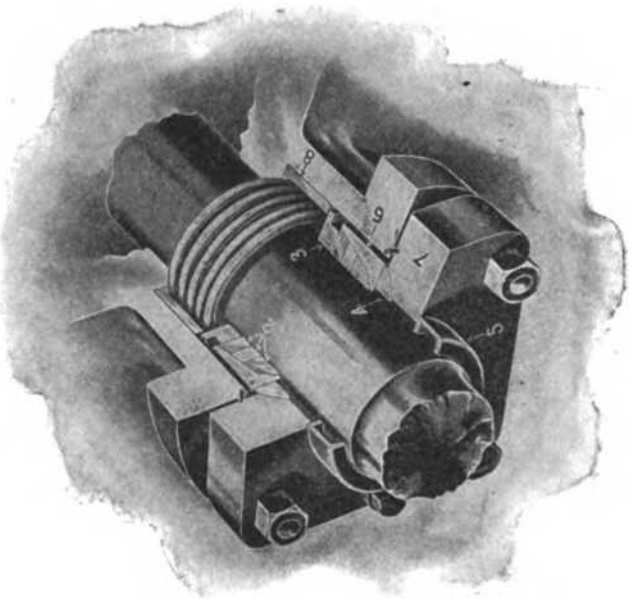


FIG. 2778

DIRECTION FOR ORDERING FIGS. 2777 AND 2778

ALL MEASUREMENTS TO U. S. STANDARD

Note—If rod has collar, give diameter. Make separate specifications for piston rods and valve stems.

Diameter of rod.
Diameter of stuffing box, outside.
Diameter of stuffing box, inside.
Diameter of opening into cylinder or chest.
Depth of stuffing box.
Number of stud bolts.
Distance between centers of stud bolts.
Position of stud bolts.
Length of stud bolts.
Diameter of stud bolts.
Travel of valve stem, cut off, or other rod of varying stroke.
Distance between cross head and stuffing box.
Position of guides.
Is engine vertical or horizontal?
If vertical, is rod out of top or bottom of cylinder?
Is engine high or low pressure?
If for steamer, ferry or tug, give name.
Give maximum steam pressure.

DESCRIPTION

FIGS. 2777 AND 2778

This is a double packing, the inner packing composed of one set of babbitt metal rings which with their parts do most of the work. They are separated from the rest of the packing by a dividing piece; then outside of this comes the second set of packing. Should any water or steam happen to leak through the first set of rings it is caught by the second set and can be drained off; also, should the first set of rings wear out or fail while under heavy service the second set is already on the rod ready to take up the work of the first set at all times.

Prices on application. See directions for ordering.

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SECTIONAL SELF ACTING METAL PACKING

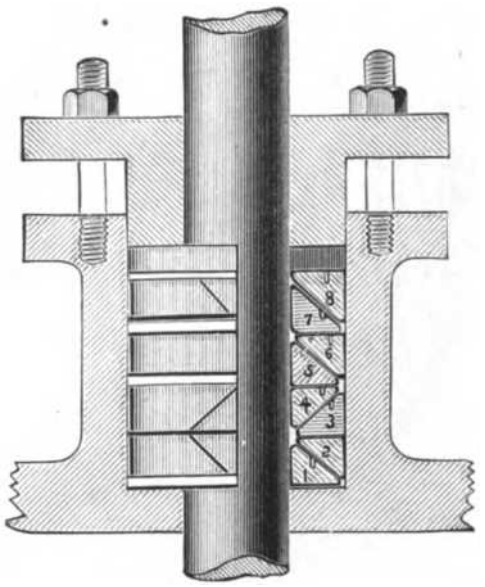


FIG. 2780

For piston rods, valve stems, etc., of every description; for steam engines, air and ammonia compressors, pumps, etc.

The condensing material of this packing is a peculiar metal composition which, by virtue of its properties, will adhere to the rod, and at the same time possesses enough softness not to affect it. The construction is composed of conical plates and different rings, those again composed of two parts. The exterior cone presses the interior against the wall of the stuffing box, and no matter how great the pressure, it will remain at all times safely locked. In consequence of each ring being a valve seat in itself, and each being divided into two parts, the whole will be elastic and work easily. In this series of semi-annular rings—each section being composed of four pieces—it should be noted that the corresponding pieces in all the sections are exactly alike, so that any piece broken, injured or worn can be easily replaced. These sections also are so placed as to have intermediate annular recesses, within which the water of condensation may be collected, and which, moreover, will permit the entire packing to be taken apart for purposes of inspection, or reset from time to time in case of wear. Next to the gland a turn of soft packing is laid, capping the metal packing, which enhances the elasticity and facilitates lubrication.

It requires no alteration of stuffing boxes; the packing is made to suit the box.

It gives a perfectly tight stuffing box, likewise a steadying to the rods and stems, with little or no friction.

It keeps the rods and stems perfectly smooth and requires little lubrication.

It will not corrode the rod when the engine is not in use.

DIRECTIONS FOR MEASUREMENT

1st.—Diameter of rod. 2d.—Diameter of stuffing box. 3d.—Depth of stuffing box; also, shape of stuffing box on the bottom. Be exact in measuring diameter of rod and stuffing box. If the rod should be out the center of box, state how much; also, how much the gland has to enter the stuffing box; also, what kind of engines or pumps, upright or horizontal, what pressure, and if new or old.

PRICE

$6.25 per inch diameter of rod or stem up to 5 inches diameter if stuffing boxes are of usual proportions. For larger sizes estimates will be furnished upon application.

PATENT TUBULAR FLEXIBLE METALLIC PACKING

ADAPTED FOR STATIONARY PRESSURE OF STEAM, WATER, ETC.

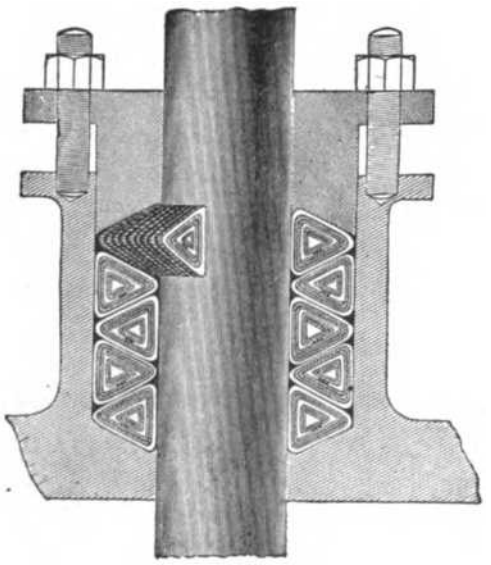


FIG. 2781

The cut represents a stuffing box showing how this flexible tubular metallic packing is in stuffing boxes. This packing is to be used in stuffing boxes for steam and water pipe slip joints, hydraulic pumps, and where there is a steady, stationary pressure of steam, water, or other fluid. It can be neatly and easily put in its place, and on account of its elasticity and flexibility will adjust itself and yield when there is displacement out of line or movement of the pipe or rod. The packing rings are convex and concave, as shown in cut. As they are hollow, they admit steam or water, and set the packing out to the rod and box. The inside tube is not closed, the edges are a little apart, thus permitting the steam or water, which would leak in the box, to enter the opening of the rings, thereby expanding same according to the pressure which lies in pipe The packing, consequently, will form a tight joint and will be self acting, allowing the pipe to move easily at all times, and reducing the friction to a minimum. The number of rings will be regulated according to the depth of stuffing boxes. The inner tube is of brass, the wire of soft metal; the next sheeting of brass or soft white metal; on the outside is laid a thin layer of asbestos or other fabric material or soft metal, according to its use, so as to give these rings a good bedding when screwed together. This packing will not harden with use, as it is metallic, and steam, water, or other fluids will not have any effect upon it, no matter how long in use.

DIRECTIONS FOR MEASUREMENT

1st.—Outside diameter of pipe in stuffing box or rod. 2d.—Diameter of stuffing box. 3d.—Depth of stuffing box.

If the pipe or rod should be out of the center of box, state how much; also, how much the gland has to enter the stuffing box; also, whether for water or steam.

PRICE, $2.50 PER INCH DIAMETER OF PIPE OR ROD

If stuffing box is deeper than 7 inches, the price will be as follows:

From 7 to 10 inches depth of box	$3 00	per inch diameter of pipe
" 10 " 12 " " "	3 25	" " "
" 12 " 15 " " "	3 50	" " "

FIBROUS METALLIC PACKING

FOR PISTON AND VALVE RODS



FIG. 2782

The form of the packing is a composite metal shaving about ⅛ inch wide and 3 feet long. The composition is the result of long experiment, and meets perfectly all the necessities of users as to heat resistance, constant elasticity, anti-friction qualities, and durability. The metal is treated with plumbago and other lubricants, which prevent its ever becoming a solid metal and losing its pliability.

PRICE $1.00 PER LB.

Packed in 1, 5 and 10 lb. pails.

The table below gives approximate quantities required for several sizes of rods and stems.

In ordering it is only necessary to state number of pounds required. No measurements need be given. Orders should call for a little more than is actually needed, so as to allow a surplus for taking up wear, etc., if necessary.

PISTON RODS

Diam. of Rod, Inches.	—STUFFING BOX.— Clearance, Inches.	Diameter, Inches.	Depth, Inches.	Quantity Required, Pounds.
1	⅝	2¼	3	3
1½	¾	3	4	6
2	¾	3½	4½	7
2½	¾	4	4½	9
3	⅞	4¾	4½	10
4	1	6	5	18
5	1	7	6	25

VALVE SPINDLES

Diam. of Stem, Inches.	—STUFFING BOX.— Clearance, Inches.	Diameter, Inches.	Depth, Inches.	Quantity Required, Pounds.
¾	½	1¾	3	1½
¾	⅝	2	4	2½
1	⅝	2¼	4	4
1¼	⅝	2½	4½	5
1½	⅝	2¾	4½	5½
1¾	¾	3¼	5	7
2	¾	3½	5	8

METALLIC PACKING

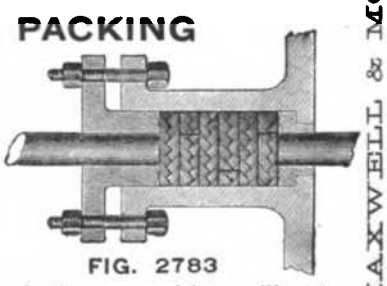


FIG. 2783

This metallic packing is made of fine white brass wire of special composition, arranged to give the maximum degree of toughness and strength, at the same time being of such hardness that should any wear occur it will take place in the packing and not on the rods.

It is, therefore, incapable of causing wear or cutting of the rods, and being entirely metallic in its composition, will not burn though subjected to the highest steam pressure.

Owing to its great strength it can be used in machines where the pressure is very high.

Because of its composition, the packing is not affected by acids or rust, and is, therefore, of great service for use in connection with fire pumps or other machines which stand idle a portion of the time.

The lubrication of rods and plungers is very easily effected with this packing, since in addition to the self lubricating character of its composition it readily takes up and holds oil, graphite and other lubricants.

Is adapted for use in the following services: marine, locomotive, stationary and pumping engines, accumulators, hydraulic presses, hydraulic pumps, water motors, hydraulic cranes, sewage pumps.

MADE IN THE FOLLOWING SIZES

¼, ⅜, ½, ⅝, ¾, ⅞, 1 and 1¼ inch.
Larger sizes to order.
Prices on application.

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SEMI-BRONZE PACKING FOR ENGINES AND PUMPS

The core, which is the foundation of this packing, is a lubricator reservoir, and is composed of loosely spun asbestos thoroughly saturated with high grade cylinder oil, pressed into the desired shape and coated with graphite lubricator. The covering is of alternate strands of flax and asbestos all loosely spun, and each braided over with an open net work of very fine semi-bronze wire. All of the strands are very loose and fluffy, so that they readily soak up oil and hold it, and the braiding of the wire being quite open permits the oil to flow readily from the fiber and carry along with it the graphite to the piston rod when heated.

Is made in all sizes from ¼ to 1½ inches, and is put up in neat and attractive form; is cut into twelve foot lengths, and each length in a separate box, labeled.

Approximate weights per box of 12 feet, for each size:

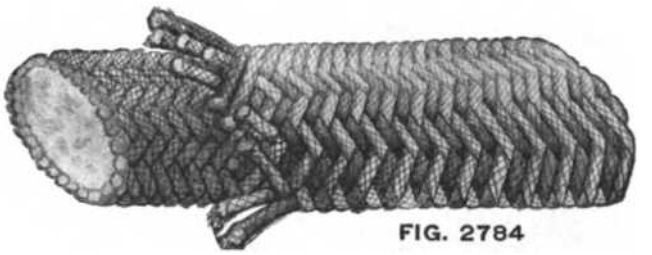


FIG. 2784

¼ inch, ¾ pounds.	⅜ inch, 1¾ pounds.	½ inch, 3 pounds.	⅝ inch, 4¼ pounds.	¾ inch, 6 pounds.
⅞ inch, 8 "	1 " 9½ "	1⅛ " 10½ "	1¼ " 12½ "	1½ " 17½ "

Price, per pound.....$1 00

ASBESTOS AND RUBBER TAPE

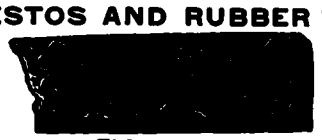


FIG. 2785

A braided asbestos band or tape, covered with improved asbestos and india rubber composition, for forming gaskets, etc., in all widths from 5/16 to 2¼ inches.

Number of feet to pound, 5/16 inch, 35 feet; ⅜ inch, 30 feet; ½ inch, 15 feet; ⅝ inch, 13 feet; ¾ inch, 12 feet; ⅞ inch, 11 feet; 1 inch, 10 feet; 1⅛ inches, 8 feet; 1¼ inches, 7 feet; 1½ inches, 6½ feet; 2 inches, 4¼ feet. We also furnish this tape from folded cloth, rubber coated.

Per pound.....$0 90

Asbesto-Metallic Tape, made in the same manner as the Asbestos and Rubber Tape, with fine strands of wire added to give greater strength.

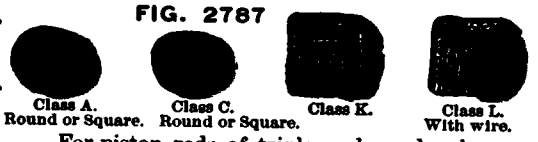
Price, per pound.....$0 90

Asbestos and rubber rings and gaskets, with cemented lap joints, made to order from the Asbestos and Rubber Tape or cloth.

Price, per pound.....$1 50

ASBESTOS AND RUBBER CLOTH WOUND PACKING

FIG. 2787



Class A. Round or Square. Class C. Round or Square. Class K. Class L. With wire.

For piston rods of triple and quadruple expansion engines and high pressure engines generally. It is made from layers of asbestos cloth coated with asbestos and rubber composition. This packing is very strong and elastic and is suitable for joints of all kinds, including wet and low pressure steam and hot water work. Also furnished with wire interwoven to order. Regular sizes up to 2½ inches in diameter.

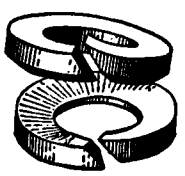
All packings excepting Class L will be sent without wire unless otherwise ordered.

Price, per pound.....$1 00

VULCABESTON MOLDED



No. 1.



No. 2.



No. 3.

FIG. 2789

We furnish for R. R. work a large variety of plain, concave and convex molded packing rings for use on valve stems, piston rods, air brake pumps, etc. Many of the large railroad systems have adopted these packing rings for steam and air ends of Westinghouse and New York air brake pumps, and for locomotive valve stems and piston rods.

The piston, valve and throttle stem packings for locomotive and stationary engines are made in pairs of concave and convex rings, split diagonally on one side so that they can be opened laterally sufficiently to pass over the rod (see cut 2).

We can furnish them in sizes from ¼ to 1¼ inches thick and ⅜ to 7 inches diameter according to thickness. Prices on application.

VULCANIZED ASBESTOS PISTON ROD PACKING

This is a flexible rope packing braided from strong twisted strands of pure asbestos combined with india rubber and vulcanized. It is an improvement upon pure asbestos packings, and is adapted for piston rods, valve stems, pump valves, etc., where high pressure steam, hot water, oils, acids, ammonia, etc., are used, and for locomotive, stationary and marine engines. It is self-lubricating, and does not shrink or blow out.

Round, all sizes, from ⅛ inch to 2 inches diameter. Square, from ⅛ inch to ⅝ inch; on reels from 10 to 50 pounds. (3/32 inch, ⅛ inch, 3/16 inch and ¼ inch, also on ¼, ½ and 1 pound spools), per pound.....$1 00

Round, in ¼, ½, and 1 pound spools, 1/16 inch and 3/32 inch diameter, per pound.....$1 25

The approximate number of feet of the different sizes of round packing to the pound is as follows:

1/16	3/32	⅛	3/16	¼	5/16	⅜	½	in. diameter.
450,	225,	128,	50,	25,	20,	16,	9,	feet.
⅝,	¾,	⅞,	1,	1¼,	1½,	2,		inches diameter.
6½,	5½,	4,	3,	2¼,	1⅔,	1,		feet.

Square packings are 25 per cent. heavier per lineal foot.

ASBESTOS CANADAX PACKING AND WICK



FIG. 2788

Requires little oil, being to a great extent self-lubricating. Lubricating oils made from petroleum work as well with these packings as lard or sperm.

Indestructible by acids, long exposure to dampness or any degree of heat.

Price, per pound.....$0 45

RINGS FOR R. R. WORK

The Brake Pump Rings are:

No. 102½, plain split ring, 1 15/16 inches x 1¼ inches x ⅜ inch for Westinghouse Air Brake passenger service, 6 inch and 8 inch pumps.

No. 400, concave and convex rings, 1 15/16 inches x 1¼ inches for same service, 6 inch and 8 inch pumps.

No. 544, concave and convex rings, 2 1/32 x 1⅜ inches for W. A. B. Co. freight service, 9½ inch pumps.

No. 168, concave and convex rings, 2 inches x 1¼ inches, for New York Air Brake Co., all sizes pumps.

Price, per set (4 rings).....$0 22

We advise use of these packings in sets of one concave and three convex rings as per cut No. 3, the outside convex rings tapering to fit the box, and the intermediate rings pressing closely on rod and interior of stuffing box.

Do not set up this packing too closely; leave room for slight expansion.

ASBESTOS PISTON ROD PACKING

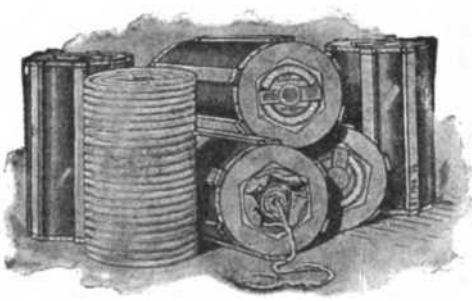


FIG. 2786

These Asbestos Piston Rod Packings are spun into strands and combined with a patented elastic core into a rope of any desired size, and form a compact and durable packing for locomotives, marine and other engines, valve stems, oil pumps, expansion joints, etc. It is to a great extent self-lubricating, is easily applied, and is indestructible by acids, long exposure to dampness or any degree of heat. Lubricating oils made from petroleum work as well with it as lard or sperm.

On reels of 10, 15, 25, and 50 pounds each.

Asbestos Braided Packing, per pound	$0 45
Standard Asbestos Twist Packing, per pound.	45
X X " " " "	45

Special forms of asbestos packings furnished to order.

ASBESTOS WICK PACKING

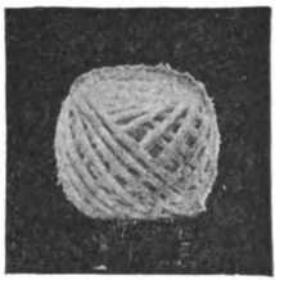


FIG. 2790

These asbestos wick packings are composed of pure asbestos fiber, spun into strands (which can be separated), and made into the form of a soft, strong, "Lampwick," which may be wound or packed in any desired shape around small steam and other valve stems, pumps, etc. Being acid and fireproof, it is valuable for use in chemical works, etc.

In ¼, ½, and 1 pound balls and on 5 and 10 pound spools as follows:

Standard Asbestos Wick Packing, per pound,	$0 45
X X Asbestos Wick Packing for wire drawing, calking, etc., per pound	45

Customers ordering will please give size of balls or spools wanted; without such instructions, we ship 1 pound balls.

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PISTON ROD AND VALVE PACKING

BLACK SQUADRON



FIG. 2791

Black Squadron Packing is put up in coils. It is made of wedges, cut diagonally, and a flax cushion. The wedges slide on one another and compensate for the wear made by the rod. The cushion absorbs the oil and keeps the rod lubricated. This packing is guaranteed to be very economical, as it wears absolutely out in the stuffing box.

PRICE, 75C. PER POUND

BLACK SQUADRON SPIRAL



FIG. 2792

This packing is put up in round tin boxes; it is made of the very best quality of cotton duck, with a Para rubber friction. It is made in two parts with a rubber center, and has a sliding motion that will adapt itself to any inequalities that may be in the rod or stuffing box.

PRICE, $1.00 PER POUND

RING OPEN



FIG. 2793

BLACK SQUADRON RING PACKING

This packing is made of the same material as the spiral (Fig. 2792) with the exception that it is cut diagonally, and made with wedges that slide on one another under pressure from the gland, and wears absolutely out in the stuffing box. It is self-lubricating.

In ordering this packing be sure to give exact diameter of rod and inside diameter of stuffing box.

PRICE, $1.00 PER POUND

RING SHUT



FIG. 2794

WHITE SQUADRON

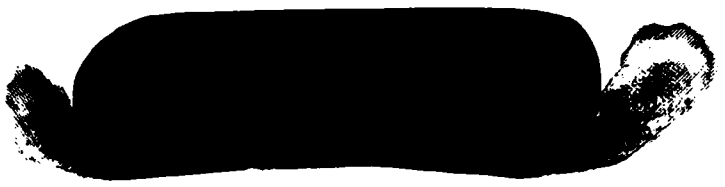


FIG. 2795

White Squadron Packing is made in coils of twelve feet, and covered with a muslin wrapper. It is made of the finest cotton, and is thoroughly lubricated.

PRICE, 75C. PER POUND

CHAMPION HIGH PRESSURE SPIRAL PACKING



FIG. 2798

PRICE, $1.00 PER POUND.

RISING SUN CORE PACKING

ROUND



FIG. 2796

OBLONG



FIG. 2797

Rising Sun is put up in round tin boxes. This packing is made of the finest linen flax with a round or oblong core, specially compounded to withstand high steam pressure. It is lubricated with the finest material obtainable, and of the highest fire test made.

PRICE, 50C. PER POUND

DIRECTIONS FOR USE, FIGS. 2796 AND 2797

Use exact size required; cut in suitable lengths to form ring around the rod; place break joints on opposite sides; screw gland up fairly tight, and let the engine make nine or ten revolutions; then loosen the gland so as to allow an escape between rod and packing; tighten gland slowly, stopping when escape ceases, as the packing then expands and holds everything tight; let the expansion of the packing do all the work, do not tighten up on the packing. By adhering to these directions there will be no friction on either rod or packing, which keeps perfectly tight.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK.

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PISTON ROD AND VALVE PACKING

PISTON ROD PACKING



FIG. 2799

This is a round packing made in spiral form, with a red rubber core wrapped in specially prepared duck and a high grade of plumbago. It will hold over 430 pounds of superheated steam. It is made from a compound that will not harden from any degree of heat. Specially adapted for marine work. When applying this packing allow for expansion.

PRICE PER POUND, 80 CENTS

SPIRAL SQUARE PACKING



FIG. 2803

This packing is made in continuous coils shaped to fit the rod and box. It is treated with a special lubricant, which makes it very flexible. It is made in 12 foot lengths and furnished in sizes up to 2 inches. Each box contains one coil. We furnish all the usual sizes promptly.

PRICE PER POUND, $1.20

ASBESTO-METALLIC PISTON PACKING

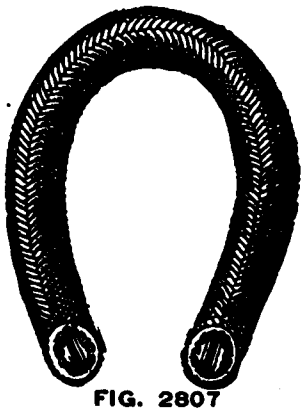


FIG. 2807

For high pressure engines, etc. Made with brass and copper wire.

A semi-metallic packing, combining the best qualities of a fibrous and metallic packing. This packing is composed of **I** core of non-vulcanizing rubber, braided with a soft asbestos thread, the whole with an outside cover of flax and wire.

PRICE PER POUND, $1.50

PISTON PACKING WITH RUBBER BACK



FIG. 2811

Made in 20 foot lengths.

PRICE PER POUND, $1.00

SELDEN PACKING



FIG. 2800

PRICES

	Per Pound.
With rubber core, from ¼ inch up	$0 80
" canvas " " ¼ " "	60
" square " " ⅝ " "	1 00

All sizes varying by sixteenths, from ¼ inch to 1¼ inch, regular; larger sizes made to order.

RING PACKING FOR STEAM

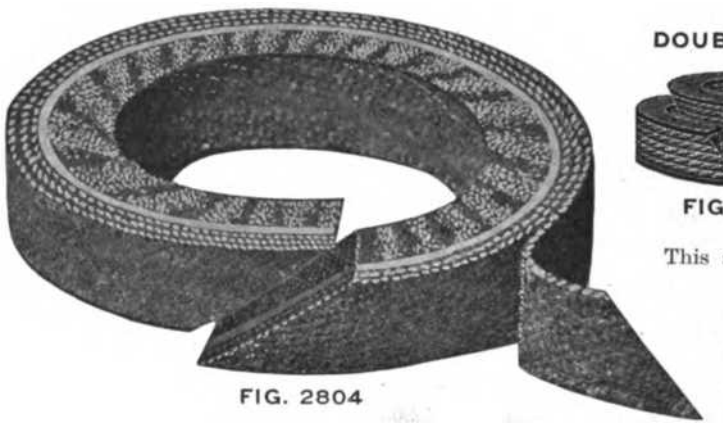


FIG. 2804

This packing consists of a duck core laid upon edge right angles with the rod. The outside fabric is placed flat, or in the opposite direction, thus enabling one or more plies of the duck to be removed in case the packing does not fit loosely in the stuffing box. The expansion ring is made of the best Para rubber, and being compressed in the mold, expands when exposed to heat, remaining soft and elastic. In ordering, state steam pressure, as best results can be obtained by so doing.

PRICE PER POUND, $1.50

RUBBER BACK SPIRAL PACKING

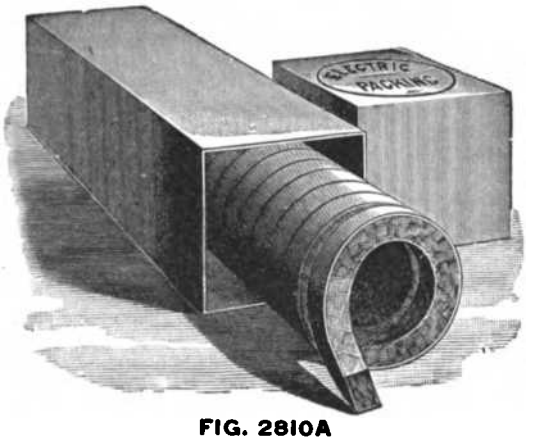


FIG. 2810A

DESCRIPTION, FIG. 2810A

This packing is made of a combination of cotton duck and rubber, having an elastic back, and thoroughly lubricated. The rubber back acts as a cushion, which, resting against the rear of the stuffing box, keeps the packing closely pressed against the rod, with but little pressure from the gland. Its thorough lubrication gives the minimum of wear to both rod and packing. Put up spirally in boxes, in lengths of 12 feet.

PRICE PER POUND, $1.20

SELF LUBRICATING PLUMBAGO PISTON PACKING

SQUARE ROUND

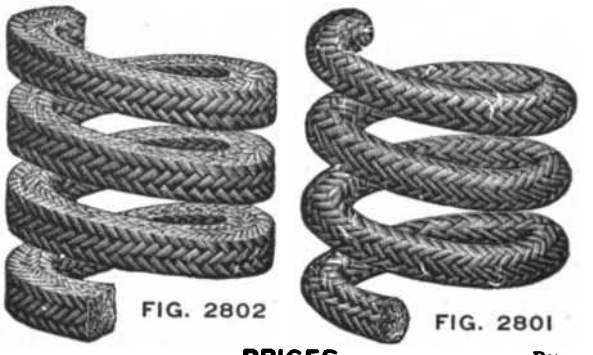


FIG. 2802 FIG. 2801

PRICES

	Per Pound.
1/16, ⅛ and 5/16 sizes	$2 00
¼ inch and larger	1 00

RING PACKING

DOUBLE RING SINGLE RING

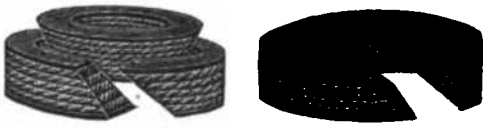


FIG. 2805 FIG. 2806

This single and double ring lubricated packing is treated with a special lubricant. The rings are made to exactly fit the rod and box. The double rings can only be used in the larger sizes. The single rings can be used in any size. Give exact measurements when ordering.

PRICE PER POUND, $1.20

FINE SQUARE PUMP PACKING



FIG. 2808

We furnish to order for steam pumps a square packing, using fine duck and white rubber. Made in 12 foot lengths.

PRICE PER POUND, 85 CENTS

TUCK'S PISTON PACKING

ROUND SQUARE

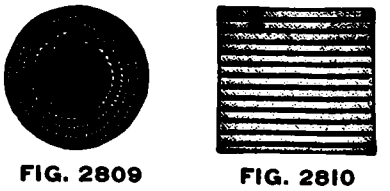


FIG. 2809 FIG. 2810

For packing the piston rods and valve stems of steam engines and pumps. Made in 12 foot lengths.

PRICE PER POUND, 85 CENTS

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DOUBLE CONNECTION SIGHT FEED LUBRICATORS

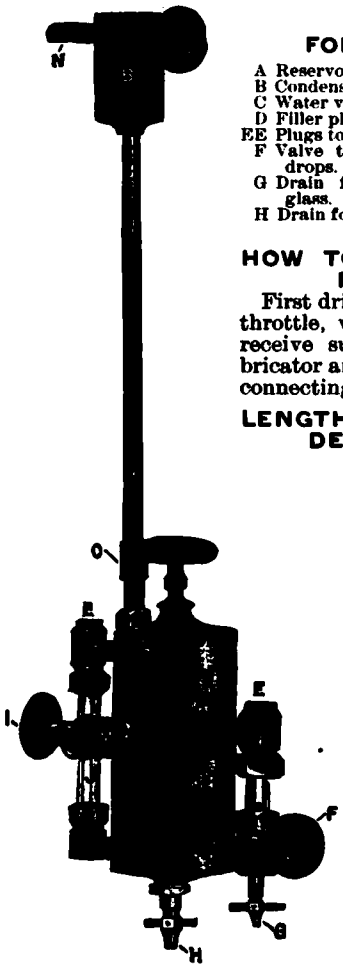


FIG. 2815

KIRBY
FOR STATIONARY ENGINES

A Reservoir.
B Condenser.
C Water valve.
D Filler plug.
EE Plugs to insert glasses.
F Valve to regulate oil drops.
G Drain for sight-feed glass.
H Drain for oil reservoir.
I Valve for shutting off pressure in case glass breaks.
J Gauge glass.
K Tail pipe and nut.
M Support arm with steam connection and oil discharge.
N Steam pipe connection for condenser.
O Condenser tube and coupling.

HOW TO ATTACH A DOUBLE CONNECTION LUBRICATOR

First drill and tap the steam pipe above the throttle, with gas tap, as may be required to receive support arm of lubricator; attach lubricator and then tap steam pipe higher up for connecting condenser.

LENGTH OF PIPE BETWEEN CONDENSER AND TAIL PIPE K

For ½ pint	lubricator, pipe is	4 in.
For 1 "	" "	6 in.
For 1 quart	" "	12 in.
For ½ gal.	" "	18 in.
For 1 "	" "	18 in.

HOW TO FILL AND OPERATE THE LUBRICATOR

To fill, close valves C, F and I, drain the lubricator by opening valve H; close valve H, remove filler plug D, and fill reservoir with oil (full) and replace filler plug. After filling open valve I slowly and wait a moment until sight feed glass is filled with water by condensation, then open valve C, and regulate oil drops by valve F. The sight feed glass and nozzle can be blown out, cleansed or drained by opening valve G.

PRICES, FIG. 2815

Nos.	Sizes.	Brass Finish.	Nickel Plated.	For Cylinder.	Gauge Glass.	Sight Fd. Glass.
300	⅛ pint	$3 35	$3 75	10 to 12 in.	⅝ x 3	⅝ x 2
301	½ pint	3 85	4 30	10 to 12 in.	⅝ x 3¾	⅝ x 2¼
302	1 pint	4 60	5 20	12 to 18 in.	⅝ x 3¾	⅝ x 2¼
303	1 quart	6 35	7 00	18 to 30 in.	⅝ x 4¾	¾ x 2½
304	½ gal.	9 80	10 75	30 in. and over	¾ x 6½	¾ x 2¾
305	1 gal.	15 00	16 25		¾ x 7⅜	¾ x 2¾

Lubricators are furnished complete; all necessary parts included.

Each lubricator packed separately in a wood box, with full set of instructions, etc., etc.

Catalogue of extra parts will be mailed on application.



FIG. 2817

KIRBY
FOR MARINE OR VERTICAL ENGINES
DESCRIPTION AND PRICES, FIG. 2817

This Kirby Double Connection Lubricator has the great point of advantage of being convenient to the throttle. It is not necessary to run up a flight of stairs to read or to adjust the sight feed, to fill the reservoir, etc. The lubricator is near the engineer.

An advantage in this lubricator is obtained with a loop pipe, one end of which is connected with the steam pipe, and the outlet end with a discharge pipe, controlled by a valve. This construction provides means for regulating the temperature of the oil, being readily under the control of the engineer, and allows of lubricator being placed any distance from the steam pipe.

Prices do not include pipe connections.

No. 404—½ gallon, for cylinder 30 in. and over, brass finish.....$50 00
" ½ gallon, for cylinder 30 in. and over, nickel plated..... 51 60

Other sizes made to order. Write for prices. Catalogue of extra parts will be mailed on application.

KIRBY
FOR HORIZONTAL COMPOUND ENGINES
DESCRIPTION AND PRICES, FIG. 2818

This lubricator will not cross feed on account of the arrangement of the auxiliary steam pipes and the separate sight feeds for each cylinder, which are in no manner connected. Prices do not include pipe connections.

Numbers.....	503	504	505
Sizes.....	1 quart	½ gal.	1 gal.
For cylinder.....	18 to 30 in.	30 in. and over	
Brass finish.....	$25 00	$42 00	$59 00
Nickel plated.....	26 75	44 00	62 00

Other sizes made to order. Write for prices. Catalogue of extra parts will be mailed on application.

KIRBY
FOR MARINE USE, WITH IMPROVED ATTACHMENT.

It will work the highest test oils. The small pipe P, leading from the condenser B to the lower sight feed arm, is used to cleanse the sight feed glass, and also to assist in working the very thick oils. By opening the valve G in the lower arm, the sight feed glass is cleared and the regular operation of the lubricator is assisted by a steam current flowing in the direction of the normal feed. It is not necessary to have a drain for the sight feed glass.

PRICES, FIG. 2816

Nos.	Sizes.	For Cylinder.	Brass Finish.	Nickel Plated.
330	⅛ pint	10 to 12 in.	$4 20	$4 70
331	½ pint	10 to 12 in.	4 70	5 25
332	1 pint	12 to 18 in.	5 45	6 10
333	1 quart	18 to 30 in.	7 20	7 90
334	½ gal.	30 in. and over	10 65	11 40
335	1 gal.		16 00	17 00

Catalogue of extra parts will be mailed on application.

Glasses same size as the Kirby Double Connection Lubricators.

The Kirby Double Connection Lubricator with approved attachments can be furnished with double, triple, quadruple sight feed if desired,

Prices on application.

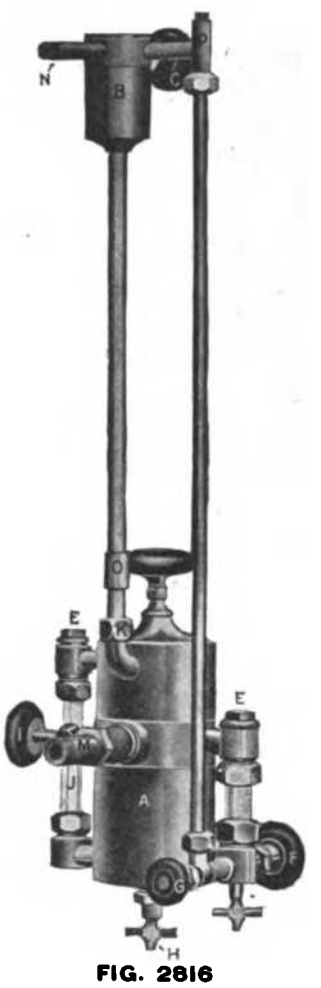


FIG. 2816

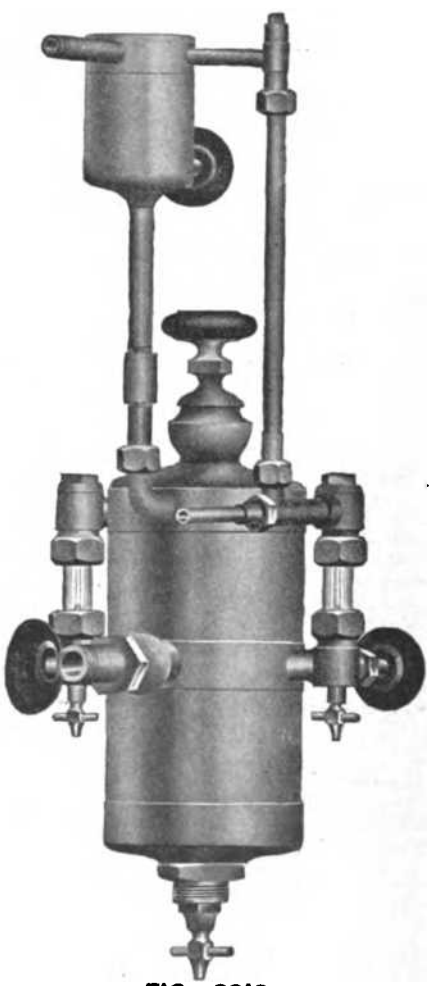


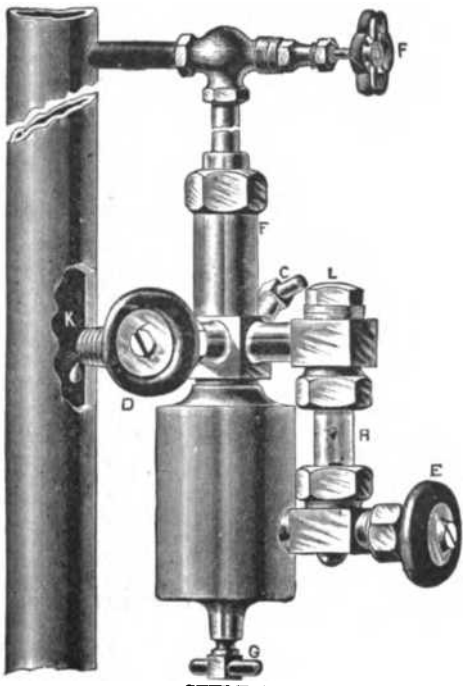
FIG. 2818

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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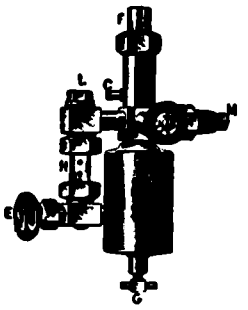
DOUBLE CONNECTION LUBRICATORS

STYLES A AND C



STYLE A

FIG. 2819



STYLE C

FIG. 2820

C—Filler plug.
D—Water valve.
E—Feed valve.
FF—Condenser and steam connections.
G—Drain valve.
H—Sight feed glass.
K—Oil discharge pipe.
L—Plug to insert glass.
M—Reducing nozzle in style C.

The style A and style C lubricators are intended for use on stationary engines, traction and portable engines, and steam pumps. They are extra strong and heavy and are finished all over.

The style A lubricator should have both connections between the boiler and the throttle.

The style C lubricator takes steam for condensation from the boiler direct or from the steam pipe above the throttle, and delivers the oil into the steam pipe below the throttle or into the steam chest.

PRICES, FIGS. 2819 AND 2820

Sizes	¼ pint.	½ pint.	½ pint.	1 pint.	1 quart.
Brass finish, each	$15 00	$17 00	$20 00	$28 00	$42 00
Nickel finish, "	18 00	20 00	23 00	32 00	47 00
Pipe thread on support arm, inches	⅜	⅜	⅜	½	½

SIZE OF GLASS.

Sight feed up to ½ pint ¾ x 2⅛
" pint and quart ¾ x 3

ZERO

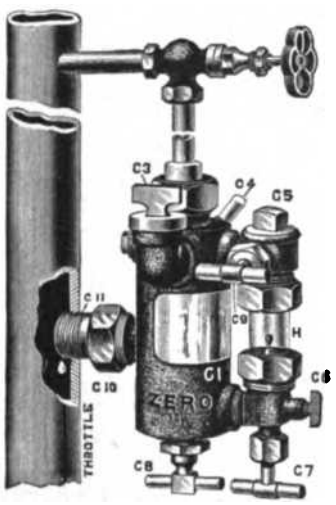


FIG. 2822

DESCRIPTION

C1—Body or oil reservoir.
C3—Filler plug.
C4—Water valve.
C5—Plug for inserting sight feed glass.
C6—Sight feed drain stem
C7—Regulating valve.
C8—Drain valve.
C9—Steam valve.
C10—Union nut.
C11—Tail piece.
H—Sight feed glass.
" " ¾ x 2⅛.

The double connection zero lubricators are very widely used on such traction and portable engines as have steam pipes suitable for a double connection lubricator. They are also extensively used on steam pumps and on stationary engines, which are exposed more or less to the cold. We can furnish two styles of the double connection zero lubricators, style A and style C. On some engines the throttle valve is so located that one connection for the lubricator must be made above, and the other connection below it; while in others there is room enough to make both connections either above or below the throttle. The style A, double connection zero lubricator, should be attached with both connections on same side of throttle, either above or below, as circumstances will permit. The style C, double connection zero lubricator, has spray feed feature, and should take steam above the throttle and deliver oil below the throttle, either into steam pipe or top of steam chest. In ordering, state how the attachment is to be made.

PRICES, FIG. 2822

	¼ pint.	½ pint.	½ pint.	1 pint.	1 quart.
Bronze body, finished trimmings,	$15 00	$17 00	$20 00	$28 00	$42 00
Nickel plated all over	18 00	20 00	23 00	32 00	47 00
Pipe thread on support arm, inches	⅜	⅜	⅜	½	½

IMPROVED STANDARD LUBRICATOR

FOR STATIONARY ENGINES

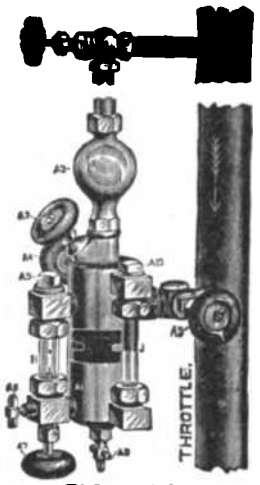


FIG. 2821

DESCRIPTION

A1—Body or oil reservoir.
A2—Condenser.
A3—Filler plug.
A4—Water feed valve stem.
A5—Plug for inserting sight feed glass.
A6—Sight feed glass drain stem.
A7— " regulating valve stem.
A8—Drain valve.
A9—Globe valve in support arm.
A10—Plug for inserting gauge glass.
H—Sight feed glass.
J—Gauge glass.
K—Connection to steam pipe.

Valve A9 in support arm should be in horizontal position, as shown in cut, when lubricator is attached to steam pipe.

Before leaving the factory each lubricator is tested at a pressure of 300 lbs. to the square inch.

PRICES FIG. 2821

Sizes	⅛ pint.	½ pint.	1 pint.	1 quart.	½ gal.	1 gal.
For cylinder	Under 10 in.	10 to 12 in.	12 to 18 in.	18 to 30 in.	30 in & over.	
Brass finish	$17 00	$22 00	$30 00	$45 00	$60 00	$75 00
Nickel "	20 00	25 00	35 00	50 00	65 00	80 00
Pipe thread on support arm, inches	½	½	½	½	¾	¾

SIZES OF GLASSES USED.

Sight feed	⅝ x 2	¾ x 3	¾ x 3	¾ x 3¼	¾ x 3¼	¾ x 3¼
Gauge	⅝ x 2	⅝ x 3¼	⅝ x 4⅝	⅝ x 4 11/16	⅝ x 6¾	⅝ x 9¾

KID

SINGLE AND DOUBLE CONNECTION

FOR SMALL STATIONARY ENGINES, STEAM PUMPS, ETC.

Single Connection.

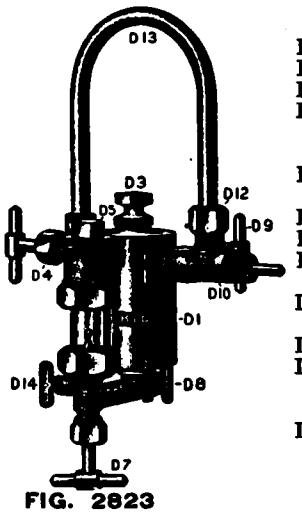


FIG. 2823

DESCRIPTION

D1—Oil reservoir.
D3—Filler plug.
D4—Water valve.
D5—Plug for inserting sight feed glass.
D7—Regulating valve.
D8—Drain valve.
D9—Steam valve.
D10—Steam connection.
D12—Steam tube nut.
D13—Steam tube.
D14—Sight feed glass drain stem.
D16—Condenser pipe.
Size of glass, ⅝ x 1⅝.

Double Connection.

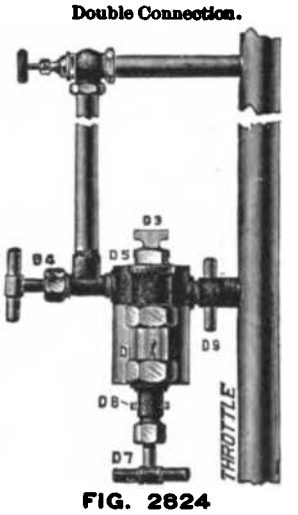


FIG. 2824

The Kid lubricators are intended for use on small steam engines and small steam pumps. Having the sight feed glass, they are greatly to be preferred over the common plain lubricator or chest oiler, as you can see at once whether the oil is being fed or not, and the rate of feed can be intelligently regulated.

DIRECTIONS

To refill—Close valves D4 and D7; open valve D8; then remove plug D3. When the water has all drained out, close valve D8; fill with oil and replace filler plug D 3. Valve D 9 should always be left open except when a glass breaks. To operate—Open valve D4, and regulate feed of oil by valve D7. Should a glass break, close valve D9 and insert new glass by removing the plug D5. When the lubricator is not in use, and there may be danger from freezing, drain off all the water and oil, and leave open valves D 4 and D 8.

PRICES, FIGS. 2823 AND 2824

Size, ⅛ pint.....Brass, $12 00; Nickel, $14 00
Pipe thread on support arm, inches, ¼.

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DOUBLE CONNECTION SIGHT FEED LUBRICATORS

IMPROVED SENIOR SIGHT FEED LUBRICATOR

DESCRIPTION AND PRICES, FIG. 2825

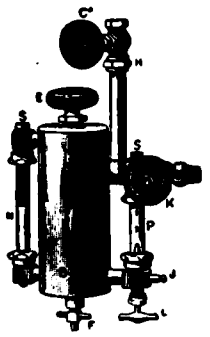


FIG. 2825

B—Oil reservoir.
C—Upper valve.
E—Filling plug.
F—Drain valve.
H—Union to connect condenser pipe and valve.
K—Discharge valve.
L—Valve for regulating flow of oil.
N—Indicator glass.
P—Sight feed glass.
J—Valve to drain or blow out sight feed glass P.

In this lubricator the use of a condensing chamber or bulb has been dispensed with, owing to its liability to freeze and consequent bursting. The filling plug has been placed directly on top of the oil reservoir or chamber, which makes the cup easy to fill. The sight feed and indicator glasses when broken can easily be replaced by removing plugs S and the sight feed is provided with a vent plug, by means of which steam can be blown through the glass to clean it. The connection shanks on the ¼, ⅓ and ½ pint sizes are threaded for ⅜ inch pipe instead of ½ inch, consequently these sizes of cups can be attached to small steam pipes.

Sizes.	Suitable for Engine Cylinders, Inches.	Shank Pipe Thread, Inch.	Finished Brass, Each.	Nickel Plated, Each.	Condenser Connections, Brass Tubing and Angle Valve, Each.	Condenser Connections, Brass Tubing and Angle Valve, Nickel Plated, Each.	Length of Condenser Pipes necessary, Inches.
¼ Pt.	Up to 4	⅜	$12 00	$13 50	$0 60	$0 70	15
⅓ "	4 to 6	⅜	15 00	17 00	70	80	18
½ "	6 to 10	⅜	17 00	19 00	80	90	24
⅔ "	10 to 14	½	20 00	22 50	1 00	1 15	30
1 "	14 to 18	½	22 00	25 00	1 20	1 40	36
1½ "	18 to 24	½	25 00	28 50	1 40	1 60	42
1 Qt.	24 to 30	½	28 00	32 00	1 50	1 70	48
½ Gal.	From 30 up.	½	38 00	43 00	1 60	1 80	60
1 Gal.		½	60 00	65 00	1 70	2 00	72

These lubricators are neatly packed in wooden boxes with sliding lids.

Lubricators are sent without condenser pipes and angle valve unless otherwise ordered.

SPRAY FEED LUBRICATOR

DESCRIPTION

A—Condensing chamber.
B—Oil reservoir.
C—Filling plug.
D—Upper steam valve.
F—Drain valve.
K—Lower steam valve.
L—Valve for regulating flow of oil.
N—Indicator glass.
P—Sight feed glass.
R—Steam pipe.
SS—Plugs for cleansing and replacing glass.
X—Spray nozzle.

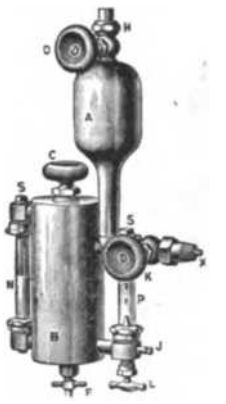


FIG. 2826

This spray feed lubricator is especially adapted for attachment to steam chest or to steam pipe between throttle and steam chest. The spray feed system of feeding oil consists in forcing the oil (after it has passed in drops up through the glass tube) into the steam pipe in the form of a spray, thus atomizing it with the steam before it reaches the parts to be lubricated.

PRICES, FIG. 2826

Sizes.	Suitable for Engine Cylinders, Inches.	Shank Pipe Thread, Inch.	Finished Brass, Each.	Nickel Plated, Each.	Condenser Connections, Brass Tubing and Angle Valve, Each.	Condenser Connections, Brass Tubing and Angle Valve, Nickel Plated, Each.	Length of Condenser Pipes necessary, Inches.
⅛ Pt.	Up to 6	⅜	$15 00	$17 00	$0 70	$0 80	18
½ "	6 to 10	⅜	17 00	19 00	80	90	24
⅔ "	10 to 14	½	20 00	22 50	1 00	1 15	30
1 "	14 to 18	½	22 00	25 00	1 20	1 40	36
1½ "	18 to 24	½	25 00	28 50	1 40	1 60	42
1 Qt.	24 to 30	½	28 00	32 00	1 50	1 70	48
½ Gal.	From 30 up	½	38 00	43 00	1 60	1 80	60
1 "	.....	½	60 00	65 00	1 70	2 00	72

These lubricators are neatly packed in wooden boxes with sliding lids.

Lubricators are sent without condenser pipes and angle valve, unless otherwise ordered.

STAR SIGHT UP FEED LUBRICATOR

DESCRIPTION, FIG. 2827

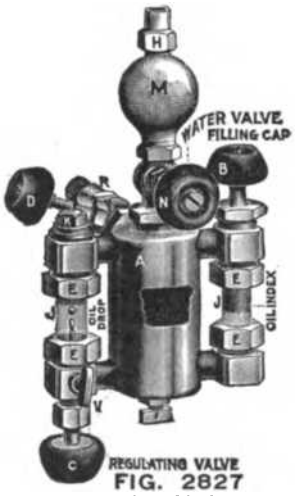


FIG. 2827

A—Oil reservoir.
B—Filling cap.
C—Valve to regulate oil drops.
D—Shut off valve.
E—Packing nuts.
F—Drain valve to draw off condensed water before refilling.
H—Coupling for condenser pipe.
JJ—Sight feed and index glasses.
K—Removable cap to insert glass.
M—Condensing chamber.
N—Valve to regulate water from condenser.
V—Blow off valve to clean sight feed glass.
R—Attaching shank with valve and union.

Capacity.	Suitable for Engine Cyl'ders, Inches.	Finished.	Plated.	Size of Shank, Pipe Th'd. Inch.	Size of Sight Feed Glass, Inches.	Size of Index Glass, Inches.
⅛ Pt.	Up to 8	$5 60	$6 25	⅜	¾ x 2¼	¾ x 2¼
½ "	8 to 10	7 00	7 50	½	¾ x 2¼	¾ x 2¼
¾ "	10 to 15	8 00	8 50	½	¾ x 2¼	¾ x 3
1 "	15 to 18	8 75	9 50	½	¾ x 3¼	¾ x 3¼
1 Qt.	18 to 30	11 25	12 50	½	¾ x 3¼	¾ x 4
½ Gal.	30 to 75	16 25	17 50	¾	¾ x 3¼	¾ x 5½
1 "	75 & over	26 00	33 00	1	¾ x 3¼	¾ x 6¾

COLUMBIAN SIGHT UP FEED LUBRICATOR

DESCRIPTION AND PRICES

FIG. 2828

This cup was designed with reference to extra strength where a heavy pressure is carried. It is intended for high speed, high pressure and high grade engines. The sight chamber and gauge glass are placed on right and left sides of oil reservoir, the connecting discharge arm being in the rear of same. The body and side arms are cast all in one piece, insuring absolute freedom from leaky joints.



FIG. 2828

Capacity.	Suitable for Engine Cyls. Inches.	Finished.	Plated.	Size of Shank, Pipe Thread, Inch.	Size of Sight Feed Glass, Inches.	Size of Index Glass, Inches.
⅛ Pt.	Up to 8	$5 60	$6 25	⅜	¾ x 2½	¾ x 3
½ "	8 to 10	7 00	7 50	½	¾ x 2½	¾ x 3¼
1 "	10 to 18	8 75	9 50	½	¾ x 3¼	¾ x 4
1 Qt.	18 to 30	11 25	12 50	½	¾ x 3¼	¾ x 6¾
½ Gal.	30 to 75	16 25	17 50	¾	¾ x 3¼	¾ x 6¾
1 "	75 & over	26 00	33 00	1	¾ x 3¼	¾ x 6¾

OIL FILLER

FOR DIRECT ATTACHING TO SIGHT FEED LUBRICATORS

HOW TO OPERATE

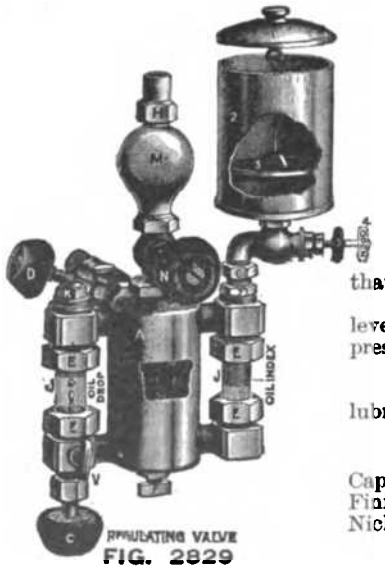


FIG. 2829

After the lubricator has been properly connected on the steam pipes or steam chest of an engine, close all valves tight. When filling oil reservoir A for the first time, charge the same with water, then attach filler, close shut off valve under the chamber, as indicated by the dotted lines. Remove lid, fig. 1, and fill chamber, fig. 2, full of oil—replace lid, then open valve, position 4. Now open drain valve F at bottom of oil reservoir, and as fast as the water is drawn off the oil in filler will replace same in oil reservoir A. As soon as oil begins to appear at vent cock F, close same, as it indicates that the lubricator is full. Then immediately close valve underneath filler. The lubricator is now ready for operation.

CAUTION.—Before opening steam valve D and water valve N of lubricator, be sure that filler shut off valve is closed.

When contents of oil reservoir A has been used and is ready for refilling, before opening lever valve in filler be careful to first open drain valve F to relieve reservoir of any steam pressure remaining.

N. B.—Always keep the filler ready charged with oil; never allow it to be empty.

The strainer, fig. 3, in filler will catch all dirt and grit, allowing only clean oil to pass to lubricator. Clean strainer frequently.

We recommend using a filler double the capacity of the lubricator.

PRICES, FILLER ONLY, FIG. 2829

Capacity.....	⅛ Pint.	½ Pint.	1 Pint.	1 Quart.	½ Gallon.	1 Gallon.
Finished, each.....	$3 25	$3 75	$5 00	$6 25	$8 75	$11 25
Nickel plated, each....	3 75	4 50	5 75	7 00	10 00	13 25

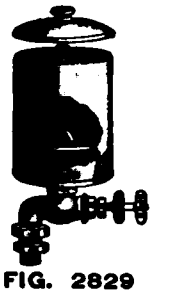


FIG. 2829

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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DOUBLE CONNECTION SIGHT FEED LUBRICATORS

AUTOMATIC SIGHT FEED LUBRICATOR

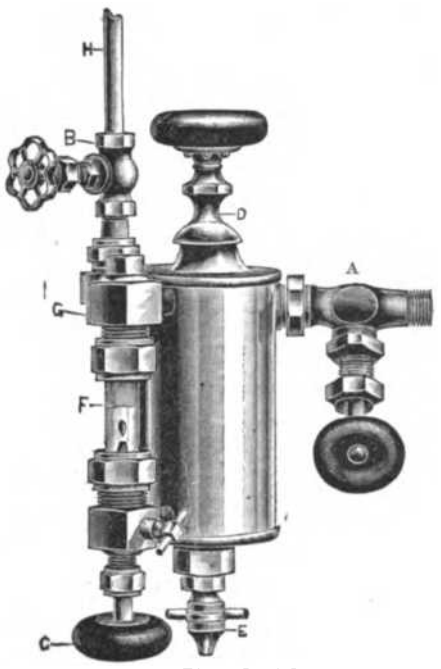


FIG. 2830

All parts are heavy and made of best steam metal, insuring strength and durability in service. Cup is attached to steam pipe at A, through which valve the oil passes to engine. H is condensation pipe, which should not be less than two feet long and at least of one-quarter inch pipe size. Opening for filling cup D is large, and receives oil without hindrance in filling. To operate cup, fill with oil or melted tallow; see that condensation pipe H contains water, not steam. Open valve A wide when sight glass F becomes filled with water; next open valve B of condensation pipe, then open valve C, by which you secure the exact feed required. When the oil in cup has all fed out, close all valves; open cock E and filling plug D, to allow the water to escape, after which fill with oil and operate as before.

PRICES

Sizes.	Finished Brass.	Nickel Plated.	Suitable for Engines with Cylinder Diameter as follows:
⅛ pint	$15 00	$17 00	6 inch and less
½ "	18 00	20 00	10 inch and less
1 "	24 00	27 00	18 inch and less
1½ "	30 00	35 00	24 inch and less
2 "	36 00	42 00	30 inch and less
4 "	45 00	52 00	30 inch and upward

CYLINDER LUBRICATOR

It has no tubes in it to clog or choke.

It will not chill or freeze while steam is turned on it.

It is made of solid brass castings, from the best material obtainable.

All passages are drilled and therefore perfectly uniform in size, and smooth.

It does not require an extra valve in the steam pipe leading to the lubricator.

The frame is so heavy that it is an impossibility to get the glass out of line.

No condensing chamber to freeze and burst.

1 inch diameter by 2 inch length.

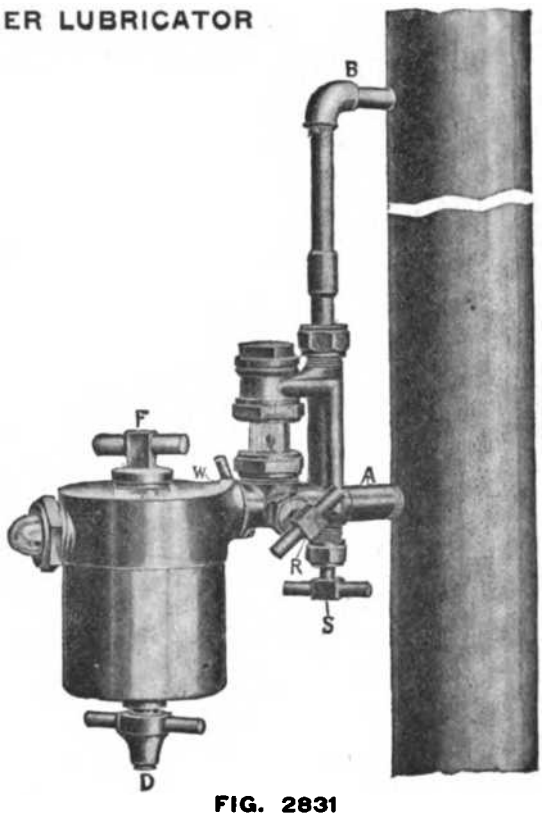


FIG. 2831

PRICES

Capacity	⅛ Pt.	½ Pt.	¾ Pt.	1 Pt.	1½ Pt.	1 Qt.	1½ Qt.	2 Qt.
Brass Blk., each	$12 00	15 00	18 00	20 00	25 00	30 00	36 00	46 00
Brass Polished, each	13 00	16 00	19 00	21 00	26 00	31 00	37 25	47 50
Brass Nickel, each	14 00	17 00	20 00	22 00	27 00	32 00	38 50	49 00

BUFFALO SIGHT FEED CYLINDER LUBRICATORS

FOR PORTABLE ENGINES, STEAM PUMPS, ETC.

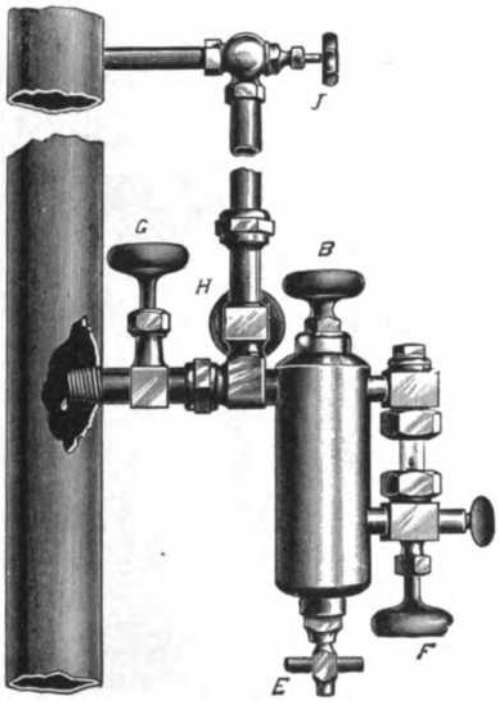


FIG. 2832

PRICES, CLASS A, SINGLE GLASS

Sizes.	Brass Finished.	Nickel Plated.
⅛ pint	$16 00	$19 00
½ "	18 00	22 00
1 "	20 00	24 00
1½ "	24 00	28 00
1 quart	36 00	40 00

FOR STATIONARY ENGINES, STEAM PUMPS, ETC.

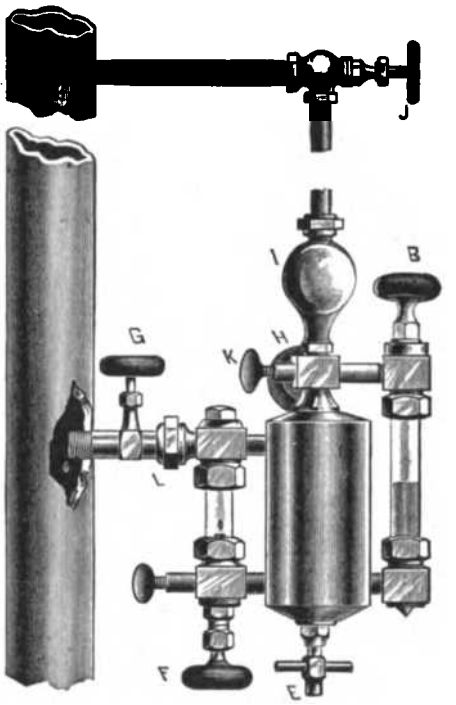


FIG. 2833

PRICES, CLASS B, DOUBLE GLASS

Sizes.	Brass Finished.	Nickel Plated.
½ pint	$22 00	$25 00
1 "	30 00	35 00
1½ "	35 00	40 00
1 quart	45 00	50 00
½ gallon	60 00	65 00
1 "	75 00	80 00

WITH UP FEED

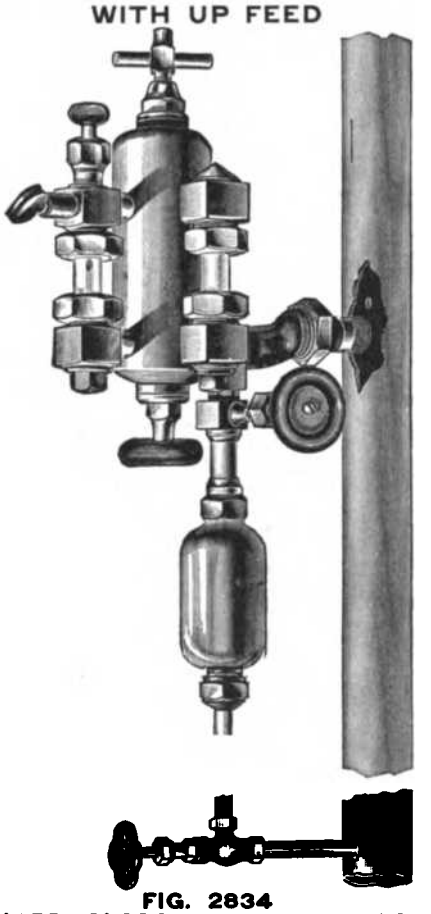


FIG. 2834

PRICES, CLASS D, DOUBLE GLASS

Brass Finished and Polished. Sizes Guaranteed Full Measurement.

⅛ pint	$10 00	1½ pint	$22 00
½ "	15 00	1 quart	28 00
1 "	18 00	½ gallon	36 00
		1 Gallon	$50 00

Add 10 per cent. to net price for nickel plating.

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DOUBLE CONNECTION SIGHT FEED LUBRICATORS

ACME, CLASS A

WITH PATENT SLIP JOINT CONNECTION

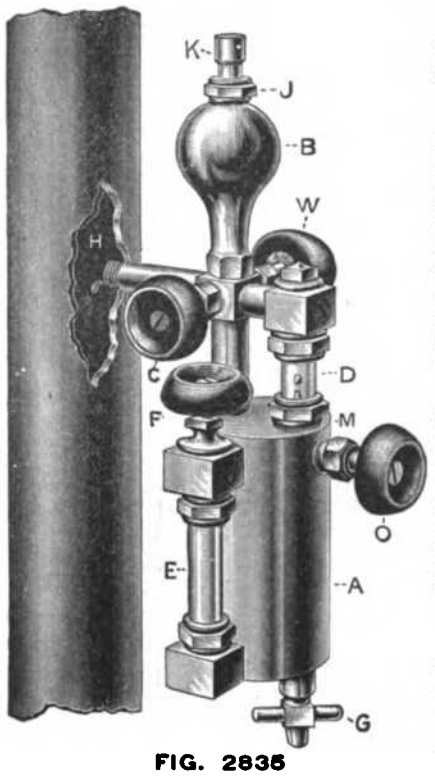


FIG. 2835

DESCRIPTION, FIG. 2835

A—Oil reservoir.
B—Condenser.
C—Valve to regulate pulsation, and to be used in case of breakage of glass.
D—Sight feed glass.
E—Gauge glass.
F—Filler stopple.
G—Drain valve.
H—Steam pipe.
I—Plug over sight feed glass.
JJ—Slip joint.
K—Condensing pipe.
L—Angle valve.
M—Air vent.
O—Valve to regulate flow of oil.
W— " " " water.

All Class A standard lubricators have patent slip joint connection for coupling the condensing pipe to the condenser, allowing of an adjustment should a mistake be made in drilling the holes in steam pipe for connecting, assuring tight joints, and it is always a convenience in making connections.

PRICES, FIG. 2835

	Brass.	Nickel Plated.
⅓ pint	$17 00	$20 00
½ "	22 00	25 00
1 "	30 00	35 00
1 quart	45 00	50 00
½ gallon	60 00	65 00
1 "	75 00	80 00

Brass condensing pipe and angle valve furnished when desired at 75c. extra.

ACME, CLASS B

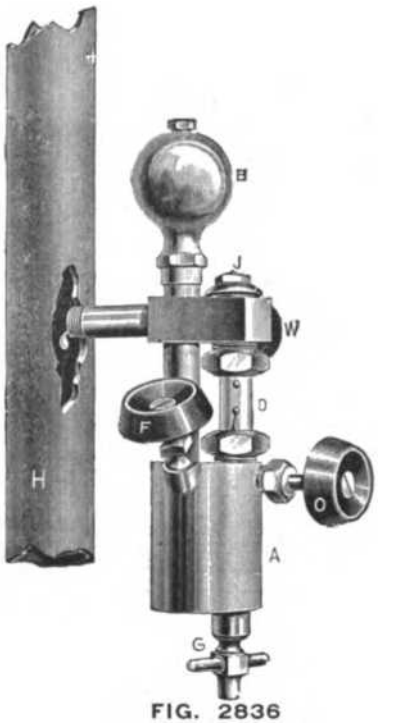


FIG. 2836

DESCRIPTION

A—Oil reservoir.
B—Condenser.
D—Sight feed glass.
F—Filler stopple.
G—Drain valve.
H—Steam pipe.
J—Plug over sight feed glass.
O—Valve to regulate flow of oil.
W— " " " water.

PRICES, FIG. 2836

	Brass Finish.	Nickel Plated.
⅓ pint	$16 00	$20 00
½ "	20 00	23 00
1 "	28 00	32 00
1 quart	40 00	47 00

IMPROVED HANDY DROP FEED LUBRICATORS

FOR STATIONARY AND PORTABLE ENGINES OF ALL KINDS, STEAM PUMPS, ETC.

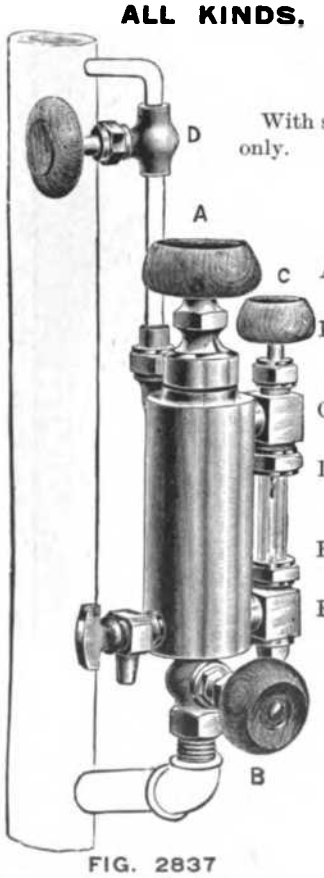


FIG. 2837

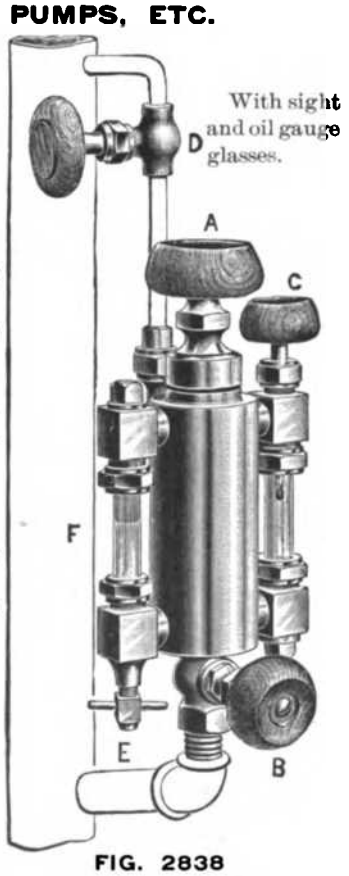


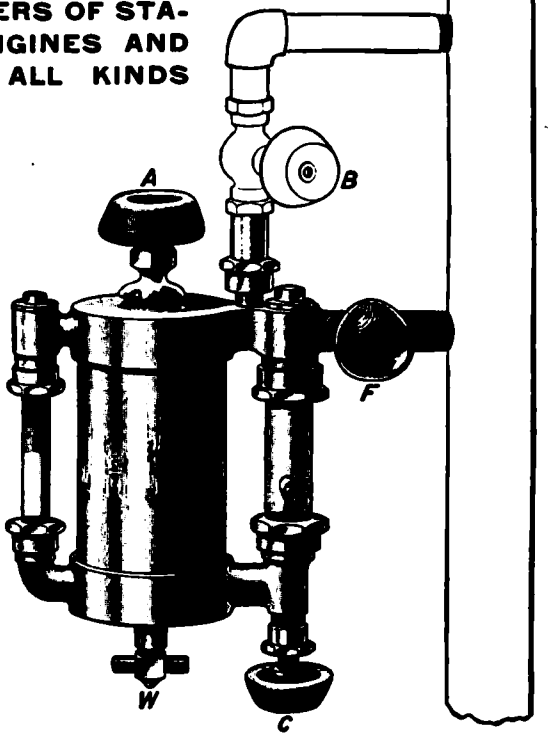
FIG. 2838

PRICES, NICKEL PLATED

Sizes, Nos	1	2	3	4	5	6	7
Approximate capacity in pints.	¼	⅓	½	¾	1	1½	2
With sight glass only	$8 00	$10 00	.....	.....	.....	.....	.....
" and oil gauge glass	....	....	$14 00	$16 00	$18 00	$24 00	$30 00

DEFENDER UP DROP SIGHT FEED LUBRICATOR

FOR STEAM CHESTS AND CYLINDERS OF STATIONARY ENGINES AND PUMPS OF ALL KINDS



A—Filling plug.
B—Steam valve.
C—Regulating valve.
F—Oil discharge valve.
W—Waste cock.

FIG. 2839

DIRECTIONS FOR APPLICATION

1—Connect the lubricator to main steam pipe by the shank at end of valve F. 2—Connect top condensing pipe (which is ⅛ in. to ⅜ in. pipe size, according to size of lubricator) to main steam pipe, placing valve B in the most convenient position. 3—The connection between main steam pipe and valve F must be above the throttle, so that pressure will remain on the cup when throttle is closed. In ordering these lubricators take notice that the smallest size has no oil gauge glass.

PRICES

	WITHOUT OIL GAUGE GLASS	WITH OIL GAUGE GLASS			
Sizes	½ pint.	½ pint.	¾ pint.	1 pint.	1½ pints.	1 quart.
Each (nickel plated)	$14 00	$20 00	$24 00	$30 00	$36 00	$44 00

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DOUBLE CONNECTION SIGHT FEED LUBRICATORS

DEFENDER EQUALIZED DOUBLE FEED LUBRICATOR

FOR SINGLE CYLINDER OR COMPOUND ENGINES

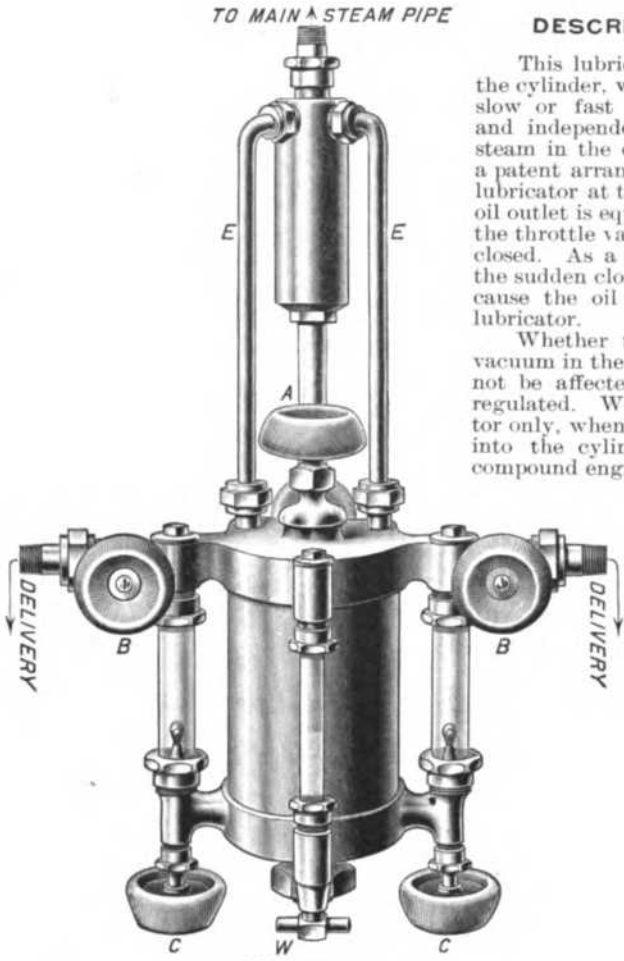


FIG. 2840

DESCRIPTION, FIG. 2840

This lubricator has a direct delivery to the cylinder, which feeds the oil uniformly, slow or fast as circumstances require, and independently of the action of the steam in the cylinder or valve chest. By a patent arrangement, the pressure in the lubricator at the point of steam inlet and oil outlet is equalized at all times, whether the throttle valve of the engine is open or closed. As a result of this arrangement, the sudden closing of the throttle will not cause the oil to be siphoned out of the lubricator.

Whether there is boiler pressure or vacuum in the cylinder, the lubricator will not be affected, if properly handled and regulated. We furnish this type of lubricator only, when the oil is delivered directly into the cylinders of single cylinder or compound engines.

PRICES, FIG. 2840

Size.....	1 Pt.	1½ Pts.	1 Qt.	½ Gal.
Nickel Plated.....	$36.00	$48.00	$60.00	$84.00

UP DROP SIGHT FEED LUBRICATOR

FOR STEAM CHEST AND CYLINDERS OF STATIONARY ENGINES AND PUMPS OF ALL KINDS

DESCRIPTION FIG. 2841

A—Filling plug.
B—Steam valve.
C—Regulating valve.
D—Water valve.
E—Condenser.
G—Oil discharge shank.
W—Waste cock.

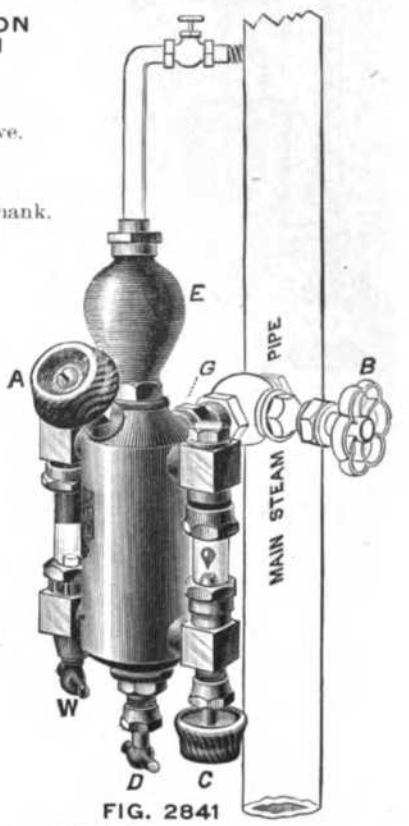


FIG. 2841

PRICES

The lubricators are nickel plated, unless otherwise ordered.

Size,	⅛ pt.	¼ pt.	¾ pt.	1 pt.	1½ pt.	1 qt.
Each,	$16 00	$20 00	$24 00	$30 00	$36 00	$44 00

AUTOMATIC SIGHT FEED LUBRICATOR

FOR STATIONARY ENGINES


FIG. 2843

DESCRIPTION FIG. 2843

It has a positive flash feed, seen in a good light fifty feet. Its body is cast in one piece, avoiding joints and leakage. Only the best steam metal, copper and tin, is used. You can use dark or light oil, and see its working perfectly. It will work the hardest tallow in the coldest weather.

PRICES, FIG. 2843

Capacity	¼ Pt.	½ Pt.	½ Pt.	1 Pt.	1½ Pt.	1 Qt.
Pipe Thread,	⅜ in.	⅜ in.	⅜ in.	½ in.	½ in.	½ in.
Brass Finish,	$10 00	$12 00	$16 00	$22 00	$28 00	$34 00
Nickel Plated,	12 00	14 00	20 00	26 00	32 00	40 00

VOLUNTEER UP DROP SIGHT FEED LUBRICATOR

FOR STATIONARY ENGINES AND PUMPS OF ALL KINDS

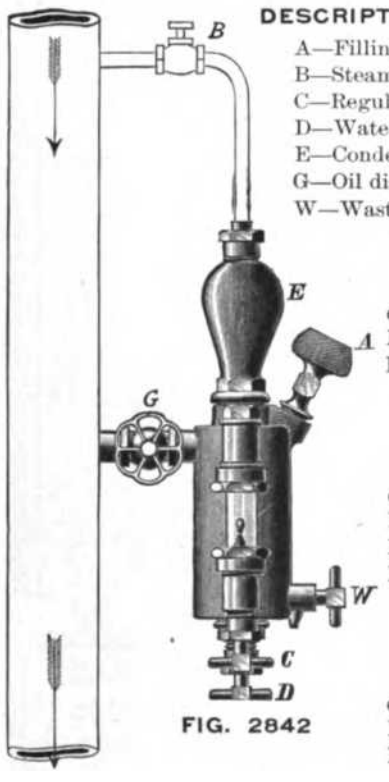


FIG. 2842

DESCRIPTION, FIG. 2842

A—Filling plug.
B—Steam valve.
C—Regulating valve
D—Water valve.
E—Condenser.
G—Oil discharge shank.
W—Waste cock.

PRICES FIG. 2842

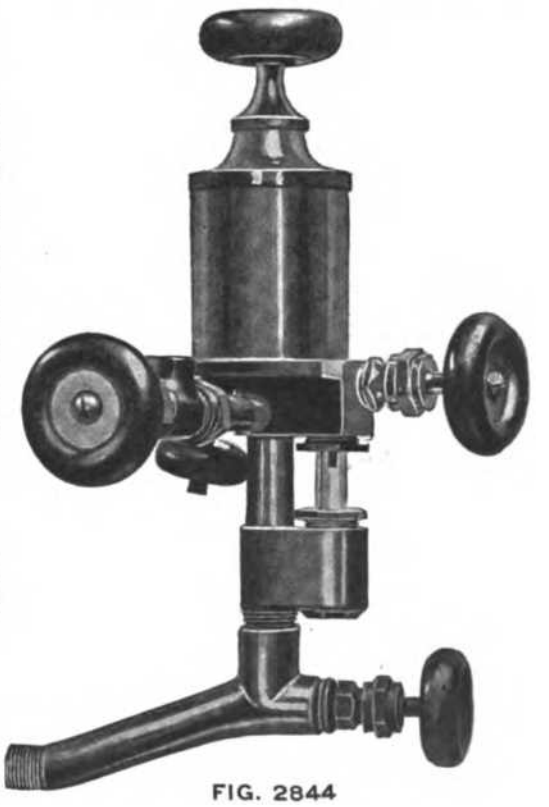
Capacity,	⅛ pt.	¼ pt.	⅜ pt.
Nos.	1	2	3
Each,	$10 00	$12 00	$15 00

PRICES, FIG. 2844

Including valve for connecting.

Capacity	¼ pt.	⅛ pt.	½ pt.	1 pt.	1 qt.
Brass, each,	$8 00	$9 00	$10 00	$12 00	$16 00
Nickel Plated, each,	9 00	10 50	12 00	15 00	20 00

IDEAL DOWN FEED LUBRICATOR


FIG. 2844

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DOUBLE CONNECTION SIGHT FEED LUBRICATORS

CLASS B

Cylinder lubricator with gauge glass.

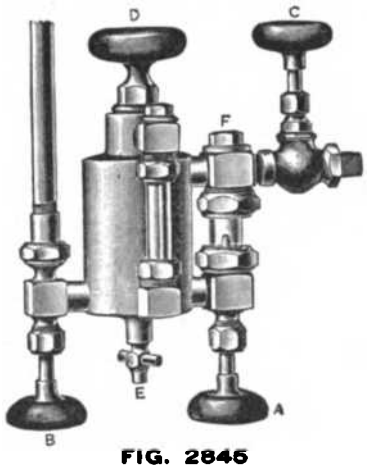


FIG. 2845

DIRECTIONS, FIG. 2845

Connect the lubricator to steam pipe above throttle when possible. Fill with oil at D, and with water at F. Screw both valves down tight, and start valve B about one half turn. Open valve C about one turn, and regulate by valve A. When the oil is exhausted, close valves A and B, open draw off E, and remove cap D. When the water has run off, close draw off E tight, and fill and operate as before. It is important that there be no leak at valves or joints.

PRICES

	Brass.	Nickel.
⅛ pint	$13 50	$16 00
½ "	16 00	19 00
1 "	20 00	24 00
1½ "	25 00	30 00
1 quart	30 00	35 00
½ gallon	45 00	50 00

Pipes furnished on all sizes above half pint.

CLASS A

With sight feed, up drop and iron wheels.

PRICES, FIG. 2846

	Brass.	Nickel.
¼ pint	$4 25	$5 00
⅛ "	5 25	6 00
½ "	6 25	7 00
1 "	8 00	9 00
1½ "	10 00	12 00

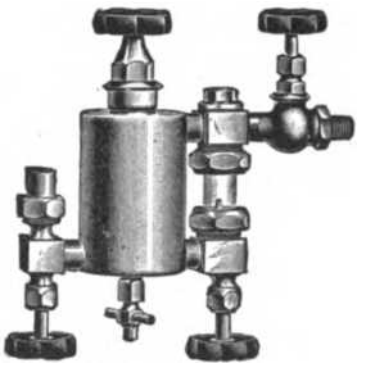


FIG. 2846

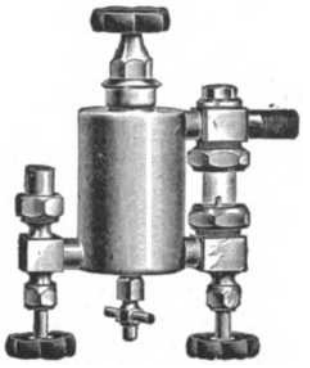


FIG. 2847

CLASS E

Sight feed only, without valve. Iron wheels.

PRICES, FIG. 2847

	Brass.	Nickel.
¼ pint	$3 75	$4 50
⅛ "	4 75	5 50
½ "	5 50	6 25
1 "	7 00	8 00

ENGINEERS' FAVORITE SIGHT FEED LUBRICATORS

DESCRIPTION, FIGS. 2848 AND 2849

The glass in these cups shows the rate of feed in drops, and the quantity of oil in the reservoir, lessening the liability of breakage and leakage one half, etc. These cups do not stop, increase or decrease their feed after being regulated, but will feed regularly from morning until night. Classes E and F are substantially the same as class B.

CLASS B

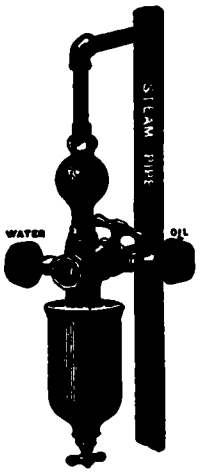


FIG. 2848

PRICES, FIG. 2848

½ pint, brass finish	$22 00
1 " " "	28 00
1 quart, " "	40 00
½ gallon, " "	55 00
1 " " "	70 00
½ pint, nickel plate	27 00
1 " " "	33 00
1 quart, " "	46 00
½ gallon, " "	63 00
1 " " "	75 00

CLASSES E AND F

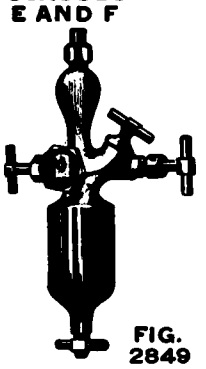


FIG. 2849

PRICES, FIG. 2849

CLASS E

⅛ pint, plain brass	$12 50
½ " " "	17 50
1 " " "	23 00
⅛ " nickel plate	15 00
½ " " "	20 00
1 " " "	26 00

CLASS F

⅛ pint, partly bronzed	$12 00
½ " " "	16 50
1 " " "	21 00

CLIPPER SIGHT FEED LUBRICATOR

For engines, pumps, etc.

PRICES, FIG. 2850

Nos.	Sizes.	Each.
1671	½ pint	$8 00
1672	1 "	10 00
1673	1 quart	15 00

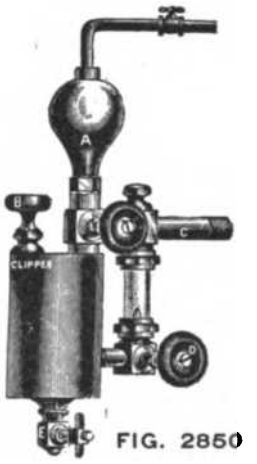


FIG. 2850

SEIBERT LUBRICATORS FOR MARINE AND STATIONARY ENGINE CYLINDERS

SIZES, NOS. 3 AND 4

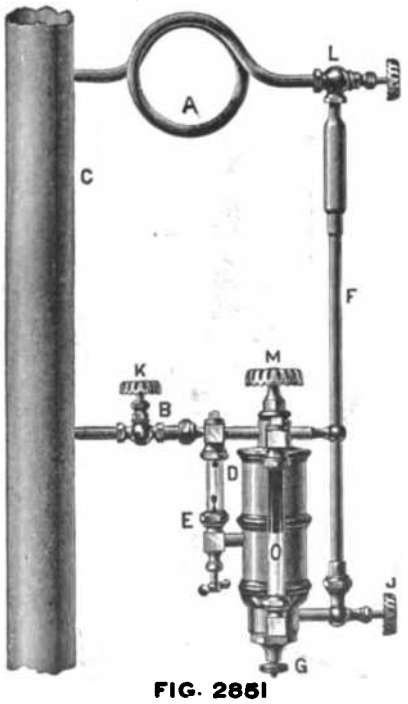


FIG. 2851

Made up right and left hand. Above cut shows a right hand.

DESCRIPTION

These lubricators feed oil drop by drop to the cylinder through glass filled with water.

A—The condensing pipe.
B—The discharge pipe.
C—The steam pipe from the boiler.
D—The oil reservoir.
E—Sight feed, showing drop of oil passing up through water to cylinder.
F—The pipe for condensed water.
M—Plug through which to refill lubricator.
G—Waste cock to draw off the water.
L—The valve to admit steam.
J—Valve to feed the condensed water under the oil.
K—Discharge valve.

PRICES, FIGS. 2851 AND 2852

Nos.								Brass Finished, with Sight Feed.	Nickel Plated, with Sight Feed.
1	⅛ pint	for	10	horse	power	engine	....	$10 00	$11 00
2	½ "	"	25	"	"	"	....	12 50	13 75
3	1 "	"	150	"	"	"	....	17 50	19 00
4	1 quart	"	300	"	"	"	....	25 00	27 50
5	½ gallon	"	500	"	"	"	....	35 00	38 00
6	1 "	"	500	"	"	"	or more,	45 00	49 00

SIZES, NOS. 1 AND 2

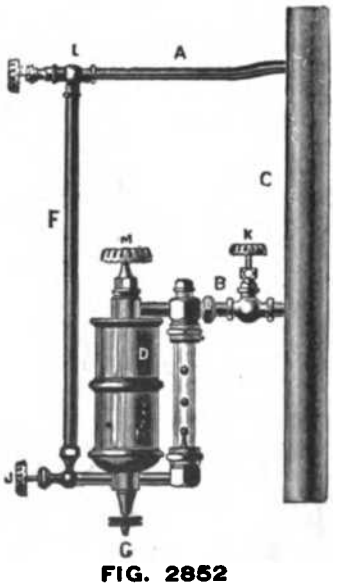


FIG. 2852

The above cut shows the ordinary method of connecting the lubricator to the steam pipe.

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DOUBLE CONNECTION SIGHT FEED LUBRICATORS

COMPOUNDED SIGHT FEED LUBRICATORS

DOUBLE SIGHT FEED

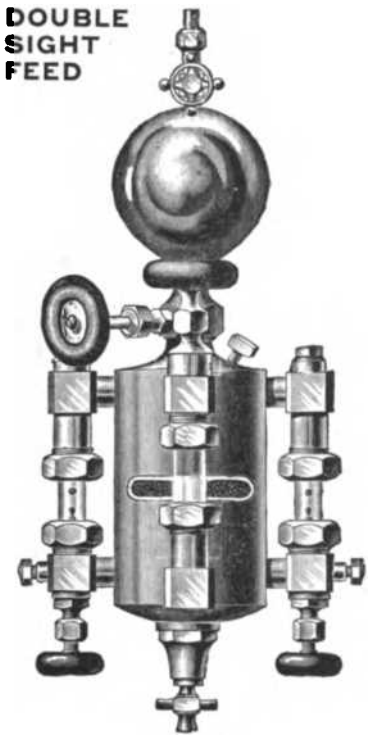


FIG. 2853
FRONT VIEW

Feeds regularly, through entirely distinct and separate passages, one high pressure and one low pressure cylinder, regardless of fluctuation of pressure.

PRICES, FIG. 2853.

Capacity	1 Pint.	1 Quart.	1½ Quart.	½ Gallon.	1 Gallon.
Brass finish	$24 00	$30 00	$36 00	$44 00	$60 00
Nickel plated	25 50	32 00	38 00	47 00	66 00
Size sight feed gl. inches	2½x¾	2½x¾	2½x¾	2½x¾	4x¾
Size gauge glasses, "	2¾x¾	2¾x¾	2¾x¾	4¼x¾	6x¾
Steam connection, "	¾	¾	¾	¾	¾
Cylinder " "	¼	¼	¼	¼	¼

TRIPLE SIGHT FEED

For compound and triple expansion engines.

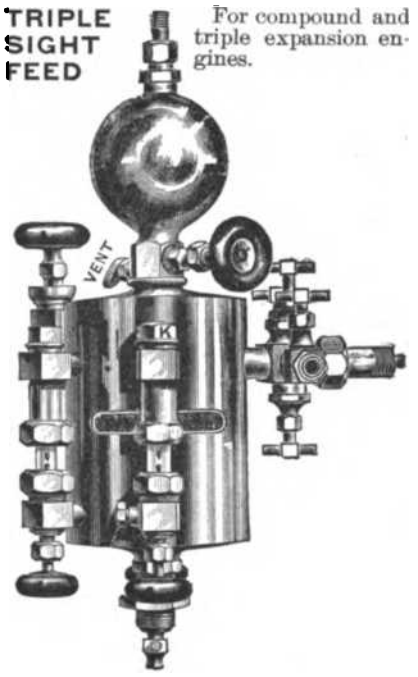


FIG. 2854
SIDE VIEW

Feeds regularly, through entirely distinct and separate passages, one high pressure, one intermediate and one low pressure cylinder, or one high pressure and two ends of one low pressure cylinder, regardless of the fact that steam is at variance.

QUADRUPLE SIGHT FEED

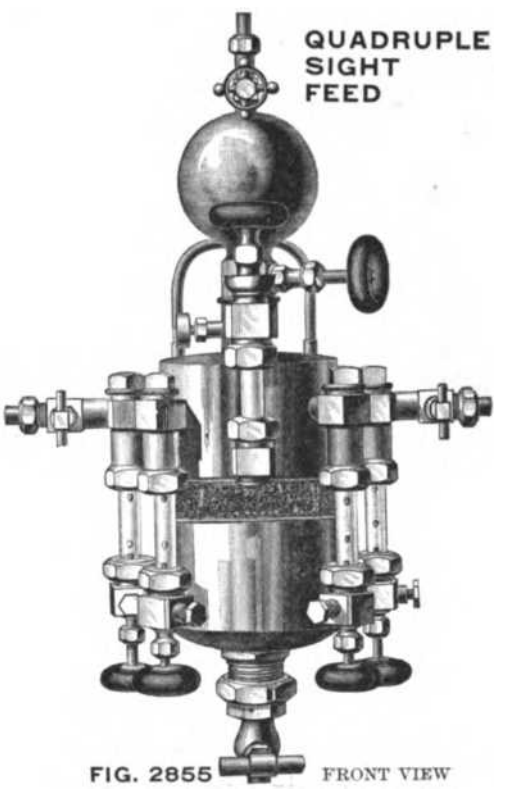


FIG. 2855 FRONT VIEW

The high pressure feed is purely hydrostatic. Compounded with it are three equalized spraying feeds that deliver oil, without varying, to three other cylinders having fluctuating pressures, any of which may fall to vacuum without affecting the feed regulation.

PRICES, FIG. 2854

Capacity	1½ Quart.	½ Gallon.	1 Gallon.
Brass finish	$38 00	$50 00	$70 00
Nickel plated	40 00	53 00	76 00
Size sight feed glasses, inches	2½x¾	2¾x¾	4x¾
Size gauge glasses, inches	2¾x¾	2¾x¾	6x¾
Steam connection, inches	¾	¾	¾
Cylinder " "	¼	¼	¼

CYCLONE AUTOMATIC SIGHT FEED LUBRICATOR

With patent automatic steam chamber in oil reservoir.

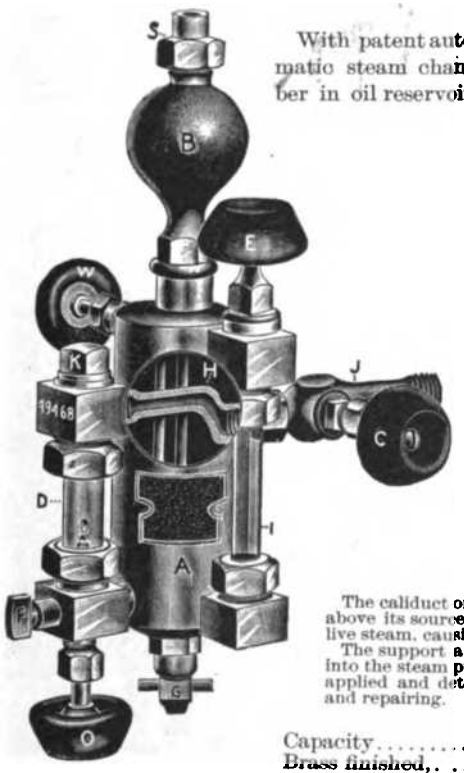


FIG. 2856

PRICES FIG. 2855

Capacity	1 Quart. without gauge glass	½ Gallon. without gauge glass	1 Gallon.
Brass finish	$60 00	$70 00	$90 00
Nickel plated	63 00	74 00	96 00
Size sight feed glasses, inches	2¾x¾	2¾x¾	4x¾
Size gauge glasses, inches	.....	.....	6x¾
Steam connection, "	¾	¾	¾
Cylinder " "	¼	¼	¼

Prices Figs. 2853, 2854 and 2855, include bracket, perpendicular stand, or goose neck stand support.

DESCRIPTION, FIG. 2857

This lubricator is of the simple hydrostatic principle, and will lubricate two points of one high pressure cylinder, or two high pressure cylinders, providing its condense tube is tapped into high pressure; or it will lubricate two points of one low pressure cylinder, or two low pressure cylinders, providing its condense tube is tapped into a pressure equal to and fluctuating simultaneously with the pressure of the low pressure cylinders.

PRICES, FIG. 2857

Prices include bracket, perpendicular stand. or goose neck stand support.

Capacity	1 Pint.	1 Quart.	1½ Quart.	½ Gal.	1 Gal.
Brass finish	$16 00	$20 00	$24 00	$30 00	$40 00
Nickel plated	17 50	22 00	26 00	33 00	45 00
Size sight feed gl.in..	3x¾	3x¾	3x¾	3x¾	3x¾
Size gauge gl.inches.	3¾x¾	4x¾	5¾x¾	6½x¾	6x¾
Cylinder con. inches.	¼	¼	¼	¼	¼

DESCRIPTION, FIG. 2856

The caliduct or steam heating chamber within the oil reservoir, having its bottom in a plane above its source of steam supply, is continually drained of condensation, and therefore always filled with live steam, causing the heaviest oil to feed freely and at a high temperature even in the coldest weather.

The support arm, J, is separate from the cup, and contains the globe valve, C, which being screwed into the steam pipe first, the lubricator proper is then connected by a union; consequently the cup is easily applied and detached while steam is on the main steam pipe of engine, a great convenience for cleaning and repairing.

PRICES, FIG. 2856

Capacity	⅛ Pint.	½ Pint.	1 Pint.	1 Quart.	½ Gallon.	1 Gallon.
Brass finished, Each	$13 30	$15 00	$20 00	$26 75	$38 35	$60 00
Nickel plated, "	14 30	16 00	21 35	28 35	40 35	63 35
Size sight feed glasses, inches	⅝x2¾	¾x2¾	¾x2⅝	¾x2¾	¾x3¼	¾x3¼
Size gauge glasses, inches	⅝x2¾	⅝x2¾	⅝x3¾	⅝x4¾	¾x7¼	¾x8¾
Shanks, threaded, inches	⅜	½	½	½	¾	¾

DOUBLE SIGHT FEED LUBRICATOR

For lubricating two points of one cylinder, or two cylinders having equal pressure.

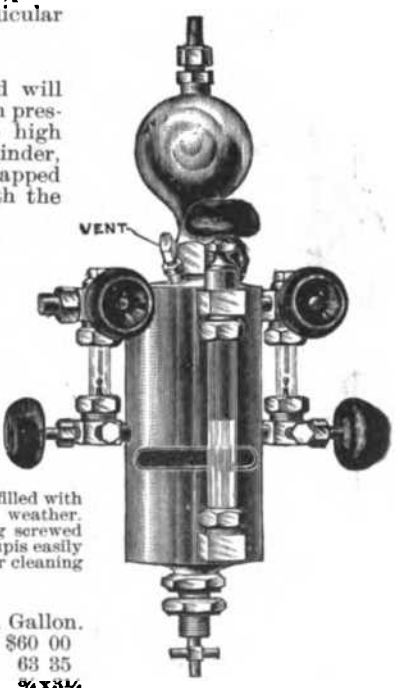


FIG. 2857

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DOUBLE CONNECTION AUTOMATIC SIGHT FEED LUBRICATORS

JUNIOR CUP

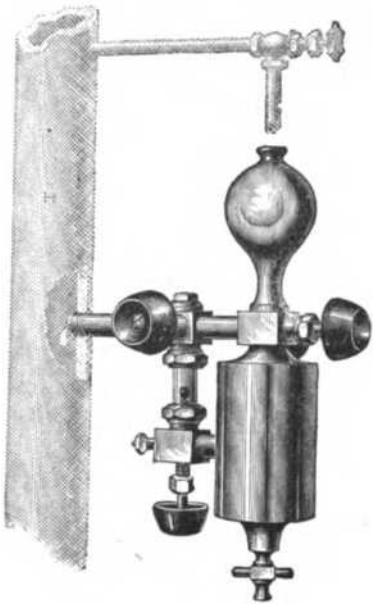


FIG. 2858

PRICES FIG. 2858

Capacity.	Size Sight Feed Glasses, Inches.	Shank, Inches.	Brass, Each.	Nickel, Each.
¼ Pint	2 x ⅝	⅜	$9 00	$10 00
⅓ "	2 x ⅝	⅜	10 65	11 65
½ "	2¼ x ¾	⅜	12 25	13 70
1 "	2¾ x ¾	⅜	17 25	18 70
1 Quart	2½ x ¾	½	24 00	25 70

CYCLONE CUP

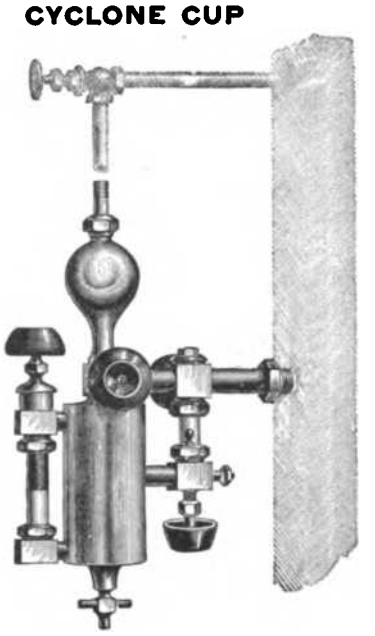


FIG. 2859

PRICES, FIG. 2859

Capacity.	Brass Finished, Each.	Nickel-plated, Each.	Size Sight Feed Glasses, Inches.	Size Gauge Glasses, Inches.	Shanks Threaded, Inches.
⅓ Pint...	$13 30	$14 30	2¼ x ⅝	2½ x ⅝	⅜
½ " ...	15 00	16 00	2¼ x ¾	2½ x ¾	⅜
1 " ...	20 00	21 35	2⅜ x ¾	3⅜ x ¾	½
1½ " ...	23 00	24 70	2½ x ¾	3½ x ¾	½
1 Quart ..	26 75	28 35	2½ x ¾	3⅞ x ¾	½
½ Gallon.	38 35	40 35	3¼ x ¾	5½ x ¾	¾
1 " ..	60 00	63 35	4¼ x ¾	6¼ x ¾	¾

HYDROSTATIC CUP

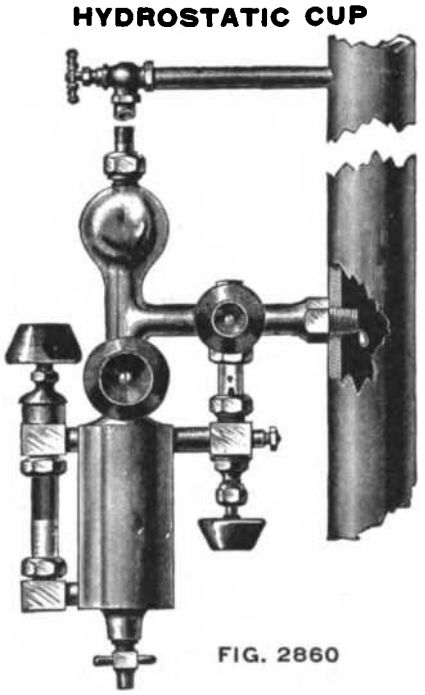


FIG. 2860

PRICES, FIG. 2860

Capacity.	Brass Finished, Each.	Nickel-plated, Each.	Size Sight Feed Glasses, Inches.	Size Gauge Glasses, Inches.	Shanks Threaded, Inches.
½ Pint....	$21 75	$23 00	2¼ x ¾	2½ x ¾	⅜
1 "	28 25	29 75	2⅜ x ¾	3⅜ x ¾	½
1½ "	31 25	33 00	2½ x ¾	3½ x ¾	½
1 Quart...	36 75	38 50	2½ x ¾	3⅞ x ¾	½
½ Gallon .	51 85	54 00	3¼ x ¾	5½ x ¾	¾
1 " .	80 00	83 75	4¼ x ¾	6¼ x ¾	¾

PORTABLE CUP

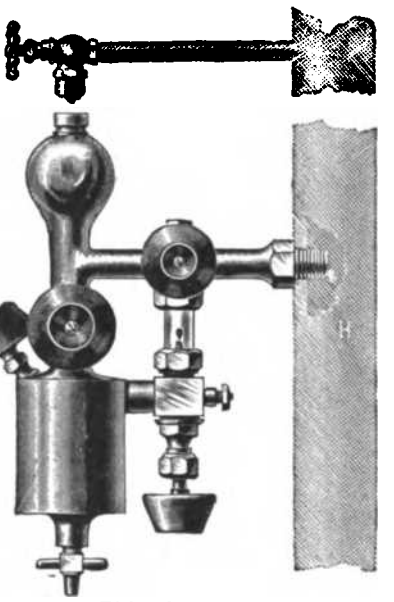


FIG. 2861

PRICES FIG. 2861

Capacity.	Size Sight Feed Glasses, Inches.	Shank, Inches.	Brass Finished, Each.	Nickle-plated, Each.
⅓ Pint.....	2¼ x ¾	⅜	$15 00	$16 00
½ "	2¼ x ¾	⅝	18 45	19 70
1 "	2½ x ¾	½	25 00	26 50

The Farmer Cup is a double connecting lubricator, especially adapted for any desired style of connection, straddling the throttle valve of engine making no difference whatever, which is particularly desirable for traction engines, causing the oil to maintain a high temperature in the coldest weather, absolute steady feed and impossibility of siphoning. Both the reservoir and sight feed glass drain valves are constructed so they can not be lost out.

FARMER CUP

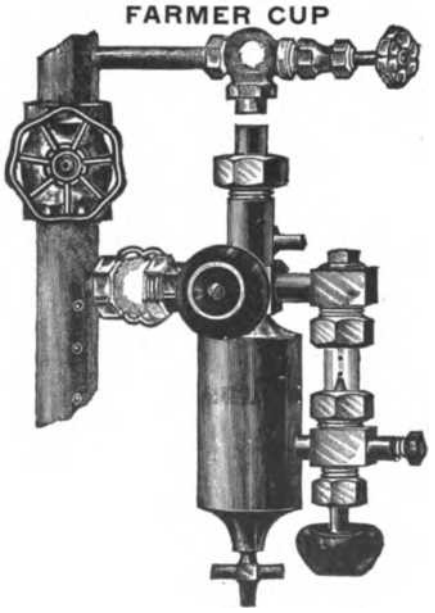


FIG. 2862

PRICES, FIG. 2862

Capacity.	Brass, Each.	Nickeled, Each.	Shank, Gas Pipe Thread, Inches.	Size Glasses, Inches.
¼ Pint.....	$11 00	$12 00	⅜	2½ x ¾
⅓ "	13 00	14 25	⅜	2½ x ¾
½ "	15 00	16 50	⅜	2½ x ¾
1 "	18 00	20 00	½	3 x ¾
1 Quart.....	23 00	25 50	½	3 x ¾

PRICES, FIG. 2863

Capacity.	Brass, Each.	Nickeled, Each.	Shank, Inches.	Size Sight Feed Glasses, Inches.
⅛ Pint.....	$6 75	$7 40	¼	1¾ x ⅝
¼ "	7 35	8 00	¼	2 x ⅝
⅓ "	8 00	9 00	⅜	2 x ⅝
½ "	10 00	11 00	⅜	2⅛ x ⅝
1 "	13 50	14 85	½	2⅛ x ¾
1 Quart.....	20 00	21 70	½	2⅛ x ¾

JAP CUP

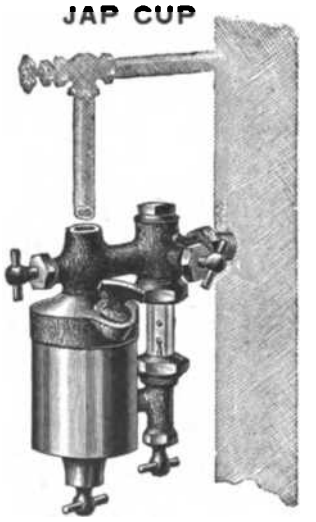


FIG. 2863

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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DOUBLE CONNECTION SIGHT FEED LUBRICATOR

FOR EXTREME COLD WEATHER AND EXPOSED PLACES

DESCRIPTION AND PRICES, FIG. 2864

J—Connecting union.
H—¼ inch female threaded tail pipe.
E—Plug to be removed for filling.
W—Valve to admit water into reservoir.
O—Valve to regulate feed of oil.
D—Sight feed glass.
K—Plug through which sight feed glass is inserted.
G—Drain cock of reservoir.
F—Drain cock of sight feed glass.
C—Valve to shut off steam should sight feed glass break.

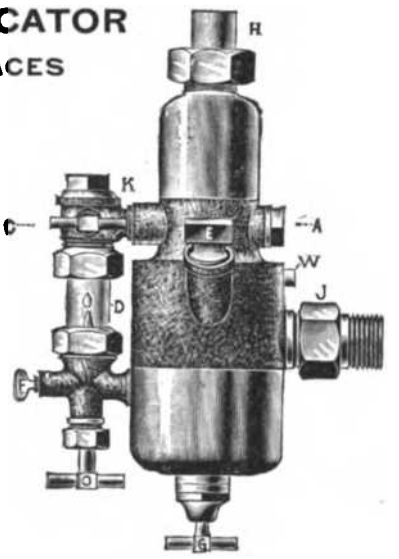


FIG. 2864

This lubricator is intended for traction, hoisting portable engines, and steam pumps operating in low temperatures. It keeps the oil hot in winter weather.

It has a patented automatic steam chamber within the oil reservoir, and is intended to have its condense tube attached above the throttle of engine, and its oil discharge arm attached below the throttle, or both connections on the boiler side of the throttle, thus maintaining live steam in the heating chamber within the oil reservoir as long as there is steam in the boiler.

The attaching arm is precisely at the center of supporting weight. The condenser and body are cast in one piece, preventing leaky joints and bringing the glass within perfect alignment, thus preventing breakage.

Capacity	⅛ Pint.	¼ Pint.	⅓ Pint.	½ Pint.	1 Pint.
Brass	$7 35	$8 70	$9 70	$11 70	$16 70
Nickeled	8 35	9 70	10 70	13 00	18 35

DOUBLE CONNECTION SIGHT FEED LUBRICATORS, WITH STAND

ATOMIZER, DOUBLE FEED

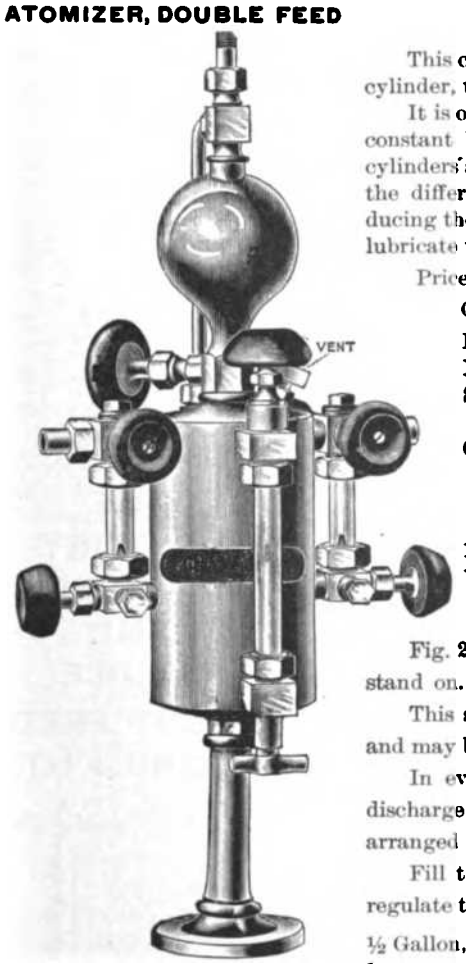


FIG. 2865

DESCRIPTION AND PRICES, FIG. 2865

This cup is for lubricating, with atomized feed, two points of one low pressure cylinder, two low pressure cylinders, or a low and vacuum cylinder.

It is of the equalized principle. Its condense tube must always be tapped into constant boiler pressure, and it will then deliver its oil direct to the points of the cylinders above described, accompanied by a current of steam, restricted, due to the difference between boiler and the lesser pressure of cylinders fed, thus introducing the oil to those cylinders having low temperatures in a form to completely lubricate the entire valve surface.

Prices include bracket, perpendicular stand, or goose neck stand support.

Capacity	1 Pt.	1 Qt.	1½ Qts.	½ Gal.	1 Gal.
Brass finish	$22 00	$28 00	$34 00	$42 00	$55 00
Nickel plated	23 50	30 00	36 00	45 00	60 00
Size, sight feed glasses, inches	3 x ¾	3 x ¾	3 x ¾	3 x ¾	3 x ¾
" gauge glasses "	3¾ x ¾	4 x ¾	5¾ x ¾	6½ x ¾	6 x ¾
Cylinder connection "	¼	¼	¼	¼	¼

SINGLE FEED

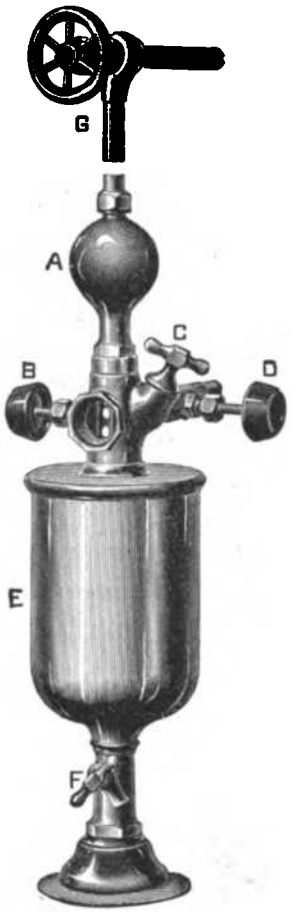


FIG. 2866

DESCRIPTION AND PRICES, FIG. 2866

A—Condenser.
B—Water or regulating valve.
C—Filling plug.
D—Oil discharge valve.
E—Oil reservoir.
F—Drain cock.
G—Steam pipe and valve.

Fig. 2866 represents Improved Sight Feed Lubricator, provided with a base to stand on.

This style is generally used on marine or on very large stationary engines, and may be placed some distance from the engine, to suit convenience.

In every case the steam pipe G should be about 24 inches higher than the oil discharge pipe at its highest point. In every other particular these pipes may be arranged to suit conditions of locations, etc.

Fill the reservoir E with clean oil, let on steam, open valve D one turn and regulate the feed by valve B.

½ Gallon, brass finish	$60 00	½ Gallon, nickel plated	$68 00
1 " " "	75 00	1 " " "	80 00

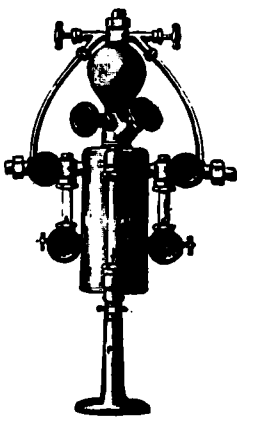
DOUBLE SIGHT FEED LUBRICATOR FOR COMPOUND ENGINES

DESCRIPTION AND PRICES, FIG. 2867

This lubricator is designed for use on compound engines, and is provided with equalizing tubes; thus, variations in pressure are properly equalized, preventing siphoning of the oil. Owing to the variety of methods employed in connecting lubricators of this kind, we can furnish them made in several styles, viz.: with brace stud and lock nut at back or bottom, and with vertical or horizontal stand. In ordering, always specify which style of support is desired, and, if wanted with stand, give height and base diameter of same. Cups furnished with stands are charged at a slightly higher price than those with brace studs. When necessary, we can furnish lubricators with any number of sight feeds. Prices on these special cups will be quoted upon application.

Sizes	1 Pint.	1½ Pints.	1 Quart.	½ Gallon.	1 Gallon.
Nickel plated without stand, each,	$36 00	$42 00	$48 00	$60 00	$80 00

On all sizes of cups, the unions at top of condenser connection and on oil delivery connections have ⅜ inch female pipe thread.


FIG. 2867

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DOUBLE CONNECTION SIGHT FEED LUBRICATORS, WITH STAND

DOUBLE SIGHT FEED FOR COMPOUND ENGINES

FRONT VIEW

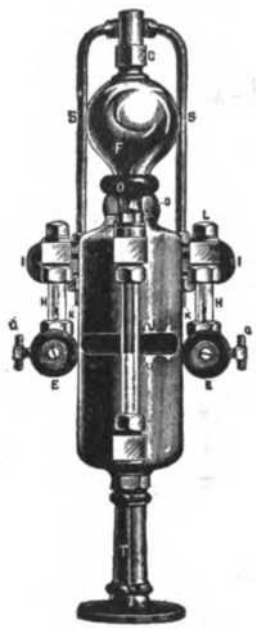


FIG. 2868

DESCRIPTION, FIG. 2868

A—Oil reservoir.
C—Extension top.
D—Water feed valve.
EE—Regulating valves.
F—Condenser.
G—Drain valve.
HH—Sight feed glasses.
II—Equalizing valves.
J—Gauge glass.
KK—Connection to cylinders.
LL—Plug to insert glass.
O—Filler plug.
QQ—Sight feed glass drain valves.
SS—Equalizing tubes.
T—Stand to support lubricator.

These double sight feed lubricators are intended particularly for use on compound engines. They have two sight feed glasses, and deliver the oil to both the high pressure and low pressure cylinders. Each sight feed is provided with an equalizing pipe, S, which supplies a current of steam to carry the drop of oil to its cylinder as soon as it rises through the glass. The two sight feeds are entirely separate from each other, and either one may be shut off without disturbing the other. Both sight feeds are protected from siphoning, so that it makes no difference which one is connected to the low pressure cylinder. They are supported by a stand, as shown in cut, or we will furnish a right angle stand when it will suit better, as in the case of some upright engines. These double sight feed lubricators are used by some engine builders to deliver oil to a single cylinder, one feed going to each end. We also furnish triple sight feed lubricators for triple expansion engines and quadruple feed lubricators for quadruple expansion engines. These are similar in construction to the double sight feed style, except that in the triple sight feed there are three sight feed glasses and three equalizing pipes, S, and in the quadruple feed style there are four sight feed glasses and four equalizing pipes.

To operate, open valve D and regulate flow of oil by valve E.

PRICES, FIG. 2868

Sizes.	Double Sight Feed. Brass.	Double Sight Feed. Nickel.	Triple Sight Feed. Brass.	Triple Sight Feed. Nickel.	Quadruple Sight Feed. Brass.	Quadruple Sight Feed. Nickel.
Quart	$60 00	$65 00	.....	.....	.....	.....
Half gallon	75 00	80 00	$90 00	$95 00	$125 00	$130 00
Gallon	90 00	96 00	105 00	110 00	150 00	155 00
Stands, extra	1 25	1 50	1 25	1 50	1 25	1 50

Each lubricator is tested under 800 pounds pressure before it leaves factory.
Pipe thread on oil delivery pipes ¼ inch.

SIDE VIEW

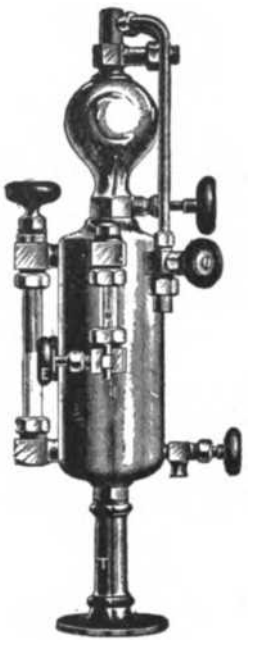


FIG. 2868

DOUBLE CONNECTION LUBRICATORS

CLASS D, DOUBLE SIGHT FEED

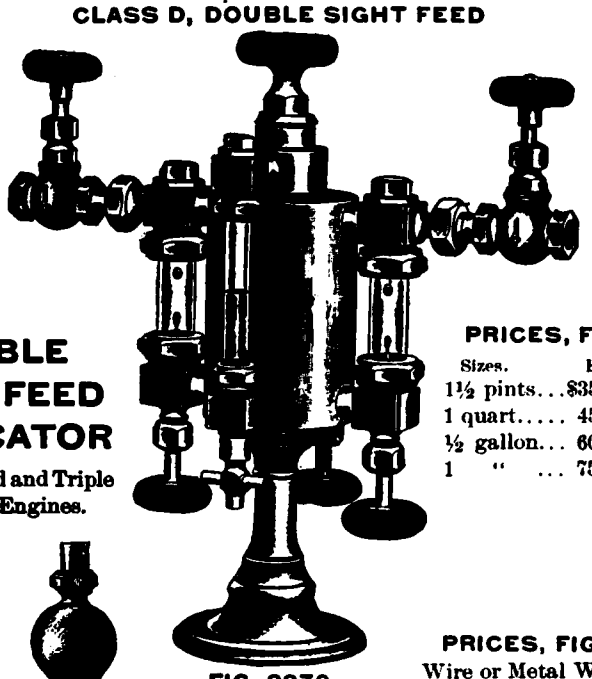


FIG. 2870

PRICES, FIG. 2870

Sizes.	Brass.	Nickel.
1½ pints	$35 00	$42 00
1 quart	45 00	55 00
½ gallon	60 00	70 00
1 "	75 00	85 00

CLASS C, SINGLE SIGHT FEED

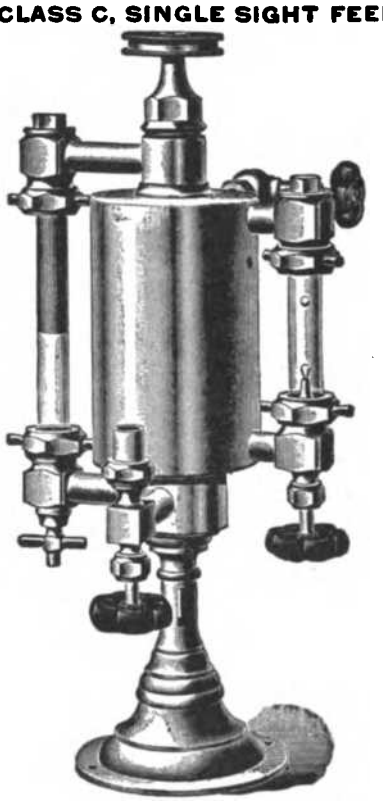


FIG. 2871

PRICES, FIG. 2871

Wire or Metal Wheels, as ordered.

Sizes.	Brass.	Nickel.
1½ pints	$32 00	$38 00
1 quart	40 00	45 00
2 "	55 00	60 00
4 "	70 00	85 00

DOUBLE SIGHT FEED LUBRICATOR

For Compound and Triple Expansion Engines.

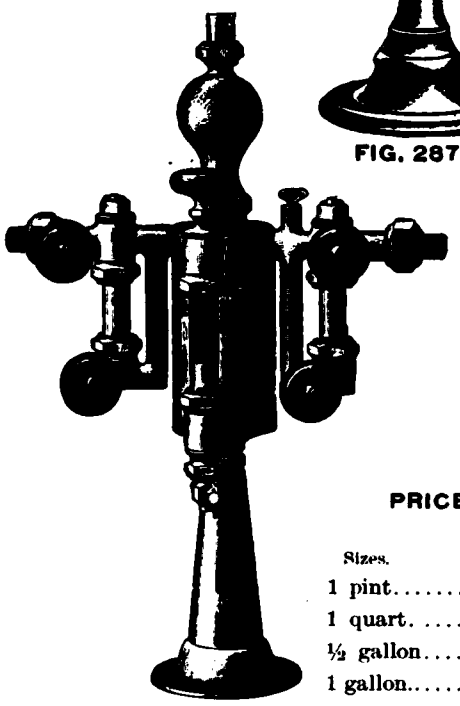


FIG. 2869

PRICES, FIG. 2869

Sizes.	Brass Finished.	Brass, Nickel Plated.
1 pint	$36 00	$45 00
1 quart	60 00	72 00
½ gallon	75 00	90 00
1 gallon	90 00	110 00

THE VICTORY DOUBLE AND TRIPLE SIGHT FEED LUBRICATOR

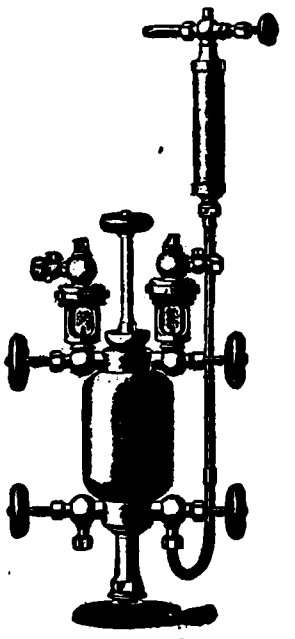


FIG. 2872

PRICES, FIG. 2872

Sizes.	Double Sight.	Triple Sight.	Nickel Plated.
½ pint, brass	$27 00	.....	$1 25
1 " "	37 00	$40 00	1 50
1 quart, "	55 00	60 00	2 00
½ gall. "	75 00	80 00	2 50
1 " "	95 00	100 00	3 00

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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DOUBLE CONNECTION SIGHT FEED CYLINDER LUBRICATORS WITH STAND

With short, large sight feed glasses for compound and other engines.

THE NEW PATTERN DOUBLE SIGHT FEED CYLINDER LUBRICATOR

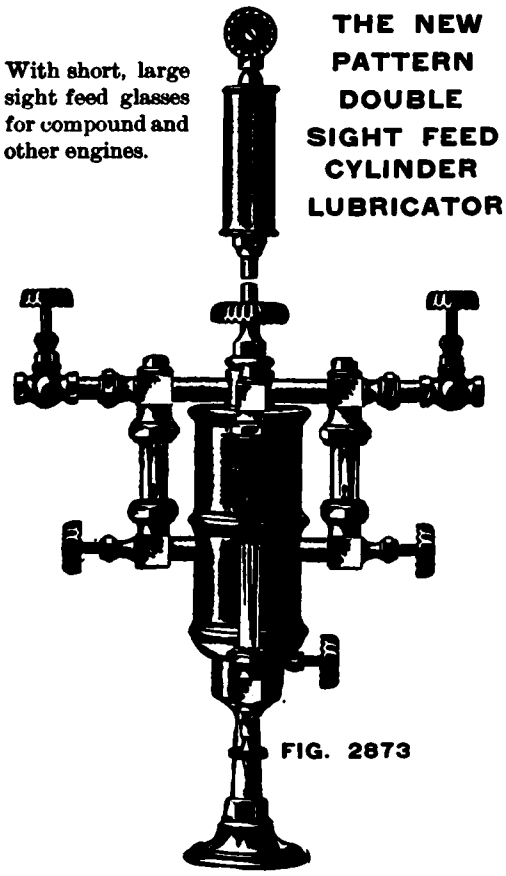


FIG. 2873

PRICES, FIG. 2873

Nos.		Brass.	Nickel Plated.
4	1 quart,	$32 50	$35 00
5	½ gallon,	42 50	46 00
6	1 "	57 50	62 50

We can furnish the double sight feed lubricators with either straight or curved bases as preferred.

PRICES, FIG. 2874

Nos.		Horse Power Engine.	Brass Finished with Sight Feed.	Nickel Plated, with Sight Feed.
3	1 pint	for 150	$17 50	$19 00
4	1 qt. "	300	25 00	27 50
5	½ gal. "	500	35 00	38 00
6	1 " "	500 or more	45 00	49 00

SINGLE SIGHT FEED LUBRICATOR

Made up right and left hand; cut shows a right hand.

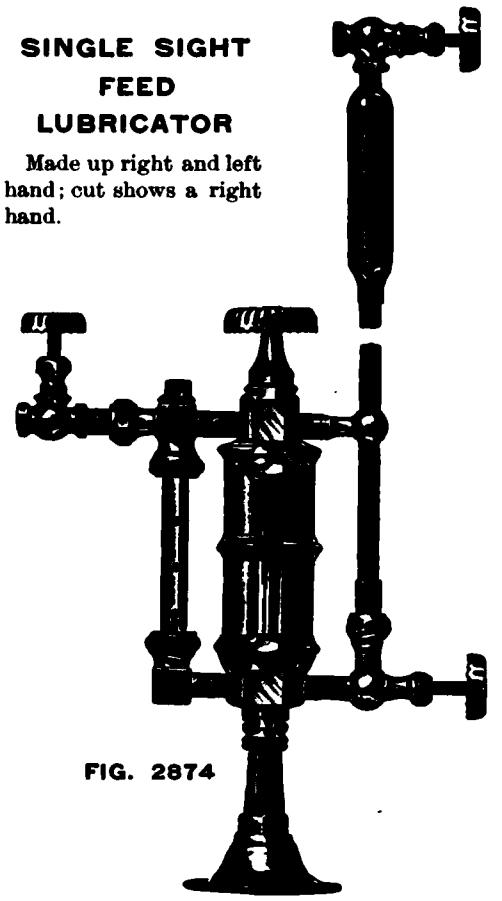


FIG. 2874

CYLINDER LUBRICATOR FOR STATIONARY ENGINES

Cuts below show the proper method of connecting lubricator to vertical and horizontal steam pipes.

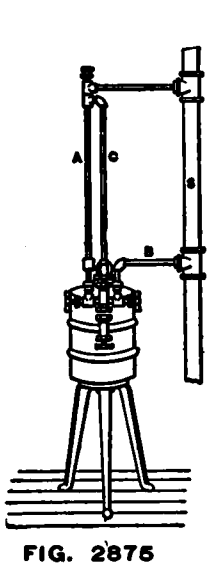


FIG. 2875

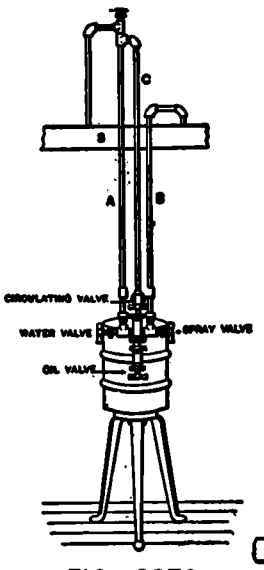


FIG. 2876

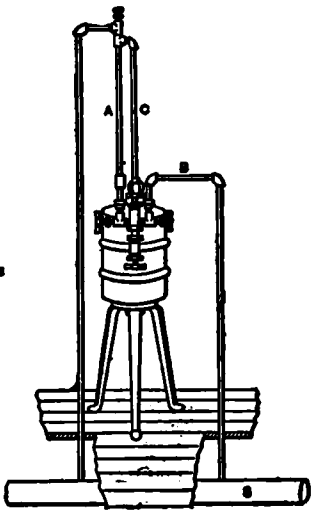


FIG. 2877

Pipes marked S in the cuts represent main steam pipes leading from the boilers to the engines. Pipes marked A are the steam inlet pipes to lubricators. Pipes marked C are the circulating pipes, which maintain a slow movement of hot water through the feed glass. Pipes marked B are the oil outlet pipes from the lubricators. Fig. 2875 shows the proper method of connecting the lubricator to a vertical steam pipe. Fig. 2876 shows how to connect to an overhead steam pipe. Fig. 2877 shows how to connect to a steam pipe running under the floor. In making connections, pipe A should always be carried at least two feet higher than the highest point in pipe B. If there is room to raise it three or four feet higher, so much the better.

DESCRIPTION, FIG. 2878

Five gallons capacity, brass fittings, heavy cast iron body with stand, furnished with all necessary valves and unions. This lubricator has a water circulating pipe which maintains a slow movement of water through feed glass, insuring a steady flow of oil to steam pipe and obviating all possibility of oil clogging in pipes. Stand the lubricator in a warm place to avoid freezing in the winter. At a slight additional cost we furnish these lubricators with an improved heater, which insures an even temperature to the oil. This is for use only where it is impossible to place lubricator in an even temperature warm enough to enable the oil to flow freely.

Price.....$50 00



FIG. 2878

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SINGLE CONNECTION SIGHT FEED LUBRICATORS
FOR STATIONARY ENGINES, TRACTION ENGINES, PUMPS, ETC.

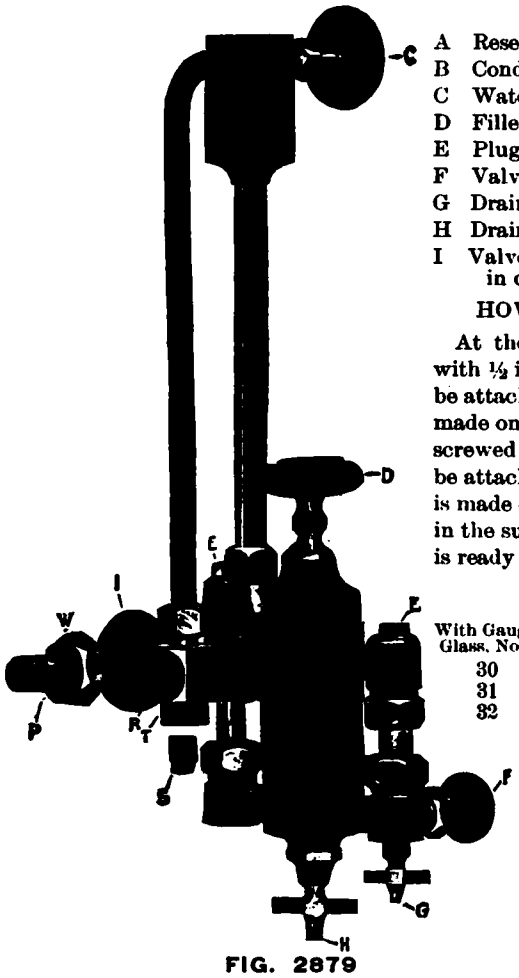


FIG. 2879

DESCRIPTION, FIG. 2879

A Reservoir
B Condenser
C Water Valve
D Filler Plug
E Plugs to insert glasses
F Valve to regulate oil drops
G Drain for sight feed glass
H Drain for oil reservoir
I Valve for shutting off pressure in case glass breaks
J Gauge Glass
M Support Arm, with steam connection and oil discharge
T Point of connection
W Nut for tail pipe
P Tail Pipe
R Point of connection
S Stopper Plug

HOW TO ATTACH SINGLE CONNECTION LUBRICATOR

At the point at which the lubricator is to be connected, drill and tap with ½ inch gas tap, and screw in the tail piece P. If the lubricator is to be attached to a vertical steam pipe, the connection to the tail piece P is made on the support arm at R, and the plug S being interchangeable is screwed in the opening in the support arm at T. If the lubricator is to be attached to a horizontal steam pipe, the connection to the tail piece P is made on the support arm at T, and the plug S is screwed in the opening in the support arm at R. When all joints are made tight, the lubricator is ready to be used.

PRICES, FIG. 2879

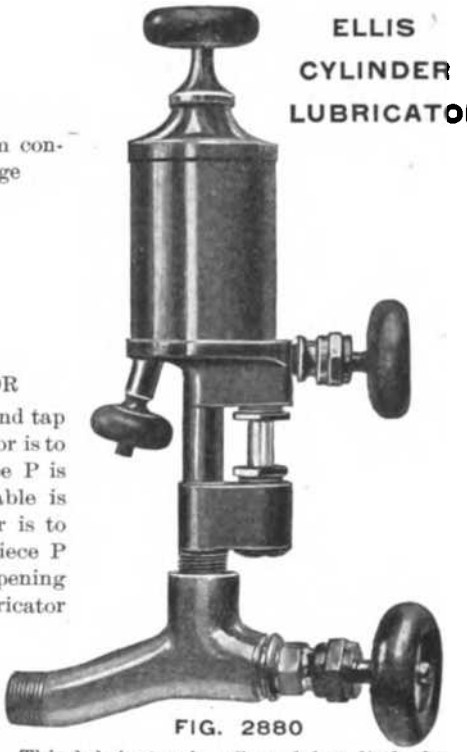
With Gauge Glass, Nos.	Size, Pint.	Brass.	Nickel Plated.
30	⅛	$3 60	$4 00
31	½	4 17	4 70
32	1	5 00	5 60

Without Gauge Glass, Nos.	Size Pint.	Brass.	Nickel Plated.	For Cylinder, inches.	Gauge Glass.	Sight Feed Glass.
030	⅓	$3 34	$3 75	10 to 12	⅝x3	⅝x2
031	½	3 83	4 35	10 " 12	⅝x3¾	⅝x2¼
032	1	4 58	5 15	12 " 18	⅝x3¾	⅝x2¼

Catalogue of extra parts will be mailed on application.

Each lubricator is complete; packed separately in a wood box, with full set of instructions.

ELLIS CYLINDER LUBRICATOR


FIG. 2880

This lubricator is affected but little by change of temperature. It will work as well at 60° below as at 60° above: owing to this fact it is popular among marine, portable and hoisting engineers. If your steam plant is exposed to the weather, this lubricator will be satisfactory.

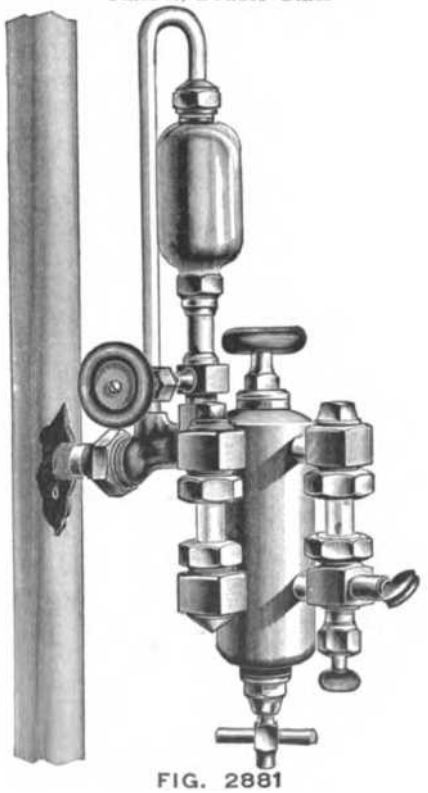
PRICES, FIG. 2880

Prices include valve for connecting.

Capacity, Pints.	Brass.	Nickel Plated.	Capacity, Pints.	Brass.	Nickel Plated.
¼	$8 00	$9 00	1	$12 00	$15 00
⅓	9 00	10 50	2	16 00	20 00
½	10 00	12 00			

BUFFALO CYLINDER LUBRICATOR

Class E, Double Glass


FIG. 2881

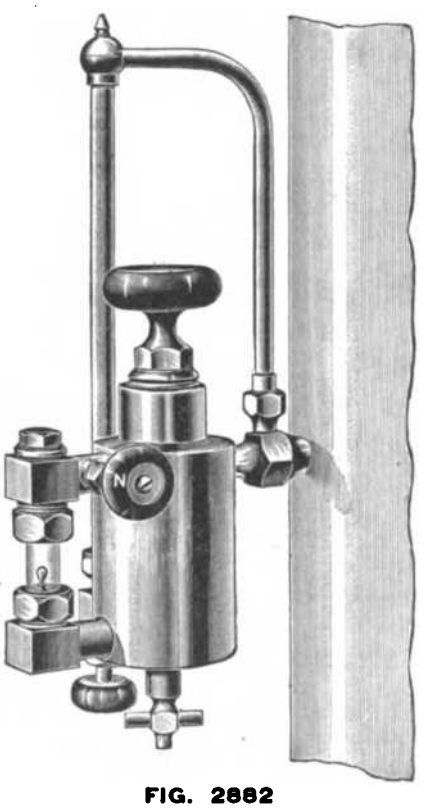
PRICES

	Pint.	Pint.	Pint.	Pints.	Quart.	Quarts.	Gallon.
Capacity.	⅛	½	1	1½	1	2	1
Brass.	$10 00	15 00	18 00	22 00	28 00	36 00	50 00

Nickel plating extra.

UP DROP CYLINDER LUBRICATORS
AUTOMOBILE LUBRICATOR

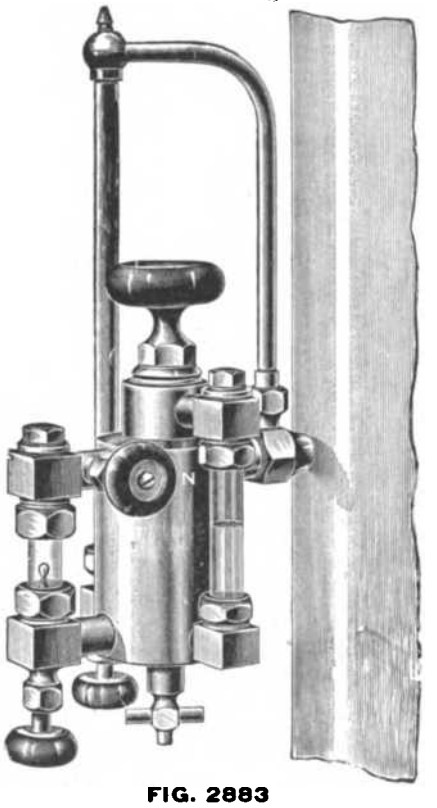
Class I, without Gauge Glass


FIG. 2882

PRICES

	Pint.	Pint.	Pint.	Pints.	Quart.
Capacity.	⅛	½	1	1½	1
Brass.	$5 50	6 50	9 00	11 00	14 00
Nickel.	6 00	7 00	10 00	13 50	16 00

Class H, with Gauge Glass


FIG. 2883

PRICES

	Pint.	Pint.	Pints.	Quart.	Quarts.
Capacity.	½	1	1½	1	2
Brass.	$16 00	20 00	25 00	30 00	35 00
Nickel.	19 00	24 00	30 00	35 00	47 00

MANNING, MAXWELL & MOORE, 85, 87 ... NEW YORK AMEN, THEIRS ALTHEIT 68 CNT ...

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SINGLE CONNECTION SIGHT FEED LUBRICATORS

COUSE AUTOMATIC AND PLAIN COMBINED LUBRICATOR

DIRECTIONS

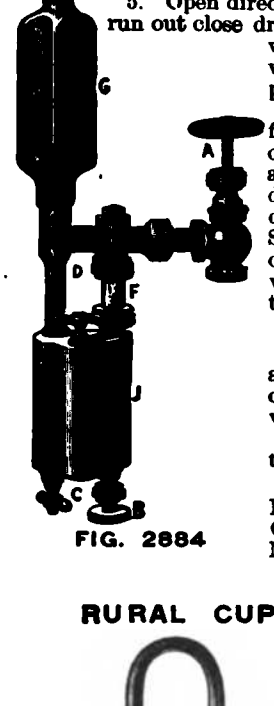


FIG. 2884

1. Close steam valve A. 2 Close regulating valve B. 3. Open drain cock C. 4. Remove filler plug D. 5. Open direct feed plug E to give vent. After water has run out close drain cock C, then fill oil reservoir J solid full with oil, then close all and turn on steam by valve A; wait a few minutes, then regulate by part of a turn the drops by valve B.

This lubricator has the advantage of a direct feed attachment which, when a quantity of oil is always to be had, acts independent of its automatic action. It also has a fin shaped condenser, which gives greater surfaces for condensation. It is unaffected by temperature. Steam on or off does not affect the regularity of its working. It has large internal passages, with no turns for oil to clog, and has continual circulation.

PLAIN OIL CUP

When necessary at any time to give engine a quantity of oil, close steam valve A; fill the condenser with oil and feed by means of steam valve A.

The plain oil cup must be used only when the automatic parts are full of oil or water.

	Prices.
Pints, finished brass	$25 00
Quarts " "	30 00
Nickel plating, extra	1 00

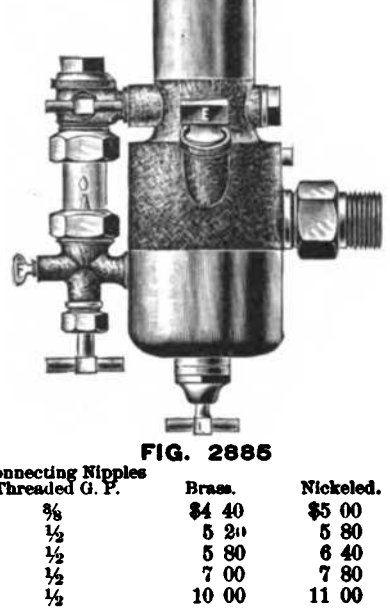
PEPPER POD LUBRICATOR

For extreme cold weather and exposed places.

DESCRIPTION, FIG. 2885

This lubricator is intended for connection above the throttle of engines, whereby steam pressure is constantly in the steam heating chamber within the oil reservoir, thus maintaining the oil at a very high temperature, even in a freezing wind. It is, therefore, very efficient for traction engines or any engine or steam pump in an exposed position.

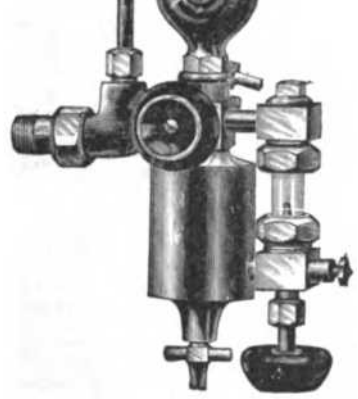
This cup will feed the heaviest oil or tallow as long as there is steam in the boiler. It keeps the oil hot in winter weather.


FIG. 2885

PRICES

Capacity.	Sight Feed Glasses.	Connecting Nipples Threaded G. P.	Brass.	Nickeled.
⅛ pint	⅝ x 1⅝	⅜	$4 40	$5 00
¼ "	¾ x 1¾	½	5 20	5 80
⅓ "	¾ x 1¾	½	5 80	6 40
½ "	¾ x 1⅞	½	7 00	7 80
1 "	¾ x 2	½	10 00	11 00

RURAL CUP


FIG. 2886

AUTOMATIC SIGHT FEED LUBRICATORS

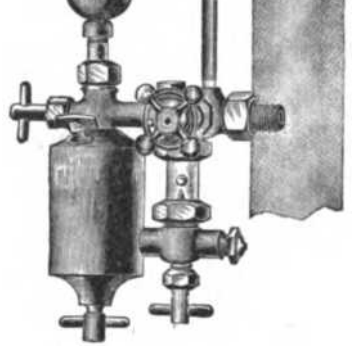
PRICES, FIG. 2886

Capacity.	¼ Pint.	½ Pint.	½ Pint,	1 Pint.	1 Quart.
Brass, finished	$7 60	$8 80	$10 40	$12 00	$15 60
Nickel, finished	8 40	9 60	11 45	13 50	17 40
Shank, gas pipe thread, in...	½	½	½	½	½
Size Glass, inches	2½ x ¾	2½ x ¾	2½ x ¾	3 x ¾	3 x ¾

Both the reservoir and sight feed glass drain valves are constructed so they can not be lost out.

The condenser has internal drainage, completely preventing "flooding" or "plugging," maintaining absolute circulation.

SUCCESS CUP


FIG. 2887

PRICES, FIG. 2887

Capacity.	Diameter and Length Sight Feed Glasses, inches.	Shank, inches.	Bronzed.
⅛ Pint	1⅝ x ¾	⅜	$4 80
½ "	1⅝ x ¾	½	5 60

The Success Lubricator is a smooth casting, handsomely gold bronzed, with valve stems, packing nuts and trimmings lathe finished.

BISON SIGHT UP FEED LUBRICATOR

DESCRIPTION

A—Oil reservoir.
B—Filling cap.
C—Valve to regulate oil drops.
D—Shut off valve.
E—Packing nuts.
F—Drain valve to draw off condensed water before refilling.
H—Air vent nut.
JJ—Sight feed and index glasses.
K-K—Removable caps to insert glasses.
M—Condensing chamber.
N—Valve to regulate water from condenser.
V—Blow off valve to clean sight feed glass.
R—Attaching shank with valve and union.
T—Oil discharge.

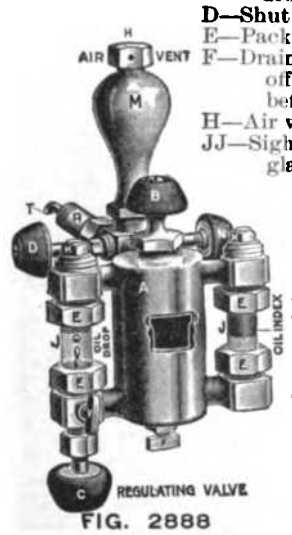


FIG. 2888

Especially designed for lubricating the steam cylinders of traction and hoisting engines, steam pumps, etc. The filling cap is placed on top of the oil magazine for convenience of filling. The arms and body are cast in one piece, ensuring great strength and solidity, and preventing the leakage of joints

PRICES

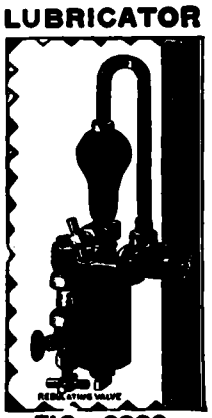
Capacity.	Suitable for Eng. Cyls. in.	Finished, Each.	Nickel Plated. Each.	Size Shank Pipe Thread.	Size Sight Feed Glass.	Size Index Glass.
⅛ pt.	Up to 8	$6 50	$7 00	⅜	¾ x 2¼	¾ x 2¼
½ pt.	8 to 10	7 00	7 75	½	¾ x 2¼	¾ x 2¼
¾ pt.	10 to 15	8 25	9 00	½	¾ x 2¼	¾ x 3
1 pt.	15 to 18	10 00	10 75	½	¾ x 3¼	¾ x 3¼
1 qt.	18 to 30	12 50	13 75	½	¾ x 3¼	¾ x 4

CRESCENT SIGHT UP FEED LUBRICATOR

This lubricator is constructed to attach either to a vertical steam pipe at the side as shown, or by the use of an elbow and nipple can be attached to horizontal pipe or directly onto the steam chest.

DESCRIPTION

A—Oil reservoir.
B—Filling cap.
C—Valve to regulate oil drops.
D—Shut off valve.
E—Packing nuts.
F—Drain valve to draw off condensed water before refilling.
H—Condenser pipe.
J—Sight feed glass.
K—Removable cage to insert glass.
M—Condensing chamber.
N—Valve to regulate water from condenser.
V—Blow off valve to clean sight feed glass.
R—Attaching shank.


FIG. 2889

Capacity, pints.	Size of Attach. Shank, Pipe Thread, in.	Bronze Finish.	Size of Glass.
⅛	⅜	$3 75	⅝ x 2
¼	⅜	4 00	¾ x 2¼
⅓	⅜	4 25	¾ x 2¼
½	½	5 25	¾ x 2¼
1	½	7 50	¾ x 3¼

Polished, and polished and plated, to order at special prices.

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SINGLE CONNECTION SIGHT FEED LUBRICATORS

ZERO LUBRICATOR

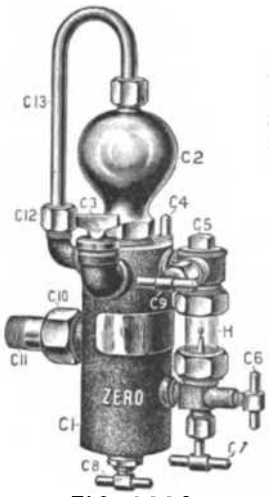


FIG. 2890

DESCRIPTION

C 1—Body or Oil Reservoir. C 2—Condenser. C 3—Filler Plug. C 4—Water Valve. C 5—Plug for inserting Sight Feed Glass. C 6—Sight Feed Glass Drain Stem. C 7—Regulating Valve. C 8—Drain Valve. C 9—Steam Valve. C 10—Union Nut. C 11—Tail Piece. C 12—Steam Tube Nut. C 13—Steam Tube. H—Sight Feed Glass.

Sight Feed Glass ¾ x 2⅛.

The Zero Lubricator possesses every feature necessary or desirable for traction engine service, or for engines working in exposed places, subject to sudden changes of temperature. It is also used quite extensively on steam pumps.

The oil is kept warm by steam. This heating arrangement is automatic. No matter how cold the weather, the oil will continue warm if steam is supplied to the engine.

The filler arm and opening are large, making it easy to fill. The support arm is close to the center of gravity of the cup, reducing vibration to a minimum. Should the glass be accidentally broken, a new one can be put in without stopping the engine. There are no handles to be lost, and each lubricator is subjected to severe tests before leaving the works. It may be attached to the steam pipe on either side of the throttle, or to the steam chest direct, by using an elbow and a short piece of pipe.

PRICES, FIG. 2890

Sizes	¼ Pint.	½ Pint.	½ Pint.	1 Pint.	1 Quart.
Bronze body, finished trimmings.	$15 00	$17 00	$20 00	$28 00	$42 00
Nickel plated all over	18 00	20 00	23 00	32 00	47 00
Pipe thread on support arm, inches	⅜	⅜	⅜	½	½

PRICES, FIG. 2891

Sizes	¼ Pint.	½ Pint.	½ Pint.	1 Pint.	1 Quart
Brass finish, each	$15 00	$17 00	$20 00	$28 00	$42 00
Nickel plated, each	18 00	20 00	23 00	32 00	47 00
Pipe thread on support arm, inches	½	½	½	½	½

STYLE C LUBRICATOR

DESCRIPTION

A—Oil Reservoir. B 2—Connection for attaching to Steam Chest. C—Filler Plug. D—Water Feed Valve. E—Regulating Valve. F—Condensing Chamber. F 1—Equalizing Tube. G—Drain Valve. H—Sight Feed Glass. L—Plug to insert Glass. K—Connection to Steam Pipe. Q—Drain Valve for Sight Feed Glass. I—Valve in Support Arm.

Size of Glass ¾ x 2⅛.

This lubricator is for traction engines, portable engines, steam pumps, etc.

It is extra strong and durable, and it can be connected to the steam pipe either above or below the throttle or into the steam chest direct. It can not be siphoned out and will not vary in feed whether the engine is working hard or running light.

The one pint and one quart sizes have a gauge glass as well as a sight feed glass.

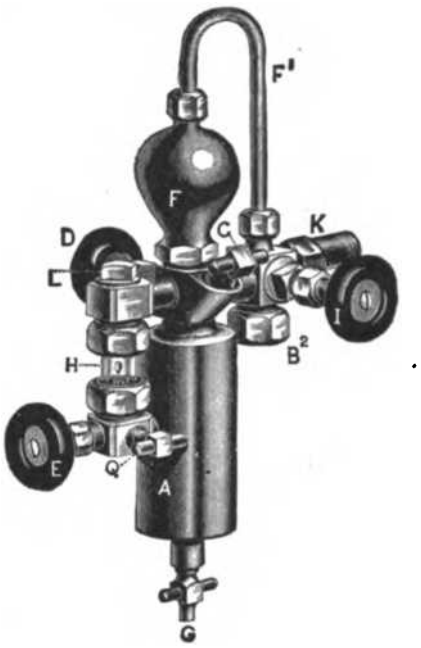


FIG. 2891

PORTABLE SIGHT FEED LUBRICATOR

FOR TRACTION AND PORTABLE ENGINES, STEAM PUMPS, ETC.

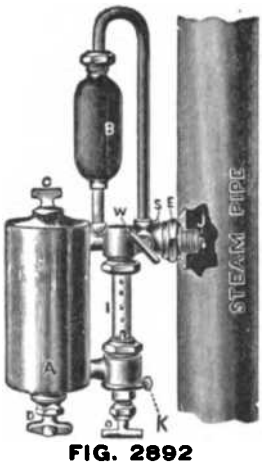


FIG. 2892

PRICES, FIG. 2892

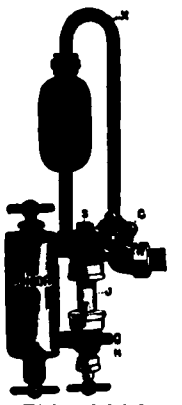
Capacity	¼ Pint.	½ Pint.	½ Pint.	1 Pint.
Brass bronzed	$7 00	$8 00	$9 00	$12 00
Brass finished	8 00	9 00	10 00	14 00
Brass, nickel plated	9 00	10 00	11 00	16 00

JUNIOR SIGHT FEED LUBRICATOR

FOR TRACTION ENGINES, STEAM AND AIR BRAKE PUMPS, ETC.

DESCRIPTION, FIG. 2893

The Junior can be attached to steam pipe or chest, and if to steam pipe preferably on boiler side of throttle. If placed on steam chest attach it into top of same by using a short piece of vertical pipe and elbow. The working of the cup is not affected by turning steam on or off. In attaching, see that hole in steam pipe is tapped straight, allowing shank to stand exactly horizontal.

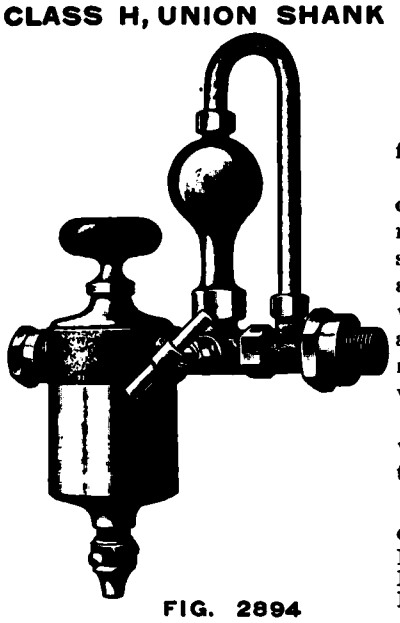

FIG. 2893

PRICES, FIG. 2893

Sizes, pint	¼	⅛	½
Shank, pipe thread, inch	⅜	⅜	½
Partly finished, each	$7 00	$8 00	$10 00
All finished (brass condensers and pipes, and wood handles), each	8 50	10 00	12 00
All finished and nickel plated (brass condensers and pipes, and wood handles), each	10 00	11 50	13 50

¼ and ⅓ pint sizes are also made with ½ inch pipe shank, but will be sent as above (⅜ inch) unless otherwise specified. These lubricators can also be furnished with glass gauge, to indicate quantity of oil in reservoir, at an extra charge, but will be sent without, unless specially ordered.

CLASS H, UNION SHANK


FIG. 2894

AUTOMATIC SIGHT FEED LUBRICATORS

DESCRIPTION, FIGS. 2894 AND 2895

These lubricators are arranged with special connections for portable farm and traction engines.

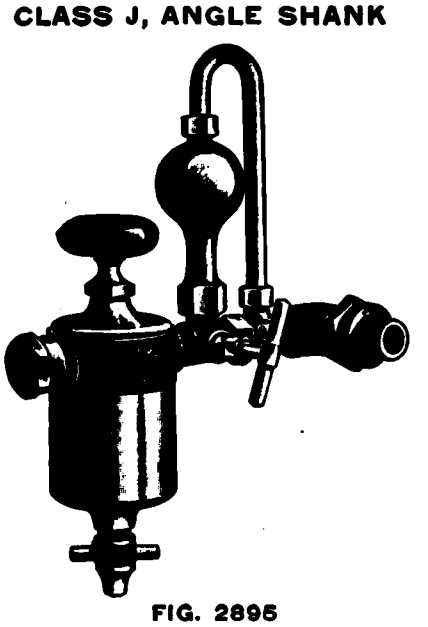
The Class H has an ordinary shank with the exception of having a union coupling on the end of shank, so that the lubricator may be attached in a narrow place, without having to turn the cup to screw it into the steam pipe. The Class J has an angle shank with union attached; this allows the lubricator to be attached in the same manner as the Class H, with the additional advantage of allowing the sight feed glass to stand at an angle from where it would with the straight shank. This is frequently necessary so that the sight feed glass will be in position for observation when engine is on the road, and engineer is on the platform.

Fig. 2895 shows the lubricator with the angle connection turned toward the right, but the same is so arranged that it can be turned toward the left, or downward for attaching to top of steam pipe, with equal ease.

PRICES FIGS. 2894 AND 2895

Capacity	¼ Pint.	½ Pint.	½ Pint.	1 Pint.	1½ Pints.	1 Quart.
Brass finish	$10 00	$12 00	$16 00	$22 00	$28 00	$34 00
Nickel plated	12 00	14 00	20 00	26 00	32 00	40 00
Pipe thread	½ in.	½ in.	½ in.	½ in.	½ in.	½ in.

CLASS J, ANGLE SHANK


FIG. 2895

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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SINGLE CONNECTION SIGHT FEED LUBRICATORS

AUTOMATIC CLASS F. S. C.

FOR TRACTION AND PORTABLE ENGINES, STEAM PUMPS, ETC.

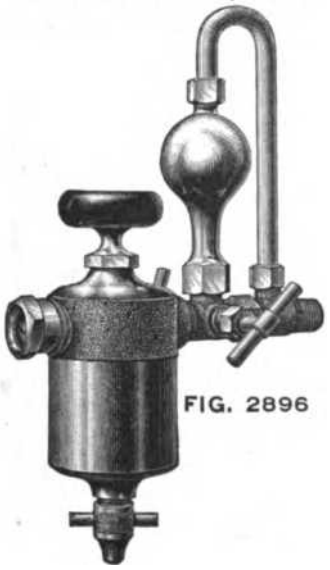


FIG. 2896

DESCRIPTION AND PRICES, FIG. 2896

This lubricator is designed for use on portable and traction engines, where it is desirable to attach with only one connection to steam pipe. The body of the lubricator is all cast in one piece, so there are no joints for leakage. These lubricators will feed any oil, no matter how heavy, and the feed will not chill in zero weather in the most exposed position. The cup is also provided with an index, which notifies the engineer when cup needs refilling. The sight feed glass can be instantly replaced while engine is running, and in case an extra glass is not at hand, a coin or metal disk of any kind can be put in, and the cup can be run as a "blind feed" until a new glass can be procured or made out of a scrap of ordinary window glass.

Capacity.	¼ Pint.	⅜ Pint.	½ Pint.	1 Pint.	1½ Pints.	1 Quart.
Brass finish	$10 00	$12 00	$16 00	$22 00	$28 00	$34 00
Nickel plated	12 00	14 00	20 00	26 00	32 00	40 00
Pipe thread	⅜ inch.	⅜ inch.	⅜ inch.	½ inch.	½ inch.	½ inch.

CLASS G, FOR SMALL ENGINES, STEAM PUMPS, ETC.

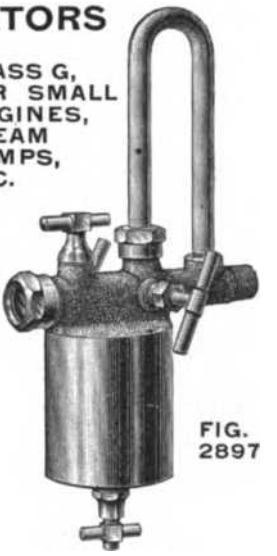


FIG. 2897

DESCRIPTION AND PRICES, FIG. 2897

The lubricator is all cast in one piece, so there are no joints for leakage; has a positive sight feed, seen in a good light fifty feet, and has an index which notifies the engineer before the cup needs refilling.

Capacity.	⅛ Pint.	¼ Pint.	⅜ Pint.	½ Pint.
Brass finish	$2 50	$3 00	$3 75	$4 50
Nickel plated	3 00	3 50	4 25	5 00
Pipe thread	¼ inch.	¼ inch.	⅜ inch.	⅜ inch.

STYLE D, WITH REVERSIBLE VALVE

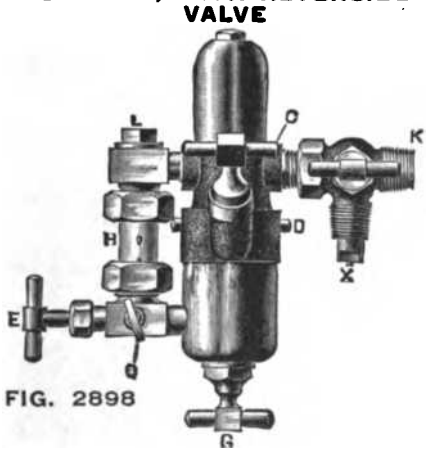


FIG. 2898

STYLE E, WITHOUT REVERSIBLE VALVE

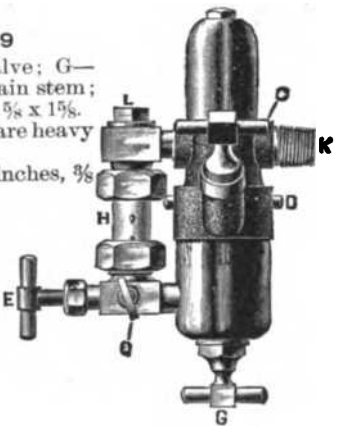


FIG 2899

DESCRIPTION AND PRICES, FIGS. 2898 AND 2899

A—oil reservoir; C—filler plug; D—water valve; E—regulating valve; G—drain valve; H—sight feed glass; K—steam connection; Q—sight feed drain stem; X—reversible plug for horizontal or perpendicular support. Size of glass, ⅝ x 15⅝.

These lubricators are used on small engines and steam pumps. They are heavy and extra strong.

Size ⅛ pint—brass, $12.00; nickel, $14.00; pipe thread on support arm, inches, ⅜

SINGLE CONNECTION SIGHT UP FEED LUBRICATOR

FOR STEAM PUMPS

This sight feed lubricator has been especially designed for steam pump service, and is adapted for steam pumps of the smaller class where efficiency and cheapness are required

PRICES, FIG. 2900

Capacity	1/12 Pint.	⅛ Pint.	¼ Pint.	½ Pint.	½ Pint.
Suitable for steam pump cylinder	Up to 2	2 to 2½	2½ to 3	3 to 4	4 to 6
Bronze finish	$2 75	$3 00	$3 35	$3 75	$4 25
Nickel plated	3 00	3 30	3 70	4 00	4 60
Size of shank pipe thread	¼	¼	¼	⅜	⅜
Size of sight feed glass	⅝ x 15⅛	⅝ x 15⅛	⅝ x 2	¾ x 2⅛	¾ x 2⅛



FIG. 2900

STAR SIGHT DOWN FEED LUBRICATOR

FOR STEAM CHEST CONNECTION

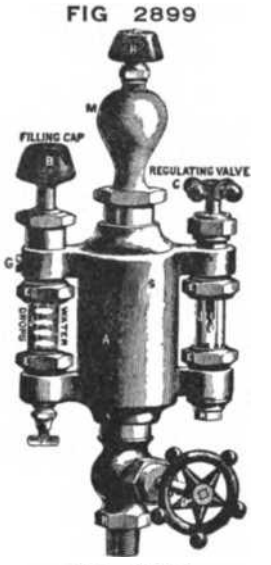


FIG. 2901

DESCRIPTION AND PRICES, FIG. 2901

To fill the chamber (A), close valves (C and D), remove cap (B), and fill the chamber to the top. Replace the cap (B), and throw lower valve (D) wide open, then blow the air out of condenser (M) by loosening cap (H) one-half turn; then fasten down again and regulate drop feed by valve (C) to the desired quantity, say from 5 to 15 drops per minute.

Caution.—When placing these lubricators on steam chest or steam pipe, raise them up about 6 inches. All connections should be full size of lubricator shank.

Capacity	⅛ Pint.	½ Pint.	1 Pint.	1 Quart.
Size of attaching shank pipe thread, inches	½	½	¾	¾
Finished	$5 60	$7 00	$8 75	$11 25
Nickel plated	6 25	7 50	9 50	12 50
Size of sight feed glass	⅝ x 2	⅝ x 2½	⅝ x 2¾	⅝ x 4
Size of index glass	⅝ x 2	⅝ x 2⅛	⅝ x 2¾	⅝ x 4

AUTOMATIC SIGHT FEED LUBRICATOR

FOR STEAM CHEST CONNECTION

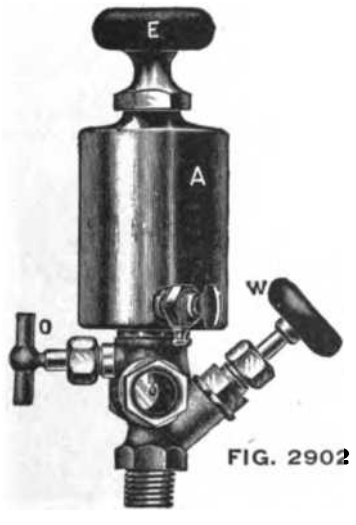


FIG. 2902

DESCRIPTION AND PRICES, FIG. 2902

This cup is designed to meet the requirements of direct steam chest connection to small steam pumps, steam portable and traction engines. Its simplicity and the fact that it will keep the oil hot in the coldest exposure, renders it very desirable for traction engines.

Diameters, inches	1¼	1½	2	2½	3
Capacity, ounces	¾	1¼	3	5	16
Brass	$3 50	$4 00	$5 00	$6 50	$8 50
Nickeled	4 30	5 00	6 25	8 50	10 50
Shank	⅜	⅜	½	½	¾
Extra Bull's Eyes per pair, including washers	30c.	30c.	30c.	30c.	30c.

DESCRIPTION AND PRICES, FIG. 2903

Condenser can not become "flooded" or "plugged." Can not siphon or feed oil into condenser, and can be drained for refilling without emptying condenser, unless desired. Specially adapted for traction engines, steam pumps and portable engines.

¼ Pint—⅜ inch shank.....$6 00
⅓ " ⅜ " " 8 00
½ " ½ " " 10 00

Sight feed glasses for all sizes, inches, 2 x ¾

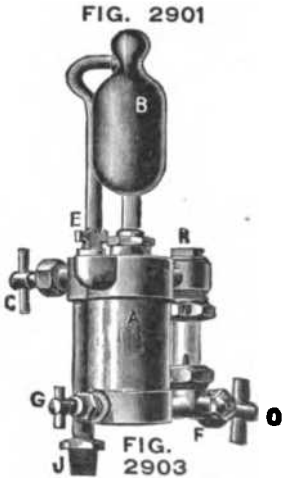


FIG. 2903

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SINGLE CONNECTION SIGHT FEED LUBRICATORS

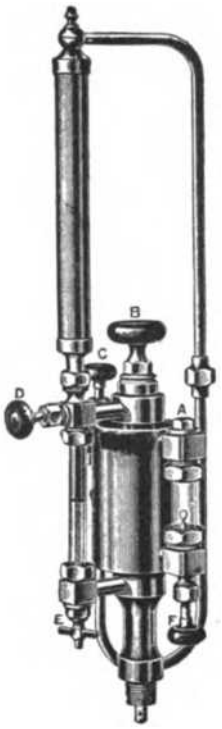


FIG. 2904

CLASS F

Up Drop with Sight Feed and Gauge Glass.

DIRECTIONS, FIG. 2904

Remove plug A and fill glass with water. Remove cap B and fill with oil. Open valve D about two turns. Start valve F and open valve C about two turns. Regulate the flow by valve F. The water in the glass will remain clear if the feed is stopped before the oil is completely exhausted. To refill, close valves D and F, start drawoff E, and remove cap B. When water has run, close drawoff E, fill and start as before.

PRICES

	Brass.	Nickel.
⅛ pint	$8 00	$9 00
½ "	10 00	11 00
1 "	13 00	15 00
1 quart	17 00	19 00
2 "	22 00	25 00
Special bracket for vertical steam pipe		2 00

CLASS G

Down Drop for Marine Engines, Steam Pumps, etc.

DIRECTIONS, FIG. 2905

Valve G must be closed until the cup is filled, then open wide and regulate by valve K. When oil is exhausted close valve G, open drawoff I and remove cap J. When the water has run off close drawoff I, fill and operate as before.

PRICES

With Iron Handles.

	Brass.	Nickel.
¼ pint	$4 00	$5 00
⅛ "	5 00	6 00
½ "	7 00	8 00
1 "	9 00	11 00
1 quart	12 00	15 00
2 "	17 00	20 00

With Wood Handles.

	Brass.	Nickel.
¼ pint	$4 50	$5 50
⅛ "	5 50	6 50
½ "	7 50	8 50
1 "	9 50	11 50
1 quart	12 50	15 50
2 "	17 50	20 50

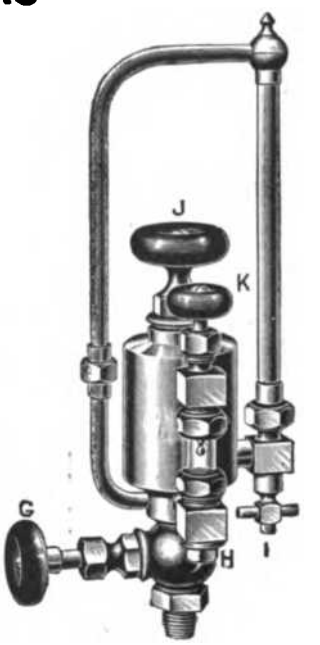


FIG. 2905

DOWN DROP SIGHT FEED LUBRICATOR

For Pumps and Small Engines.

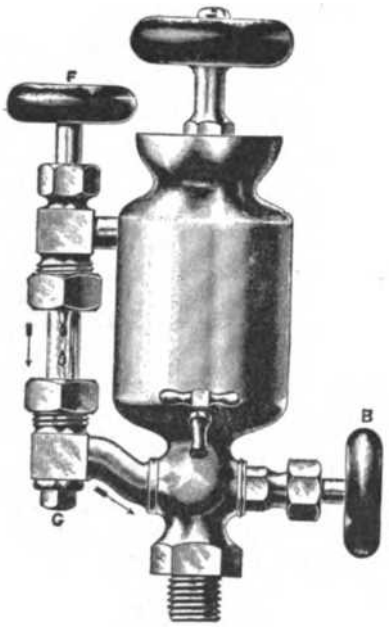


FIG. 2906

DIRECTIONS, FIG. 2906

To Attach.—Place the lubricator on the steam pipe on the boiler side of the engine stop-valve if possible. If the engine is vertical a bend or elbow can be used. In putting any pipe between the lubricator and steam pipe be careful that it is as large as the connection of the lubricator.

This lubricator will work with any kind of oil suitable for steam engine cylinders.

PRICES

	Brass.	Nickel Plated.
⅛ pint	$8 00	$8 50
½ "	10 00	10 75
1 "	15 00	16 00
1 quart	25 00	26 50

DOWN SIGHT FEED STEAM CHEST LUBRICATOR

For Steam Pumps and Steam Engines of Small or Moderate Size.

DIRECTIONS, FIG. 2907

Attach to steam chest or cylinder direct without use of ells, when possible, but if ells must be used, employ one size larger than shank of lubricator, using reducer to shank size, and taking care that the ell and nipple leading to the steam does not trap or sag; but, where practicable, give the flow to the steam or the parts requiring lubrication a slight descent.

Directions to Operate.—Close valves A and B, remove top C, fill with oil, replace top C tightly, then open valve A, and after a minute or two, if no water or oil shows in glass, open valve B slightly and feed will show at E in drops. The quantity of feed is controlled by valve B. Cup is emptied at valve D.

PRICES

¼ pint	$10 00
⅛ "	12 00
½ "	15 00
1 "	18 00
1½ "	22 00
2 "	26 00
3 "	32 00
4 "	40 00

Nickel plating extra.

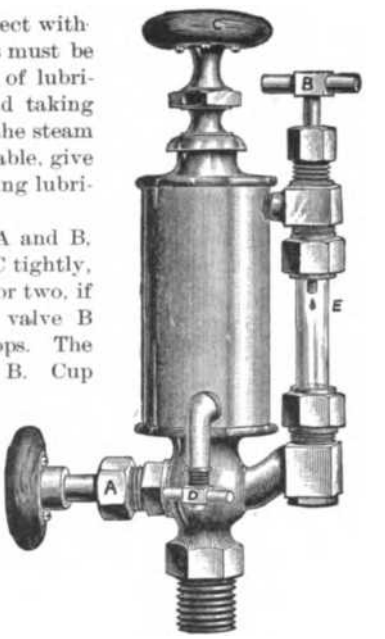


FIG. 2907

AUTOMATIC SIGHT FEED GRAPHITE LUBRICATOR

For Cylinders of Steam Engines and Pumps.

DESCRIPTION, FIG. 2908

In this single connection Graphite Sight Feed Lubricator the graphite is fed automatically and continuously in desired quantities and visibly by passing it through a sight feed.


FIG. 2908

As graphite is a very superior lubricant, and a small quantity will last quite a while, it is recommended to be used very economically, as a continuous feeding of same is not necessary; thus the feed can occasionally be shut off. The cup requires but one connection to the cylinder. It should always be placed on the steam chest. On slide valve engines it is only necessary to use one cup, placing it about the middle of the steam chest, but on Corliss engines it is best to use two, placing one over each valve.

PRICES

Number	1	2	3
Capacity, graphite, ounces	3	5	8
Shank pipe thread, inch	⅜	½	½
Finished brass, each	$10 00	$12 00	$16 00
Finished brass, nickel plated, each	11 00	14 00	18 00
Five pound can of superior graphite, per can	2 45		

MAJOR DOWN SIGHT FEED LUBRICATOR

For Steam Pumps and Small Engines.

DESCRIPTION, FIG. 2909

A—Reservoir. B—Steam valve. C—Oil regulating valve. F—Drain valve. H—Bull's eye sight feed.

The Major Lubricator is a down drop cup of compact and simple construction suitable for steam pumps and small engines, and should be placed on the steam chest. This cup is provided with an improved bull's eye sight feed, H. When a glass breaks it is only necessary to replace the entire bull's eye by using an ordinary monkey wrench.

For price of extra bull's eyes see list below.

PRICES

Sizes, Nos.	Diams. of Oil Chamber, Inches.	Capacity, Ounces	Shank Pipe Thread, In.	Brass, Each.	All Finished and Nickel Plated, Each.	Extra Bull's Eyes, Each.
0	1½	1	⅜	$3 50	$4 20	$0 30
1	1¾	1½	⅜	4 00	5 00	30
2	2	2½	½	5 00	6 00	30
3	2¼	4	½	6 00	7 25	30
4	2½	5	½	8 00	9 50	30
5	3	10	½	10 00	12 00	30
6	3½	18	¾	12 00	14 00	30


FIG. 2909

MANNING, MAXWELL & MOORE, 85, 87, AND NEW YORK 'TELEPHONE EXCHANGE 68

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SINGLE CONNECTION SIGHT FEED LUBRICATORS

GAS ENGINE AND AIR COMPRESSOR LUBRICATOR

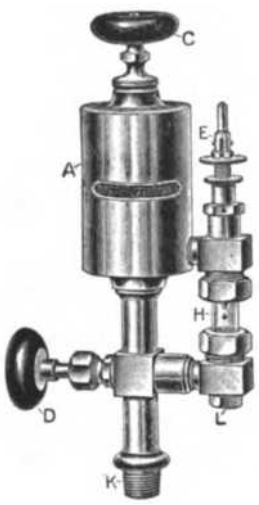


FIG. 2911

DESCRIPTION AND PRICES, FIG. 2911

A—Oil reservoir.
C—Filler plug.
D—Valve to control admission of gas or air.
E—Feed valve, with stop feed feature.
H—Sight feed glass.
K—Connection in cylinder.
L—Plug to insert glass.
Size of glass, 5/8x2 1/16.

This gas engine and air compressor lubricator is made of the best brass, and is connected to the cylinder direct. For large gas engines and powerful air compressors we furnish a specially strong lubricator of this pattern. The ½ pint and larger sizes can be furnished with gauge glass, if so desired, at a slight additional cost.

	¼ Pint.	½ Pint.	½ Pint.	Pint.	Quart.
Brass body finished	$15 00	$17 00	$20 00	$28 00	$42 00
Nickel plated all over	18 00	20 00	23 00	32 00	47 00
Pipe thread on support arm, inches	¼	½	½	½	½

DIRECTIONS FOR OPERATING

Regulate pressure by valve D and flow of oil by valve E. Valve E may be shut off at any time and opened again without disturbing the feed.

DESCRIPTION AND PRICES, FIG. 2912

A—Oil reservoir.
C—Filler plug.
D—Valve to control admission of ammonia gas.
E—Feed valve, with stop feed feature.
H—Sight feed glass.
K—Connection to cylinder.
L—Plug to insert glass.

This ammonia cylinder lubricator is composed of special material, which is not affected by the action of ammonia. It is attached into the ammonia cylinder direct, or into the pipe leading to same. Ammonia cylinders require lubrication just as much as do steam cylinders, and in case they are not properly lubricated, the loss is correspondingly great.

	¼ Pint.	½ Pint.	½ Pint.	Pint.	Quart.
Finished body	$15 00	$17 00	$20 00	$28 00	$42 00
Nickel plated all over	18 00	20 00	23 00	32 00	47 00
Pipe thread on support arm, inches	¼	½	½	½	½

AMMONIA CYLINDER LUBRICATOR

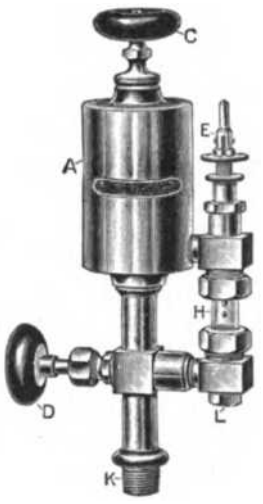
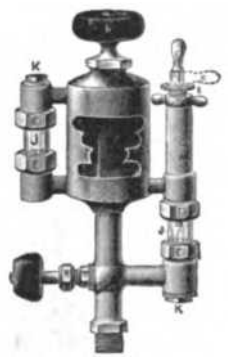


FIG. 2912

GAS ENGINE LUBRICATOR



FIQ. 2913

PRICES

Capacity	½ pt.	1 pt.	1 qt.
Finished, each	$9 00	$11 00	$13 00
Finished and plated, each	10 50	13 00	15 00
Size of shank, pipe thread, inches	½	½	¾
Length of sight glass, "	1¾	1¾	2
" index "	2½	3	4
Diameters of sight glasses, "	⅝	⅝	⅝
" index "	⅝	⅝	⅝

ELLIS AMMONIA LUBRICATOR

DESCRIPTION, FIG. 2913

A—Oil reservoir.
B—Filling cap.
C—Signal lever drop feed.
D—Jamb nut.
E—Milled feed regulator.
EE—Packing nuts.
JJ—Sight and index glasses.
KK—Removable plug to renew glasses.
N—Shut off valve when refilling.
R—Attaching shank.

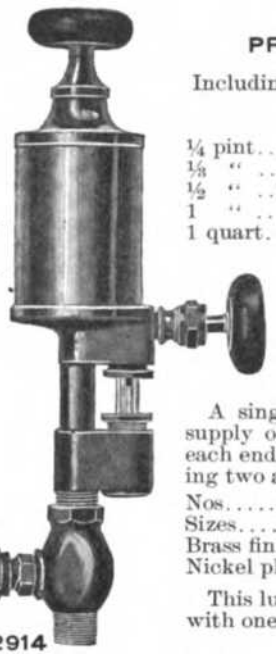


FIG. 2914

PRICES, FIG. 2914

Including Valve for Connecting.

	Brass.	Nickel Plated.
¼ pint	$8 00	$9 00
⅓ "	9 00	10 50
½ "	10 00	12 00
1 "	12 00	15 00
1 quart	16 00	20 00

DESCRIPTION AND PRICES, FIG. 2915

A single lubricator which will supply oil in the middle and at each end of the cylinder, thus saving two additional lubricators.

Nos	602	603
Sizes	1 pint	1 quart
Brass finish	$6 25	$8 33
Nickel plated	7 10	9 25

This lubricator can be furnished with one or more feeds.

KIRBY AIR COMPRESSOR LUBRICATOR

Down Drop Feed.

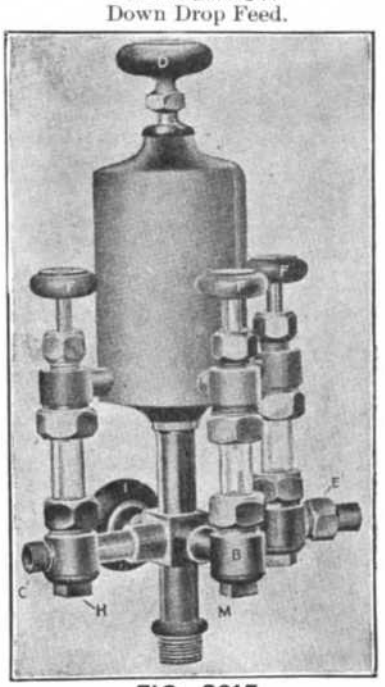
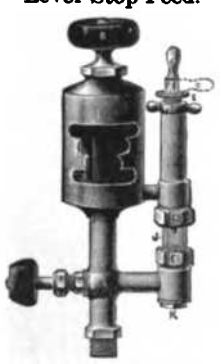


FIG. 2915

GAS ENGINE LUBRICATOR

With Patent Signal Lever Stop Feed.



DESCRIPTION, FIG. 2916

Regulating.—The feed is regulated with signal lever C up, by the milled screwhead E, under the signal lever. Screwing the milled head E up or down increases or reduces the flow. When once the desired feed rate is obtained the screw is locked by winged jamb nut D.

Stop feed.—The flow is started with lever up, and can be instantly stopped by turning the lever down, as shown in illustration, without disturbing the regulation. Thus the cup can be set for an indefinite period.

Lever down shows oil feed cut off.

FIG. 2916

PRICES

Capacity.	Size Attaching Shank Pipe Thread, Inches.	Finished.	Finished and Plated.	Length of Glass, Inches.	Diameter of Glass, Inches.
1/12 pt.	⅜	$3 50	$4 20	1⅜	⅝
⅛ "	⅜	4 00	5 00	1⅜	⅝
¼ "	⅜	5 00	6 00	1½	⅝
⅓ "	⅜	6 00	7 25	1½	⅜
½ "	½	8 00	9 50	1¾	⅝
1 "	½	10 00	12 00	1¾	⅝
1 qt.	¾	12 00	14 00	2	⅝

AIR COMPRESSOR LUBRICATOR

With Regulating Drop Feed Valve.



DESCRIPTION, FIG. 2917

A—Oil reservoir.
B—Filling cap.
C—Regulating drop feed valve.
EE—Packing nuts to sight glass.
G—Brace bar.
J—Sight feed glass.
K—Removable plug to renew sight glass.
N—Shut off valve.
R—Attaching shank.

For use on air compressors as well as for ammonia and gas engines. It has a screw start and stop feed device which insures a positive feed or cut off to flowing oil at all times.

It is made of best steam metal, convenient to get at, drop feed always in sight.

FIG. 2917

PRICES

Capacity.	Size Attaching Shank Pipe Thread, Inches.	Finished.	Finished and Plated.	Length of Glass, Inches.	Diameter of Glass, Inches.
¼ pt.	⅜	$5 00	$6 00	1½	⅝
⅓ "	⅜	6 00	7 25	1½	⅝
½ "	½	8 00	9 50	1¾	⅝
1 "	½	10 00	12 00	1¾	⅝
1 qt.	¾	12 00	14 00	2	⅝

MAX SIGHT FEED LUBRICATOR

For Gas Engines, Air Compressors, etc.

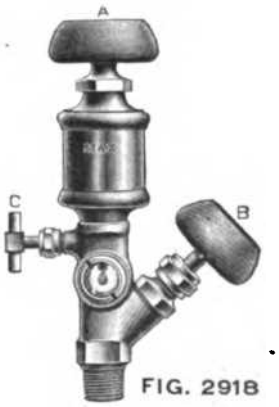


FIG. 2918

PRICES, FIG. 2918

2 oz	$8 00
4 "	10 00
6 "	12 00
8 "	14 00
16 "	20 00

These lubricators can be furnished either brass polished or nickel plated, as desired.

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SINGLE CONNECTION SIGHT FEED LUBRICATORS

VULCAN FORCE FEED LUBRICATOR FOR GAS ENGINES, AIR COMPRESSORS, ETC.

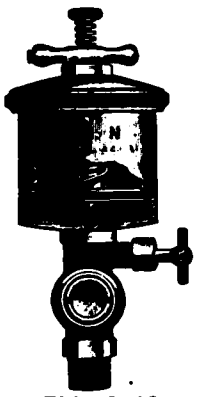


FIG. 2919

DESCRIPTION, FIG. 2919

A—Oil reservoir.
C—Oil regulating valve.
D—Piston.
E—Thumbnut for raising and regulating piston.

This cup will be found an excellent lubricator for feeding heavy oils, when cold, to gas engines and air compressor cylinders, as the spring actuated piston causes a force feed. It is recommended for use on bearings requiring heavy oil. Do not feed grease in this cup.

PRICES

Nos.	Outside Diameter of Cups, Inches.	Capacity Oil, Ounces.	Shank Pipe Thread, Inches.	Brass, Each.	All Finished and Nickel Plated, Each.	Extra Sight Feed Glasses, Dozen.
1	1¾	1½	¼	$5 00	$6 00	$0 60
2	2¼	3	⅜	6 00	7 25	60
3	2¾	4½	½	8 00	9 50	60
4	3¼	6½	½	10 00	12 00	60

FORCE FEED LUBRICATOR FOR GAS ENGINES, AIR COMPRESSORS, ETC.

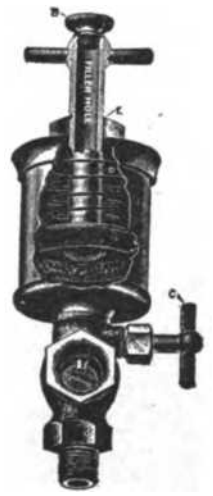


FIG. 2921

This lubricator feeds heavy oils, not grease. It is equipped with a spring actuated piston, having a perfectly tight cup leather washer. The stronger the compression, the tighter the washer is spread, thus preventing the oils backing past.

It has an independent filler, see B in cut, thus obviating the necessity of removing the cap of reservoir or taking out its perfectly tight cup washer.

It is specially adapted to feeding cold, heavy, thick oils to the cylinders of gas engines, air compressors, and in fact any bearing requiring positive oiling with this class of lubricants.

PRICES

Capacity, Ounces.	Diameter of Reservoirs, Inches.	Size of Shanks, Inches.	Brass Finish, Each.	Nickeled, Each.	Extra Bull's Eye Glasses, per Pair, Including Washers.
1½	1⅝	⅜	$3 60	$4 30	$0 30
3	2	⅜	3 90	4 60	30
4½	2⅜	⅜	4 30	5 00	30
7	2¾	½	5 75	6 85	30
10	3⅛	½	7 25	8 65	30

MARS GLASS BODY LUBRICATOR FOR GAS, GASOLINE OR OIL ENGINES, AIR COMPRESSORS, ETC.

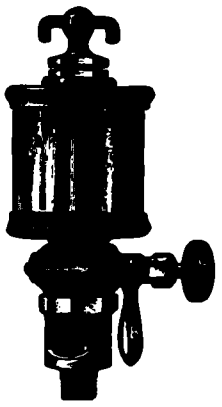


FIG. 2923

DESCRIPTION

A—Oil chamber.
B—Stop cock.
C—Oil regulating valve.
E—Filling plug.

This cup is intended to supply the demand for a heavy glass body lubricator for vapor engines. The glass body enables the engineer to readily ascertain the amount of oil in the reservoir. The sight feed is large and can be easily cleaned when dirty. The feed regulating device is so arranged that when once set it need never be changed when refilling the cup. It will feed heavy oils regularly, and having a large opening at the top is easy to fill.

PRICES

Size, Nos.	Diameter of Glass Body, Inches.	Height of Glass Body, Inches.	Capacity, Ounces.	Shank Pipe Thread, Inches.	Brass, Each.	All Finished and Nickel Plated, Each.	Extra Sight Feed Glasses, per Dozen.
2	2	1⅞	2½	½	$5 00	$6 00	$0 60
3	2¼	2⅛	4	½	6 00	7 25	60
4	2½	2⅜	5	½	8 00	9 50	60
5	3	3	10	½	10 00	12 00	60
6	3½	4	18	¾	12 00	14 00	60

When ordering extra glasses and cork washers, give number of cup as stamped on same.

BANNER SIGHT FEED LUBRICATOR FOR GAS ENGINES, AIR COMPRESSORS, ETC.

DESCRIPTION

A—Oil chamber.
B—Stop valve.
C—Oil regulating valve.
E—Filling plug.

This sight feed lubricator is designed for gas engines, air compressors and steam valve spindles of water works engines, and will also be found suitable for various other purposes, especially on account of its simplicity and compactness. It is provided with an improved sight feed, which is easily replaced when broken.



FIG. 2920

PRICES

Sizes, Nos.	Diameter of Oil Chambers, Inches.	Capacity, Ounces.	Shank Pipe Thread, Inches.	Brass, Each.	All Finished and Nickel Plated, Each.	Extra Sight Feed Glasses, per Dozen.
0	1½	1	⅜	$3 50	$4 20	$0 60
1	1¾	1½	⅜	4 00	5 00	60
2	2	2½	½	5 00	6 00	60
3	2¼	4	½	6 00	7 25	60
4	2½	5	½	8 00	9 50	60
5	3	10	½	10 00	12 00	60
6	3½	18	¾	12 00	14 00	60

CRYSTAL GLASS RESERVOIR LUBRICATOR FOR GAS, NAPHTHA AND GASOLINE ENGINES, AIR COMPRESSORS, ETC.

This sight feed lubricator for gas, naphtha and gasoline engines and air compressors or any vapor pressure bearings, has the advantage of a transparent glass reservoir, showing, at all times, the amount of oil contained.

The sight feed is of the bull's eye pattern, easily repaired, and as the pressure valve is below the feed, the cup can be filled at any time while the engine is running.

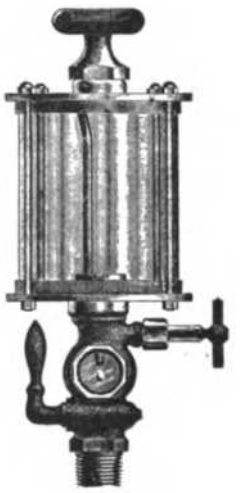


FIG. 2922

PRICES

Capacity.	Diameter of Glass Shells, Inches	Size of Shanks, Inches.	Brass Finish, Each.	Nickeled, Each.	Extra Bull's Eye Glasses, per Pair, Including Washers.
¼ pint	2⅜	⅜	$5 00	$6 00	$0 30
⅛ "	2¾	⅜	6 00	7 00	30
½ "	3⅛	½	8 00	9 50	30
1 "	3½	½	11 00	13 00	30
1 quart	4⅛	½	15 00	17 00	30

GLASS BODY SET AND STOP FEED LUBRICATOR FOR USE ON GAS AND GASOLINE ENGINES AND AIR COMPRESSORS

This glass body gas engine lubricator is intended to feed the oil directly into the explosion chamber of gas engines, and against the full pressure in the cylinders of air compressors. The bent tube, shown within the cup, conveys the gas to the upper part of the body, where it exerts a pressure on the oil and assists gravity in forcing the feed. The top and bottom plates are of cast brass, and a strong heavy glass cylinder is used. Besides a ball check is employed in the shank, so that the full force of the explosion does not act upon the glass chamber. On this account, this style can be used even with very large gas engines.

It is also equipped with the set feed and stop feed features, so that in case the engine should be stopped at any time, the feed of the oil can be instantly shut off, and as instantly started again, when the engine is started, without disturbing the feed regulation.



FIG. 2924

PRICES

Nos.	Diameter in Inches.	Height in Inches.	Capacity.	Pipe Thread. Inches.	Brass, Each.	Nickel, Each.
24	2	1⅞	2 ounces.	⅜	$5 00	$5 50
25	2¼	2⅛	3 "	⅜	5 50	6 00
26	2½	2⅜	4 "	⅜	6 50	7 00
27	3	3	8 "	½	9 00	9 75
28	3½	4	1 pint	½	11 50	12 25

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GLASS BODY SIGHT FEED LUBRICATORS

SIGNAL STOP AND SCREW SETTING SIGHT FEED LUBRICATOR FOR GAS, GASOLINE AND OIL ENGINES

SIGNAL DOWN FEED STOPPED

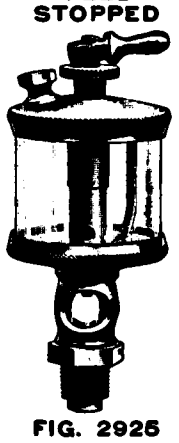


FIG. 2925

These cups are provided with ball check valves at the bottom of the shanks, which will prevent any excessive pressure from entering the cup.

When it is desired, the filling knob may be secured to the cup by a chain, which will prevent its being lost.

PRICES

Nos.	Height of Cup Complete, in Inches, Signal Up.	Diameter of Cup Complete, in Inches.	Capacity in Ounces.	Size of Shank Pipe Threads, in Inches.	Per Dozen.
725	5⅜	2	1½	¼	$27 00
726	5¾	2 1/16	2	⅜	30 00
727	6 5/16	2⅝	4	⅜	36 00
728	7 5/16	2 15/16	6	⅜	42 00
729	7 11/16	3⅜	10	½	54 00
730	8 9/16	3 13/16	15	½	72 00
731	10⅛	4 5/16	24	½	108 00
732	10⅞	4 15/16	36	½	168 00

SIGNAL LEVER SIGHT FEED LUBRICATOR FOR GAS, GASOLINE AND NAPHTHA ENGINES AND AIR COMPRESSORS

The feed stem is packed tight, while provision is made to supply air to the magazine, as the oil is fed out the shank, U, it is also made gas tight to prevent leakage at that point.

TO SET FEED

Raise signal lever, C, to an upright position as in cut, then adjust desired oil drops by milled thumb nut, R, and secure in place by jamb nut, Q. To flush, tilt lever, C, at an angle of 45 degrees.



FIG. 2926

PRICES

Nos.	Outside Diameters of Glass, Inches.	Height of Glass, Inches.	Capacity.	Size of Shank Pipe Thread, Inches.	Finished, Each.	Nickel Plated, Each.
2	2	1⅞	2 ounces	⅜	$2 80	$3 25
3	2¼	2⅛	¼ pint	⅜	3 50	4 00
4	2½	2¼	⅓ "	½	4 00	4 60
5	3	2¾	½ "	½	5 40	6 25
6	3½	4	1 "	½	7 00	8 20
7	4	4½	1½ "	¾	12 00	13 50
8	4½	5	1 quart	¾	15 00	17 00

AIR BRAKE SIGHT FEED LUBRICATORS

NO. A

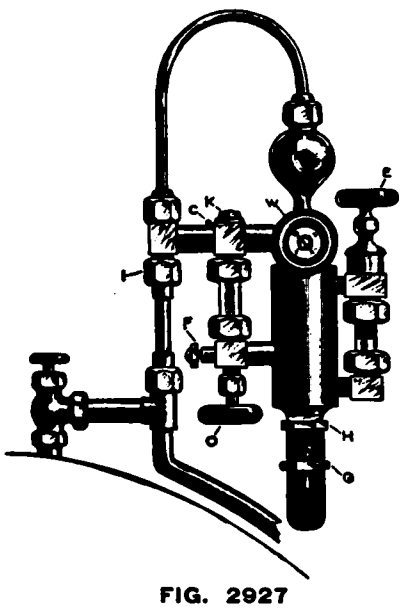


FIG. 2927

DESCRIPTION
FIGS. 2927 TO 2929

These air brake lubricators are perfect in principle, heavily constructed, can not siphon, finest detailed.

Sight feed glass has a drain valve and can be drained or flushed with steam without emptying oil reservoir or condenser.

Glasses can be renewed without emptying oil reservoir.

PRICES
FIGS. 2927 AND 2928

½ pint capacity.

Nos.	Brass, Each.	Nickel, Each.
A brass	$11 00	$12 00
2A "	9 50	10 50
C "	7 00	8 00

No. A has gauge glass.

No. 2A without gauge glass.

NO. C

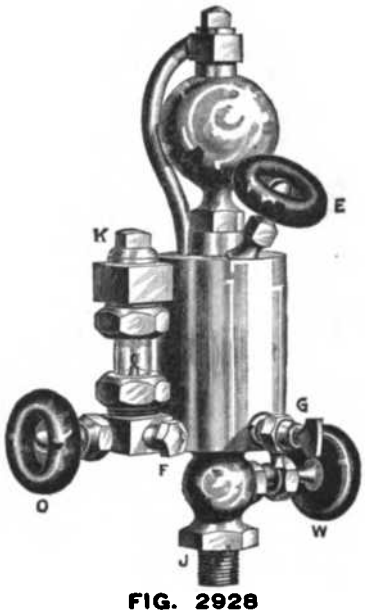


FIG. 2928

PRICES
FIG. 2929

½ pint capacity.

No. B, with gauge glass, brass, $11.00; nickel, $12.00.

No. 2B, without gauge glass, brass, $9.50; nickel, $10.50.

NO. B

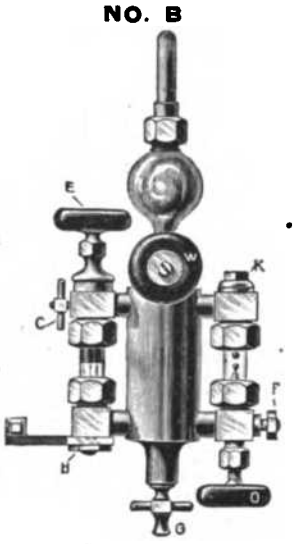


FIG. 2929

AUTOMATIC AIR BRAKE LUBRICATOR



FIG. 2930

DESCRIPTION
FIG. 2930

This automatic lubricator, with yoke, is particularly well adapted to steam chests of locomotive engines, air-brakes, etc. All parts are made extra heavy and of the best steam metal. Feed is secured automatically by condensation. Feed indicator on 6 inch only, except where specially ordered.

PRICES

Outside Diameter, Inches.	Height, Inches.	Capacity.	Each.
2	7	3 oz.	$14 00
2½	8	6 "	17 00
3	10	10 "	20 00
3½	11	1 pt.	23 00
4	12	1½ "	27 00
5	14	3 "	35 00
6	16	5 "	45 00

IMPROVED AIR BRAKE LUBRICATOR

DESCRIPTION, FIG. 2931

The body and arms are cast in one piece, so there are no joints about it to rack loose and leak. By a peculiar construction of the water trap, internal tubes in the oil chamber are dispensed with, which obviates all possibility of siphoning the contents of the cup. The lubricator is very strong, and made expressly to stand heavy pressure. If desired, the oil drop can be instantly stopped without disturbing regulating valve, C, by simply closing down stop valve, N, or base shut off valve, D.

Capacity, ½ pint.

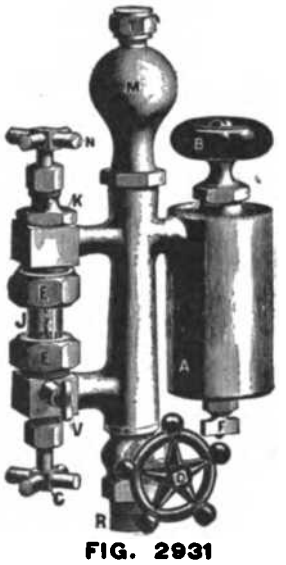
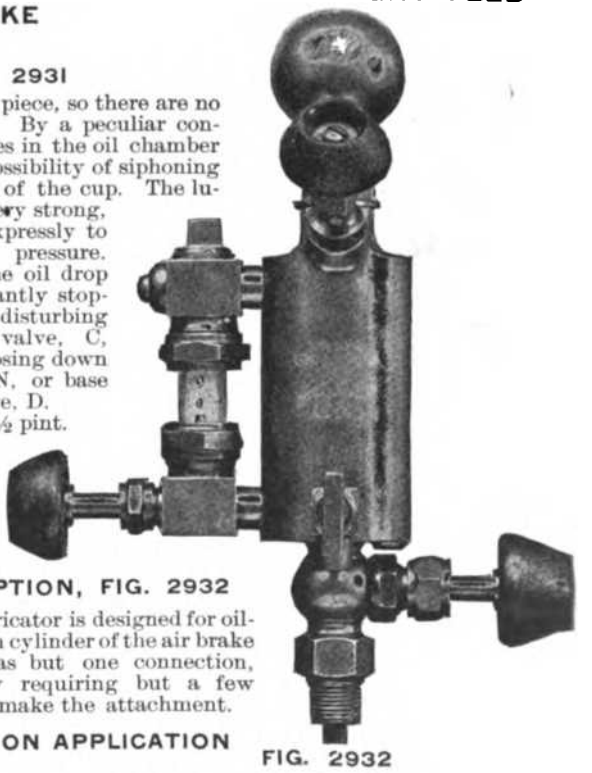


FIG. 2931

PRICES ON APPLICATION

AIR BRAKE LUBRICATOR WITH UP DROP SIGHT FEED



DESCRIPTION, FIG. 2932

This lubricator is designed for oiling the steam cylinder of the air brake pump. It has but one connection, consequently requiring but a few moments to make the attachment.

PRICES ON APPLICATION

FIG. 2932

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SIGHT FEED LOCOMOTIVE LUBRICATORS

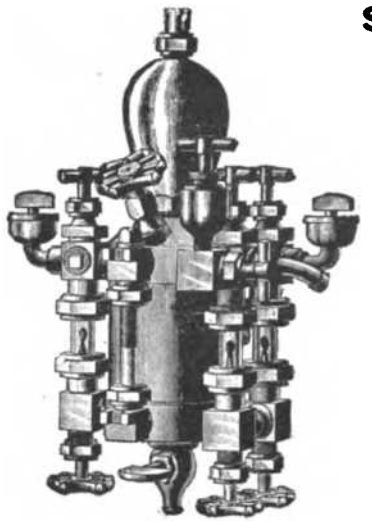


FIG. 2933

DIRECTIONS FOR APPLICATION

Secure the lubricator to boiler head or top of boiler by a strong brace.

Connect for steam to boiler, preferably direct. The steam pipe must not have less than ¾ inch inside diameter when iron pipe is used, and not less than ⅝ inch inside diameter when copper pipe is used. Steam valves and their shanks must have openings fully in accordance with these dimensions.

Connect oil or tallow pipes to the union couplings on top of the lubricator body. Oil pipes must have a continuous fall towards the steam chest, without any pockets in them.

Remove valves from plugs over steam chest, in order to maintain proper lubrication when steaming.

1—Valves FFF must be always kept open, except when one of the glasses breaks. In such case, close valves C and F belonging to the broken glass and use the auxiliary oiler on that glass on down grades as a common cab oiler.

The breaking of one glass does not interfere with the proper function of the others.

2—Always open the steam valve B before the engine begins to do any work whatever, whether the feed is started right away or not, and keep it open as long as the engine is doing service of any kind.

3—Keep the water valve D always open except during the period of filling the cup, as per directions.

4—Once in two weeks, at least, blow out the cup with steam; opening all valves wide with the exception of the filling plug, which should remain closed.

PRICES ON APPLICATION

TRIPLE SIGHT FEED LOCOMOTIVE LUBRICATORS

For oiling cylinders continually through the regular outside oil pipes, whether up or down grade, and also oiling the steam cylinder of the air brake from one cup.

Class B

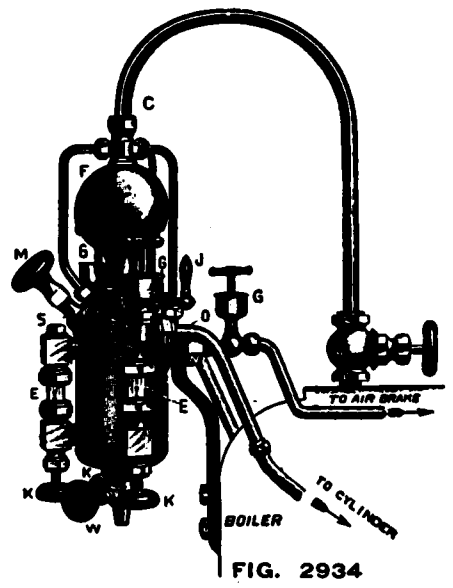


FIG. 2934

Class C

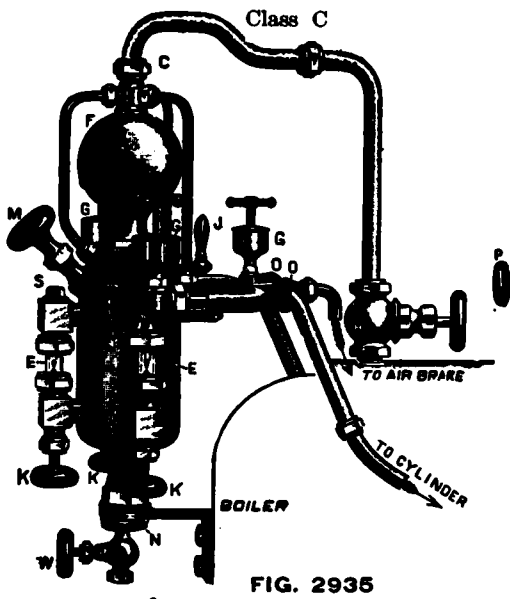


FIG. 2935

Class F

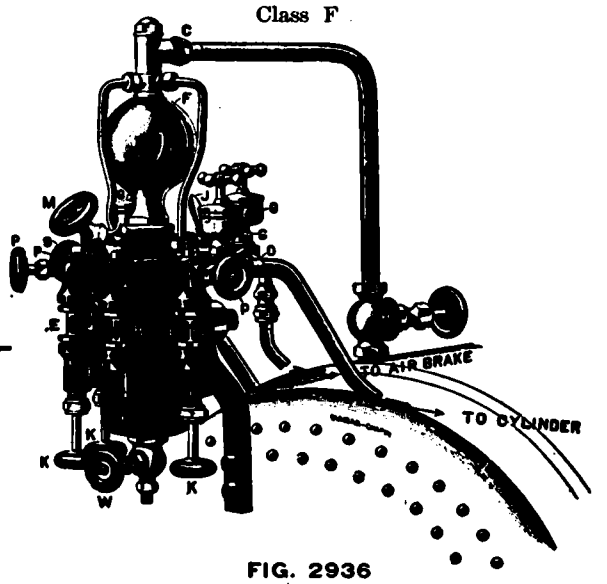


FIG. 2936

This lubricator has three sight feeds for oiling independently each cylinder and air brake. After placing in position and connecting as directed steam enters at C, a portion passing through the small outside pipes leading from the top of the bulb or condenser to each cylinder through O on both sides, taking oil at the discharge from the lubricator at the top of the sight feeds, and for the air brake pump cylinder at the connection just below the auxiliary oiler G to the different cylinders to be lubricated. The other portion of steam condenses in bulb F forming the water column; this water is conducted to the bottom of the lubricator under the oil, which is forced out through sight feeds EEE in drops regulated by valves KKK. Thus it can be readily understood that exactly the quantity of oil allowed to feed up through each sight feed must go to each cylinder as desired. At the auxiliary oiler G on back of lubricator connections are made with the air brake pump cylinder, and the quantity of oil feeding is indicated by sight feed E on the front of the lubricator. M—Filling plug. F—Condenser. N—Lock nut to fasten lubricator to bracket. SSS—plugs over glasses. H—Steam valve. GGG—Auxiliary oilers. C—Union. KKK—Regulating valves. W—Draw off valve. EEE—Sight feeds. PPP—Valves to shut off at top of glass when broken. J—Water valve. OO—Connections to cylinders. B—Gauge glass.

PRICES ON APPLICATION

DUPLEX CONDENSER AND TRIPLE SIGHT FEED LOCOMOTIVE LUBRICATOR

For Locomotive and Air Pump Cylinders.

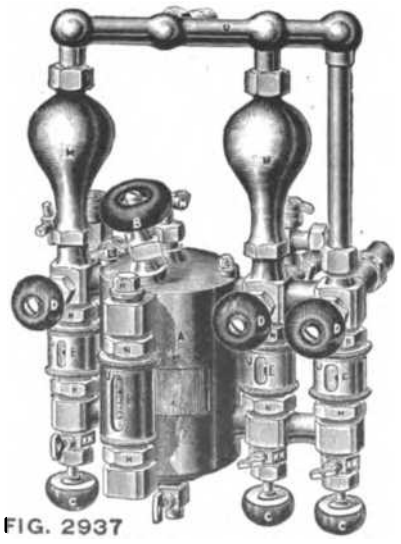


FIG. 2937

DESCRIPTION, FIG. 2937

A—Oil chamber. B—Filling cap. CCC—Oil drop regulating valves. DDD—Ejector valves. EEE—Protecting shields. GG—Oil tube cleaning plugs. F—Drain valve for oil chamber. HHH—Packing nuts. JJJJ—Sight feed and index glasses. KKK—Removable bonnets for replacing glasses. LL—Auxiliary oil cups. II—Adjustable shield collars. MM—Condensing chambers. N—Water valve. O—Bracket stud and lock nut. RRR—Connecting couplings to cylinder. T—Coupling to boiler. VVV—Valves for cleaning out sight glasses. YY—Valves for auxiliary oil cups. Sizes, 1 quart, 3 pints. Finished or nickel plated.

SPECIAL CIRCULAR AND PRICES ON APPLICATION

DUPLEX CONDENSER AND DOUBLE UP FEED LOCOMOTIVE LUBRICATOR

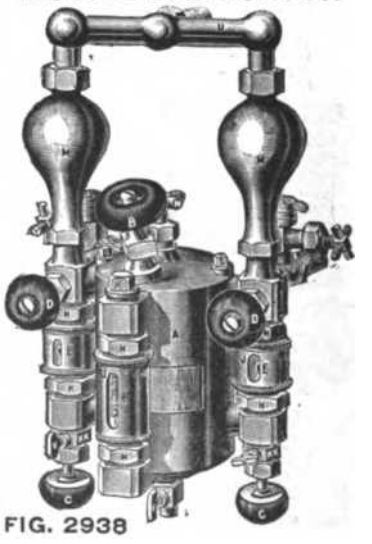


FIG. 2938

DESCRIPTION, FIG. 2938

These lubricators are made extra strong. No joints about them to rack loose and leak. All the arms are cast in one piece with the body; not screwed in.

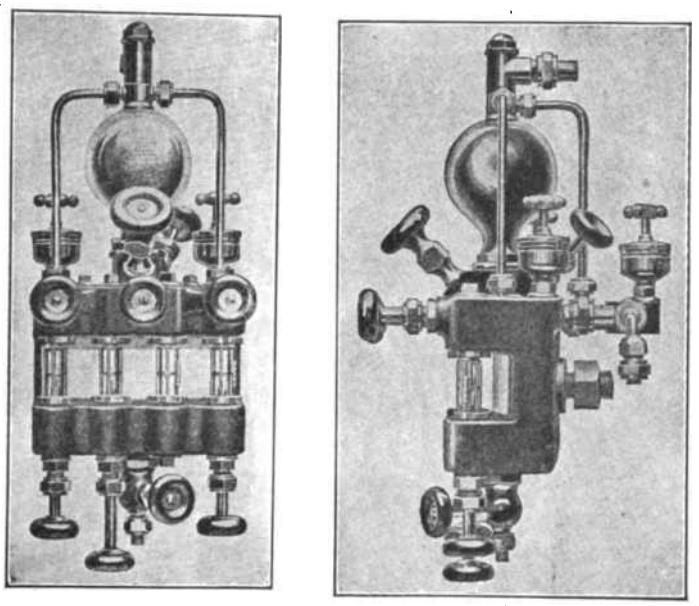
A—Oil chamber. B—Filling Cap. CC—Oil drop regulating valves. DD—Ejector valves. EE—Protecting shields. GG—Oil tube cleaning plugs. F—Drain valve for oil chamber. HH—Packing nuts. JJJ—Sight feed and index glasses. KK—Removable bonnets for replacing glasses. LL—Auxiliary oil cups. II—Adjustable shield collars. MM—Condensing chambers. N—Water valve. O—Bracket stud and lock nut. RR—Connecting couplings to cylinders. T—Connecting coupling to boiler. VV—Valves for cleaning out sight feed glasses. YY—Valves for auxiliary oil cup. Sizes, 1 pint, 1 quart and 3 pints. Finished or nickel plated

SPECIAL CIRCULAR AND PRICES ON APPLICATION.

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LOCOMOTIVE LUBRICATORS

JUMBO TRIPLE SIGHT FEED LOCOMOTIVE LUBRICATOR



FRONT VIEW. FIG. 2939 SIDE VIEW.

In this lubricator all the glasses stand in a straight line, as shown, otherwise it will interchange with either Fig. 2934 or Fig. 2936. Prices on application.

LOCOMOTIVE LUBRICATOR

DESCRIPTION, FIG. 2940

The supply to the atomizing pipes being entirely independent from the supply to the condenser guarantees dry steam at all times for this part of the work; the overflow from the condenser is thus unable to get into the tallow pipes, and must therefore go back to the boiler. By a patented device in the oil reservoir loss of oil is prevented either by oil flowing back through the condenser or by the cup being siphoned by a partial vacuum forming in the boiler.

By the use of a valve placed in the tallow pipes just at the steam chests all back pressure is overcome, thus relieving the cup of much extra work. Prices on application.

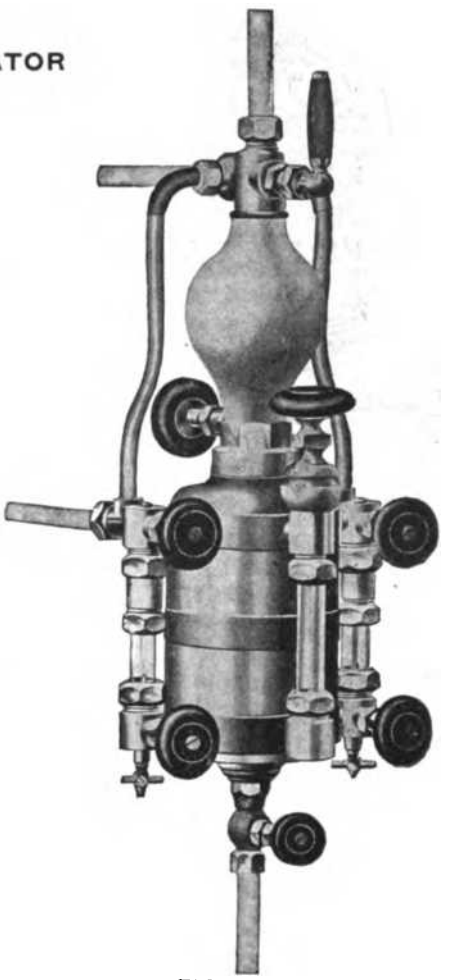


FIG. 2940

LOCOMOTIVE CYLINDER LUBRICATOR



DESCRIPTION, FIG. 2941

Absolute uniformity of feed under all conditions.

Perfect distribution of oil to two or more cylinders.

Self filling feed glass.

Only one glass, which is short and stout.

Simplicity of design and convenience of operation.

Avoidance of passing oil into the boiler, which is accomplished without the use of valves.

FIG. 2941

PRICES

Nos.		Capacity. 1 Quart.	Capacity. 3 Pints.	Hand Oilers.
1	Brass, nickeled	$55 00	$57 50	$6 00
2	Brass, polished	50 00	52 50	5 00
3	Brass, black	37 50	40 00	4 00

TRIPLE SIGHT FEED LOCOMOTIVE LUBRICATOR

DESCRIPTION FIG. 2942

Absolutely overcomes hold up of oil in tallow pipes.

The cylinder feeds have no chokes within the lubricator, but are located in automatic steam chest plug, which plug also contains a separate automatic ball valve, giving large area when throttle is open, but leaving choke only when throttle is closed. The air pump feed is choked at cup, as usual.

It has the Marvin auxiliary or tallow cup, operative against open throttle, in addition to the ordinary functions of closed throttle.

Auto-positive check valves top of sight feed glasses, closing if glasses break, but allowing any one glass to be drained, rushed with live steam, or renewed while others are feeding, and without emptying oil reservoir.

Feeds against 1,000 lbs. pressure as readily as 100 lbs.

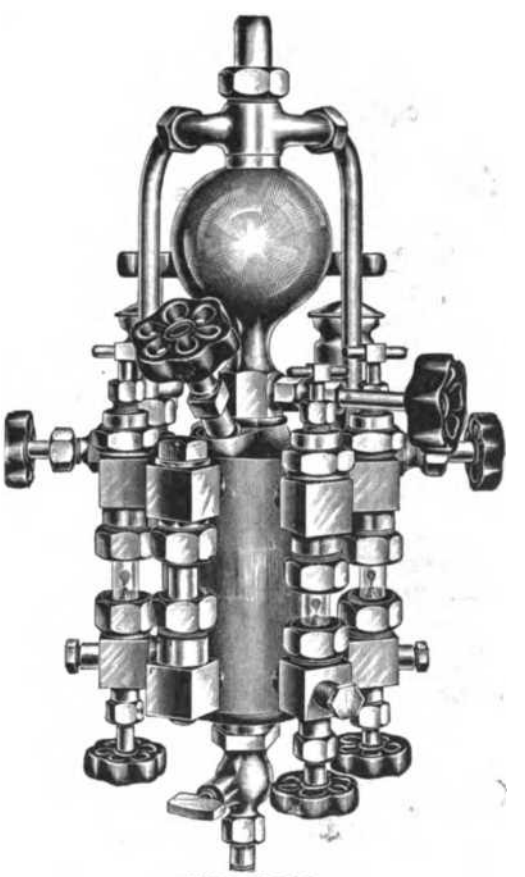


FIG. 2942

Capacity, 3 pints, including automatic steam chest plugs.

Nickel plated or brass finished, each, $70.00.

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HEAVILY MADE SELFACTING LUBRICATORS

FOR LOCOMOTIVE CYLINDERS, AIR BRAKES, MARINE ENGINES, ETC.

DESCRIPTION AND PRICES, FIGS. 2943 AND 2944

Made extra heavy for railroad use.

Screw the cup on the top of the steam chest or on the steam pipe.

Fill it with oil or melted tallow up to the side hole of the inside tube; then open the valve about one quarter, and it is ready for use.

At the end of the day, or when the oil or tallow is exhausted, water, acids and other impurities which remain should be drawn off by the waste cock, and the cup refilled with the lubricant.

These cups will run 90 to 120 miles with each filling.

Sizes, inches	1	1½	1¾	2	2½	3	3½	4	5
Capacity, pints	1/16	1/8	1/5	1/3	½	¾	1½	2	3
Air brake	$4 00	$5 00	$6 00	$8 00	$10 00	$12 00	....	....	...
Cross handled, for cylinder	....	....	....	....	....	$14 00	$18 00	$21 00	....
With yoke for cylinder	....	....	....	....	....	$16 00	....	$24 00	$33 00

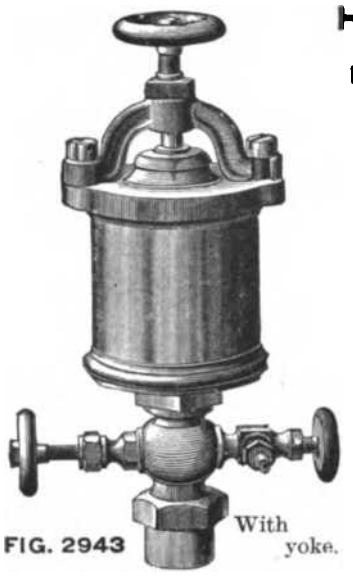


FIG. 2943 With yoke.

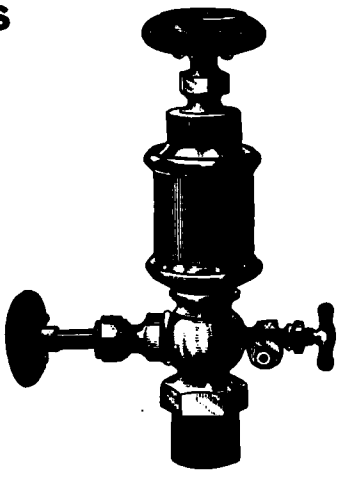


FIG. 2944

Cross handled, outside thread, loose disk valve.

IMPROVED SEAT LUBRICATOR

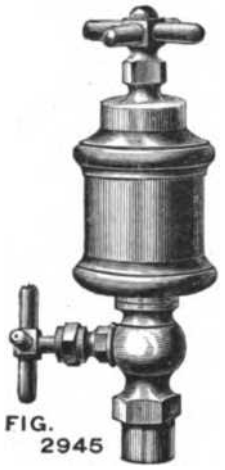


FIG. 2945

PRICES, FIG. 2945

Wood or brass handled.

Nos.	Sizes, Inches.	Per Doz.	Capacity in Pints.
1	1	$18 00	1/16
2	1½	24 00	⅛
3	2	33 00	¼
4	2½	45 00	½
5	3	54 00	¾
6	3½	66 00	1

PRICES, FIG. 2946

Nos.	Sizes. Inches.	Per Doz.	Capacity in Pints.
1	1¼	$15 00	1/16
2	1½	21 00	⅛
3	1¾	24 00	1/5
4	2	30 00	¼
5	2¼	36 00	⅓
6	2½	42 00	½
7	3	54 00	⅞

FUNNEL SHAPED TOP LUBRICATOR



FIG. 2946

LOCOMOTIVE CYLINDER LUBRICATOR

PRICES, FIG. 2947

Number	1
Diameter of body, inches	2
Threaded for iron pipe, inches	½
Capacity, ounces	1½
Each	$8 00

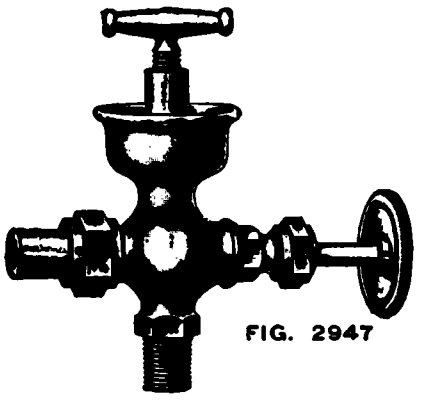


FIG. 2947

HARLIN PATENT LUBRICATOR

BROUGHTON'S LUBRICATORS

PLAIN



FIG. 2948

PRICES FIGS. 2948 AND 2949

Nos.	Diams. of Body, Inches.	Threaded for Iron Pipe, Inches.	Capacity, Ounces.	Plain, Each.	Yoked, Each.
1½	1¾	⅜	1½	$4 00	....
2	2⅛	½	3	5 50	$8 00
2½	2½	¾	6	8 00	12 00
3	3	¾	12	12 00	16 00
4	3¾	¾	24	18 00	24 00

YOKED



FIG. 2949

PLAIN LUBRICATORS

NEW PATTERN

DESCRIPTION AND PRICES, FIGS. 2951 AND 2952



FIG. 2951

The close proximity of the regulating valve of the old style of plain lubricators to hot steam chest and fittings renders it almost impossible to use them without burning the hands while regulating feed of oil. The improvement in these plain lubricators consists of placing the valve G higher up at the bottom of the oil chamber (see cut), thus making it convenient and perfectly safe to handle.

The Siphon Lubricator is constructed with a view to facilitate filling the chamber without entirely removing the cap B, thus preventing the wasting or spilling of oil or tallow, also of misplacing or losing the cap.

Diameters of Body, Inches.	Sizes of Shank, Pipe Thread.	New Pattern Lubricator, Each.	Siphon Lubricator, Each.
1	¼	$2 00	.....
1¼	⅜	2 20	$2 45
1½	⅜	2 40	2 65
1¾	⅜	2 60	2 90
2	½	2 90	3 30
2¼	½	3 25	3 75
2½	¾	3 75	4 25
3	¾	4 75	5 35
3½	¾	7 00	7 50
4	¾	10 00	10 75

Lubricators chased pipe thread furnished regularly. Blank shanks and special threads to order.

SIPHON



FIG. 2952

NEW PATTERN AND SIPHON LUBRICATOR

WITH CONDENSING TUBE AND DRAIN COCK

PRICES, FIG. 2953

Diameters of Body, Inches.	Sizes of Shank, Pipe Thread.	New Pattern Lubricator, C. T. and D. C.	Siphon Lubricator, C. T. and D. C., not illustrated.
1	¼	$3 00	.....
1¼	⅜	3 20	$3 45
1½	⅜	3 40	3 65
1¾	⅜	3 60	3 90
2	½	3 90	4 30
2¼	½	4 25	4 75
2½	¾	4 75	5 25
3	¾	5 75	6 35
3½	¾	8 00	8 50
4	¾	11 00	11 75

Lubricators chased pipe thread furnished regularly. Blank shanks and special threads to order.

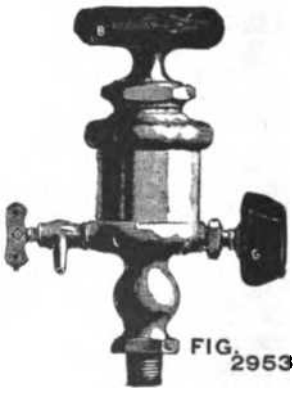


FIG. 2953

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MANNING, MAXWELL & MOORE, 85, 87 AND 89 LIBERTY STREET, NEW YORK

AUTOMATIC NEEDLE VALVE LUBRICATOR

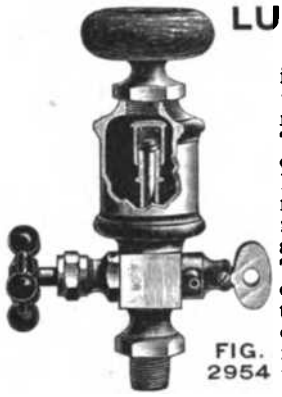


FIG. 2954

The automatic needle valve oil feeder is intended for slide valve engines only, works automatically by pulsation, and must be placed on the steam chest. The stop valve must always be left open except when filling cup with oil. Do not drain off the water until ready to recharge the cup. The lubricator stops feeding when the engine stops, and is about properly adjusted as shipped. To regulate the feed, screw yoke up or down, thereby increasing or decreasing the lift of needle. The greater the lift of the needle the more oil is fed; the needle works up and down like a check valve while the engine is in motion.

PRICES FIG. 2954

Diameters, inches	1¾	2	2½	3
Capacity, pint	¼	½	¾	1
Shank pipe thread, inch	⅜	½	½	¾
Plain top, each	$4 70	$6 20	$7 70	$9 00
Cross top with glass gauge, each	.....	10 60	11 30	14 50

PLAIN ENGINE LUBRICATORS

FINISHED BRASS **BRONZED**

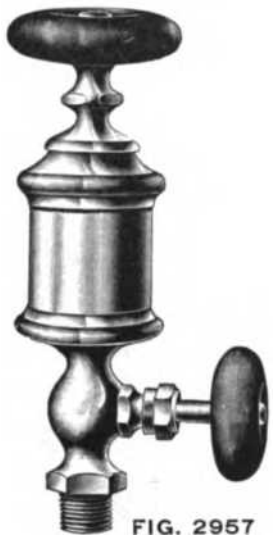


FIG. 2957



FIG. 2958

Filler plug and trimmings finished brass.

PRICE, FIG. 2958

Bronzed, iron body, rough, with iron wheels.

Diameter, inches.. 2
Capacity, pint.....⅝₃₂
Threaded iron pipe, size..... ½
Each.....$2 25
Nickel plating extra.

PRICES, FIG. 2957

Nos.	Threaded Iron Pipe. Sizes.	Diameters, Inches.	Capacity. Drachms.	Capacity. Pints.	Finished Brass, Each.	With Cock and Tube, Each.
00	⅜	1	3	...	$2 00	$3 00
0	⅜	1¼	5	...	2 20	3 20
1	⅜	1½	10	...	2 40	3 40
2	⅜	1¾	..	⅛	2 60	3 60
3	½	2	..	3/16	2 90	3 90
4	½	2¼	..	5/16	3 25	4 25
5	½	2½	..	7/16	3 75	4 75
6	¾	3	..	⅝	4 75	6 00
7	¾	3½	..	1	7 00	8 50
8	¾	4	...	1⅝	10 00	12 00

Nickel plating extra.

PLAIN CYLINDER LUBRICATORS FOR STEAM CHEST

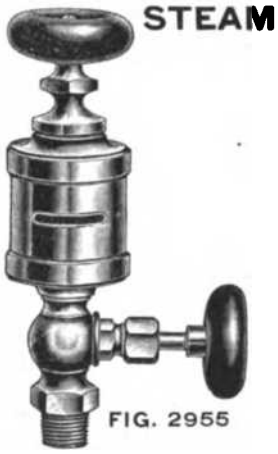


FIG. 2955



FIG. 2956

PRICES, FIG. 2955

Numbers	80	81	82	83	84	85	86	87	88
Diameters, inches	1	1¼	1½	1¾	2	2¼	2½	3	3½
Pipe thread	⅜	⅜	½	½	½	¾	¾	¾	¾
Each, without tube or drain	$2 00	$2 20	$2 40	$2 60	$2 90	$3 25	$3 75	$4 75	$7 00

PRICES, FIG. 2956

Numbers	90	91	92	93	94	95	96	97	98
Diameters, inches	1	1¼	1½	1¾	2	2¼	2½	3	3½
Pipe thread	⅜	⅜	½	½	½	¾	¾	¾	¾
Each, with tube and drain	$3 00	$3 20	$3 40	$3 60	$3 90	$4 25	$4 75	$5 75	$8 00

PLAIN ENGINE LUBRICATORS

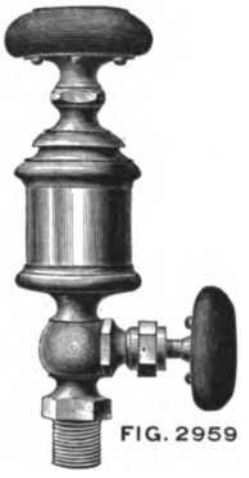


FIG. 2959

PRICES, FIG. 2959

Wood handled.

Nos.	Sizes in Inches.	Per Dozen.	Capacity in Pints.
1	¾	$12 00	1/20
2	1	15 00	1/16
3	1½	18 00	⅛
4	1¾	24 00	⅛
5	2	30 00	⅛
6	2¼	39 00	½



FIG. 2960

PRICES, FIG. 2960

Diameters of bowl	1	1¼	1½	1¾	2	2¼	2½	3
Sizes of shank pipe thread	⅜	⅜	½	½	½	½	½	¾
Common lubricator	$2 00	$2 20	$2 40	$2 60	$2 90	$3 25	$3 75	$4 75
With air cock	3 00	3 20	3 40	3 60	3 90	4 25	4 75	5 75

PLAIN ENGINE LUBRICATORS

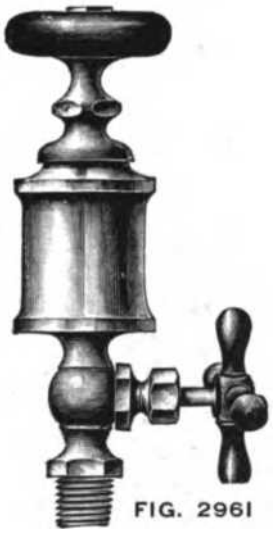


FIG. 2961

PRICES, FIG. 2961

Nos.	Diams. of Body, Inches.	Threaded for Iron Pipe, Inches.	Capacity, Ounces.	Each.
15	1⅛	⅜	½	$2 00
16	1⅜	⅜	1	2 20
17	1¾	½	1½	2 45
18	2	½	2½	2 75
19	2⅛	½	3½	2 95
20	2½	½	6	3 50

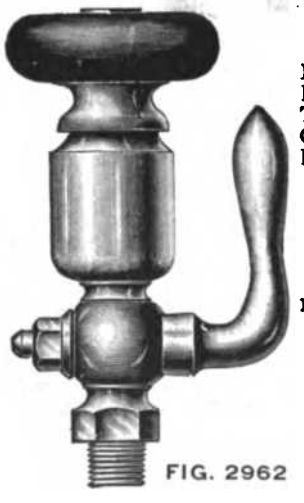


FIG. 2962

PRICE, FIG. 2962

Number	AA
Diameter of body, inch	1
Threaded for iron pipe, inch.	⅛
Capacity, ounces	⅛
Each	$1 55

PRICES, FIG. 2963

Nos.	Diameters of Body, Inches.	Threaded for Iron Pipe, Inches.	Capacity.	Each.
00	15/16	¼	½	$2 25
0	1½	⅜	1	2 40
1	2	½	2	3 00
2	2⅜	½	4	3 90
3	2¾	¾	7	5 00
4	3⅛	¾	12	12 00
5	4	¾	22	16 00
6	5	1	40	21 00

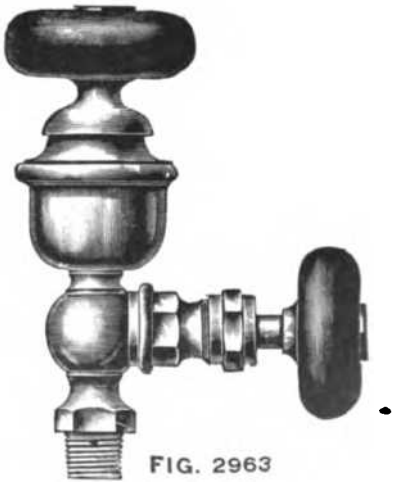


FIG. 2963

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IMPROVED ROCHESTER AUTOMATIC LUBRICATORS

SINGLE FEED. FIG. A

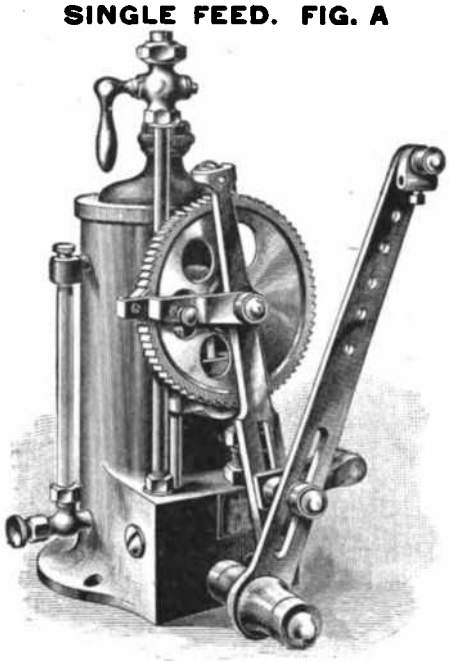


FIG. 2964

SINGLE FEED. FIG. B

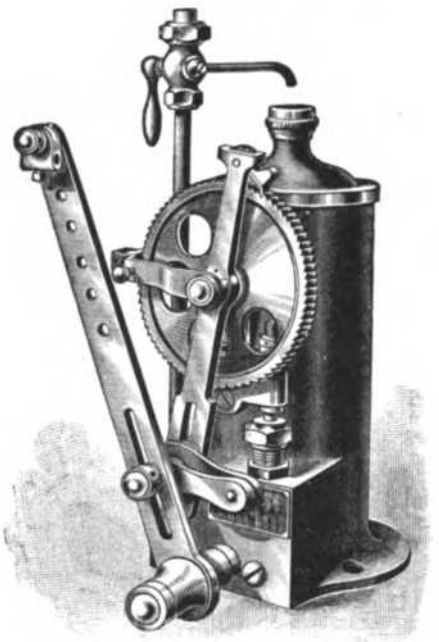


FIG. 2965

DOUBLE FEED. FIG. C

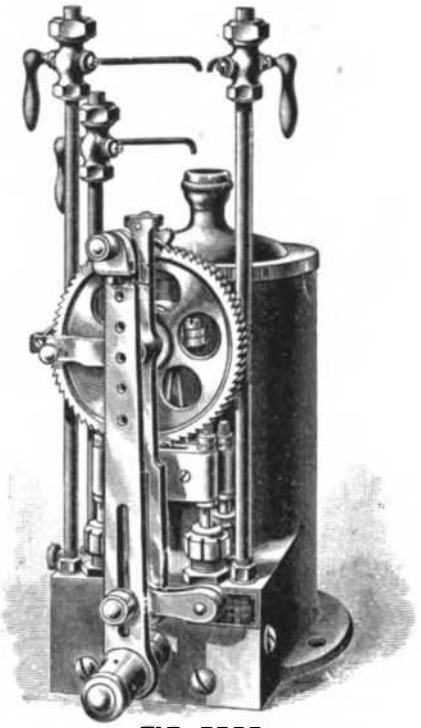


FIG. 2966

QUADRUPLE FEED. FIG. E

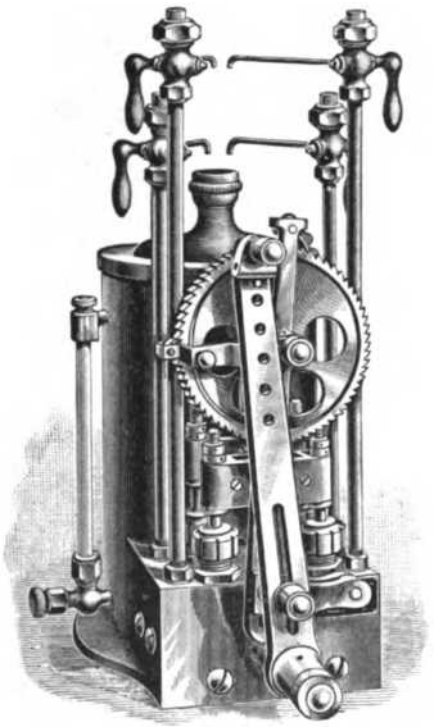


FIG. 2968

FRONT VIEW

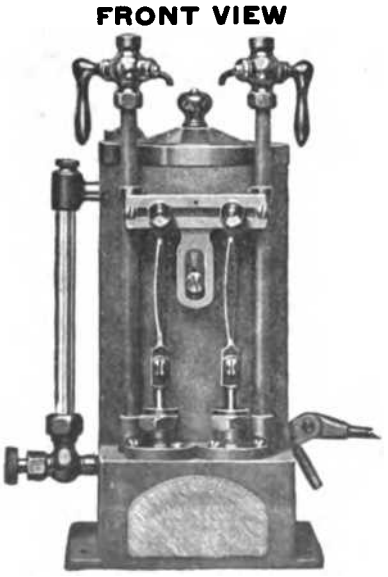


FIG. 2969

TRIPLE FEED. FIG. D

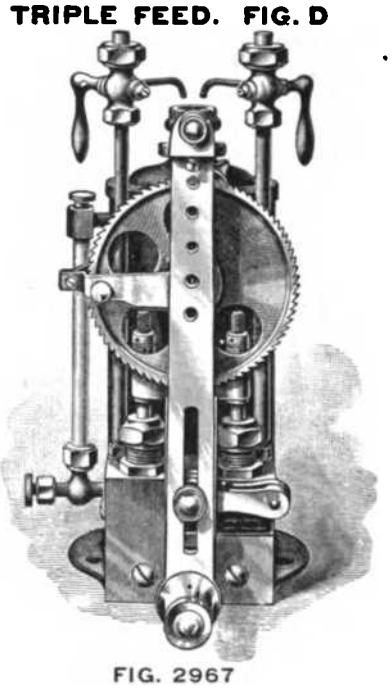


FIG. 2967

BACK VIEW

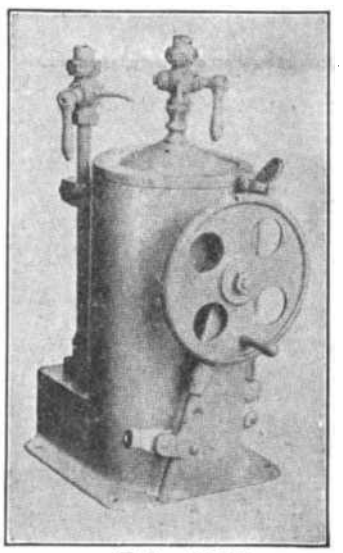


FIG. 2969

PRICES FIGS. 2964 AND 2965

1 pint, single feed	.....	$30 00
3 pints "	.....	35 00
1 gallon "	.....	45 00
2 gallons "	.....	50 00

PRICES FIG. 2966

3 pints, double feed	.....	$50 00
1 gallon "	.....	60 00
2 gallons "	.....	75 00

PRICES, FIG. 2967

1 gallon, triple feed	.....	$80 00
2 gallons "	.....	90 00

PRICES, FIG. 2968

1 gallon, quadruple feed	.....	$100 00
2 gallons " "	.....	125 00

FORCE FEED LUBRICATOR

PRICES, FIG. 2969

1 quart, single feed	.....	$25 00
2 quarts, "	.....	30 00
1 gallon, "	.....	40 00
2 gallons, "	.....	50 00

FOR COMPOUND ENGINES

2 quarts, double feed	.....	$50 00
1 gallon, "	.....	60 00
2 gallons, "	.....	75 00

FOR TRIPLE EXPANSION ENGINES

1 gallon, triple feed	.....	$80 00
2 gallons, "	.....	90 00

QUADRUPLE EXPANSION ENGINES. ENGINES OF FOUR VALVE TYPE, ETC.

1 gallon, quadruple feed	.....	$100 00
2 gallons, "	.....	125 00

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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AUTOMATIC LUBRICATOR, FRANKE SYSTEM

DESCRIPTION, FIGS. 2970 AND 2970A

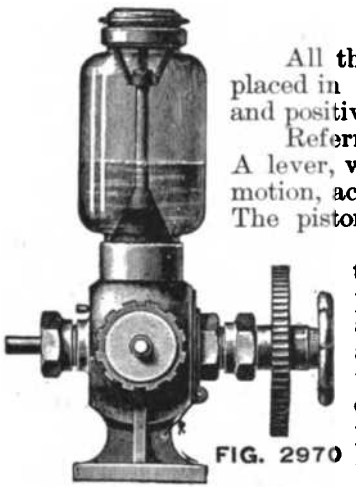


FIG. 2970

All the working parts of these lubricators, except ratchet wheel and lever, are placed in oil, and therefore protected from wear. The apparatus is easily connected, and positive in action under any pressure.

Referring to cuts, Figs. 2970 and 2970A, its construction will be readily understood. A lever, which is to be connected to any part of the machine having a reciprocating motion, actuates a ratchet wheel, and by the same a pump cylinder inside the casing. The piston of the cylinder makes two strokes with every revolution by being forced against an adjustable stud, and in this manner effects a suction and forcing of the oil to the parts of the machine to be lubricated. The pump cylinder is provided with an opening, which, while revolving, forms alternately a communication with the oil reservoir and with a force tube, leading the oil to any desired points. A small valve is provided in force tube as a protection against leaks caused by impurities in the lubricant. The length of stroke of the cylinder piston can be adjusted by means of a screw nut and thus the amount of oil regulated. They are made of steam metal with glass reservoirs.



FIG. 2970A

PRICES

1 pint..... each, $20 00
2 pints..... " 22 50

AUTOMATIC FORCE FEED LUBRICATORS

POSITION OF RESERVOIR WHEN FULL

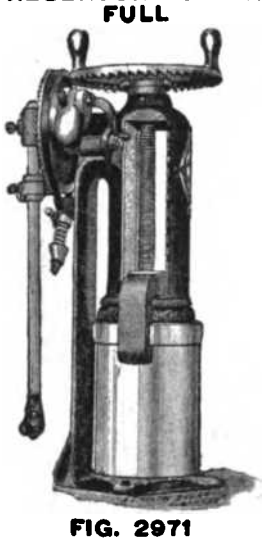


FIG. 2971

DESCRIPTION, FIGS. 2971 AND 2971A

This lubricator will positively and regularly (without regard to temperature, consistency of oil or distance) lubricate the cylinders of stationary, marine, locomotive and steam fire engines, steam pumps, hydraulic elevator pumps and cylinders, air compressors, gas engines and air motors. This lubricator is also perfectly adapted for supplying oil or grease to all kinds of motors, large bearings, such as thrust bearings. It will be found especially valuable wherever the machinery is run intermittently or at variable speed, such as steam pumps, propellers, tug boats, ferry boats and hydraulic elevator pumps and cylinders. As the lubricator works only while the machinery is running and in proportion to the speed, it protects the boilers from damage caused by the excess of oil returned with the condensation. When the oil reservoir is empty the action of lubricator is stopped automatically. With the lubricator secured on stand made for this purpose, it can be placed at any point most convenient for making connections. The connecting arm is attached to some movable part of the engine and the pawl on arm gradually turns the back ratchet wheel. An eccentric on inner hub of back wheel operates a bell crank having a pawl on upper end, which turns top wheel one tooth to each revolution of back wheel. The oil reservoir is drawn on to stationary piston by means of the feed screw of top wheel. The face of piston is provided with a leather cup packing and an oil outlet, running up one side of piston frame to pipe connecting with point to be lubricated, through which the oil is forced. A check valve in outlet prevents escape of oil when the removable reservoir is taken out for refilling.

POSITION OF RESERVOIR WHEN EMPTY



FIG. 2971A

A positive and regular feed is permanently secured by adjusting connecting arm and pawl to feed one or more teeth in the row on back wheel that will give the required supply.

Prices, each: 1 pint capacity, $42.00; 1 quart capacity, $55.00; half-gallon capacity, $68.00.

DUPLEX, HIGH SPEED



FIG. 2972

For large cylinders, especially those having Corliss type of valve, builders have found that the best results are obtained by feeding the oil to both ends of the cylinder. As the two oil reservoirs are raised together by the feed screw, a perfectly even distribution of oil is guaranteed to each end of cylinder. It is constructed and operates in the same manner as the single lubricator. For high speed we furnish a lubricator with a double adjustment which permits reducing the feed as low as may be desired, and at the same time gets all the advantages of the regular and positive feed. We can furnish stands especially for holding this lubricator. They can be placed at any point most convenient for making connection and bring the lubricator to a convenient height. For the pint size we furnish a neat bracket, which can be fastened to wall or partition, and is often a convenience, especially in marine use. Each, $80.00.

SIGHT FEED ATTACHMENT FOR AUTOMATIC FORCE FEED LUBRICATOR

DESCRIPTION

FIGS. 2973 AND 2974

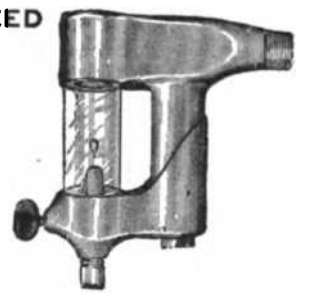


FIG. 2973

SECTION OF SIGHT FEED ATTACHMENT

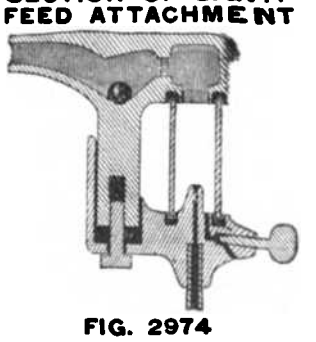


FIG. 2974

Although a sight feed attachment is not really necessary for the automatic lubricator, most engineers, having become accustomed to the sight feed, prefer to continue its use. We furnish a sight feed attachment which screws directly into the steam pipe. This sight feed is intended for use only when connection is made back of throttle valve. Shank threaded ⅜ inch, and connection from lubricator ⅛ inch pipe. It is constructed with an automatic valve which shuts off pressure immediately should glass break. The replacing of glass and adjustment of packing are accomplished with a single adjusting bolt. Glass can be cleaned at any time by simply turning thumb screw. Each, $7.00.

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TIC-A-TOC AUTOMATIC LUBRICATOR OR GREASE CUP



FIG. 2975

DESCRIPTION, FIG. 2975

With this lubricator you get a positive, automatic, even and never varying feed. Lubrication starts and stops with the starting and stopping of engine. No waste. Bearings don't have to get warm before they get lubricated. The throw of the crank pin or eccentric operates a pendulum, ratcheted to a worm connected wheel, forcing the plunger—fast or slow, as required—through the grease cup. The ordinary engine running ten hours a day, at a speed of 150 revolutions a minute, will empty the pint cup in 11¾ days. Grease is forced into bearing in the exact quantity required—speed of engine or size of bearing no obstacle. Season or temperature has nothing to do with it. Quantity of lubrication easily and surely regulated by increasing or diminishing swing of pendulum. Can also be operated as a hand compression cup while the engine is running, if necessary. The stem of the plunger extends through the top of the cup, and at all times indicates the amount of grease remaining in the cup. A medium soft grease, that will retain its consistency under the range of temperature existing where cup is, should be used.

PRICES, FIG. 2975

Nos.	1	2	3	4	5
Outside diameter of body, inches	2	2½	2½	3	3
Travel of plunger, "	2½	3½	5½	3½	5½
Extreme height when filled, "	7½	9½	11½	9¾	11¾
Pipe thread on shank, inch	⅜	½	½	½	½
Capacity in oz. (grease)	4	8	12	12	18
Finished brass, each	$10 50	$11 50	$12 50	$13 50	$15 00
Nickeled	11 50	12 50	13 75	15 00	17 00

Other lengths made if desired. Prices on application.

SINGLE FEED PUMP

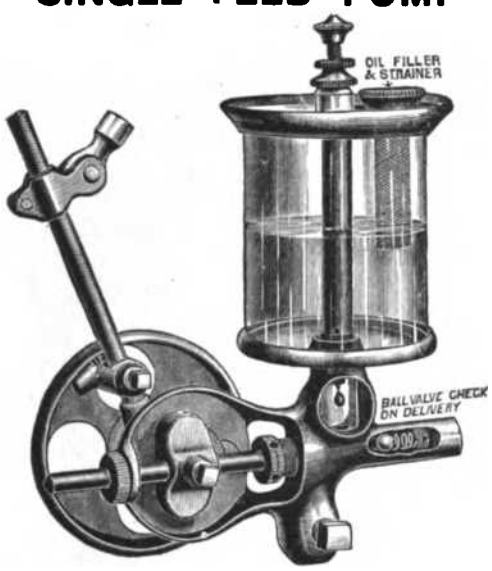
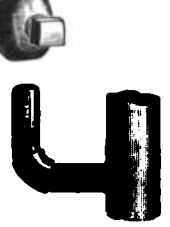


FIG. 2977



Made in three sizes: 1 pint, 3 pints and 1 gallon.

THE BUFFALO AUTOMATIC CYLINDER OIL PUMP

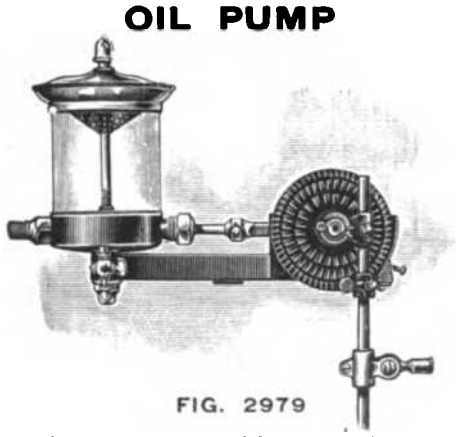


FIG. 2979

Adapted for use on either vertical or horizontal engines. A positive automatic oiler for the lubrication of steam valves and cylinders where positive accuracy is required.

PRICES

No. 1 glass cup, iron frame, nickel plated; holds over one pint	$25 00
No. 2 glass cup, iron frame, nickel plated; holds over one quart	30 00
Sight feed	5 00

AUTOMATIC LUBRICATING OIL PUMPS

These lubricating oil pumps have been specially designed to meet the demand for an economical lubrication of stationary, marine, electric light, regardless of speed, steering and blowing engines, fans, air compressors, locomotives, pumps of all kinds, hydraulic elevators, regardless of pressure, than can be had from lubricators or pumps now in use—the variations of temperatures not affecting its operation. They feed any kind of oil or graphite. We can furnish these pumps. Triple feed pump for engines of triple expansion type. Made in one size, one gallon reservoir. Quadruple feed, made with two 1 gallon reservoirs, two cylinders under each reservoir. On same plan as Duplex two reservoir pump. Six feed, made with two 1 gallon reservoirs, three cylinders under each reservoir. On same plan as Duplex two reservoir pump.

INSTRUCTIONS FOR ATTACHING PUMP.

Attach pump to any part of engine frame where it is most convenient to get motion. Place check valve (furnished) at inlet to steam pipe; use quarter-inch pipe. Close adjusting valve when filling reservoir the first time; after filling, open according to necessity of drop desired to feed, then tighten lock nut and it will always be regulated. Adjust friction according to grip in wheel, and break to spring power; oil V groove with oily waste. If it is desired to clean sight feed glass, close regulating valve and unscrew the reservoir.

PRICES, FIGS. 2977 AND 2978

1 pint single feed	$20 00
3 " " "	30 00
1 gallon " "	40 00
3 pint double "	40 00
1 gallon " "	50 00
1 " triple "	70 00
1 " quadruple feed	90 00
1 " sextuple feed	100 00

DOUBLE FEED PUMP

For engines of compound condensing type

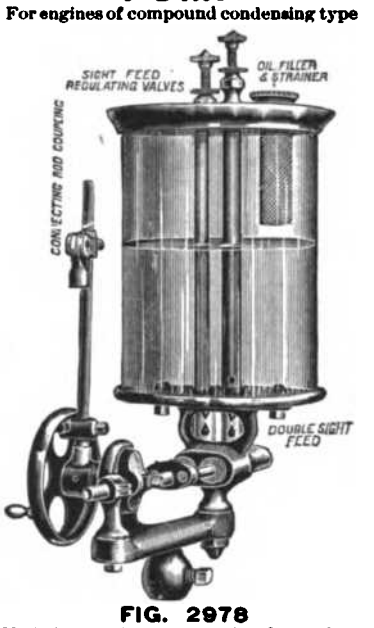


FIG. 2978

Made in two sizes. Capacity three pints and one gallon.

UNIVERSAL HAND OIL PUMP

PRICES, FIG. 2980

Size, No.	3A	5A	6A	8A
Outside diameter of glass, inches	2¼	3	3½	4¼
Height of glass, inches	2⅛	3	4	5
Capacity	⅛ pint	½ pint	1 pint	1 quart
Shank pipe thread, inch	⅜	⅜	½	½
Glass body, finished brass, each	$7 50	$8 50	$10 00	$15 00
" nickel plated, "	8 25	9 50	11 00	16 50
Brass body, finished brass, "	8 30	9 50	11 00	16 50
" nickel plated, "	9 10	10 30	12 20	18 20
Extra glasses, each	15	35	65	1 50
Extra cork washers, per dozen	45	60	75	1 50



FIG. 2980

GLASS BODY OIL PUMP

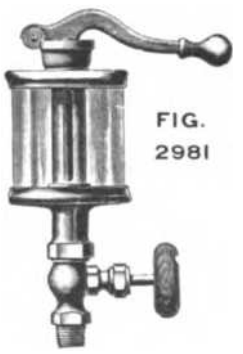


FIG. 2981

PRICES, FIG. 2981

Size. No.	3	5	6	8
Outside diameter of glass, inches	2¼	3	3½	4¼
Height of glass, inches	2⅛	3	4	5
Capacity	⅛ pint	½ pint	1 pint	1 quart
Shank pipe thread, inch	⅜	⅜	½	½
Finished brass, each	$7 50	$8 50	$10 00	$15 00
Nickel plated "	8 25	9 50	11 00	16 50
Extra glasses, "	15	35	65	1 50
Extra cork washers, per dozen	45	60	75	1 50

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CYLINDER OIL PUMP

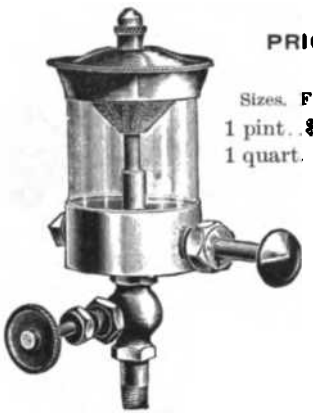


FIG. 2982

PRICES, FIG. 2982

Sizes.	Brass Finished.	Brass, Nickel Plated.	Glasses.
1 pint..	$18 00	$20 00	$0 30
1 quart.	25 00	28 00	50

HAND CYLINDER OIL PUMP

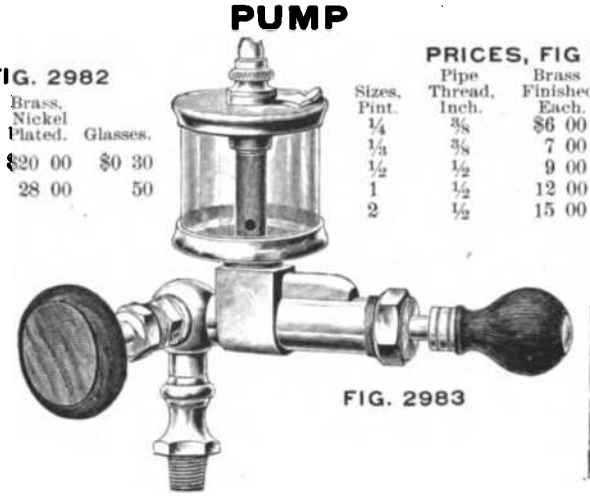


FIG. 2983

PRICES, FIG 2983

Sizes, Pint.	Pipe Thread, Inch.	Brass Finished, Each.	Nickel Plated, Each.
¼	⅜	$6 00	$6 75
⅓	⅜	7 00	7 75
½	½	9 00	9 75
1	½	12 00	13 00
2	½	15 00	16 00

ATLANTIC CYLINDER OIL PUMP

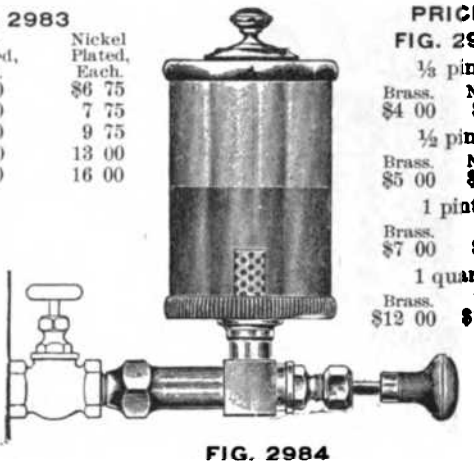


FIG. 2984

PRICES
FIG. 2984

⅓ pint.
Brass. $4 00 — Nickel. $4 50

½ pint.
Brass. $5 00 — Nickel. $5 50

1 pint.
Brass. $7 00 — Nickel. $8 00

1 quart.
Brass. $12 00 — Nickel. $13 00

HAND OIL PUMP

For very large engines and pumps.



FIG. 2985

HAND CYLINDER OIL PUMP



FIG. 2986

BUFFALO GLASS BODY CYLINDER OIL PUMP

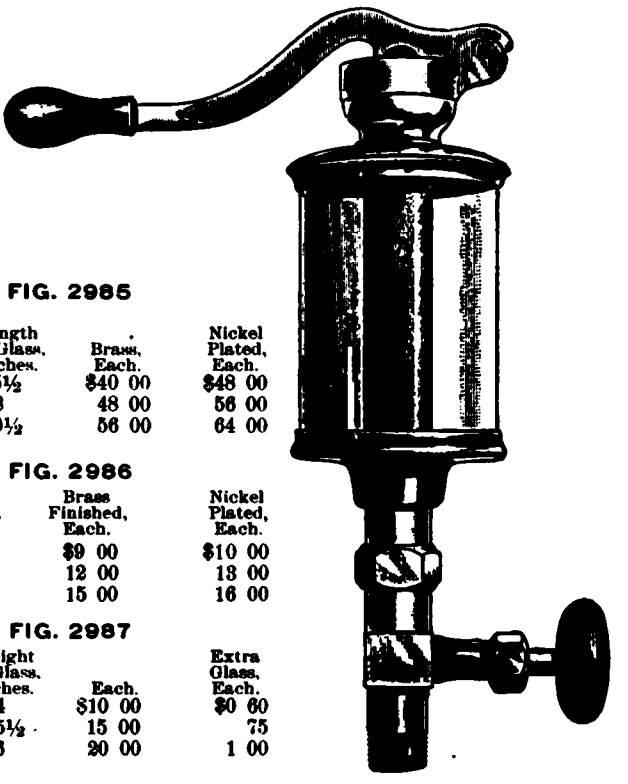


FIG. 2987

PRICES, FIG. 2985

Capacity.	Outside Diameters of Glass, Inches.	Length of Glass, Inches.	Brass, Each.	Nickel Plated, Each.
1 quart....	4½	5½	$40 00	$48 00
3 pints....	4½	8	48 00	56 00
½ gallon..	4½	10½	56 00	64 00

PRICES, FIG. 2986

Sizes.	Pipe Thread. Inch.	Brass Finished, Each.	Nickel Plated, Each.
½ pint.....	½	$9 00	$10 00
1 "	½	12 00	13 00
2 pints.....	½	15 00	16 00

PRICES, FIG. 2987

Capacity.	Diameters of Glass, Inches.	Height of Glass, Inches.	Each.	Extra Glass, Each.
1 pint.....	3	4	$10 00	$0 60
1 quart....	3½	5½	15 00	75
1½ quarts..	4½	6	20 00	1 00

DIAMOND GLASS BODY OIL PUMP

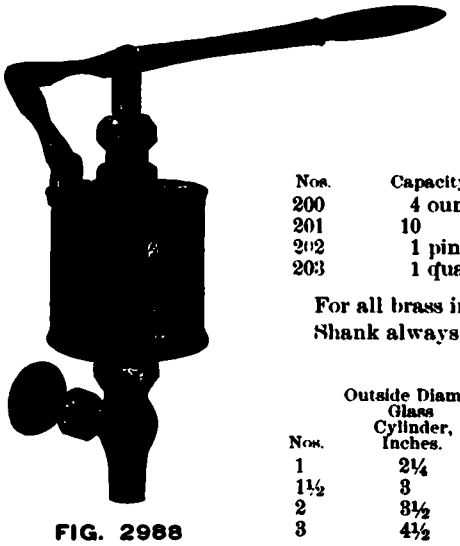


FIG. 2988

DESCRIPTION AND PRICES, FIG. 2988

This pump is substantially built, has pump valves in both suction and discharge, as well as a needle point valve in the standard. We furnish a metal cylinder in place of the glass for this pump if desired.

Nos.	Capacity.	Diams. of Glass.	Height of Glass, Inches.	Shanks, Inches.	Brass, Each.	Nickel Plated, Each.
200	4 ounces	2⅜	2½	⅜	$4 00	$4 60
201	10 "	3⅛	2⅞	½	5 50	6 25
202	1 pint	3½	4½	½	6 75	7 50
203	1 quart	4⅜	4½	½	8 75	9 75

For all brass in place of glass cylinder, add 10 per cent. to list prices.
Shank always threaded for standard pipe unless otherwise ordered.

PRICES, FIG. 2989

Nos.	Outside Diams. Glass Cylinder, Inches.	Height of Glass Cylinder, Inches.	Capacity.	Shank Pipe Thread.	Brass, Each.	Nickel Plated, Each.	Extra Glass, Each.
1	2¼	2⅛	⅛ pint	⅜	$7 50	$8 00	$0 15
1½	3	2¾	½ "	⅜	8 50	9 50	35
2	3½	4	1 "	½	10 00	11 00	65
3	4½	5	1 quart	½	15 00	16 50	1 50

GLASS CYLINDER OIL PUMP

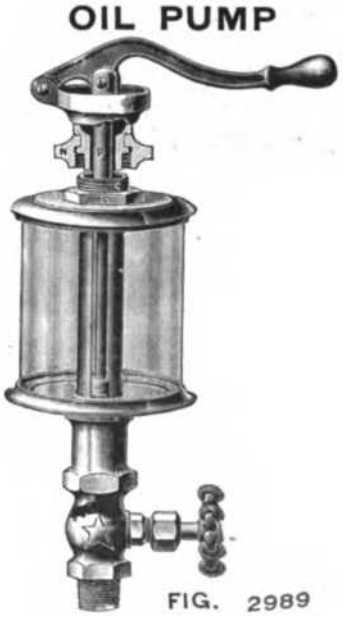


FIG. 2989

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FELTHOUSEN PATENT HAND CYLINDER OIL PUMPS

GLASS BODY

Nos. 03 and 6 go on top of cylinder or steam chest.

Nos. 3, 04, 4 and 5 go on side of cylinder or steam pipe.

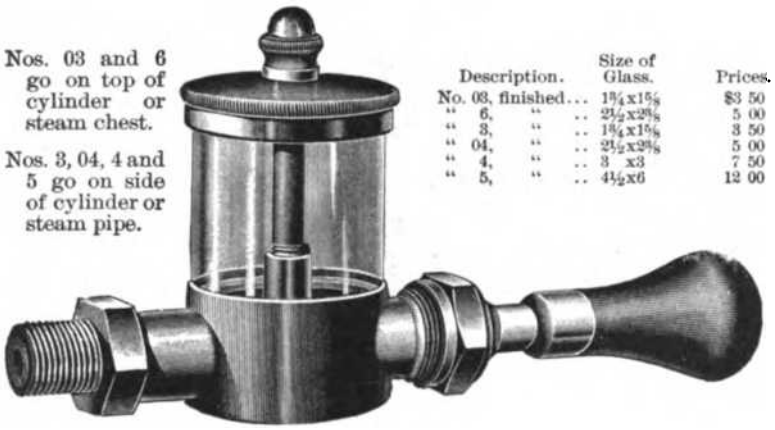


FIG. 2990

Description.	Size of Glass.	Prices.	Extra Glass, Each.
No. 03, finished...	1¾x1⅝	$3 50	$0 12
" 6, " ..	2½x2⅜	5 00	35
" 3, " ..	1¾x1⅝	3 50	12
" 04, " ..	2½x2⅜	5 00	35
" 4, " ..	3 x3	7 50	50
" 5, " ..	4½x6	12 00	1 00

METAL BODY

Style Nos. 3, 04, 4 and 5 to go on side of cylinder or steam pipe.

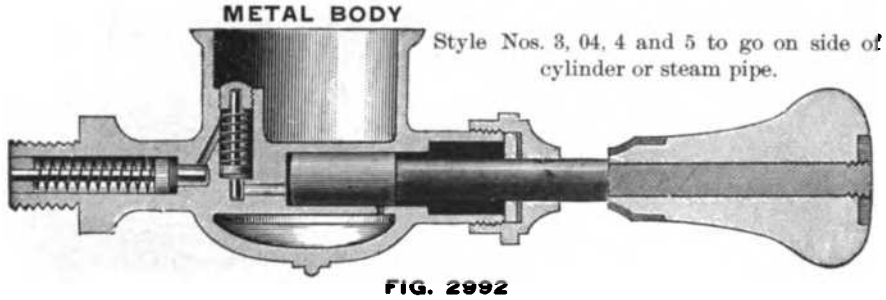


FIG. 2992

Nos. 04, 4 and 5 have extension, with thread and nut on bottom of bowl, to which support brace can be fastened from either right or left hand side if desired.

Style Nos. 03 and 6 to go on top of cylinder or steam chest.

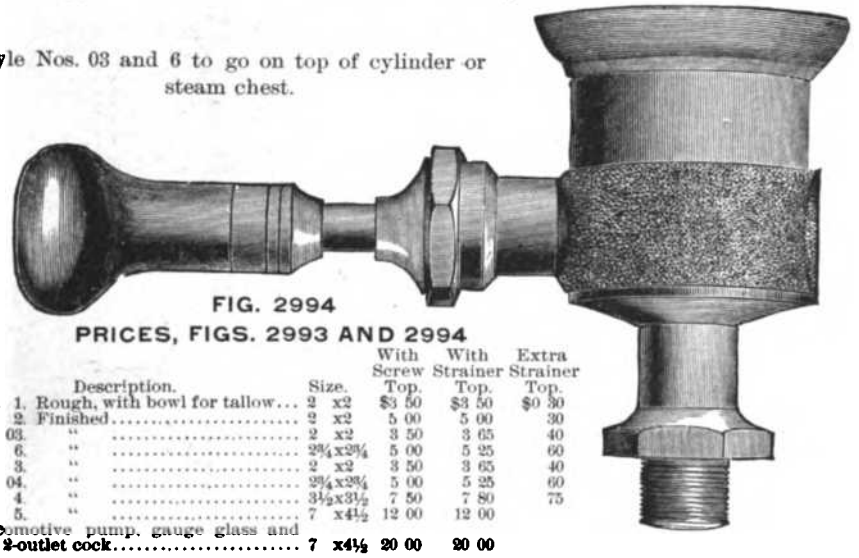


FIG. 2994

PRICES, FIGS. 2993 AND 2994

	Description.	Size.	With Screw Top.	With Strainer Top.	Extra Strainer Top.
No.	1. Rough, with bowl for tallow...	2 x2	$3 50	$3 50	$0 30
"	2. Finished.....	2 x2	5 00	5 00	30
"	03. "	2 x2	3 50	3 65	40
"	6. "	2¾x2¾	5 00	5 25	60
"	3. "	2 x2	3 50	3 65	40
"	04. "	2¾x2¾	5 00	5 25	60
"	4. "	3½x3½	7 50	7 80	75
"	5. "	7 x4½	12 00	12 00	
Locomotive pump, gauge glass and 2-outlet cock.....		7 x4½	20 00	20 00	

RUBY HAND CYLINDER OIL PUMPS

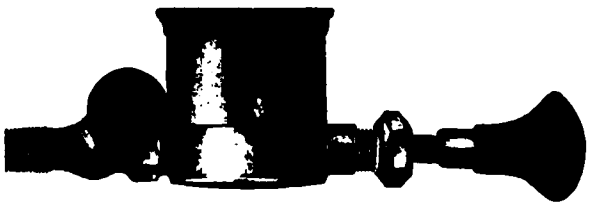


FIG. 2991

When so ordered we furnish this pump with standard below the body for connecting to top of steam chest or cylinder, as well as in the horizonal position for fastening into steam pipe or steam chest.

PRICES

Nos.	Capacity, Pint.	Size of Bowl.	Brass.	Nickel Plated.
700	¼	2½x2½	$3 00	$3 50
701	½	3 x3	4 00	4 75
702	1	3¾x3¾	5 75	6 75

HAND CYLINDER OIL PUMP

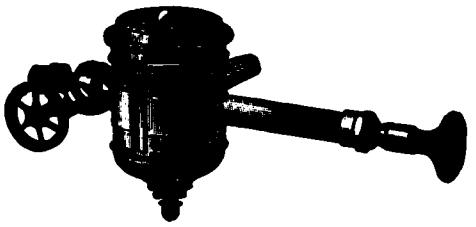


FIG. 2993

½ pint capacity..... $12 00
1 " " with sight glass..... ..... 15 00

HAND OIL PUMP FOR SMALL ENGINES

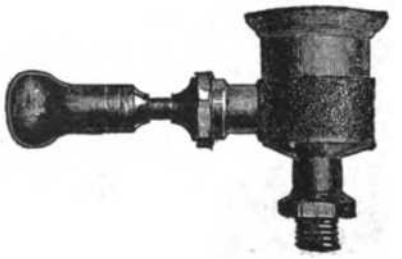


FIG. 2995

¼ pint capacity, for portable and small engines.... $6 50

HAND CYLINDER OIL PUMPS

IN HORIZONTAL OR VERTICAL SHANK PATTERN, WITH VALVE BUILT ON

These pumps not intended for use of graphite.

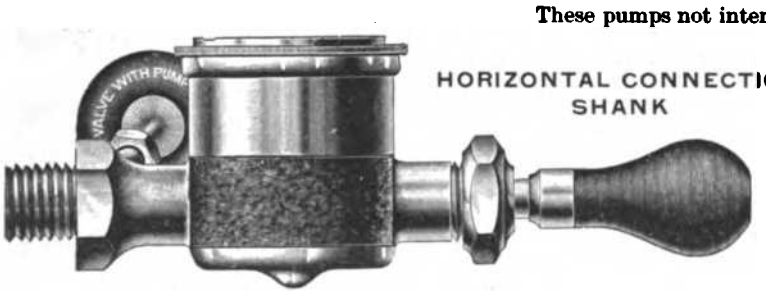


FIG. 2996

PRICES, FIG. 2996

Nos.	Capacity. Pint.	Size of Bowl.	Price with Screw Top. Brass.	Nickel.	Price with Strainer Top. Brass.	Nickel.
500	¼	2¼x2¼	$3 50	$4 00	$3 65	$4 15
501	½	2¾x2¾	5 00	5 65	5 25	5 90
502	1	3½x3½	7 50	8 40	7 80	8 70

PRICES, FIG. 2997

Nos.	Capacity, Pint.	Size of Bowl.	Price with Screw Top. Brass.	Nickel.	Price with Strainer Top. Brass.	Nickel.
503	¼	2¼x2¼	$3 50	$4 00	$3 65	$4 15
504	½	2¾x2¾	5 00	5 65	5 25	5 90
505	1	3½x3½	7 50	8 40	7 80	8 70

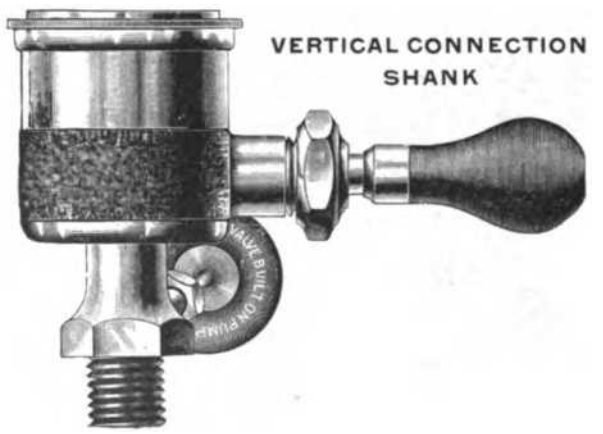


FIG. 2997

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IMPROVED HAND CYLINDER OIL PUMPS

WITHOUT VALVE BUILT ON

THESE PUMPS NOT INTENDED FOR USE OF GRAPHITE

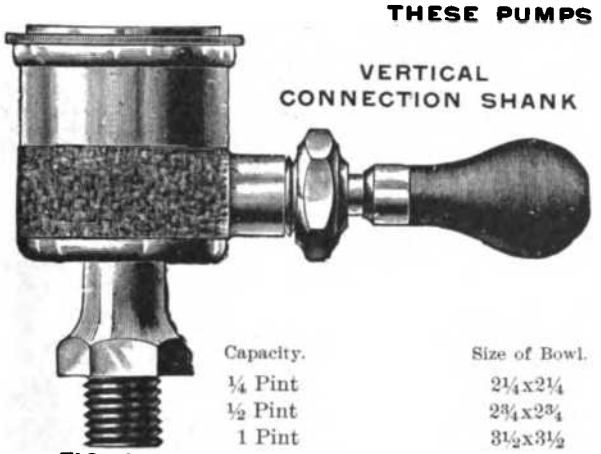


FIG. 2998

Capacity.	Size of Bowl.
¼ Pint	2¼x2¼
½ Pint	2¾x2¾
1 Pint	3½x3½

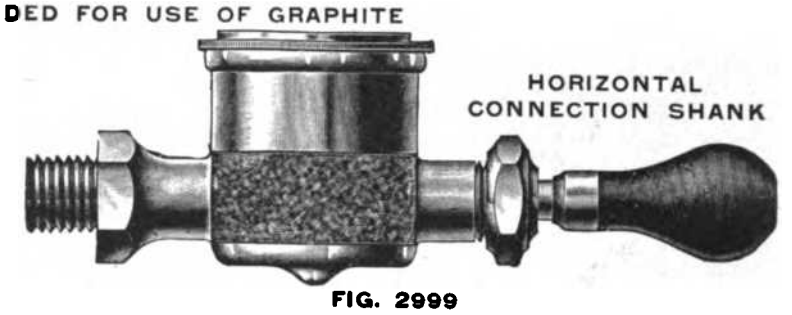


FIG. 2999

Price with Screw Top. Brass.	Nickel.	Price with Strainer Top. Brass.	Nickel.
$3 50	$4 00	$3 65	$4 15
5 00	5 65	5 25	5 90
7 50	8 40	7 80	8 70

BRASS FORCE OIL PUMPS

THESE PUMPS NOT INTENDED FOR USE OF GRAPHITE

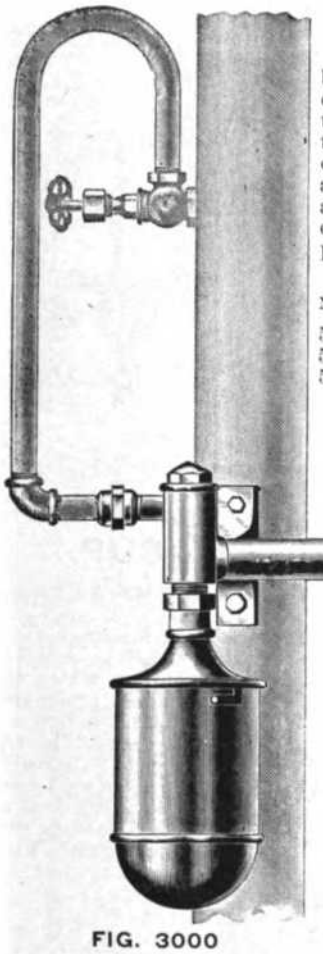


FIG. 3000

DESCRIPTION, FIG. 3000

The reservoir is so constructed that by giving it a slight turn it becomes detached from the balance of the pump, thus permitting of easy filling. With this pump in connection with piping, oil can be forced to remote cylinders and bearings. It is intended for use on all classes of engines, as all its valves are constructed to work against highest pressures.

PRICES

Nos.	Capacity.	Brass Finish, Each.	Nickel Plated, Each.
514	1 Pint	$10 00	$11 00
515	1 Quart	12 00	13 50
516	2 "	15 00	17 00

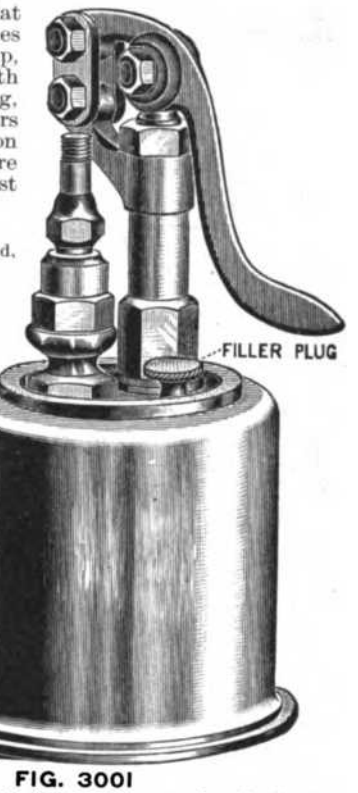


FIG. 3001

This pump is extra heavy in every detail, highly finished. Is intended particularly for use where it is desired to force oil a considerable distance to cylinders and bearings, such as on marine engines, ice machines and large vertical engines, as all its valves are constructed to work against highest pressures.

PRICES

No.	Capacity, Quarts.	Brass Finish, Each.	Nickel Plated, Each.
512	1	$16 00	$17 50
513	2	20 00	22 00

VERTICAL HAND PUMP FOR CORLISS ENGINE

PRICES

Size, Pints.	Brass.	Nickel Plated.
½	$10 00	$11 00
1	13 00	14 00



FIG. 3003

GLASS BODY OIL PUMP

VERTICAL CONNECTION SHANK



FIG. 3002

These oil pumps are made in two styles: one with horizontal connecting shank for attaching into upright steam pipe, and the other with vertical connecting shank for attaching direct into steam chest. The filler opening is provided with a strainer.

PRICES

	No. 6 A.	No. 7 A.	No. 8 A.	No. 9 A.
Diameters, inches.	2½	3	3½	4¼
Height, inches....	2⅜	3	4	5
Capacity.....	4 oz.	8 oz.	1 pt.	1 qt.
Pipe Threads.....	⅜	½	½	½
Brass, price each..	$8 00	$8 50	$10 00	$15 00
Nickel, price each.	8 75	9 50	11 00	16 50
Oil cup glasses, each.....	20	30	40	1 25
Cork washers, per dozen.....	30	40	60	1 50

BRASS OIL SYRINGES

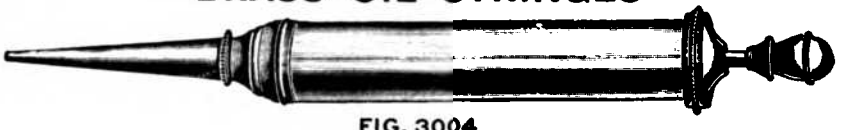


FIG. 3004

	Each.
1¼ inch by 12 inch cylinder.....	$5 00
1½ " " 12 " "	6 00
2 " " 12 " "	7 00

Nozzle detachable. Special sizes made to order.

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JOURNAL SIGHT FEED OILERS AND OIL CUPS

COMPOUND SIGHT FEED OILERS WITH PATENT SIGNAL LEVER STOP FEED

WITH TWO VISIBLE DROPS

For long bearings

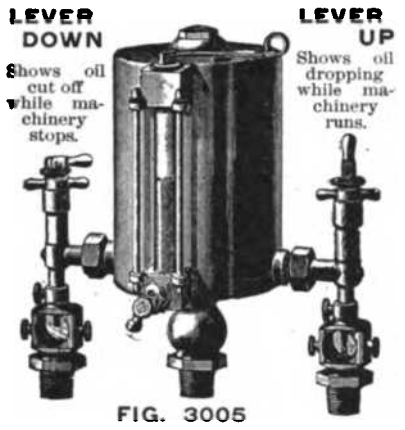


FIG. 3005

PRICES, FIG. 3005, SIDE ARMS ADJUSTABLE

Capacity	1 quart	½ gal.	1 gal.
Size of center shank, pipe thread, inches	¾	¾	¾
Finished, each	$22 00	$32 00	$45 00
Nickel plated, "	26 00	38 00	53 00
Without sight chamber on side arms, deduct	2 00	2 00	2 00

The sight chambers threaded ⅜ pipe unless ordered otherwise.

Can also furnish the above with center shank provided with lock nut to attach to bracket.

PRICES, FIG. 3006

Capacity	1 quart	½ gallon	1 gallon
Size of center shank, pipe thread, inches	¾	¾	¾
Finished, each	$26 00	$36 00	$50 00
Nickel plated, "	30 00	43 00	58 00

This compound feed oiler has been designed for special use on large journals where the single feed cup is insufficient. The side arms are made to adjust to any desired extension within reasonable limits. The sight chambers on side arms are independent and adjustable, and the shanks are threaded ⅜ pipe unless ordered otherwise. Furnished with couplings on sight chambers if desired at above prices.

WITH THREE VISIBLE DROPS

For large journals on engine or dynamo

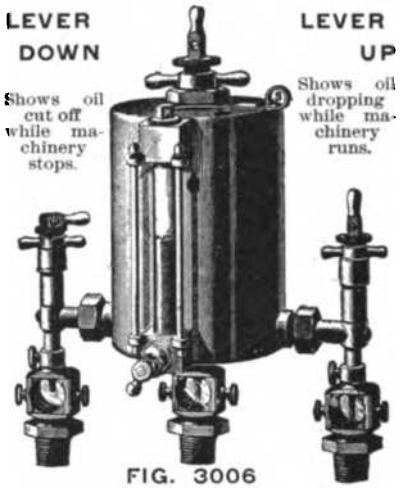


FIG. 3006

WITH THREE VISIBLE DROPS

For dynamo use

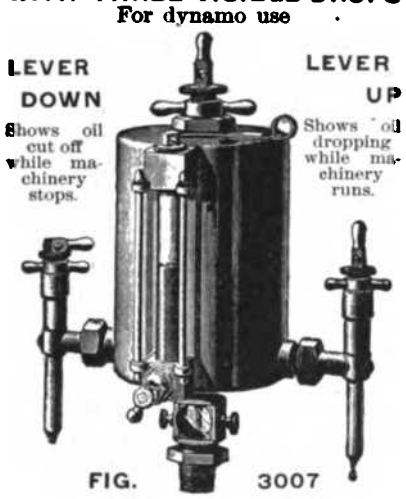


FIG. 3007

PRICES, FIG. 3007

The side arms are adjustable to suit spread of oil holes and height of box.

Capacity	1 quart	½ gallon	1 gallon
Size of shank, pipe thread, in.	¾	¾	¾
Finished, each	$24 00	$34 00	$48 00
Nickel plated, "	28 00	40 00	56 00

This cup is the same as Fig. 3006 without sight chambers on side arms.

PRICES, FIG. 3008

This compound oiler has two feeds on either side of center shanks all fitted with couplings for carrying off the oil to various journals. The center shank is provided with lock nut for fastening to bracket.

Capacity	1 quart	½ gallon	1 gallon
Size of connecting coupling, inches	¼	¼	¼
Finished, each	$42 00	$52 00	$66 00
Nickel plated, "	46 00	58 00	74 00

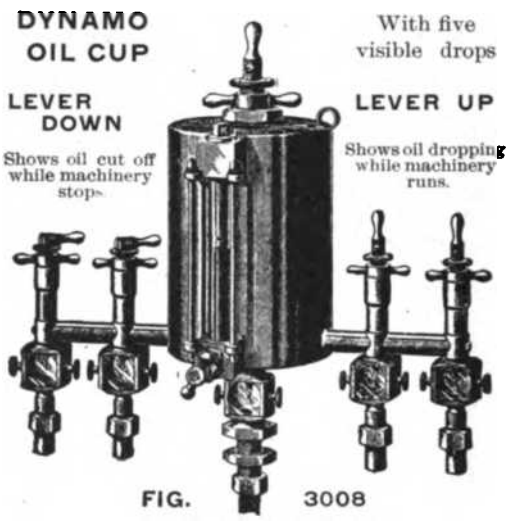


FIG. 3008

PLURAL SIGHT FEED OILERS

WITH PATENT QUICK STOP FLUSHING VALVES

PRICES, FIG. 3009

	1 Quart.	½ Gallon.	1 Gallon.
With Three Feeds.			
Brass finished	$13 00	$18 00	$25 00
Nickel plated	15 00	21 00	29 00
With Four Feeds.			
Brass finished	17 00	22 00	29 00
Nickel plated	19 00	25 00	33 00
With Five Feeds.			
Brass finished	21 00	26 00	33 00
Nickel plated	23 00	29 00	37 00

When desired we furnish supporting brackets at extra cost. In ordering give figure number and capacity, and state finish and pipe thread for unions.

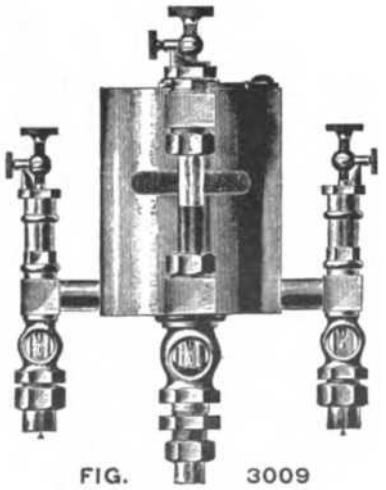


FIG. 3009

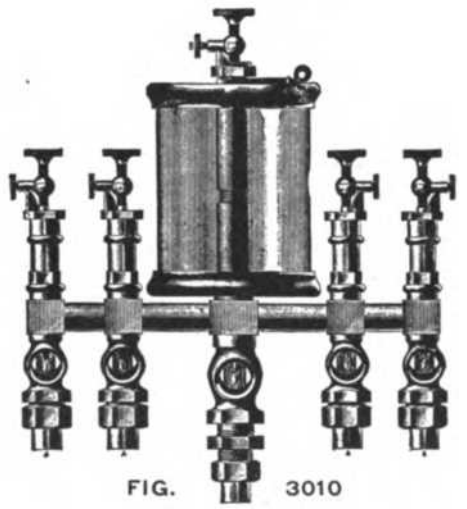


FIG. 3010

PRICES

Quart.

Capacity.	Brass.	Nickel Plated.	Height of Glass.	Diams. of Glass.
Three feeds.	$10 00	$11 50	5⅛	4⅛
Four feeds.	14 00	15 50	5⅛	4⅛
Five feeds.	18 00	19 50	5⅛	4⅛

All feeds can be shut off, renewed instantly or flushed without disturbing set regulation with both Fig. 3009 and Fig. 3010. Connecting unions threaded as specified.

When desired we furnish supporting brackets at extra cost. In ordering give figure number and finish and pipe thread for unions.

JOURNAL OIL CUP

WITH THREE OR MORE SIGHT FEEDS

The general features of this system of lubricating will be noted on inspection of the cut. It will be observed that there is provided a large reservoir from which the several oil holes are fed. A good head, prolonged, uniform, and un failing action are thus insured. Concealed by the cover of the reservoir is a valve stop motion for the central feed, and sight feeds are introduced at proper joints. In practical working this apparatus is economical and efficient.

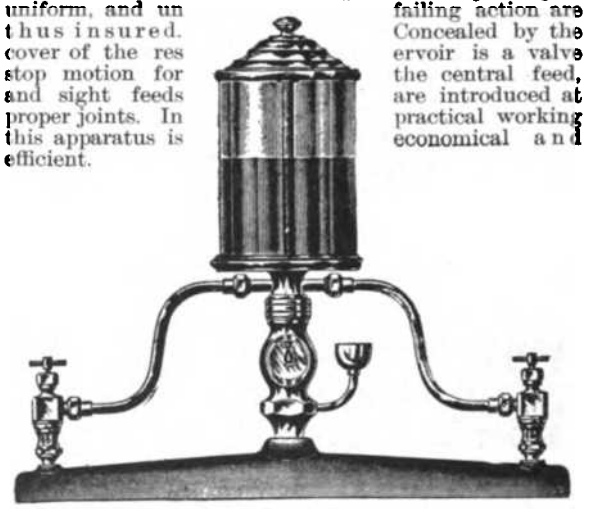


FIG. 3011

PRICES

	Brass.	Nickel.
Reservoir, 2 quarts	$10 00	$11 00
" 3 "	14 00	15 00
" 4½ "	20 00	21 00
" 6 "	24 00	26 00
Oil indicator	1 00	1 50

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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MULTIPLE SIGHT FEED OILERS

FOR VERTICAL, COMPOUND, MARINE AND STATIONARY ENGINES

MULTIPLE OILER

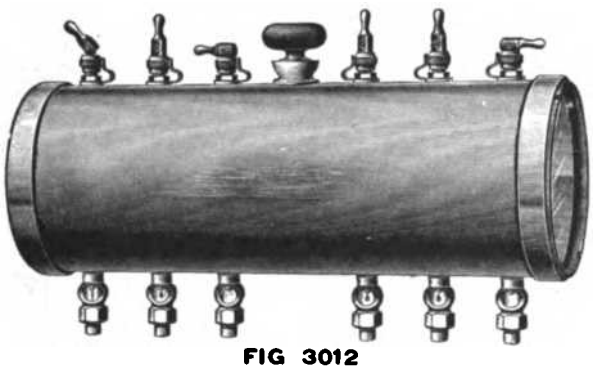


FIG 3012

This style of oiler was originally designed and adapted for use on high speed vertical engines. but has been found useful for all places where it is desirable to oil a number of bearings from one reservoir situated in a convenient place. The sight feeds can be quickly adjusted to give any desired flow of oil, and feed can be put on or off by simply raising or lowering cam lever at top. We furnish devices of this kind of any desired capacity and number of sight feeds, and with square body instead of round as shown in cut. Unions at bottom of sight feeds can be furnished threaded, either male or female, or plain for brazing. In ordering always state capacity of reservoir required, give the number of sight feeds, and whether unions on same are to be threaded, or left plain for brazing. If unions are to be threaded state thread desired, and if for brazing give outside diameter of pipe. Unions with larger thread than ¼ inch pipe will be charged extra.

The prices below cover the round body device as shown in cut. To find list for any size of oiler and number of sight feeds, proceed as follows: Multiply the list price of sight feeds for size of reservoir required by the number of same, and add this amount to the list price of the reservoir, and if brackets are required, add these also, and the sum of the three items will be the complete list price.

PRICES

Capacity.	Reservoirs, Finished Brass, Each.	Reservoirs, Nickel Plated, Each.	Sight Feeds, Finished Brass, Each.	Sight Feeds, Nickel Plated, Each.	Brackets, for supporting Reservoir, Finished Brass, Per Pair.	Brackets, for supporting Reservoir. Nickel Plated, Per Pair.
1 Pint....	$8 40	$9 70	$1 35	$1 55	$1 35	$1 50
1 Quart...	11 60	13 70	1 40	1 60	1 70	1 90
½ Gallon.	15 00	17 30	1 50	1 70	2 00	2 35
1 " .	20 00	22 60	1 55	1 75	2 35	2 70
2 " .	26 60	29 70	1 60	1 80	2 70	3 15
3 " .	36 60	40 00	1 70	1 90	3 30	4 00

MULTIPLE OILER

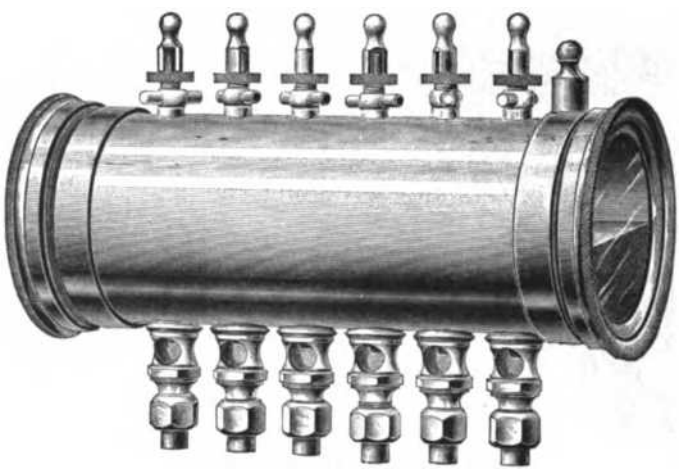


FIG. 3013

PRICES, FIG. 3013, WITH SIGNAL OR SHOULDER FEED

	Diameters. 2 to 2½ Inches, Each.	3 to 3½ Inches, Each.	5 Inches, Each.
2 Outlets	$6 00	$6 00	$8 00
3 "	7 00	7 50	10 00
4 "	8 00	9 00	12 00
5 "	9 00	10 50	14 00
6 "	11 00	12 00	16 00
7 "	12 50	14 00	18 00
8 "	14 00	16 00	22 00
9 "	17 00	19 00	26 00
10 "	20 00	22 00	30 00

In ordering give distance between supports, and size of unions wanted, also number of feeds.

CENTRIFUGAL CRANK OILER

OIL CUP WITH SHANK

OILER ARM

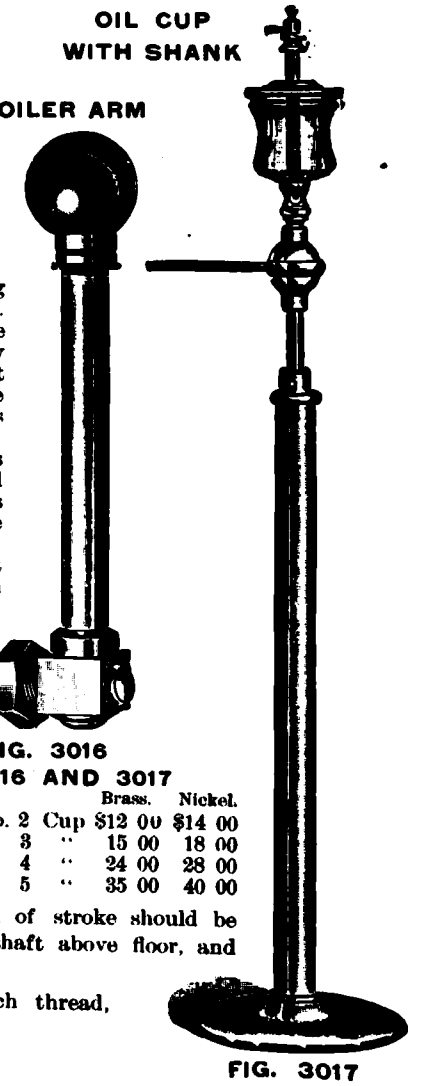


FIG. 3016

PRICES, FIGS. 3016 AND 3017

	Brass.	Nickel.
24 inches, Stroke, No 10 or No. 2 Cup	$12 00	$14 00
36 " " " 12 " " 3 "	15 00	18 00
48 " " " 14 " " 4 "	24 00	28 00
60 " " " 16 " " 5 "	35 00	40 00

In ordering, the length of stroke should be given, height of center of shaft above floor, and size of cup.

Shanks are made ¾ inch thread, unless otherwise specified.

FIG. 3017

ADJUSTABLE CENTRIFUGAL CRANK PIN OILING DEVICES

OILER ARM COMPLETE WITH FLOOR STAND AND OIL CUP

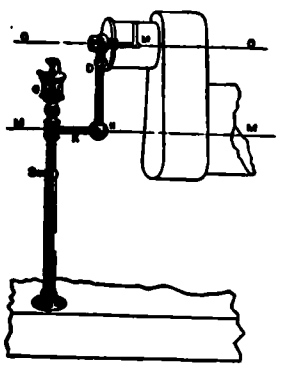


FIG. 3014

PLAIN OILER ARM

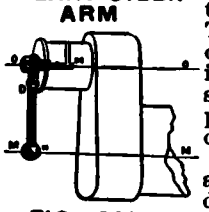


FIG. 3015

These devices furnish means for sufficiently lubricating the crank pin bearings of engines to which they are attached. They are very economical in the use of oil, and in the case of the complete oiler (Fig 3014) the oil can be delivered continuously in any desired quantity to the crank pin bearing, without stoppage of engine. When ordering these oilers always be particular to give the necessary dimensions of engine as detailed below.

The plain oiler arm (Fig. 3015) is intended to be used as an auxiliary to the crank pin cup to afford an extra and direct means of lubricating the crank pin while the engine is in motion, by squirting oil with an oil can through the hole in ball H. In ordering these give stroke of engine.

The complete device with adjustable oil cup stand (Fig. 3014) gives direct continuous lubrication to the crank pin from the oil cup on the floor stand. In ordering these give stroke of engine and distance from center of crank shaft to floor.

When so desired the complete device (Fig. 3014) can be used for feeding grease instead of oil. In such cases we can furnish without extra charge a "Marine" Grease Cup (Fig. 3254) in place of the oil cup which is usually provided on the floor stand. In ordering this device always state which style is desired, and when not otherwise specified we will send an oil cup of a size proportionate to that of the oiler arm.

PRICES, FIGS. 3014 AND 3015

Nos. Length of Stroke. Thread on Bolt (O). Pipe Thread.	1 Up to 16 Inches, ⅝ Inch Each.	2 Up to 30 Inches, ⅝ Inch Each.	3 Up to 60 Inches, ½ Inch Each.
Plain Oiler Arm, Brass	$6 00	$7 00	$9 00
Plain Oiler Arm, Nickel Plated	7 00	8 00	11 00
Complete, Brass	15 00	17 00	21 00
Complete, Nickel Plated	18 00	20 50	25 00

The length of oiler arm is always half the length of stroke of engine, and the above prices on the complete device are based on furnishing a stand of ordinary height, but where specifications call for stands higher than 24 inches on the No. 1 device, 36 inches on the No. 2, and 40 inches on the No. 3, we will have to make an additional charge covering the extra height.

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CRANK PIN LUBRICATING DEVICE

For the lubrication of crank and cross head pins combined with the visible feed oil cup.

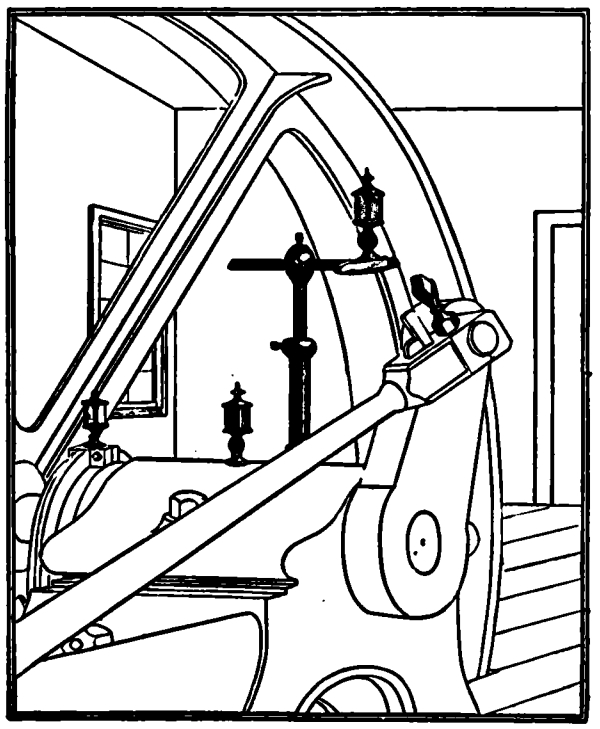


FIG. 3018

DESCRIPTION, FIG. 3018

In lubricating all bearing surfaces the minimum of wear and of oil required to properly lubricate is reached by a regular and constant feed. The Crank Pin Oiler, Fig. 3018, consists of an oil cup attached to an adjustable supporting frame which holds the cup stationary over the center of the bearing to be lubricated. Suspended beneath the oil cup is a web of fibrous material upon which the oil is fed; being seen as it drops from the cup to the web, it can be regulated as desired. Upon the crank connection, and in the hole where an ordinary crank pin cup would be placed, is a wiper cup, so called, being a cup shaped tube for conducting the oil to the bearing surfaces, provided with a metallic blade for wiping or scraping the oil from the suspended web, the oil cup and web being so adjusted that the wiper cup removes the oil from the web at each revolution of the engine. Can fill the oil cup without shutting down the engine and regulate the amount of oil required.

PRICES

Complete with visible feed oil cup and adjustable support.

Sizes	1	2	3	4	5	6
Height from top of pillow block to top of crank, inches	8	11	15	18	22	26
Distance from face of pillow block to center of crank connection, inches	8	10	12	14	15	16
Brass	$15 00	$20 00	$25 00	$30 00	$40 00	$50 00
Nickel plated	17 00	23 00	28 00	33 00	44 00	55 00

Sizes other than given above at proportionate prices. All sizes are made so as to be adjustable from 1 to 3 inches.

In ordering, state distance from top of pillow block to top of crank, and distance from face of pillow block to center of crank connection; also, height of key above the crank.

Unless the size and number of thread are stated in order the standard and wiper cup will be sent blank.

CRANK PIN WIPER SYSTEM, WITH TELESCOPIC BLADES

Can be readily applied to any form of engine.

CROSS HEAD WIPER WITH CUP AND BLADE

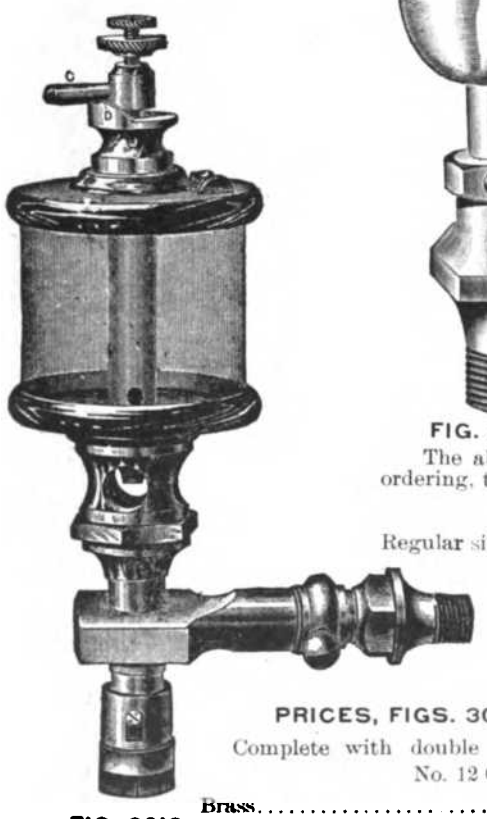


FIG. 3019

PRICES, FIGS. 3019 AND 3020

Complete with double telescopic blade and No. 12 Cup.

Brass	$6 00
Nickel	7 00

PRICES, PARTS

Bracket	$1 00
Cup holder	50
Nozzle	1 00

In ordering, give thread and distances, or if possible send drawing with measurements marked.

DOUBLE TELESCOPIC BLADE



FIG. 3020

SINGLE BLADE

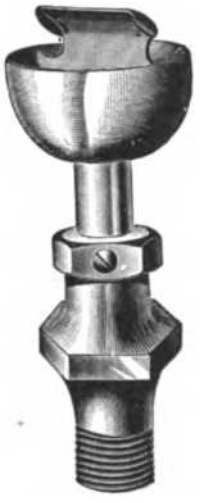


FIG. 3021

SINGLE BLADE

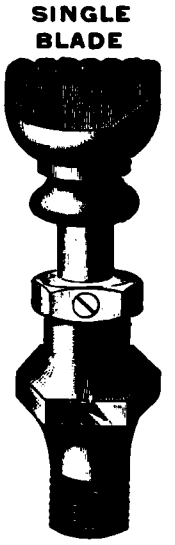


FIG. 3022

OFFSET BLADES

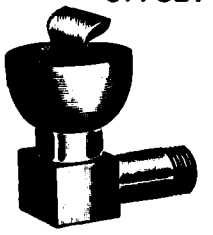


FIG. 3023

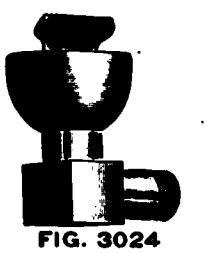


FIG. 3024

The offset blades can be made to any size, telescopic or not, as desired. The direct and offset cross head blades are both telescopic and any size. In ordering, state thread and distances between centers, and whether brass or nickel.

PRICES, FIGS. 3023, 3024, 3025 AND 3026

	Each.
Offset blade, brass or nickel	$1 00
Direct cross head blade, brass or nickel	1 75
Offset cross head blade, brass or nickel	2 00

The above are the styles of telescope blades used on wipers. In ordering, the length over all should be given and the size of thread.

PRICE, FIGS. 3020, 3021 AND 3022

Regular sizes, 3½ x ¼ inch and 4½ x ⅜ inch, each $1 00

DIRECT BLADE

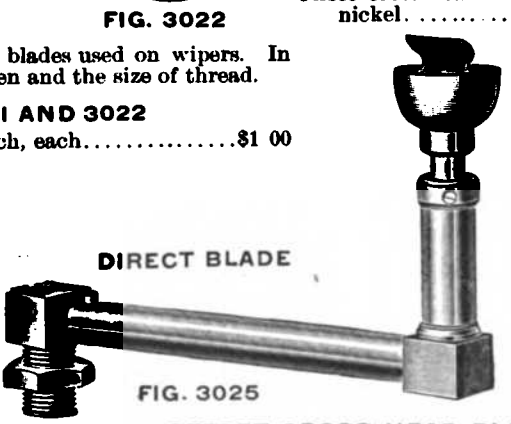


FIG. 3025

OFFSET CROSS HEAD BLADE

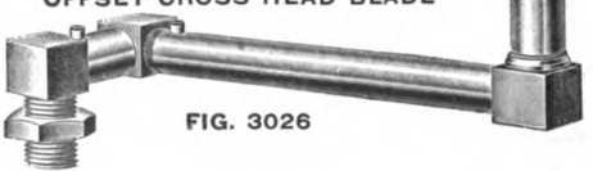


FIG. 3026

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TELESCOPE STAND FOR WIPER CUP

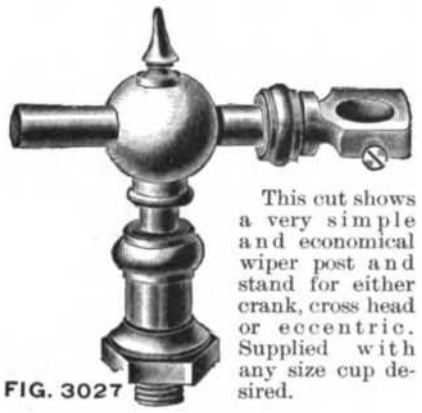


FIG. 3027

This cut shows a very simple and economical wiper post and stand for either crank, cross head or eccentric. Supplied with any size cup desired.

PRICES, FIG. 3027

10 inch post	$5 00
14 " "	6 00
20 " "	7 50

Cup and blade extra.

BRACKET FOR CROSS HEAD WIPER

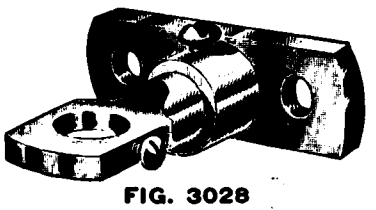


FIG. 3028

Price.....$1 00

WIPER NOZZLE



FIG. 3029

Price, each.....$1 00

OILING DEVICES FOR ENGINE AND MACHINERY BEARINGS

Plain Wiper Cup

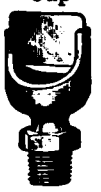


FIG. 3030

Horizontal Wick Wiper Cup.



FIG. 3031

Oil Cup Wiper Tip.



FIG. 3032

Drip Trough.



FIG. 3033

		Brass. Each.	Nickel Plated. Each.
Fig. 3031	Horizontal wick wiper cup, ¼ or ⅜ inch pipe.	$2 00	$2 30
" 3032	Wiper tips, ¼ or ⅜ inch pipe.....	40	50
" 3032	" ½ in. pipe.....	50	60

FIG. 3030. PLAIN WIPER CUP

Pipe Thread. Inches.	O. Diam. Inches.	Brass. Each.	Nickel Plated. Each.
¼	1¼	$1 00	$1 20
⅜	1½	1 50	1 75
½	2	2 00	2 40

FIG. 3033. DRIP TROUGHS

Length. Inches.	Pipe Thread. Inches.	Rough. Each.	Finis'd. Each.	Nickel Plated. Each.
3	¼	$0 75	$1 00	$1 25
5	⅜	1 00	1 50	2 00
7	½	1 50	2 00	2 75
9	½	2 00	2 75	3 50

OILING DEVICES FOR ENGINE AND MACHINERY BEARINGS

Cross Drip Valve.

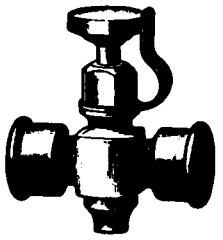


FIG. 3034

Straight Drip Valve.

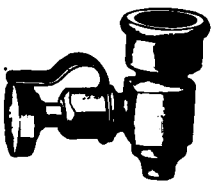


FIG. 3035

Angle Drip Valve.

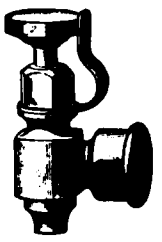


FIG. 3036

Cross Sight Feed Valve.

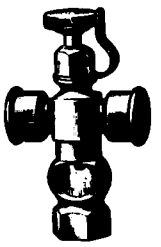


FIG 3037

Straight Sight Feed Valve.

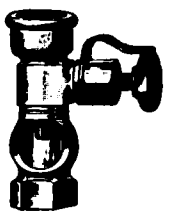


FIG. 3038

Angle Sight Feed Valve.

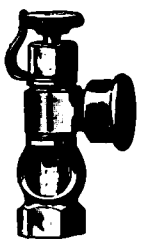


FIG. 3039

Cross Sight Feed Valve with Union.

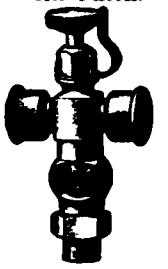
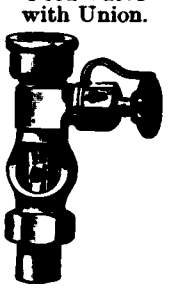


FIG. 3040

Straight Sight Feed Valve with Union.



FIQ. 3041

Above are shown various styles of oiling devices which we furnish. They are intended to be used in connection with brass pipe and fittings, to be so adapted as to oil all of the bearing parts of an engine from one or two centrally located oil cups of large size. We can furnish any manner of oiling devices, but owing to the variety of conditions attending their application we would request parties when writing regarding these goods to give us, if possible, a sketch showing dimensions and style of engine for which device is required.

These fittings are neat and practical in construction, handsomely finished and convenient and economical in operation. All devices with the exception of Figures 3030, 3032 and 3033 are furnished for either ¼ or ⅜ inch pipe thread, but will be sent with ⅜ inch pipe thread, and outlet connection on drip valves will be threaded 27 threads by ¼ inch for ¼ inch O. D. brass pipe, and unions on sight-feed valves will be sent with ¼ inch pipe thread, unless otherwise specified.

PRICES

Figures.		Brass, Each.	Nickel Plated, Each.
3034	Cross drip valve	$1 50	$1 75
3035	Straight drip valve	1 25	1 50
3036	Angle drip valve	1 25	1 50
3037	Cross sight-feed valve	2 30	2 60
3038	Straight sight-feed valve	2 00	2 25
3039	Angle sight-feed valve	2 00	2 25
3040	Cross sight-feed valve with union	2 80	3 10
3041	Straight sight-feed valve with union	2 50	2 80
3042	Angle sight-feed valve with union	2 50	2 80
3043	Adjustable wiper cup for wick, ¼ or ⅜ inch pipe	2 50	3 00
3044	Adjust. wiper cup for wick, elbow shank ¼ or ⅜ in. pipe	3 00	3 50
3045	Adjustable crank pin wiper cup, ¼ or ⅜ inch pipe	2 50	3 00
3046	Adjust. plain wiper cup, elbow shank, ¼ or ⅜ in. pipe	3 00	3 50

Angle Sight Feed Valve with Union.

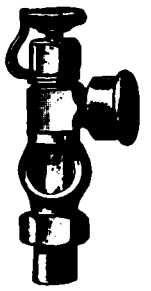


FIG. 3042

Adjustable Wiper Cup for Wick.



FIG. 3043

Adjustable Wiper Cup with Elbow Shank.



FIG. 3044

Adjustable Wiper Cup for Crank Pin.



FIG. 3045

Adjustable Plain Wiper Cup with Elbow Shank

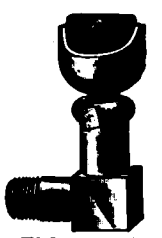


FIG. 3046

OIL DISTRIBUTING DEVICE FOR VERTICAL ENGINES WITH SIGHT FEED OIL CUPS AS OIL RESERVOIRS

The small cups on top of the body, and the knuckle below it, are detachable. Provision is also made for an opening to the ducts running through the body, should it be necessary to clean them out.

If you order the pieces of tubing of us, give the length you want them cut. We thread them for the knuckles and unions and send them straight, to be bent by you to suit the engine.

When ordering give horse power of engine and diameter of cross head pin.

Customers may order the whole rig or part. The prices below cover the rig in detail.

PRICES IN DETAIL, FIG. 3047, EITHER BRASS OR NICKEL FINISH

	Each.	Oil Cups. Nos.	Capacity. Ounces.	Brass. Each.	Nickel Plated. Each.
Oil distributing body, thread ¼ gas pipe,	$4 00	1	1½	$2 85	$3 00
" " cups	80	2	2½	3 15	3 30
" " knuckle	1 20	3	3½	3 45	3 60
Brackets for supporting oil cups	1 20	4	5⅛	4 30	4 50
Unions for oil cups	60	5	16	6 25	6 50
Tubing per foot or part thereof	30	6	32	11 60	12 00

The above are for engines under 50 H. P. For anything over that we should have to submit special quotation.

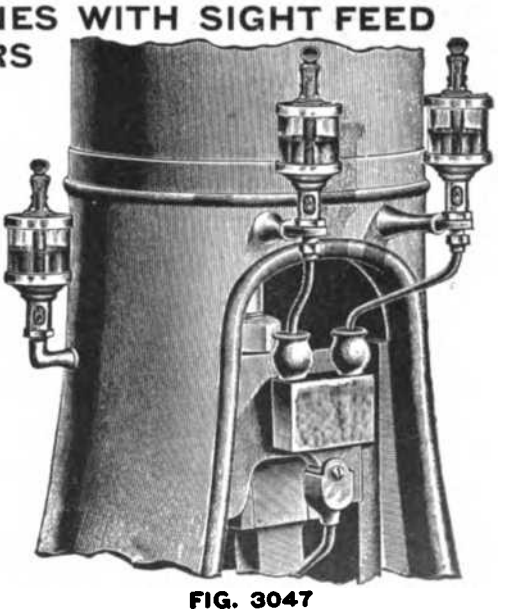


FIG. 3047

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MANIFOLD SYSTEM FOR OILING UNDER PRESSURE

This system may be extended to convey oil to any number of bearings, and is particularly adapted to marine and large stationary engines, such as are used in rolling mills, electric light, cable and trolley plants. By its use one person can lubricate with economy and uniformity a plant of many thousand horse power. For large plants it should be attached to gallery railing, conveying oil to bearings through brass or copper tubes, which are far superior to iron pipe for this service, being freer from scale.

Price on application, according to number of sights, capacity of tank, etc.

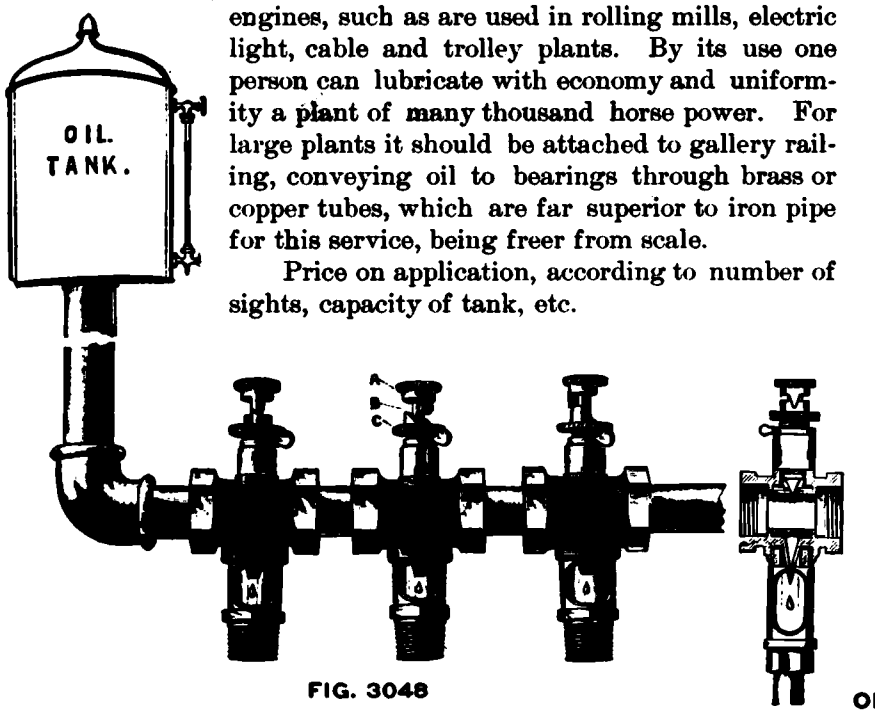


FIG. 3048

RESERVOIR SYSTEM

INDICATORS AND INDEPENDENT SIGHT FEEDS

DOUBLE POST INDICATOR

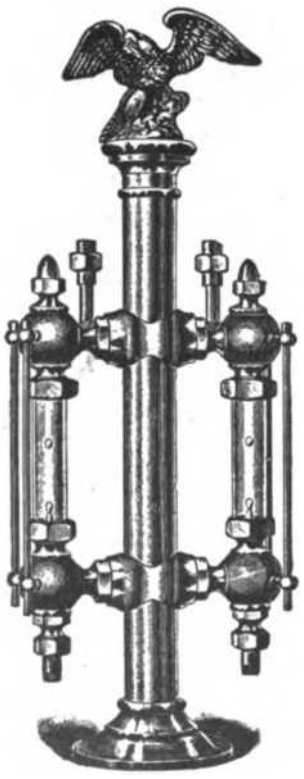


FIG. 3057

Price.....$14 00

SINGLE POST INDICATOR

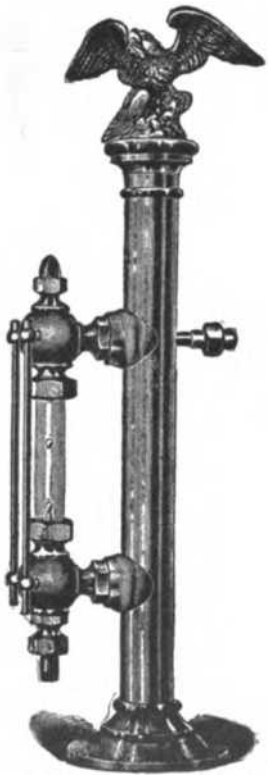


FIG. 3056

Price.....$10 00

STEAM PIPE INDICATOR

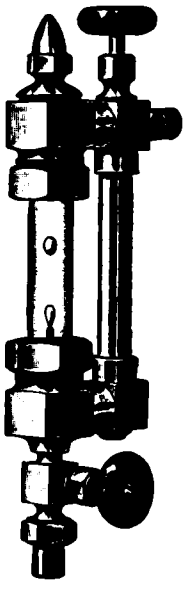


FIG. 3055

Price.....$8 00

SIGHT FEED CUPS, OIL CONVEYOR AND ECCENTRIC TROUGH

FOR TANK OILING SYSTEM WHERE A STREAM OF OIL IS USED

SHELL CASED SIGHT CUPS

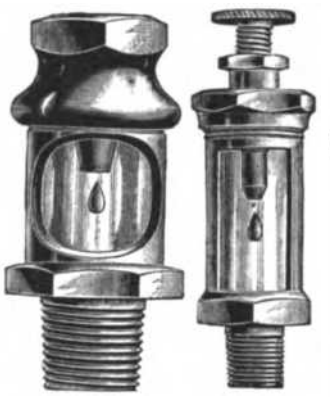


FIG. 3049 FIG. 3050

SKELETON SIGHT FEED CUP



FIG. 3051

PRICES

3051, capacity, 5 ounces	$6 00
3049	2 00
3050	2 00

OIL CONVEYOR TO SIGHT DROP CUPS, WITH FEED ADJUSTING COCK

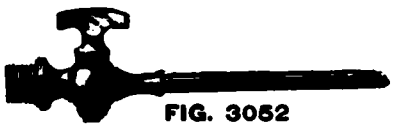


FIG. 3052

Price, each..... ....75c.

ECCENTRIC TROUGH



FIG. 3053

PRICES, FIG. 3053

Length, Inches.	Pipe Thread.	Rough, Each.	Finished, Each.	Nickel Plated, Each.
3	¼	$0 75	$1 00	$1 25
4	⅜	1 00	1 50	1 85
5	⅜	1 50	2 00	2 50
6	½	2 00	2 50	3 00
8	½	2 75	3 50	4 00

RESERVOIR SYSTEM FOR LUBRICATING CYLINDERS

In this system the oil is fed from the central tank, corresponding to the body of an ordinary lubricator, and is conducted to the independent sight feeds, brackets or post indicators.

Tanks can be provided of any size, and as many feeds be used as wanted.

Cost of installing the system depends upon the amount of piping, etc., used. Estimates cheerfully made.

PRICES, FIG. 3054

With Valve and Funnel.

1	gal. reservoir	$15 00
3	" "	20 00
5	" "	30 00
10	" "	50 00

With One Indicator.

1	gal. reservoir	$20 00
3	" "	26 00
5	" "	36 00
10	" "	55 00

RESERVOIR

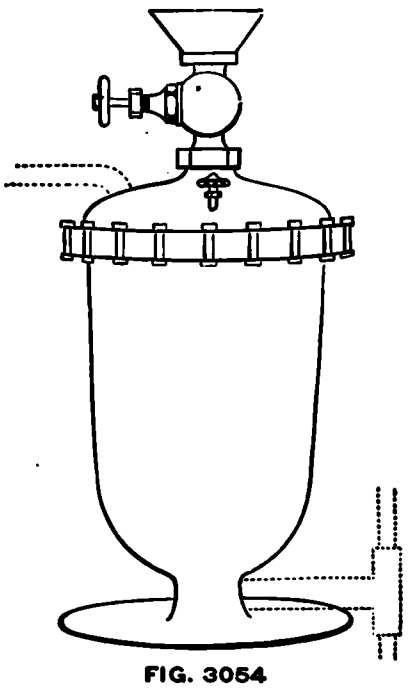


FIG. 3054

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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RESERVOIR OILER

ON STAND, WITH GAUGE GLASS

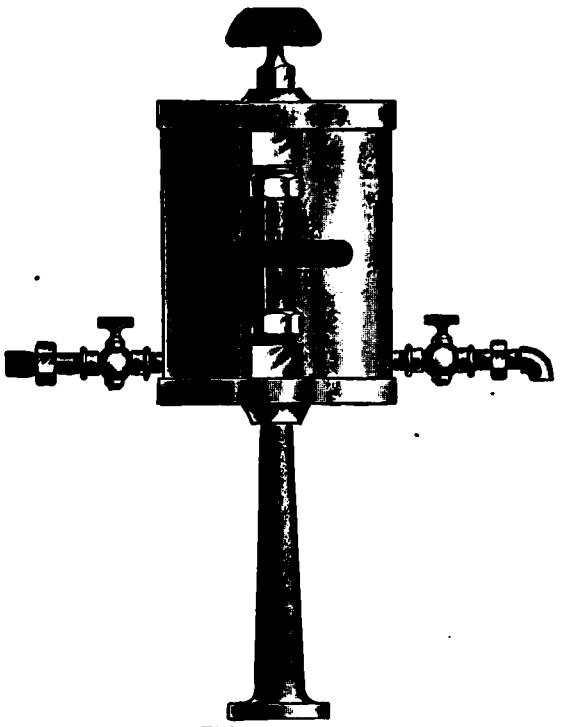


FIG. 3058

This oiler is of heavy construction. With it oil can be stored in quantity, and piped to the different points to be lubricated. In ordering state height of stand. Connections threaded ⅛ inch pipe unless otherwise specified. Can be fitted with more than two connections and with larger oil reservoirs than listed. Prices quoted on receipt of specifications.

	Brass Finish.	Nickel Finish.
½ gallon capacity, reservoir 5 x 7 inches	$16 50	$18 00
1 " " 6 x 8½ "	21 00	23 00
2 " " 7 x 12 "	28 00	31 00

Prices include stand; in ordering specify height of stand.

INDIVIDUAL SIGHT FEEDS

FOR STEAM PIPE CONNECTION

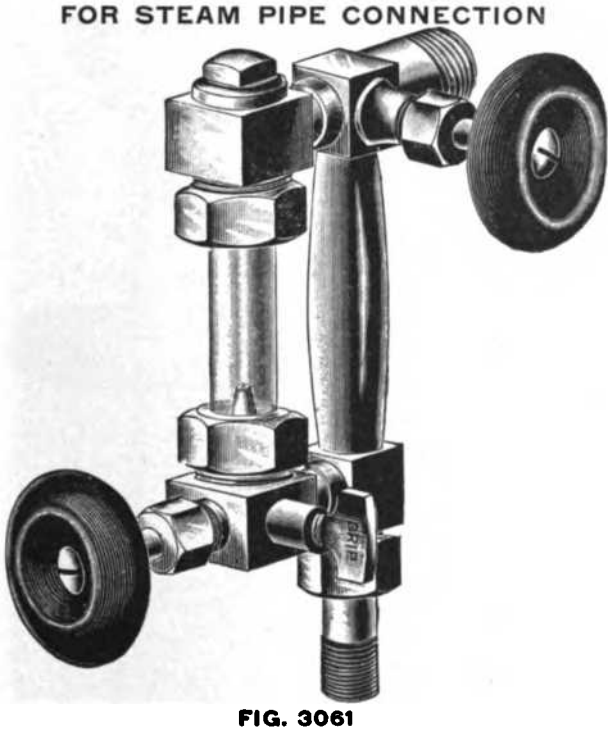


FIG. 3061

This sight feed is intended for use when a number of engine cylinders are to be supplied with oil from one large tank. Shank threaded ⅜ inch pipe. Union connection for ¼ inch pipe.

	Prices.
Finished Brass	$8 25
Nickel Plated	9 75

INDIVIDUAL SIGHT FEEDS

FOR GRAVITY SYSTEM OILING

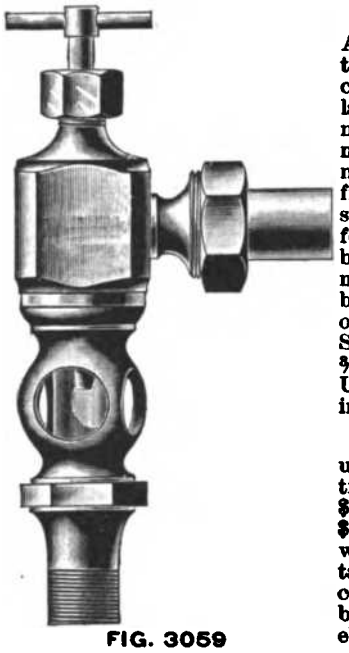


FIG. 3059

This Sight Feed Attachment is intended for use in connection with large tanks to permit of oiling numerous engine or machine bearings from one source of supply. The sight feed is screwed to bearings and connected with tank by means of copper or brass tubing. Shanks threaded ⅜ inch pipe. Unions tapped ¼ inch pipe.

Sight feed, with union, as illustrated, each, brass, $5.00. Nickeled, $6.00. Sight feed, without union, but tapped for pipe connection, each, brass, $4.25. Nickeled, $5.25.

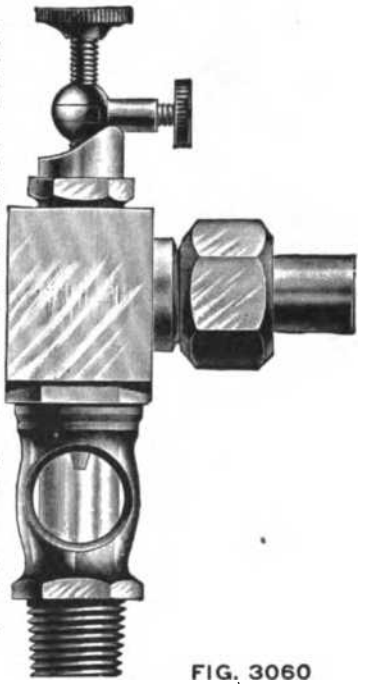


FIG. 3060

DESCRIPTION, 3060

This sight feed is fitted with a quick stop and flushing valve stem whereby the feed can be shut off, renewed instantly or flushed without disturbing set regulation. Attachment is intended for use in connection with large tanks to permit of oiling numerous engine or machine bearings from one source of supply. The sight feed is screwed to bearings and connected with tank by means of copper or brass tubing. Shanks threaded ⅜ inch pipe, unions tapped ¼ inch pipe. Prices:

Sight feed, with union, as illustrated, each, brass.....$6 00 Nickeled, $7 00
" without union, but tapped for pipe connection, each, brass. 5 25 " 6 25

INDEPENDENT SIGHT FEEDS

FOR PRESSURE TANK SYSTEMS

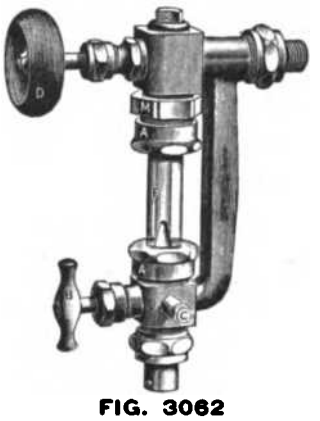


FIG. 3062
Plain

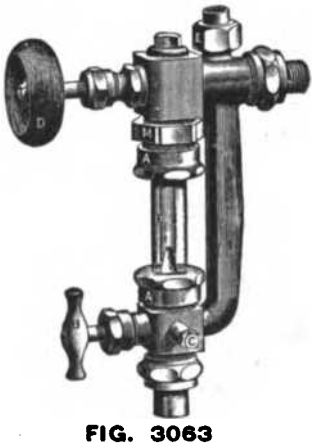


FIG. 3063
With equalizing attachment

These Independent Sight Feeds are intended to be used in connection with closed pressure tank systems for the purpose of supplying oil to steam chests and cylinders of steam engines. The plain device (Fig. 3062) is intended for use on simple engines, and should be connected above the throttle valve of same. The device with equalizing attachment (Fig. 3063) can be attached on the steam chests of simple or compound engines. The steam pressure on it can be equalized and oil prevented from being syphoned by connecting an ⅛ inch pipe from boiler side of throttle valve and attaching it to the small union, E, at top of discharge shank of sight feed. The equalizing pipe should have a valve in it so as to shut off steam after engine throttle is closed. Should a sight feed glass become broken it can easily be replaced without taking off valve, D, by simply unscrewing stuffing boxes, AA, and then the bushing, M, when the broken glass can be slipped out and a new one put in place. These devices are heavy and substantial in construction, and have unions for both oil pipe and engine connections. Shank threaded for ⅜ inch pipe and oil connections for ¼ inch pipe. Estimates and general information regarding oiling systems furnished upon request. In writing send sketch of engine room showing location of engines.

PRICES, FIGS. 3062 AND 3063

Plain, brass	Each,	$6 00
Plain, nickeled plated	"	7 00
With equalizing attachment, brass	"	6 50
With equalizing attachment, nickel plated	"	7 50

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DYNAMO AND MOTOR OIL GAUGES

GENERAL ELECTRIC CO'S PATTERN

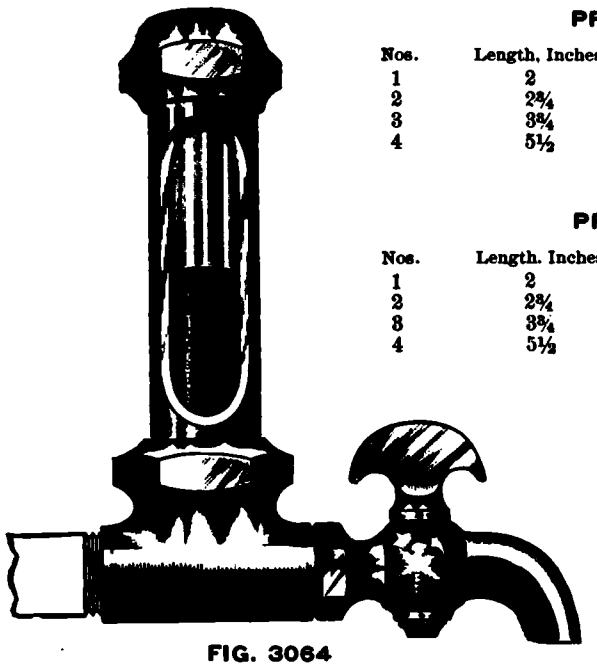


FIG. 3064

PRICES, FIG. 3064

Nos.	Length, Inches.	Width, Inches.	Shank, Inches.	Brass Finish, Each.
1	2	1⅝	¼	$0 85
2	2¾	1⅝	¼	85
3	3¾	2⅞	¼	1 10
4	5½	3¼	½	1 60

PRICES, FIG. 3065

Nos.	Length, Inches.	Width, Inches.	Shank, Inches.	Brass Finish, Each.
1	2	1⅝	¼	$1 00
2	2¾	1⅝	¼	1 25
3	3¾	2⅞	¼	1 50
4	5½	3¼	½	2 00

Measurements as listed above are height of the oil tube from the center of the hole tapped in the bearing to the top of oil exposure. Length of arm from face of bearing to center of oil tube.

We can furnish oil gauges from blue prints and sketches to meet all requirements.

WESTINGHOUSE ELECTRIC AND MFG. CO'S PATTERN

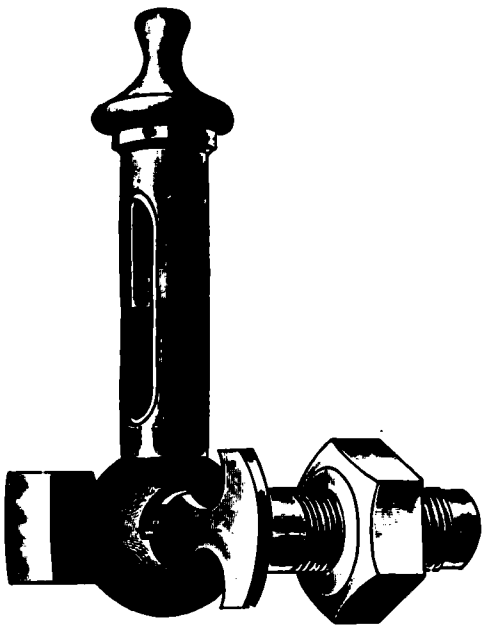


FIG. 3065

OIL GAUGES WITH REVOLVABLE SHIELD

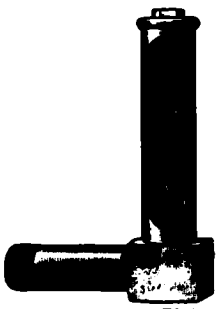


FIG. 3066 Plain.

PRICES, FIGS. 3066 AND 3067

Size, shank pipe thread	inch	⅛	¼	⅜	½
Height from center of square to top of gauge	inches	2 9/16	3⅛	3¾	4⅞
Length of shank from center of square	"	1⅝	1¾	2 9/16	4 1/16
Length of glass	"	2	2½	3	4
Finished brass without drain cock	each	$0 40	$0 50	$0 65	$1 00
Nickel plated without drain cock	"	55	65	80	1 20
Finished brass with drain cock	"	80	90	1 05	1 40
Nickel plated with drain cock	"	1 00	1 10	1 25	1 65

In ordering oil gauges, always state whether wanted with or without drain cock, and if finished brass or nickel plated. When not specified, gauges will be sent finished brass with drain cock.

When gauges are ordered whose dimensions are different from the above an extra charge will be made, same varying according to number of gauges ordered and amount of difference from standard dimensions. Orders stating simply oil gauges will be filled with the above.

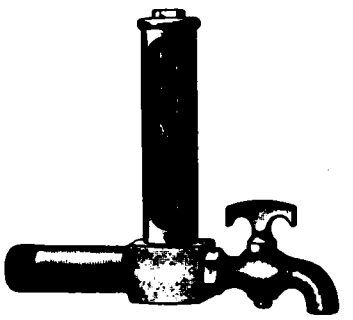


FIG. 3067 With Drain Cock.

GLASS BODY SIGHT FEED OILERS

Lever down, feed stopped.

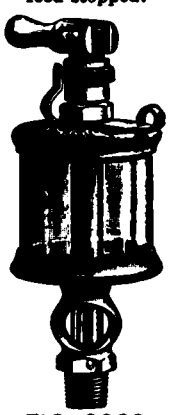


FIG. 3068

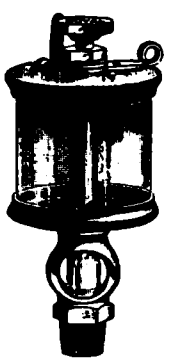


FIG. 3069

SENTINEL SNAP LEVER OILER, FOR DYNAMO AND ENGINE USE

PRICES, FIG. 3068

Nos.	0	1	1½	2	3	4	5	6
Extreme outside diameter of cup, inches	1⅝	2⅛	2 3/16	2⅜	2 13/16	2 15/16	3⅝	3 15/16
" height of cup over all, lever up. "	5 1/16	5 9/16	5 15/16	6¼	6¾	7 7/16	8 5/16	9½
Outside diameter of glass "	1¼	1½	1¾	2	2¼	2½	3	3½
Height of glass "	1⅛	1⅜	1⅝	1⅞	2⅛	2⅜	3	4
Capacity ounces	⅝	1	1½	2½	4	5	10	18
Shank pipe thread inch	⅛	¼	¼	⅜	⅜	⅜	½	½
Finished brass prices each	$3 00	3 25	3 50	3 75	4 25	5 25	7 25	9 25
Nickel plated "	3 50	3 75	4 00	4 25	4 75	5 75	8 00	10 25

ROYAL SET FEED OILER, FOR ENGINE AND DYNAMO USE

PRICES, FIG. 3069

Nos.	000	00	0	1	1½	2	3	4	5	6
Extreme outside diameter of cup, inches	1⅜	1 7/16	1⅝	1⅞	2⅛	2⅜	2 13/16	2 15/16	3⅝	3 15/16
Extreme height of cup, over all. "	3	3 9/16	3 13/16	4⅝	4 9/16	4 15/16	5⅜	6	6⅞	7 15/16
Outside diameter of glass "	1	1⅛	1¼	1½	1¾	2	2¼	2½	3	3½
Height of glass "	⅞	1	1⅛	1⅜	1⅝	1⅞	2⅛	2⅜	3	4
Capacity ounces	¼	½	⅝	1	1½	2½	4	5	10	18
Shank pipe thread inch	⅛	⅛	⅛	¼	¼	⅜	⅜	⅜	½	½
Finished brass each	$0 95	1 10	1 25	1 50	1 75	2 10	2 55	3 15	3 90	4 80
Nickel plated "	1 05	1 20	1 40	1 70	2 00	2 35	2 85	3 50	4 30	5 30

DYNAMO CAM LEVER OILER, FOR USE ON DYNAMOS AND HIGH SPEED ENGINES

PRICES, FIG. 3070

Nos.	Diameter of Glass.	Height of Glass.	Brass, per dozen	Nickel plated, per dozen.	Extra Glasses.
1	1⅞ inch.	1¾ inch	$24 00	$27 00	$0 10
2	2⅛ "	2⅛ "	30 00	33 00	12
3	2⅜ "	2¾ "	36 00	40 00	15
4	2½ "	3½ "	42 00	46 00	25



FIG. 3070

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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GLASS BODY SIGHT FEED OILERS

SIGNAL OILER

For dynamo and high grade high pressure engines.



FIG. 3071

INDICATOR OILER

For dynamo and steam engine service.



FIG. 3073

SKELETON FRAME

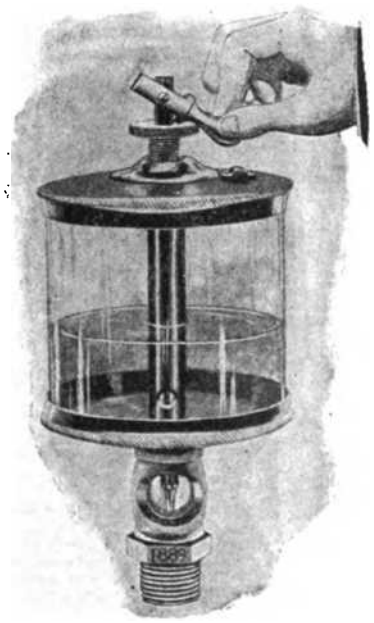


FIG. 3075

DESCRIPTION AND PRICES, FIG. 3071

The sight feed chamber is fitted with square window panes secured by brass clips. They can easily be removed for cleansing or repairs at any time without stopping the oil feed and while the machine is running. The feed drop is regulated by the milled screw R, just under the top signal lever C, and when proper feed is secured, is locked in place by jamb nut O. The flow of oil is started with signal lever C up, as shown in left hand illustration, and can be instantly shut off by dropping the lever down without disturbing the set of the feed, as the operation of signal lever is independent of feed regulator. The filling hole in the top is covered by a patent snap lever, which can be moved either to the right or left. To flush bearing, tilt lever at an angle of 45 degrees.

Nos.	0	1	1½	2	3	4	5	6
Outside diameters of glass, inches	1¼	1½	1¾	2	2¼	2½	3	3½
Height of glass, inches	1⅛	1⅜	1⅝	1⅞	2⅛	2¼	2¾	4
Capacity	½ oz.	⅝ oz.	1 oz.	2 oz.	¼ pt.	⅛ pt.	½ pt.	1 pt
Sizes of shank, pipe thread, inches	¼	¼	⅜	⅜	⅜	½	½	½
Finished, each	$3 00	3 25	3 50	3 75	4 25	5 25	7 25	9 25
Nickel plated, each	3 50	3 75	4 00	4 25	4 75	5 75	8 00	10 25

DESCRIPTION AND PRICES, FIG. 3072

To stop the flow of oil it is only necessary to give the cross bar C a quarter turn to the right or left and drop it into the deep slot. Reverse the operation to start it again. Regulate drop by milled nut R. The jamb nut O will hold it firmly in position so that feed cannot be displaced by jarring of machinery.

Nos.	00	0	1	1½	2	3	4	5	6
Outside diameters of glass, inches	1	1¼	1½	1¾	2	2¼	2½	3	3½
Height of glass, inches	⅞	1⅛	1⅜	1⅝	1⅞	2⅛	2¼	2¾	4
Capacity		½ oz.	⅝ oz.	1 oz.	2 oz.	¼ pt.	⅛ pt.	½ pt.	1 pt.
Sizes of shank, pipe thread, inches	⅛	¼	¼	⅜	⅜	⅜	½	½	½
Finished, each	$1 30	1 40	1 50	1 75	2 00	2 25	2 65	3 35	4 50
Nickel plated, each	1 55	1 65	1 75	2 10	2 35	2 65	3 10	3 85	5 10

PRICES, FIG. 3073

Nos.	383	384	385	386	387	388	389	390	391	392	393
Outside diameters of glass, inches	1½	1¾	2	2¼	2½	2¾	3	3	3½	3½	4
Height of glass, in.	1⅜	1½	1¾	2⅛	2⅜	2½	2¾	3	3½	4	4¾
Capacity, ounces..	¾	1	2	3	4	6	7	8	12	16	32
Pipe thread, inches	¼	¼	⅜	⅜	⅜	½	½	½	½	½	½
Brass finished, each	$1 50	1 75	2 00	2 50	3 25	4 00	5 00	5 50	6 50	7 00	9 00
Nickel plated, each	1 75	2 00	2 25	2 80	3 55	4 35	5 40	6 00	7 00	7 50	10 00

PRICES, FIG. 3074

Nos.	253	254	255	256	257	258	259	260	261	262	263
Outside diameters of glass, inches	1½	1¾	2	2¼	2½	2¾	3	3	3½	3½	4
Height of glass, in.	1⅜	1½	1¾	2⅛	2⅜	2½	2¾	3	3½	4	4¾
Capacity, ounces..	¾	1	2	3	4	6	7	8	12	16	32
Pipe thread, inches	¼	¼	⅜	⅜	⅜	½	½	½	½	½	½
Brass finished, each	$1 50	1 75	2 00	2 50	3 25	4 00	5 00	5 50	6 50	7 00	9 00
Nickel plated, each	1 75	2 00	2 25	2 80	3 55	4 35	5 40	6 00	7 00	7 50	10 00

SIGNAL SCREW FEED OILERS

The oilers may be set to feed a certain amount of oil within a given time, and may be relied upon to maintain this rate of feed until same be changed at will. By means of the signal lever the feed may be started or stopped without disturbing the rate of lubrication when once set at a certain speed.

DIRECTIONS FOR SETTING FEED

Raise the signal lever, and turn the knurled knob until the desired speed of feed is obtained. To stop the feed, lower the signal lever. A sudden flush of oil, i. e., feeding a stream, may be obtained by setting the signal lever at an angle of about 45 degrees.

PRICES, FIG. 3075. SKELETON FRAME

Nos.	Height of Cup, Complete, Inches, Signal up.	Diameters of Cup, Complete, Inches.	Capacity in Ounces.	Sizes of Shank Pipe Thread, Inches.	Per Dozen.
803	4 5/16	1 7/16	½	⅛	$16 00
804	5¼	1 13/16	1	¼	18 00
805	5⅜	2	1½	¼	21 00
806	5¾	2 5/16	2	⅜	24 00
807	6 5/16	2⅝	4	⅜	27 00
808	7 5/16	2 15/16	6	⅜	32 00
809	7 11/16	3⅜	10	½	40 00
810	8 9/16	3 13/16	15	½	54 00
811	10⅛	4 5/16	24	½	84 00
812	10⅞	4 15/16	36	½	120 00

PRICES, FIG. 3076. SHELL CASED

Nos.	Height of Cup, Complete, Inches, Signal up.	Diameters of Cup, Complete, Inches.	Capacity in Ounces.	Sizes of Shank Pipe Thread, Inches.	Per Dozen.
903	4 7/16	1½	½	⅛	$18 00
904	5⅛	1 15/16	1	¼	21 00
905	5⅜	2⅛	1½	¼	27 00
906	5¾	2 5/16	2	⅜	30 00
907	6 5/16	2 11/16	4	⅜	33 00
908	7 5/16	3⅛	6	⅜	40 00
909	8	3½	10	½	54 00
910	9	3 15/16	15	½	72 00
911	10⅛	4⅜	24	½	108 00
912	10⅞	5 1/16	36	½	168 00

CROSS BAR INDEPENDENT STOP FEED OILER

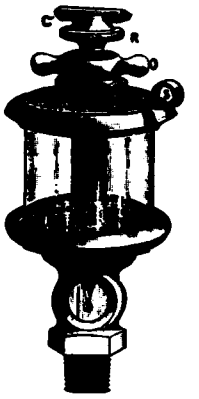


FIG. 3072

SLIDE TOP ADJUSTABLE FEED OILER

For electric and other power plants.



FIG. 3074

SHELL CASED

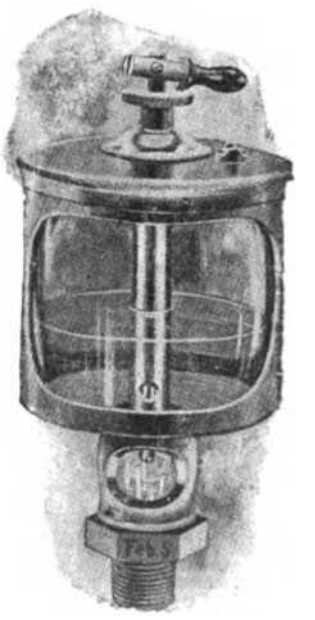


FIG. 3076

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GLASS BODY SIGHT FEED OILERS

LOCK FEED OILER FOR STATIONARY BEARINGS



FIG. 3077

DROP LEVER OILER



FIG. 3079

SET FEED AND STOP FEED OILER

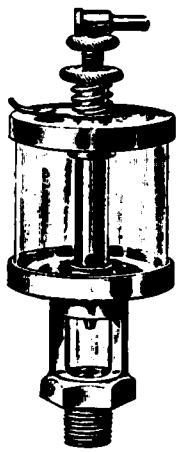


FIG. 3081

The stop feed feature consists of a lever shown in horizontal position above the regulating stem. When this lever is in horizonal position, the feed of oil is entirely shut off; when it is upright the oil is fed at the regular rate per minute; and when it is placed or held at an angle of 45 degrees, the oil will feed out in a stream.

DESCRIPTION, FIG. 3077

These oilers have a lever that locks the feed in the operation of raising it to start the flow of oil.

The construction of the valves in these cups, acting in connection with the threaded adjusting screw, enables a close feed to be obtained, and the range of adjustment is enough to allow any grade of oil to be used.

The operation of this cup is very simple. Drive the screw in to increase the feed, reverse to decrease.

Raise the lever to an upright position to open the valve and lock the feed.

Push the lever over to close the valve.

Pull up on the lever and the oil will run a stream, and afterwards the original feed can be instantly resumed.

The lever can be turned around in either direction, with the feed on or off, without disturbing the adjustment.

No jarring machinery or otherwise severe service will affect it.

The cup is simple in construction and easily taken apart to clean or put in new glasses.

PRICES, FIG. 3077

Nos.	Capacity of Cup, Ounces.	Size of Pipe Thread on Shank.	Brass Finish, Each.	Nickel Finish, Each.	Outside Height of Glass, Inches.	Outside Diameter of Glass, Inches.	Extra Glasses, Each.	Extra Gaskets, Per Dozen.
1	1½	¼	$2 85	$3 00	1¾	1¾	$0 25	$0 25
2	2½	¼	3 15	3 30	2	2	30	30
3	3½	⅜	3 45	3 60	2¼	2¼	40	40
4	5⅓	⅜	4 30	4 50	2⅝	2⅝	50	50
5	16	½	6 25	6 50	4	3½	75	75
6	32	½	11 60	12 00	5¼	4	1 25	1 25

PRICES, FIG. 3078

Nos.	Capacity of Cup, Ounces.	Size of Pipe Thread on Shank.	Brass Finish, Each.	Nickel Finish, Each.	Outside Height of Glass, Inches.	Outside Diameter of Glass, Inches.	Extra Glasses, Each.	Extra Gaskets, Per Dozen.
X0	1½	¼	$3 00	$3 15	1¾	1¾	$0 25	$0 25
00	2½	¼	3 30	3 45	2	2	30	30
0	3½	⅜	3 60	3 75	2¼	2¼	40	40
1	5⅓	⅜	4 40	4 60	2⅝	2⅝	50	50
2	16	½	5 40	5 65	4	3½	75	75
3	32	½	10 00	10 40	5¼	4	1 25	1 25

All above cups are sent threaded unless otherwise specified.

PRICES, FIG. 3079

Nos.	Capacity.	Size of Glass, Inches.	Size of Shank, Thread, Iron Pipe, Inches.	Brass Finished, Each.	Nickeled, Each.	Extra Glasses, Each.
1	1 oz.	1½x1⅜	¼	$2 75	$3 00	$0 10
3	1½ "	1¾x1⅝	⅜	3 10	3 40	10
5	2¼ "	2 x1⅞	⅜	3 50	3 90	12
7	3½ "	2¼x2⅛	⅜	4 00	4 40	15
9	4½ "	2½x2⅜	⅜	5 00	5 50	25
11	8 "	3 x3	½	7 00	7 60	35
15	1 pint	3½x4	½	8 00	8 75	50
17	1½ "	3½x5	¾	9 00	10 00	65

PRICES FIG. 3080

Size.	Capacity.	Size of Glass, Inches.	Size of Shank, Thread, Iron Pipe, Inches.	Brass Finished, Each.	Nickeled, Each.	Extra Glasses, Each.
A	1 oz.	1½x1⅜	¼	$2 75	$3 00	$0 10
B	1½ "	1¾x1⅝	⅜	3 10	3 40	10
C	2¼ "	2 x1⅞	⅜	3 50	3 90	12
D	3½ "	2¼x2⅛	⅜	4 00	4 40	15
E	4½ "	2½x2⅜	⅜	5 00	5 50	25
F	8 "	3 x3	½	7 00	7 60	35
G	1 pint	3½x4	½	8 00	8 75	50
H	1½ "	3½x5	¾	9 00	10 00	65

Above cups are sent regular pipe thread shanks, as per list, unless otherwise specified.

PRICES, FIG. 3081

Nos.	Diam., Inches.	Height, Inches.	Capacity.	Pipe Thread.	Brass, Each.	Nickel, Each.	Oil Cup Glasses, Each.	Cork Washers, Per Dozen.
50	1⅛	1	⅓ oz.	⅛	$3 00	$3 50	$0 07	$0 07
51	1¼	1⅛	½ "	⅛	3 25	3 75	08	08
52	1½	1⅜	1 "	¼	3 50	4 00	09	10
53	1¾	1⅝	1½ "	¼	3 75	4 25	10	12
54	2	1⅞	2 "	⅜	4 00	4 50	12	20
55	2¼	2⅛	3 "	⅜	4 45	4 95	15	25
56	2½	2⅜	4 "	⅜	5 25	5 75	20	30
57	3	3	8 "	½	7 30	8 05	30	40
58	3½	4	1 pint	½	9 50	10 50	40	60

The shanks of oilers can be reduced below regular sizes, as listed, without extra charge, but if larger shanks are wanted than specified in list, an extra charge will be made for same.

PRICES, FIG. 3082

Nos.	Diam., Inches.	Height, Inches.	Capacity.	Pipe Thread.	Brass, Each.	Nickel, Each.	Oil Cup Glasses, Each.	Cork Washers, Per Dozen.
30	1⅛	1	⅓ oz.	⅛	$2 30	$2 70	$0 07	$0 07
31	1¼	1⅛	½ "	⅛	2 50	2 90	08	08
32	1½	1⅜	1 "	¼	2 80	3 30	09	10
33	1¾	1⅝	1½ "	¼	3 00	3 50	10	12
34	2	1⅞	2 "	⅜	3 25	3 75	12	20
35	2¼	2⅛	3 "	⅜	3 70	4 20	15	25
36	2½	2⅜	4 "	⅜	4 50	5 00	20	30
37	3	3	8 "	½	6 55	7 30	30	40
38	3½	4	1 pint	½	8 75	9 75	40	60

The shanks of oilers can be reduced below regular sizes, as listed, without extra charge, but if larger shanks are wanted than specified in list, an extra charge will be made for same.

ADJUSTABLE SCREW FEED OILER



FIG. 3078

QUICK STOP LEVER OILER



FIG. 3080

SET FEED OILER

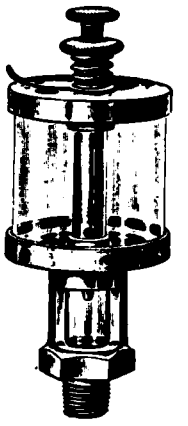


FIG. 3082

These are also made of cast brass. The sight feed glasses are firmly fixed in place, with gaskets above and below, so that no dirt can get to the bearing.

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GLASS BODY SIGHT FEED OILERS

QUICK STOP FLUSHING OILER
With Elbow Shank.

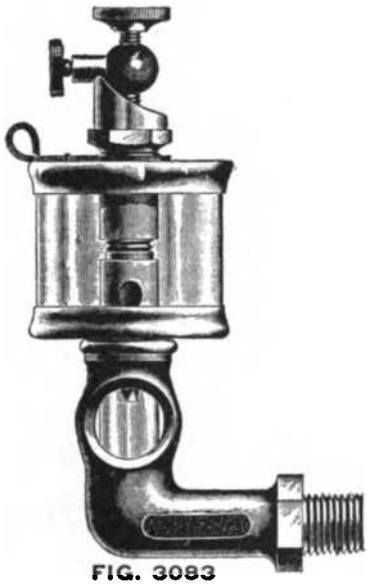


FIG. 3083

PRICES, FIG. 3083

Nos.	Capacity, Ounces.	Diameter of Glass Shell, Inches.	Size of Shank Inches.	Brass Finish, Each.	Nickeled, Each.
401	¾	1¼	⅛	$2 50	$2 85
402	1	1⅝	¼	2 85	3 45
403	1½	1¾	⅜	3 50	4 20
404	2¼	2	⅜	4 00	4 75
405	3⅔	2⅜	⅜	5 00	6 00
406	5	2½	⅜	5 75	7 25

PRICES, FIG. 3084

Nos.	Capacity, Ounces.	Diameter of Glass Shell, Inches.	Size of Shank, Inches.	Brass Finish, Each.	Nickeled, Each.
408	½	1⅛	⅛	$1 70	$1 90
409	¾	1¼	⅛	2 00	2 25
410	1	1⅝	¼	2 35	2 65
411	1½	1¾	⅜	2 70	3 10
412	2¼	2	⅜	3 20	3 75
412½	3	2 3/16	⅜	3 60	4 15
413	3⅔	2⅜	⅜	4 00	4 60
413½	5	2½	⅜	4 50	5 15
414	6	2¾	½	5 00	5 70
415	10	3⅛	½	6 00	6 90
416	Pint	3½	¾	7 65	8 65
417	Quart	4⅛	¾	13 35	15 35

With the above oilers feed can be shut off or renewed instantly without disturbing set regulation. All oilers threaded Standard Gas Pipe Tap, and will be shipped with shanks threaded as listed, unless otherwise specified in order.

QUICK STOP FLUSHING OILER



FIG. 3084

EXTRA HEAVY ADJUSTABLE FEED OILER



FIG. 3086

ADJUSTABLE FEED OILER



FIG. 3085

DESCRIPTION, FIGS. 3085 AND 3086

Fill cup with oil; then adjust feed to suit your requirements. When no feed is wanted, simply remove lug from its seat, as shown in cut, Fig. 3085, which closes the feed opening. The exact feed before had can again be secured by lifting lug to former position on adjusting screw. By lifting feed spindle a dash of oil can be given without changing the feed, when again allowed to rest on adjusting screw.

PRICES, FIG. 3085

Numbers	282	283	284	285	286	287	288	289	290	291	292	293
O. S. Diam. of Glass, in.	1¼	1½	1¾	2	2¼	2½	2¾	3	3	3½	3½	4
Height of Glass, "	1⅛	1⅜	1½	1¾	2⅛	2⅜	2½	2¾	3	3½	4	4¾
Capacity, ounces	½	¾	1	2	3	4	6	7	8	12	16	32
Pipe Thread, in.	⅛	¼	¼	⅜	⅜	⅜	½	½	½	½	½	½
Price, Brass finished, ea.	$1 25	1 33	1 45	1 75	2 25	3 00	4 00	5 00	5 50	6 50	7 00	9 00
" Nickel Plated, "	1 50	1 62	1 75	2 05	2 55	3 30	4 35	5 40	6 00	7 00	7 50	10 00

PRICES, FIG. 3086

Numbers	182	183	184	185	186	187	188	189
Diameters of Glass, inches	1¼	1½	1¾	2	2¼	2½	2¾	3
Height of Glass, "	1⅛	1⅜	1½	1¾	2⅛	2⅜	2½	3¼
Capacity, ounces	½	¾	1	2	3	4	6	8
Pipe Thread, inches	⅛	¼	¼	⅜	⅜	⅜	½	½
Price, Brass or Nickel P., each.	$1 50	1 75	2 00	2 25	2 75	4 00	5 00	6 00

AUTOMATIC OILER
For Heavy Bearings and High Speed Engines.

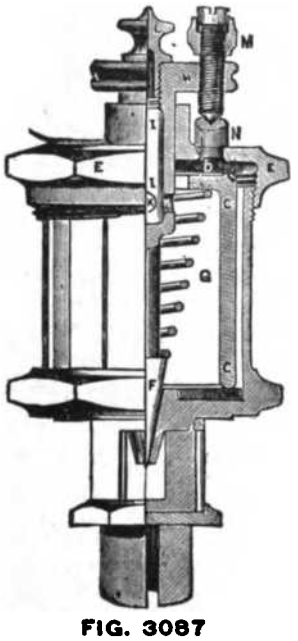


FIG. 3087

PRICES, FIG. 3087

Nos	Outside Diameters, Inches.	Height, Inches.	Capacity, Ounces.	Brass or Nickel Plated, Per Dozen.
71	1½	3	¾	$42 00
72	2	3¾	1	54 00
73	2	4¼	1¼	54 00
74	2⅜	4¾	2¼	66 00
74½	2¾	5¼	3¼	78 00
75	3¼	5¾	4½	90 00
76	4	7	8	114 00

PRICES, FIG. 3088

Nos.	Outside Diameters, Inches.	Height, Inches.	Capacity, Ounces.	Brass or Nickel Plated Per Dozen.
152	1⅝	4½	1	$24 00
153	1⅞	4¾	1¼	32 00
154	2 3/16	5	2¼	36 00
154½	2½	5¼	3¼	40 00
155	2⅞	5¾	4½	45 00
155½	3⅜	6¼	7	50 00

OILER
With Slide Filling Arrangement on Cap.



FIG. 3088

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GLASS BODY SIGHT FEED OILERS



FIG. 3089

RADIAL SLIDE FILLING OILER

For stationary and marine engines.

This cup has feed regulator, brass mountings and heavy and clear lead glass body. It will be found reliable for the use of any kind of oil, owing to the ease with which the desired feed can be secured, even when the engine or machinery to which it is attached is in motion.

PRICES, FIG. 3089

Nos.	Outside Diams. of Glass, Large End, Inches.	Height of Glass, Inches.	Capacity, About, Ounces.	Pipe Thread, Inches.	Each, Brass Finish.	Each, Nickel Plated.
125	1 13/16	1¾	1	¼	$2 00	$2 25
125½	2⅛	2 1/16	2	⅜	2 25	2 75
126	2½	2 3/16	3	⅜	3 00	3 25
126½	2⅞	2¾	5	⅜	3 75	4 10
127	3¼	3⅛	8	½	4 50	4 85
127¼	3½	3 5/16	12	½	5 50	5 95
127½	3½	4	16	½	6 50	7 00



FIG. 3091

LOOSE COVER OILER

For stationary bearings.

DESCRIPTION, FIG. 3091

In this cup there is no joint to allow leakage, and the free play of the cover allows a full opening for filling. The glass body is specially molded to stand strain.

PRICES, FIG. 3091

Nos.	Capacity, Ounces.	Thread, Inch.	Brass, per Dozen.	Nickel, per Dozen.
0A	½	⅛	$20 00	$23 00
1A	1¼	¼	23 00	26 00
2A	3	¼	27 00	30 00
3A	4½	¼	33 00	36 00
3½A	6	⅜	39 00	44 00
4A	8½	⅜	45 00	50 00
5A	1 pint	½	60 00	65 00
6A	1 quart	½	75 00	80 00

Special threads to order.



FIG. 3093

STANDARD OILER

For all purposes.

Has signal regulating device with shoulder feed.

PRICES, FIG. 3093

Nos.	Capacity, Ounces.	Diameters Glass, Inches.	Thread, Inches.	Brass, per Dozen.	Nickel, per Dozen.
7	¼	1	⅛	$12 00	$15 00
8	½	1¼	⅛	14 00	17 00
9	1	1½	⅛	16 00	19 00
10	1½	1¾	¼	19 00	21 00
11	2½	2	¼	22 00	25 00
12	3¾	2¼	¼	26 00	29 00
13	5	2½	⅜	29 00	32 00
14	7	2¾	⅜	32 00	35 00
15	10	3	½	42 00	50 00
16	15	3½	½	55 00	62 00

Special threads to order.

FIXED COVER OILER

For crank, eccentric and all moving bearings.

This cup is similar to Fig. 3091, with the exception of the cover, which is fixed, having a lock nut to hold it in place.

PRICES

Nos.	Capacity, Ounces.	Thread, Inch.	Brass, per Dozen.	Nickel, per Dozen.
0B	¼	⅛	$23 00	$26 00
1B	1¼	¼	26 00	29 00
2B	3	¼	30 00	33 00
3B	4½	¼	36 00	39 00
3½B	6	⅜	44 00	49 00
4B	8½	⅜	49 00	54 00
5B	1 pint	½	65 00	70 00
6B	1 quart	½	80 00	85 00

Special threads to order.



FIG. 3092

ADJUSTABLE SCREW FEED OILER

For steam engines and journal bearings.

This is an improved lock feed bearing cup, made extra heavy, and specially designed for furnishing a limited and regular amount of oil to journal bearings, steam engines, and other rapidly revolving shafts. It is provided with an adjustable stop to control the valve, so that, once set correctly, such stop will limit the valve movement at the same point on successive days, and the valve may be repeatedly opened and closed to the exact extent desired without special care and adjustment. This cup can also be used to give the bearing a greater amount of oil when desired without changing the adjustment.

We can also furnish a cup of the same general design, with a loose cover, to facilitate easy filling. Same list prices as below.

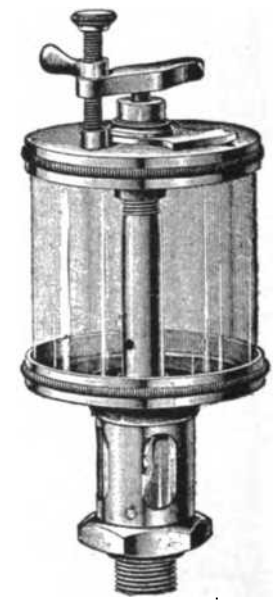


FIG. 3094

PRICES

Numbers	1	2	3	4	5	6
Diams. of glass....inches.	1¾	2	2 1/16	2½	3	3½
Height of glass... "	1½	1⅞	2¼	2½	3	3½
Capacity.....ounces.	1	2	3	4	8	1 pint
Prices extra glasses.....	$0 10	$0 12	$0 15	$0 25	$0 35	$0 50
" brass....per dozen.	24 00	30 00	36 00	48 00	62 00	84 00
" nickel plated, "	27 00	33 00	40 00	52 00	72 00	94 00

One quart capacity, shell cased, brass..... $168 00 per dozen.
" " " " " nickel plated.... 188 00 " "

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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GLASS BODY SIGHT FEED OILERS

STOP FEED OILER
SKELETON FRAME

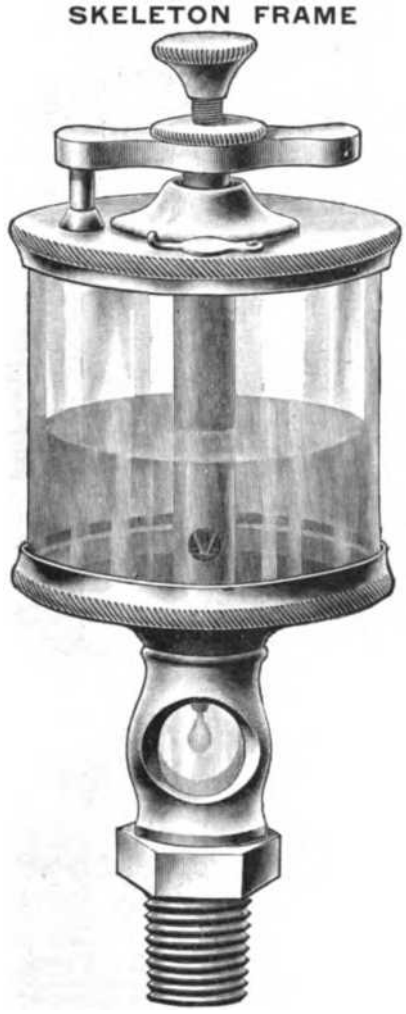


FIG. 3095

DESCRIPTION AND PRICES

In these cups the feed is controlled by the regulating screw in the top cross bar, and may be set to any desired rate by means of the small lock nut on same. The supply of oil can be shut off, or turned on, instantly, without disturbing the rate of feed by the seating and unseating of the regulating screw in the socket on top of the cup. They are also provided with ball shank sight feed openings protected by glass, and a filling hole in the top of the cup fitted with a movable cover which acts at the same time as a ventilator to keep up a proper circulation of air in the oil chamber.

Nos.	Height of Cup, Complete, Inches.	Width of Cup, Complete, Inches.	Capacity in Ounces.	Size of Shank, Pipe Thread, Inches.	Nickel Plated, per Dozen.
184	4¾	1¾	1	¼	$18 00
185	5	1⅞	1½	¼	21 00
186	5½	2⅛	2	⅜	24 00
187	5¾	2½	4	⅜	27 00
188	6¾	2⅞	6	⅜	32 00
189	7¼	3⅜	10	½	40 00
190	7¾	3¾	15	½	54 00
191	8½	4¼	24	½	84 00
192	9¼	4⅞	36	½	120 00

DESCRIPTION, FIG. 3096

The cut represents an extremely simple and convenient oiler, in which the supply of oil may be shut off or turned on without disturbing the rate of feed to which the cup may have previously been set. The regulation of the feed is effected by a plain central screw spindle, and the seating and unseating of the valve is done by simply turning the top knob, thereby lowering or raising the spindle on the central cam. They are provided with ball shank sight feed openings protected by glass, and a filling hole in the top of the cap fitted with a movable cover.

DIRECTIONS FOR SETTING THE FEED AND WORKING THE CAM OILERS

Loosen the lock nut on the top cover, and turn the spindle to the right or left by means of the knob on the top of it, until the desired rate of feed is obtained, then tighten the lock nut. This will lock the cam in the desired position. The central valve stem is then seated or unseated for stoppage or feed by lowering or raising it on the cam.

The thread in lock nut and on cam spindle is left handed.

CAM OILER
SKELETON FRAME

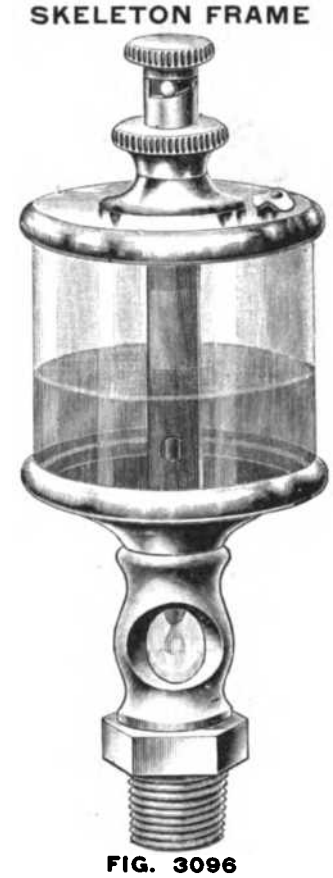


FIG. 3096

PRICES, FIG. 3096

Numbers	484	485	486	487	488	489	490	491	492
Height of cup, complete, inches	5	5⅛	5½	6⅛	7	7¼	8½	9	9¾
Width " " "	1¾	1⅞	2⅛	2½	2⅞	3⅜	3¾	4¼	4⅞
Capacity in ounces	1	1½	2	4	6	10	15	24	36
Size of shank pipe, thread, inches	¼	¼	⅜	⅜	⅜	½	½	½	½
Prices, per dozen	$18 00	21 00	24 00	27 00	32 00	40 00	54 00	84 00	120 00

PERFECTION OILER WITH EMERGENCY TUBE

For stationary engines and dynamos, engine bearings and shafting.

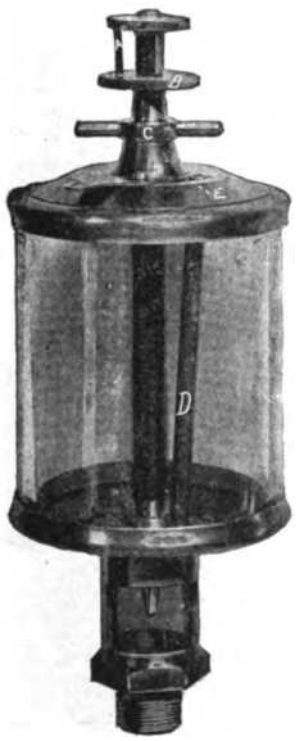


FIG. 3097

DESCRIPTION, FIG. 3097

The regulating device is simple and not affected by jarring machinery. Place pin A in the seat in disk B, loosen jam nut C, and obtain the desired number of drops by turning disk B to the right or left, then tighten the jam nut. By inserting pin A in the hole in disk the feed of oil is shut off, or by placing pin on the face of disk it will give a stream of oil. To produce a dash of oil, simply raise the pin momentarily, and replace it. The sight feed chamber is tight and perfectly dust proof. The glass can be cleaned at any time by unscrewing the body of the oiler, and without disturbing the post. The emergency tube D provides an independent passage to the part to be lubricated, through which oil may be fed, if for any reason the oil fails to be fed from the reservoir or it is desirous of using another grade of oil. Further, in employing a perfectly tight sight feed chamber, the formation of drops of oil on the nozzle would be very sluggish without the provision of some communication to the atmosphere other than by way of the oil tube; this objection is overcome by the emergency tube. The oiler is provided with an elongated hole E for filling, which prevents waste of oil in filling.

PRICES, FIG. 3097, WITH EMERGENCY TUBE

Numbers	101	101½	102	103	104	107	110	116
Outside diameter of glass, inches	1½	1¾	2	2¼	2½	3	3⅛	3½
Height of glass, inches	1⅜	1⅝	1⅞	2⅛	2⅜	2¾	2⅞	4
Capacity, ounces	1	1½	2	3	4	7	10	16
Pipe thread, inches	¼	¼	⅜	⅜	⅜	½	½	½
Brass, each	$0 62	70	75	92	1 09	1 25	1 50	1 75
Nickel plated, each	70	78	84	1 02	1 20	1 38	1 65	1 96

FIG. 3097, WITHOUT EMERGENCY TUBE

Numbers	1101	1101½	1102	1103	1104	1107	1110	1116
Outside diameter of glass, inches	1½	1¾	2	2¼	2½	3	3⅛	3½
Height of glass, inches	1⅜	1⅝	1⅞	2⅛	2¾	2¾	2⅞	4
Capacity, ounces	1	1½	2	3	4	7	10	16
Pipe thread, inches	¼	¼	⅜	⅜	⅜	½	½	½
Brass, each	$0 53	60	67	84	1 00	1 17	1 42	1 67
Nickel plated, each	60	70	78	96	1 15	1 30	1 55	1 90

Oilers other than those listed, or with other than standard iron pipe thread, made to order only.

DESCRIPTION AND PRICES, FIG. 3098

The sight feed chamber is provided with a swing lens which can be pushed aside for the purpose of cleaning the glasses, or for lubricating the bearing with any grade of oil, or dope.

Numbers	802	803	804	807	810	816
Outside diameter of glass, inches	2	2¼	2½	3	3⅛	3½
Height of glass, inches	1⅞	2⅛	2⅜	2¾	2⅞	4
Capacity, ounces	2	3	4	7	10	16
Pipe thread, inches	⅜	⅜	⅜	½	½	½
Brass finish, each	$0 75	92	1 09	1 25	1 50	1 75
Nickel plated, each	84	1 02	1 20	1 38	1 65	1 96

EAGLE OILER

For engines, dynamos, bearings, shaftings, etc.



FIG. 3098

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GLASS BODY SIGHT FEED OILERS



FIG. 3099

ADJUSTABLE FEED OILERS

For electric light and power plants.

They are adapted and applied to dynamos, and are also adapted for engine pillow blocks and heavy bearings.

PRICES, FIGS. 3099 AND 3100

Nos.	Outside Diameter, Inch.	Height, Inch.	Capacity.	Per Dozen.
25	2	5	1¼ oz.	$36 00
25½	2⅜	5¼	2 "	42 00
26	2¾	5½	3 "	46 00
26½	3¼	6¼	5 "	50 00
27	3½	7½	8 "	58 00
27¼	3¾	9½	12 "	68 00
27½	4½	11	1 pt.	78 00
28	3¾	9½	12 oz.	96 00
29	4½	11	1½ pt.	132 00



FIG. 3100

ELLIS SET FEED OILER

For dynamos, crank pins, cross heads, etc.

This oiler is thoroughly airtight, simple in construction, and when once set for a given feed will flow without any change as long as any oil remains. A movable pin placed in the regulating valve will set the feed at the desired point, and no further adjustment is necessary.

PRICES, FIG. 3101

Nos.	Capacity.	To Fit Standard Pipe Tap.	Per Dozen. Brass.	Nickel.
0	1 oz.	¼ inch	$15 00	$18 50
1	2 "	¼ "	16 00	20 00
2	3½ "	¼ "	18 00	21 50
3	5 "	¼ "	20 00	23 50
4	7 "	⅜ "	23 00	27 00
5	9 "	⅜ "	26 00	30 50
6	12 "	⅜ "	32 00	37 50

Special threads without extra charge.

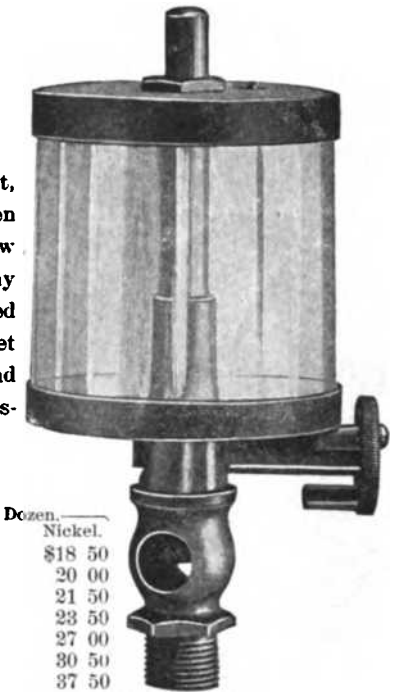


FIG. 3101

ADJUSTABLE FEED OILERS

FIXED COVER

For dynamos, steamships and engines.

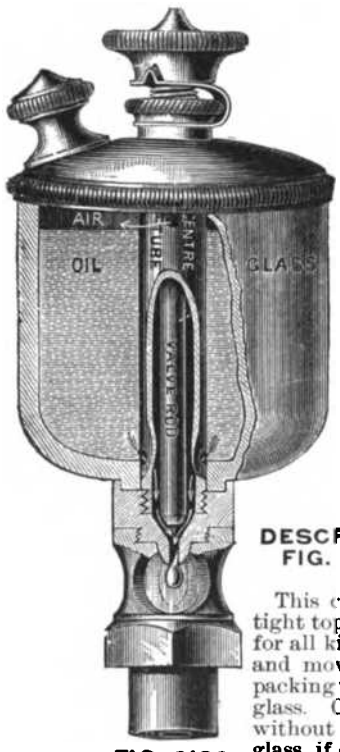


FIG. 3103

LOOSE COVER

For dynamos, engines, shafting and stationary bearings.

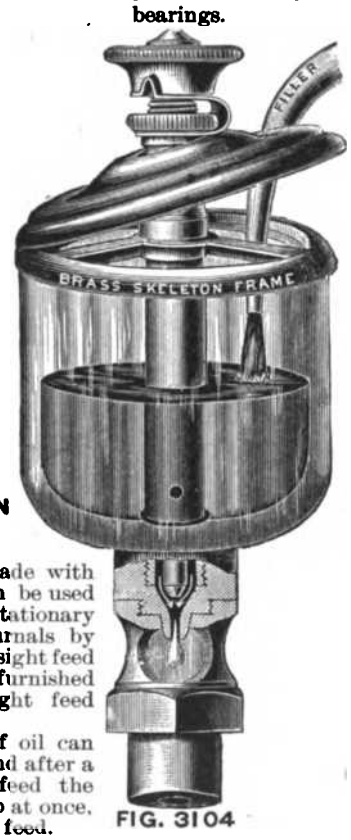


FIG. 3104

DESCRIPTION FIG. 3103

This cup is made with tight top and can be used for all kinds of stationary and movable journals by packing the drop sight feed glass. Can be furnished without the sight feed glass, if desired.

The amount of oil can always be seen, and after a temporary stoppage or alteration of feed the former amount can always be returned to at once, with a certainty that you have a positive feed.

PRICES, FIG. 3103

Nos.	12	13	14	15	16	17	18
Diameter, inches	1⅝	2	2¼	2½	3	3½	4½
Height, "	3½	4	4½	4⅞	5¼	6	9
Capacity, ounces	¾	1¼	2	3	5	8	1 qt.
Pipe thread	¼	¼	⅜	⅜	½	½	¾
Each	$2 50	$3 00	$3 50	$4 25	$5 00	$6 25	$10 00
Per dozen	30 00	35 00	41 00	50 00	58 00	72 00	118 00
Extra glass	0 10	12	15	20	25	30	60

PRICES, FIG. 3104

Nos.	30	31	32	33	34	35	36
Diameter, inches	1⅝	2	2¼	2½	3	3½	4½
Height, "	3½	4	4½	4⅞	5¼	6	9
Capacity, ounces	¾	1¼	2	3	5	8	1 qt.
Pipe thread	¼	¼	⅜	⅜	½	½	¾
Each	$2 50	$3 00	$3 50	$4 25	$5 00	$6 25	$10 00
Per dozen	30 00	35 00	41 00	50 00	58 00	72 00	118 00
Extra glass	0 10	12	15	20	25	30	60

PRICES, EXTRA GLASSES, FIG. 3101

Nos. 1	each, $0 10	Nos. 4	each, $0 20
" 2	" 12	" 5	" 28
" 3	" 15	" 6	" 28

CROWN INDEX FEED OILER

For dynamo and engine use.

The Crown Index Oiler is made of cast brass. It has an index device for regulating the feed of oil and an indicator arm turning on the lid to mark the notch giving the desired feed. The feed can be instantly turned off and on again by replacing the index lever in the notch of the indicator arm. When the feed is shut off, the lever can be left to stand up out of the notch, thus acting as an indicator to show from a distance that the feed is shut off.



FIG. 3102

PRICES, FIG. 3102

Numbers	0	1	1½	2	3	4	5	6
Extreme outside diam. of cup (lever included), inches	25/16	211/16	215/16	3¼	3¾	4	411/16	5¼
Extreme height of cup (over all), inches	4½	53/16	5⅝	6	69/16	77/16	8¼	8⅞
Outside diam. of glass, inches	1¼	1½	1¾	2	2¼	2½	3	3½
Height of glass, inches	1⅛	1⅜	1⅝	1⅞	2⅛	2⅜	3	4
Capacity, ounces	⅝	1	1½	2½	4	5	10	18
Shank pipe thread, inch	⅛	¼	¼	⅜	⅜	⅜	½	½
Finished brass, each	$1 25	1 50	1 75	2 10	2 55	3 15	3 90	4 80
Nickel plated, "	1 40	1 70	2 00	2 35	2 85	3 50	4 30	5 30

INDEX FEED OILER

PRICES, FIG. 3105

Nos.	Capacity	Size of Glass, Inches.	Size of Shank, Thread, Iron Pipe, Inches.	Brass Finished, Each.	Nickeled Each.	Extra Glasses, Each.
1	¾ oz.	1¼ x 1⅛	¼	$1 60	$1 80	$0 08
2	1 "	1½ x 1⅜	¼	1 80	2 00	10
2½	1½ "	1¾ x 1⅝	⅜	2 10	2 35	10
3	2¼ "	2 x 1⅞	⅜	2 50	2 80	12
4	3½ "	2¼ x 2⅛	⅜	2 90	3 25	15
5	4½ "	2½ x 2⅜	⅜	3 90	4 30	25
6	8 "	3 x 3	½	5 00	5 60	35
6½	1 pt.	3½ x 4	½	6 00	6 75	50
7	1½ "	3½ x 5	¾	7 90	8 65	65

Cups are sent regular pipe thread shanks.



FIG. 3105

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GLASS BODY SIGHT FEED OILERS

SLIDE TOP OILER

Oiler has a friction valve stem not influenced by vibration.



FIG. 3106

PRICES, FIG. 3106

Nos.	Capacity, Ounces.	Diameter of Glass Shell, Inches.	Size of Shank, Inches.	Brass Finish, Each.	Nickeled, Each.
238	½	1⅛	⅛	$1 55	$1 75
239	¾	1¼	⅛	1 85	2 10
240	1	1⅝	¼	2 20	2 50
241	1½	1¾	⅜	2 55	2 95
242	2¼	2	⅜	3 10	3 65
243	3⅔	2⅜	⅜	3 85	4 45
244	6	2¾	½	4 85	5 55
245	10	3⅛	½	5 85	6 75
246	Pint	3½	¾	7 50	8 50
247	Quart	4⅛	¾	13 20	15 20

All oilers threaded standard gas pipe tap, and will be shipped with shanks threaded as listed, unless otherwise specified in order.

PRICES, FIG. 3107

Numbers	1	2	3	4	5
Capacity of cup.....ounces.	1	1½	2½	3½	5½
Size of pipe thread on shank, inches.	⅛	¼	⅜	⅜	⅜
Brass finish.....each.	$1 50	$1 75	$2 00	$2 40	$3 00
Nickel " ..... "	1 65	1 90	2 15	2 60	3 20
Outside height of glass.....inches.	1¼	1⅜	1⅝	1⅞	2¼
" diameter of glass.... "	1½	1⅞	2⅛	2½	2⅞
Extra glasses.....each.	$0 20	$0 25	$0 30	$0 35	$0 40
" gaskets.....per dozen.	20	30	40	50	60

Cups are sent threaded as listed, unless specified otherwise.

PRICES, FIG. 3108

Nos.	Capacity, Ounces.	Diameter Glass, Inches.	Height of Glass, Inches.	Thread, Inches.	Brass, Per Dozen.	Nickel, Per Dozen.
7 E	¼	1	⅞	⅛	$12 00	$14 00
8 E	½	1¼	1⅛	⅛	13 00	15 00
9 E	1	1½	1⅜	⅛	15 00	17 00
10 E	1½	1¾	1⅝	¼	17 00	19 00
11 E	2½	2	1⅞	¼	19 00	21 00
12 E	3¾	2¼	2⅛	¼	21 00	23 00
13 E	5	2½	2⅜	⅜	23 00	25 00
14 E	7	2¾	2⅝	⅜	28 00	32 00
15 E	10	3	3	½	36 00	42 00
16 E	15	3½	3½	½	46 00	52 00

Special threads to order.

SCREW FEED OILER

For stationary bearings.

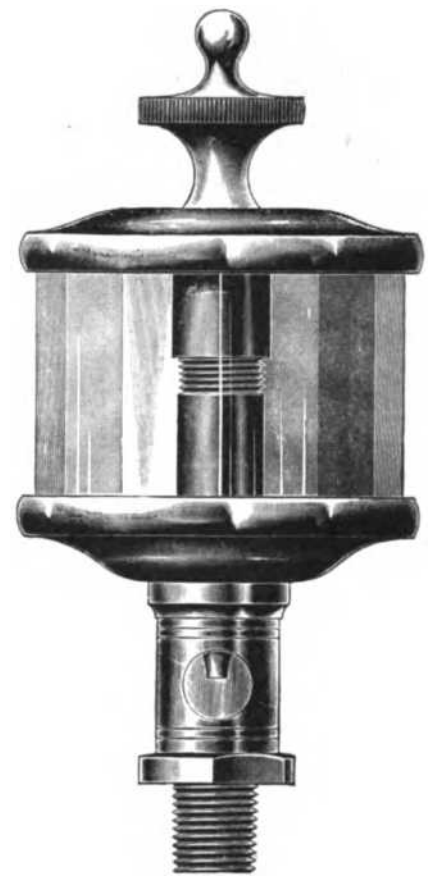


FIG. 3107

SHAFTING OILER

Plain regulator



FIG. 3108

DESCRIPTION, FIG. 3109

This style of cup is made with openings in ball shanks, protected by glass, to show the oil drop as it leaves the cup. This enables the engineer to see the progress of feeding, and regulate flow according to the required demand. They are further provided with an opening in the top, having a movable cover, through which they may be filled, and which also acts when shut (which it should always be, except in the act of filling) as a vent sufficient to keep a proper degree of circulation of air in the cup to make the pressure uniform and facilitate the flow of oil.

PRICES

Nos.	Height of Cup, Complete, Inches.	Width of Cup, Complete, Inches.	Capacity in Ounces.	Size of Shank Pipe Thread, Inches.	Per Dozen.
164	4¼	1¾	1	¼	$13 00
165	4⅞	1⅞	1½	¼	15 00
166	5⅜	2⅛	2	⅜	17 00
167	5⅝	2½	4	⅜	20 00
168	6¾	2⅞	6	⅜	24 00
169	7¼	3⅜	10	½	32 00
170	7¾	3¾	15	½	44 00
171	8½	4¼	24	½	60 00
172	9¼	4⅞	36	½	96 00

PLAIN TAPER SCREW ENGINE OILER

Skeleton frame.

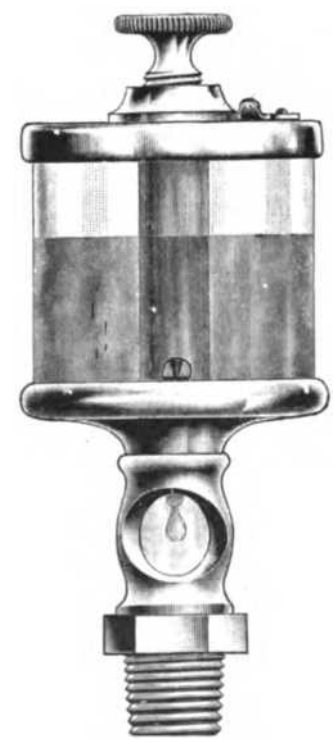


FIG. 3109

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GLASS BODY SIGHT FEED OILERS

SANCHO SLIDE COVER OILER



FIG. 3110

DESCRIPTION AND PRICES, FIG. 3110

This oiler is made from castings, not spun brass. Feed regulating device controlled by set nut. Slide cover with vent which allows oil to feed on any bearing.

Outside diameter of glass, inches	1¼	1½	1¾	2	2¼	2½
Height of glass, inches	1⅛	1⅜	1½	1¾	2⅛	2⅜
Capacity, ounces	⅝	1	1¼	2¼	4	5
Pipe thread of shank	¼	¼	⅜	⅜	½	½
Prices, brass finish, each	$1 25	$1 50	$1 65	$1 90	$2 55	$3 15
Prices, nickel plated, each	1 50	1 80	2 00	2 30	3 00	3 65

PRICES, FIG. 3111

Nos.	Capacity, Ounces.	Diameters, Inches.	Thread, Inch	Brass, Each.	Nickel, Each.
9 J	1	1½	⅛	$1 75	$2 00
10 J	1½	1¾	¼	2 00	2 25
11 J	2½	2	¼	2 25	2 50
12 J	3¾	2¼	¼	2 75	3 25
13 J	5	2½	⅜	4 00	4 75
14 J	7	2¾	⅜	5 00	5 75
15 J	10	3	½	6 00	7 00
16 J	15	3½	½	7 50	8 50

ATLANTIC GRAVITY OILER

For use in gravity oiling system.



FIG. 3112

DESCRIPTION AND PRICES, FIG. 3112

A pressure cup, with sight feed and regulator for use in the gravity system of oiling. Can be made to connect in any direction, without disturbing the joint, to either horizontal or vertical pipe.

Nos.	Capacity, Ounces.	Diameter of Glass, Inches.	Brass, Per dozen.	Nickel, Per dozen.
12 I	3¾	2¼	$32 00	$38 00
13 I	5	2½	36 00	42 00
14 I	7	2¾	48 00	52 00
15 I	10	3	62 00	74 00
16 I	15	3½	84 00	94 00

DESCRIPTION AND PRICES, FIG. 3113

These cups have been designed for high pressure service when an oil tank or magazine is placed at some height or distance from the cup, and is connected to it by feed pipe at elbow, R, on top of cup as shown in cut. These cups are carefully packed extra tight and the regulating screw valve, C, is also provided with packed stuffing box, E. S is an emergency filling plug to be used should the magazine give out. These cups are especially desirable when long services are required, as the supply of oil is continuous, the glass cylinder being kept full at all times.

Nos	2	3	4	5	6	7	8
Outside diameter of glass, inches	2	2¼	2½	3	3½	4	4½
Height of glass	1⅞	2⅛	2¼	2¾	4	4½	5
Capacity	2 oz.	¼ pt.	⅓ pt.	½ pt.	1 pt.	1½ pt.	1 qt.
Size of shank, pipe thread, inches	⅜	⅜	½	½	½	¾	¾
Finished, each	$5 00	$6 00	$7 50	$9 00	$11 00	$13 00	$15 00
Nickel plated, each	6 00	7 00	8 00	10 00	12 00	14 00	16 00

EXTRA HEAVY CAST OILER

For use in gravity oiling system



FIG. 3111

HIGH PRESSURE OILER

For high pressure tank service.



FIG. 3113

ADJUSTABLE DIVIDED DROP BRACKET OILER

DESCRIPTION, FIG. 3114

This cup will be found most convenient for use in many places where there are two bearings to be oiled but not room for two oil cups.

INSTRUCTIONS FOR ADJUSTING

Fill cup with oil at D; lift stem A so that lug B will rest in the depression on upper face of adjusting screw C; then adjust feed to your requirements, after which set lock screw E. When no feed is wanted, simply remove lug B from its seat, which closes feed opening. The exact feed before had can again be secured, by lifting lug B to former position on adjusting screw C, and by lifting feed spindle by hand a dash of oil can be given without change of the feed when again allowed to rest on feed screw C. Lock nut E should always be set except when changing feed. We can furnish these oilers with single drop and single tube, prices for which will be found in list of prices given below.

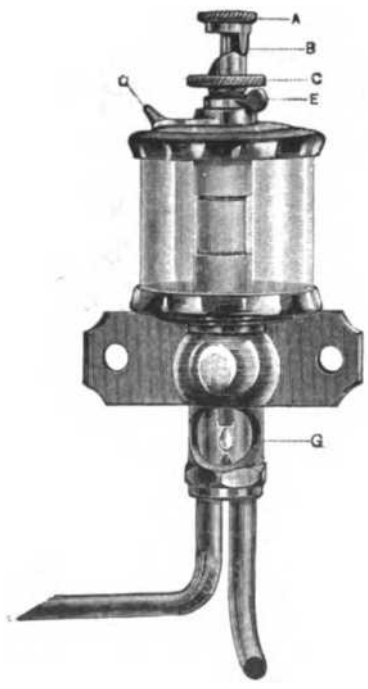


FIG. 3114

PRICES, FIG. 3114

Size glass. Diameters. Inches.	Height, Inches.	Capacity, Ounces.	Divided drop, double tube. Nos.	Brass.	Nickel.	Single drop, single tube. Nos.	Brass.	Nickel.
1¾	1½	1	584	$2 50	$2 75	684	$2 25	$2 50
2	1¾	2	585	2 75	3 10	685	2 50	2 85
2¼	2⅛	3	586	3 25	3 60	686	3 00	3 40
2½	2⅜	4	587	4 50	4 85	687	4 25	4 75
2¾	2½	6	588	5 50	5 85	688	5 25	5 75
3	3	8	589	6 50	7 00	689	6 25	6 85
3½	3½	12	590	7 00	7 65	690	6 75	7 50
3½	4	16	591	7 50	8 25	691	7 25	8 00

BRACKET OILER

PRICES, FIG. 3115

Nos	784	785	786	787	788	789	790	791
Diameter of glass, inches	1¾	2	2¼	2½	2¾	3	3½	3½
Height of glass, "	1½	1¾	2⅛	2⅜	2½	3	3½	4
Capacity, ounces	1	2	3	4	6	8	12	16
Prices, brass finished, each	$2 50	$2 75	$3 25	$4 50	$5 50	$6 50	$7 00	$7 50
" nickel plated, "	3 00	3 25	3 85	5 20	6 20	7 25	8 00	8 75



FIG. 3115

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GLASS BODY SKELETON FRAME BLIND FEED OILERS

LOCK FEED LEVER OILER

For Moving Bearings.



FIG. 3116

DESCRIPTION, FIG. 3116

This cup is used on moving bearings, such as crank or crosshead pins, eccentric straps, outward bearings, etc., for all types of steam engines. It is strongly made, and will not shake apart or stop feeding when subjected to the most severe use.

PRICES

Numbers.	Capacity of Cup, Ounces.	Sizes of Pipe Thread on Shank, Each.	Brass Finish, Each.	Nickel Finish, Each.	Outside Height of Glass, Inches.	Outside Diameters of Glass, Inches.	Extra Glasses, Each.	Extra Gaskets, per Dozen.
1	1½	¼	$3 35	$3 50	1¾	1¾	$0 25	$0 25
2	2½	¼	3 65	3 80	2	2	30	30
3	3½	⅜	3 95	4 10	2¾	2¾	40	40
4	5½	⅜	4 70	4 90	2⅝	2⅝	50	50
5	16	½	6 65	6 90	4	3½	75	75

Cups are sent threaded as listed unless specified otherwise.

IMPROVED ENGINE OILER

With Patent Snap Lever.



FIG. 3118

DESCRIPTION, FIG. 3118

A lever which covers the filling hole revolves under the head of the center post and is made elastic. When filling the cup the lever is moved either to the right or left; a short stud projects from its under side, which snaps into the filling hole to cover same, and thus the lever is held securely from displacement by jarring or shaking of the machine to which the cup may be attached. The feed of oil is regulated from the outside by the thumb screw which projects above the center post. A winged nut under the thumb head locks the feed regulator at any setting of the feed. One of the advantages of these cups is that the center post which binds the parts together contains also the valve and valve seat. If the oil passage should become obstructed in any way, the post can be readily removed and cleaned out without disturbing the base plate. Another valuable feature is the wire cloth filter which covers the oil passage in the lower end of the valve post. This effectually excludes all grit and other impurities in the oil from the journal. The filter can be readily removed for cleansing or renewal.

PRICES

Numbers.	Outside Diameters of Glass, Inches.	Height of Glass, Inches.	Capacity.	Sizes of Shank, Pipe Thread, Inches.	Finished, Each.	Nickel Plated, Each.	Extra Glasses, Each.	Cork Washers, per Dozen.
00	1	⅞	.....	⅛	$0 75	$0 85	$0 06	$0 18
0	1¼	1⅛	½ oz.	¼	80	95	08	24
1	1½	1⅝	⅝ "	¼	1 00	1 20	10	30
1½	1¾	1⅝	1 "	¾	1 25	1 50	10	35
2	2	1⅞	2 "	¾	1 50	1 75	12	40
3	2¼	2⅛	¼ pt.	⅜	1 90	2 20	15	45
4	2½	2¼	½ "	½	2 40	2 75	25	50
5	3	2¾	½ "	½	3 10	3 50	35	60
6	3½	4	1 "	½	4 00	4 50	65	75
7	4	4½	.....	..	.....	.....	1 25	1 25
8	4½	5	.....	..	.....	.....	1 50	1 50

QUICK STOP LEVER OILER

PRICES, FIG. 3120

Sizes.	Capacity.	Sizes of Glass, Inches.	Sizes of Shank, Thread, Iron Pipe, Inches.	Brass Finished, Each.	Nickeled, Each.	Extra Glasses, Each.
½ A	1 oz.	1⅛ x 1⅝	¼	$2 20	$2 45	$0 10
2½ B	1½ "	1¾ x 1⅝	⅜	2 40	2 70	10
3 C	2¼ "	2 x 1⅞	⅜	2 80	3 20	12
4 D	3½ "	2¼ x 2⅛	⅜	3 25	3 65	15
5 E	4½ "	2½ x 2⅝	⅜	4 25	4 75	25
6 F	8 "	3 x 3	½	5 80	6 40	35
6½ G	1 pt.	3½ x 4	½	7 00	7 75	50
7 H	1½ "	3½ x 5	¾	8 00	9 00	65

Cups are sent regular pipe thread shanks as per above list unless otherwise specified.



FIG. 3120

PLAIN SLIDE TOP OILER

With Lock Nut on Valve Stem.



FIG. 3122

DESCRIPTION, FIG. 3122

Lock nut prevents fluctuation of valve stem. Washer between lock nut and slide prevents oil from leaking at valve stem.

PRICES

Numbers.	Capacity	Diameters of Glass Shell, Inches.	Sizes of Shank, Inches.	Brass Finish, Each.	Nickeled, Each.
x 11	½ oz.	1⅛	¼	$1 40	$1 60
x 12	¾ "	1¼	¼	1 45	1 70
x 13	1 "	1⅝	⅜	1 80	2 10
x 14	1½ "	1¾	⅜	2 25	2 70
x 15	2¼ "	2	⅜	2 75	3 30
x 16	3⅜ "	2⅜	⅜	3 40	4 00
x 17	6 "	2¾	½	4 15	4 85
x 18	10 "	3⅛	½	5 50	6 40
x 19	Pint.	3½	¾	6 80	7 80
x 20	Quart.	4⅛	¾	12 15	14 15

DROP LEVER OILER

PRICES, FIG. 3117

Numbers.	Capacity.	Sizes of Glass, Inches.	Sizes of Shank, Thread, Iron Pipe, Inches.	Brass Finished Each.	Nickeled, Each.	Extra Glasses, Each.
2	1 oz.	1½ x 1⅝	¼	$2 20	$2 45	$0 10
4	1½ "	1¾ x 1⅝	⅜	2 40	2 70	10
6	2¼ "	2 x 1⅞	⅜	2 80	3 20	12
8	3½ "	2¼ x 2⅛	⅜	3 25	3 65	15
10	4½ "	2½ x 2⅝	⅜	4 25	4 75	25
12	8 "	3 x 3	½	5 80	6 40	35
14	1 pt.	3½ x 4	½	7 00	7 75	50
16	1½ "	3½ x 5	¾	8 00	9 00	65

Cups are sent regular pipe thread shanks, as per above list, unless otherwise specified.



FIG. 3117

POSITIVE FEED OILER

For Eccentrics, Crossheads, and all Moving Bearings.

DESCRIPTION, FIG. 3119

By referring to illustration S is filling plug, which unscrews, exposing extra large hole for quick and rapid filling. All engineers will readily appreciate the convenience of this arrangement. B is the swinging arm to which filling plug is attached to prevent dropping or losing same; can be moved either to the right or left. R is the adjusting stem to regulate the amount of oil fed. O is jamb nut, which securely holds the adjusting stem in position. This oiler has a brass shield protecting the glass cylinder.

PRICES

Numbers.	Outside Diameters of Glass, Inches.	Height of Glass, Inches.	Capacity.	Sizes of Shank, Pipe Thread, Inches.	Finished, Each.	Nickel Plated, Each.
0	1¼	1⅛	½ oz.	¼	$1 50	$1 90
1	1½	1⅝	⅝ "	¼	1 75	2 20
1½	1¾	1⅝	1 "	⅜	2 00	2 50
2	2	1⅞	2 "	⅜	2 50	3 00
3	2¼	2¼	¼ pt.	⅜	3 00	3 60
4	2½	2¼	½ "	½	4 00	4 70

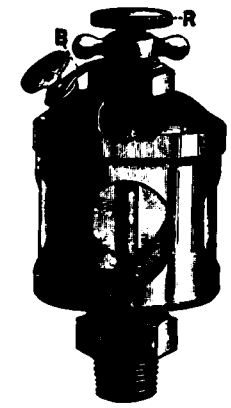


FIG. 3119

PLAIN SLIDE TOP OILER

With Quick Stop Flushing Valve.

DESCRIPTION, FIG. 3121

Feed can be shut off, renewed instantly, or flushed without disturbing the set regulation.

PRICES

Numbers.	Capacity	Diameters of Glass Shell, Inches.	Size of Shank, Inches.	Brass Finish, Each.	Nickeled, Each.
421	½ oz.	1⅛	¼	$1 65	$1 75
422	¾ "	1¼	¼	1 70	1 95
423	1 "	1⅝	⅜	2 10	2 40
424	1½ "	1¾	⅜	2 50	2 90
425	2¼ "	2	⅜	3 00	3 55
426	3½ "	2⅜	⅜	3 65	4 25
427	6 "	2¾	½	4 35	5 10
428	10 "	3¼	½	5 70	6 60
429	Pint.	3½	¾	7 00	8 00
430	Quart.	4⅛	¾	12 35	14 35

All oilers threaded standard gas pipe tap, and will be shipped with shanks threaded as listed unless otherwise specified in order.



FIG. 3121

PLAIN SLIDE TOP OILER

PRICES, FIG. 3123

Numbers.	Capacity.	Diameters of Glass Shell, Inches.	Height of Glass Shell, Inches.	Sizes of Shank, Inches.	Brass Finish, Each.	Nickeled, Each.	Price of Extra Glasses, per Dozen, Including Cork Washers.
x 0	.....	1	⅞	⅛	$1 20	$1 35	$1 75
x 1	½ oz.	1⅛	1	¼	1 30	1 50	2 00
x 2	¾ "	1¼	1⅛	¼	1 35	1 60	2 20
x 3	1 "	1⅝	1⅜	⅜	1 70	2 00	2 70
x 4	1½ "	1¾	1½	⅜	2 15	2 60	3 10
x 5	2¼ "	2	1¾	⅜	2 65	3 20	3 50
x 6	3⅝ "	2⅜	2¼	⅜	3 30	3 90	4 50
x 7	6 "	2¾	2½	½	4 00	4 70	7 00
x 8	10 "	3⅛	2⅞	½	5 35	6 25	9 00
x 9	Pint.	3½	4	¾	6 65	7 65	15 60
x 10	Quart.	4⅛	5⅛	¾	12 00	14 00	24 00

Oilers, Figs. 3122 and 3123, threaded standard gas pipe tap, and will be shipped with shanks threaded as listed unless otherwise specified.

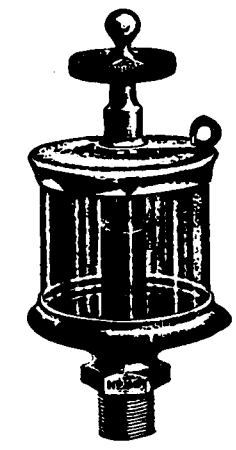


FIG. 3123

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GLASS BODY SKELETON FRAME BLIND FEED OILERS

ADJUSTABLE FEED OILER

For Stationary or Marine Engines

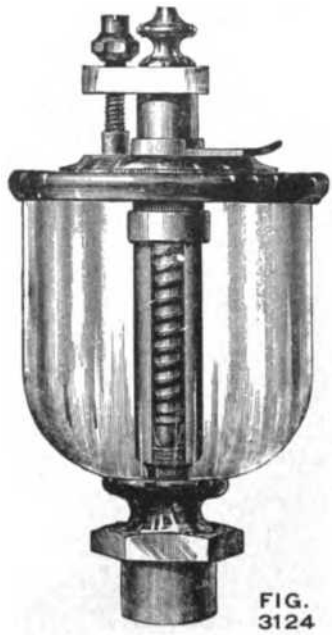


FIG. 3124

DESCRIPTION, FIG. 3124

This oiler has brass mountings, the body is made of lead glass, very heavy and clear. This cup is ornamental and reliable for use with any kind of oil, on account of the ease with which the desired feed can be secured even when the engine or machinery to which it is attached is in motion.

PRICES

Nos.	Outside Diameters, Inches.	Height, Inches.	Capacity,	Per Dozen.
7 small	1⅞	3½	¾ ounce	$22 00
7	2	4¼	1¼ "	24 00
7½	2 5/16	4⅝	2 "	28 00
8	2¾	5	3 "	32 00
8½	3⅛	5½	5 "	36 00
9	3½	6	8 "	40 00
9½	3¾	6½	12 "	46 00
10	3¾	7	1 pint	54 00

DESCRIPTION, FIG. 3125

The cup is composed of an outer skeleton brass frame A, A, and an inner glass vessel C, C, united with cork washers D, D, so that the oil will be held inside without leaking. To fill the cup, uncover filling hole in cap and pour in the oil. The feed is regulated by set screw M, which passes through the rim of thumb wheel H, H, and rests on nipple N when the cup is feeding, and with the action of the screw M, the cone F can be raised as desired, so as to feed the exact quantity of oil needed by the machinery to which it is attached. When no feed is required it is only necessary to lift the thumb wheel H, H, and turn it slightly to one side, so that the screw M may descend from its seat on nipple, thereby allowing the cone F to close feed opening. When feed is again required it is only necessary to raise the screw M on the nipple N, as before, when the exact feed will be resumed which was previously had.

PRICES

Nos.	Outside Diameters, Inches.	Height, Inches.	Capacity, Ounces.	Per Dozen.
½	1⅛	2½	¼	$24 00
1	1¼	2¾	⅝	36 00
2	1¾	3½	1	48 00
3	2	4	1¼	48 00
4	2⅜	4½	2¼	60 00
4½	3	5	3¼	72 00
5	3½	5½	4½	84 00
6	4½	7	10	96 00

ADJUSTABLE FEED OILER

For Locomotive Guides and Rocker Boxes



FIG. 3126

DESCRIPTION, FIG. 3126

This oiler has flat hexagon base, with patent adjustable feed, pressed lead glass body, clear and heavy, brass mountings. This cup is suited to all bearings, except rapidly revolving crank pin connections, and is also well adapted for locomotive guides and rocker boxes. It has radial filling slide.

PRICES

Nos.	Outside Diameters, Inches.	Height, Inches.	Capacity, Ounces.	Per Dozen.
56	1⅝	3¾	1	$24 00
57	1⅞	4	1¼	28 00
58	2 3/16	4¼	2¼	32 00
59	2½	4½	3¼	36 00
60	2⅞	5	4½	40 00
60½	3⅜	5½	7	48 00

DESCRIPTION, FIG. 3127

The cut represents a very desirable pressed glass cup, round base, brass mountings, with adjustable feed. Suitable for any service except crank pin, when the engine revolves at a greater rate of speed than 65 revolutions per minute.

PRICES

N .	Outside Diameters, Inches.	Height, Inches.	Capacity, Ounces.	Per Dozen.
52	1⅝	3¾	1	$24 00
53	1⅞	4	1¼	28 00
54	2 3/16	4¼	2¼	32 00
54½	2½	4½	3¼	36 00
55	2⅞	5	4½	40 00

SIGNAL REGULATING OILER

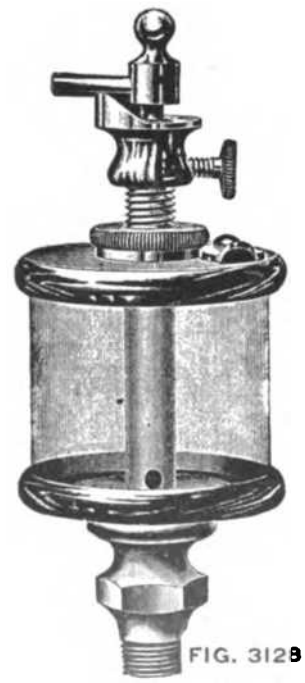


FIG. 3128

PRICES, FIG. 3128

Nos.	Capacity, Ounces.	Diams. Glass, Inches.	Height of Glass, Inches.	Thread, Inches.	Brass, per Dozen.	Nickel, per Dozen.
7D	¼	1	⅞	⅛	$10 00	$12 00
8D	½	1¼	1⅛	⅛	11 00	13 00
9D	1	1½	1⅜	⅛	13 00	15 00
10D	1½	1¾	1⅝	¼	16 00	18 00
11D	2½	2	1⅞	¼	19 00	21 00
12D	3¾	2¼	2⅛	¼	24 00	27 00
13D	5	2½	2⅜	⅜	28 00	31 00
14D	7	2¾	2⅝	⅜	32 00	35 00
15D	10	3	3	½	38 00	41 00
16D	15	3½	3½	½	43 00	47 00

PRICES, FIG. 3129

Nos.	Capacity, Ounces.	Diams. Glass, Inches.	Height of Glass, Inches.	Thread, Inches.	Brass, per Dozen.	Nickel, per Dozen.
7F	¼	1	⅞	⅛	$9 00	$10 00
8F	½	1¼	1⅛	⅛	11 00	13 00
9F	1	1½	1⅜	⅛	13 00	15 00
10F	1½	1¾	1⅝	¼	15 00	17 00
11F	2½	2	1⅞	¼	18 00	20 00
12F	3¾	2¼	2⅛	¼	22 00	24 00
13F	5	2½	2⅜	⅜	26 00	30 00
14F	7	2¾	2⅝	⅜	30 00	34 00
15F	10	3	3	½	34 00	38 00
16F	15	3½	3½	½	42 00	48 00

LOCOMOTIVE GUIDE OILER

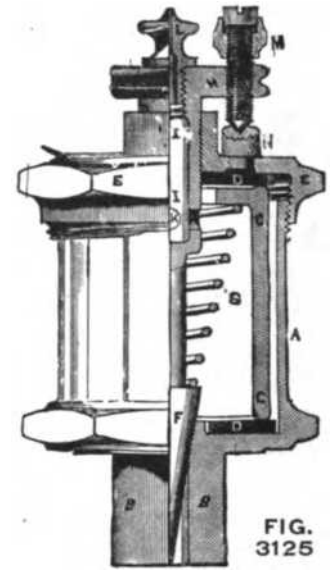


FIG. 3125

ADJUSTABLE FEED OILER



FIG. 3127

PLAIN REGULATING OILER



FIG. 3129

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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GLASS BODY SKELETON FRAME BLIND FEED OILERS

SET FEED OILER

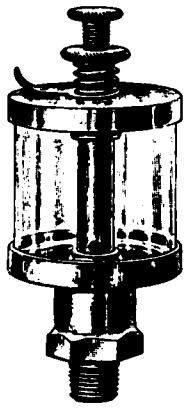


FIG. 3130

The top and bottom plates are made of the best cast brass. They are simple in design and can be easily taken apart, if necessary. The jamb nut, or set feed feature, holds the regulating stem at the point where it is set to feed at the proper rate.

PRICES

Nos.	Diameters, Inches	Height, Inches.	Capacity.	Pipe Thread, Inches.	Brass, Each.	Nickel, Each.	Oil Cup Glasses, Each.	Cork Washers, Dozen.
10	1⅛	1	⅓ oz.	⅛	$1 30	$1 55	$0 07	$0 07
11	1¼	1⅛	½ "	⅛	1 50	1 75	08	08
12	1½	1⅜	1 "	¼	1 70	1 95	09	10
13	1¾	1⅝	1½ "	¼	1 90	2 15	10	12
14	2	1⅞	2 "	⅜	2 10	2 35	12	20
15	2¼	2⅛	3 "	⅜	2 45	2 85	15	25
16	2½	2⅜	4 "	⅜	3 25	3 65	20	30
17	3	3	8 "	½	4 80	5 30	30	40
18	3½	4	1 pint	½	7 00	7 75	40	60

The shanks of oilers can be reduced below regular sizes, as listed, without extra charge; but if larger shanks are wanted than specified in list, an extra charge will be made for same.

SACHEM SET FEED OILER



FIG. 3131

This oiler is made from castings, not spun brass. Feed regulating device controlled by set nut. Slide cover with vent which allows oil to feed on any bearing.

PRICES

Outside Diameter of Glass, Inches.	Height of Glass, Inches.	Capacity, Ounces.	Pipe Thread of Shank.	Brass Finish, Each.	Nickel Plated, Each.	Extra Glasses, Each.	Extra Cork Washers, Per Dozen.
1¼	1⅛	⅝	¼	$0 85	$1 00	$0 08	$0 12
1½	1⅜	1	¼	1 00	1 20	10	18
1¾	1½	1¼	⅜	1 25	1 50	11	24
2	1¾	2¼	⅜	1 50	1 80	12	30
2¼	2⅛	4	½	2 00	2 30	15	36
2½	2⅜	5	½	2 50	2 80	25	42

TAPER SCREW FEED ENGINE OILER
OUTSIDE ADJUSTMENT



FIG. 3133

DESCRIPTION, FIG. 3133

These cups contain no parts liable to get out of order, nor do they require special attention in handling or application. They are further provided with an opening in the top, with a movable cover, through which they may be filled, and which also acts when shut (which it should always be, except in the act of filling) as a vent sufficient to keep proper degree of circulation of air in the cup to make the pressure uniform and facilitate the flow of oil.

PRICES

Nos.	Height of Cup, Complete. Inches.	Width of Cup, Complete, Inches.	Capacity in Ounces.	Size of Shank Pipe Thread, Inches.	Per Dozen.
141	2¾	1⅛	¼	⅛	$8 00
142	3	1¼	⅜	⅛	9 00
143	3¼	1⅜	½	⅛	10 00
144	3¾	1¾	1	¼	11 00
145	4	1⅞	1½	¼	12 00
146	4¼	2⅛	2	⅜	14 00
147	4¾	2½	4	⅜	17 00
148	5¾	2⅞	6	⅜	21 00
149	6¼	3⅜	10	½	27 00
150	6¾	3¾	15	½	36 00
151	7½	4¼	24	½	54 00
152	8¼	4⅞	36	½	84 00

VICTOR INDEX FEED OILER

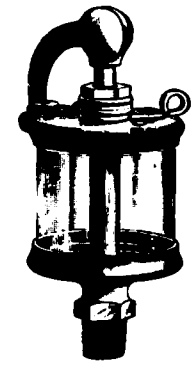


FIG. 3132

This index feed oiler is provided with a simple index device for regulating the feed of oil, and has an indicator arm pivoted on the stem and turning on the lid to mark the notch giving the desired rate of feed. The feed can be instantly turned off and on again by replacing the lever in the notch of the indicator arm. When the index arm is closed the lever can be left to stand up out of the notch, thus acting as an indicator to show from a distance that the feed is shut off.

PRICES

Nos.	Extreme Outside Diameter of Cup (lever included), Inches.	Extreme Height of Cup (over all), Inches.	Outside Diameter of Glass, Inches.	Height of Glass, Inches.	Capacity, Ounces.	Shank Pipe Thread, Inches.	Finished Brass, Each.	Nickel Plated, Each.
0	2 5/16	3 13/16	1¼	1⅛	⅝	⅛	$1 00	$1 15
1	2 11/16	4½	1½	1⅜	1	¼	1 20	1 40
1½	2 15/16	4 13/16	1¾	1⅝	1½	¼	1 45	1 70
2	3¼	5¼	2	1⅞	2½	⅜	1 75	2 00
3	3¾	6	2¼	2⅛	4	⅜	2 15	2 45
4	4	6½	2½	2⅜	5	⅜	2 70	3 05
5	4 11/16	7 7/16	3	3	10	½	3 40	3 80
6	5¼	8¼	3½	4	18	½	4 30	4 80

INDEX FEED OILER



FIG. 3134

PRICES, FIG. 3134

Nos.	Capacity.	Sizes of Glass, Inches.	Sizes of Shank Thread, Iron Pipe, Inches.	Brass Finished, Each.	Nickeled, Each.	Extra Glasses, Each.
0	½ oz.	1⅛ x 1	⅛	$0 75	$0 95	$0 07
1	¾ "	1¼ x 1⅛	¼	85	1 05	08
2	1 "	1½ x 1⅜	¼	1 10	1 35	10
2½	1½ "	1¾ x 1⅝	⅜	1 30	1 60	10
3	2¼ "	2 x 1⅞	⅜	1 70	2 00	12
4	3½ "	2¼ x 2⅛	⅜	2 10	2 40	15
5	4½ "	2½ x 2⅜	⅜	2 75	3 10	25
6	8 "	3 x 3	½	3 75	4 15	35
6½	1 pt.	3½ x 4	½	5 00	5 50	50
7	1½ "	3½ x 5	¾	6 90	7 50	65

Cups are sent regular pipe thread shanks, as per above list, unless otherwise specified.

AUTOMATIC CRANK PIN OILER

Feeds oil at every revolution of the crank. Stops feeding when the engine stops.

PRICES, FIG. 3135

Sizes.	Capacity.	Sizes of Glass, Inches.	Sizes of Shank Thread, Iron Pipe, Inches.	Brass Finished Each.	Nickeled, Each.	Extra Glasses, Each.
2	1 oz.	1½ x 1⅜	¼	$2 20	$2 45	$0 10
3	2¼ "	2 x 1⅞	⅜	2 80	3 20	12
5	4½ "	2½ x 2⅜	⅜	4 25	4 75	25
6	8 "	3 x 3	½	5 80	6 40	35
6½	1 pt.	3½ x 4	½	7 00	7 75	50
7	1½ "	3½ x 5	¾	8 00	9 00	65

Cups are sent regular pipe thread shanks, as per above list, unless otherwise specified.



FIG. 3135

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GLASS BODY BLIND FEED OILERS

PNEUMATIC ADJUSTABLE FEED OILER

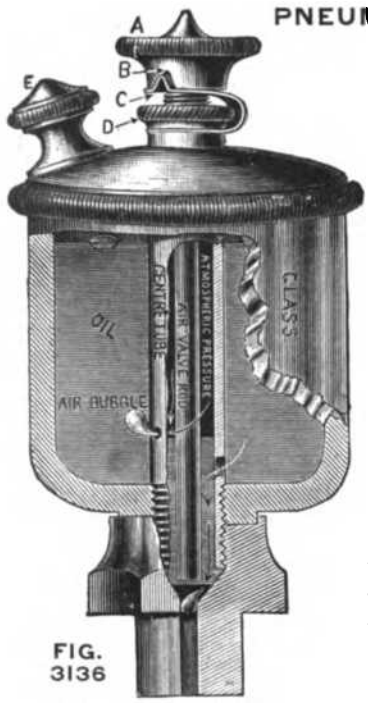


FIG. 3136

For engines, crank pins, cross heads, and all kinds of movable and stationary journals.

PRICES, FIG. 3136

After once regulating the feed and adjusting it, you can increase it to a stream if desired, and set it to the regular feed again instantly.

Nos.	Diams., Inches.	Height, Inches.	Capacity, Ounces.	Pipe Thread, Inches.	Each.	Per Dozen.	Extra Glass.
1½	1⅝	3	¾	⅛	$1 85	$20 00	.10
2½	2	3¼	1¼	¼	2 25	24 00	.12
3½	2¼	3½	2	¼	2 60	28 00	.15
4½	2½	3¾	3	⅛	3 00	32 00	.20
6½	3	4½	5	⅜	3 50	38 00	.25
8½	3½	5	8	½	4 00	42 00	.30
10½	4½	9	1 qt.	¾	7 00	80 00	.60

PNEUMATIC SCREW FEED OILER

For use on engines, machinery, shafting and pulleys.

PRICES, FIG. 3137

The body is glass and the feed is regulated by screwing the air valve up or down the center tube. Raising the valve rod off the seat increases or decreases the supply of oil.

Nos.	Diams., Inches.	Height, Inches.	Capacity, Ounces.	Pipe Thread, Inches.	Each.	Per Dozen.	Extra Glass.
1	1⅝	3	¾	⅛	$1 50	$16 00	.10
2	2	3¼	1¼	¼	1 75	20 00	.12
3	2¼	3½	2	¼	2 25	24 00	.15
4	2½	3¾	3	⅜	2 50	28 00	.20
6	3	4½	5	⅜	3 00	34 00	.25
8	3½	5	8	½	3 50	40 00	.30
10	4½	9	1 qt.	¾	6 50	75 00	.60

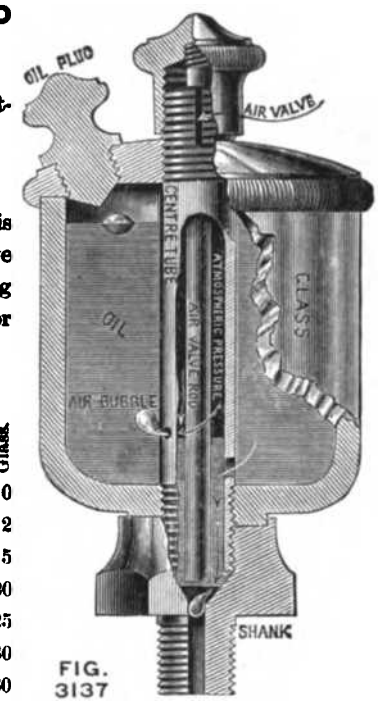
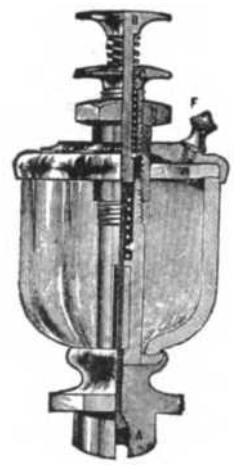


FIG. 3137

ADJUSTABLE FEED CRANK PIN OILER

For stationary and marine engines.


FIG. 3138

DESCRIPTION, FIG. 3138

Fig. 3138 is a crank pin oiler for stationary and marine engines, with adjustable feed and auxiliary plunger feed by which instant and copious lubrication is secured while the engine is in motion.

Directions.—Screw down plug C into the cap until it forces valve A slightly from its seat to give the requisite feed. Then screw jamb nut D down tightly on cap or rim of cup. Jamb nut D need not be altered till change of feed is needed. Plug F may be removed for replenishing cup and returned to position again. When a dash of oil is needed, it is only necessary to press or strike downward plunger B with the hand, which forces valve A from seat, thereby allowing the oil to pass freely from cup to bearing without changing feed adjustment.

BROUGHTON'S CRANK PIN OILER

PRICES, FIG. 3139

Nos.	Diams. of Threaded for Body, Inches.	Threaded for Iron Pipe, Inches.	Capacity, Ounces.	Each.	Extra Glasses, Each.
0	1¼	¼	½	$0 60	$0 10
1	1½	⅜	1	75	10
2	1⅞	⅜	2	90	15
3	2¼	½	4	1 10	20
4	2¾	½	7	1 55	25
5	3⅛	¾	12	2 25	40

PRICES, FIG. 3138

Nos.	Outside Diameters, Inches.	Height, Inches.	Capacity, Ounces.	Per Dozen.
62	2	3½	1¼	$24 00
63	2½	4	2¼	28 00
64	3	4½	3½	32 00
65	3¼	5	5	36 00
66	3½	5¼	8	40 00


FIG. 3139

CRANK PIN OILER

DESCRIPTION, FIG. 3140

In this oil cup the valve stem is operated by the cap on top, and the regulating of the feed permits air to pass into the cup. When cap is screwed down to the top of the oiler and the filler plug is set, no air enters the cup, but the adjusting of the feed valve permits the free flow of oil.


FIG. 3140

PRICES

Nos.	Capacity, Ounces.	Diameters of Glass Shell, Inches.	Sizes of Shank, Inches.	Brass Finish, Each.	Nickeled, Each.
160	½	1⅛	¼	$1 50	$1 65
161	¾	1¼	¼	1 55	1 75
162	1	1⅝	⅜	1 95	2 20
163	1½	1¾	⅜	2 40	2 70
164	2¼	2	⅜	3 00	3 45
165	3⅔	2⅜	⅜	3 70	4 30
166	6	2¾	½	4 50	5 20
167	10	3⅛	½	6 00	6 90
168	pint	3½	¾	7 40	8 40
169	qt.	4⅛	¾	13 00	15 00

Oilers threaded standard gas pipe tap, and will be shipped with shanks threaded as listed, unless otherwise specified in order.

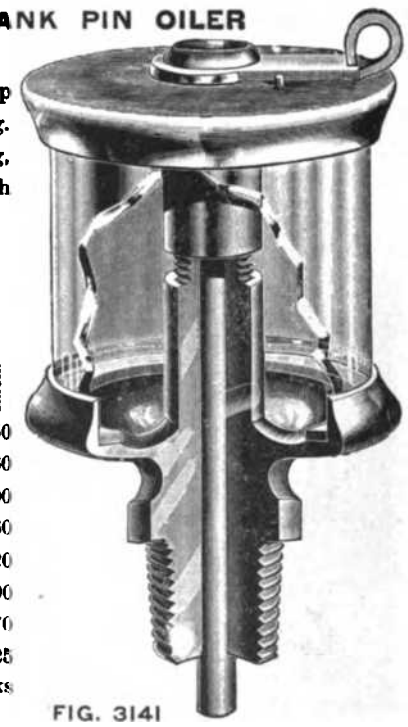
AUTOMATIC CRANK PIN OILER

It has a loose wire that works up and down while the engine is running.

Can furnish with screw filler plug, not slide top, if desired. In which case add 20 cents per cup to list.

PRICES

Nos.	Capacity, Ounces.	Diameters of Glass Shell, Inches.	Height of Glass Shell, Inches.	Sizes of Shank, Inches.	Brass Finish, Each.	Nickeled, Each.
120	½	1⅛	1	¼	$1 30	$1 50
121	¾	1¼	1⅛	¼	1 35	1 60
122	1	1⅝	1⅜	⅜	1 70	2 00
123	1½	1¾	1½	⅜	2 15	2 60
124	2¼	2	1¾	⅜	2 65	3 20
125	3⅔	2⅜	2⅛	⅜	3 30	3 90
126	6	2¾	2½	½	4 00	4 70
127	10	3⅛	2⅞	½	5 35	6 25


FIG. 3141

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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GLASS BODY, SKELETON FRAME, BLIND FEED OILERS

This cup has a needle valve C, secured from disturbance, underneath the filler plug A.

It has an immense filler B 1, joined to and constituting a part of combining sleeve B 2. Therefore, when a wrench is placed on the hexagon of the sleeve B 2, to tighten the cork washers to prevent leak, or the filler plug A is screwed in or out, the set regulation is in no way disturbed, as the filler B 1, its hexagon B 2, and the yoke B 3 are all one piece, passing through the upper metal cap of the cup and threaded on to the post D 2, of which D 1 is a part. The cup can be emptied rapidly or can be regulated to feed a month.

Centrifugal motion sends the oil to the top of the cup, from whence it is fed down the post D 2 to the point to be lubricated, the centrifugal force increasing and diminishing in exact proportion to the speed of engine, feed responds accordingly, oil ceasing entirely to flow when engine stops.

As there are no moving parts, there is nothing to wear out.

AUTOMATIC NEEDLE VALVE CRANK PIN OILER

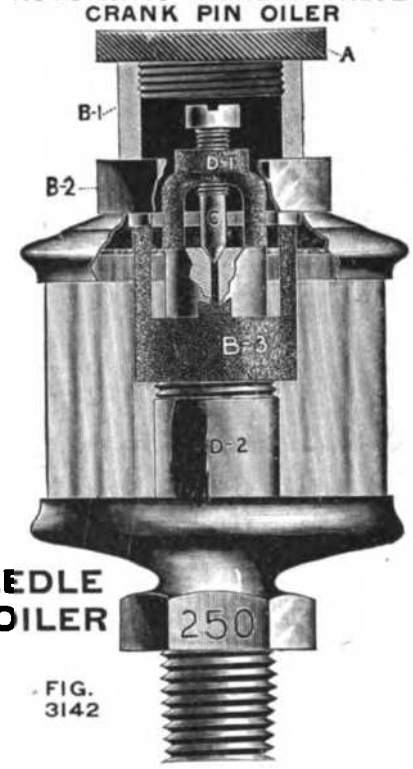


FIG. 3142

PRICES

Nos.	Capacity, Ounces.	Diameters, of Glass Shells, Inches.	Height of Glass Shells, Inches.	Sizes of Shank Inches.	Brass Finish, Each.	Nickeled, Each.
100	¾	1¼	1⅛	¼	$1 50	$1 80
200	1	1⅝	1⅜	¼	2 00	2 40
250	1½	1¾	1½	⅜	2 70	3 25
300	2¼	2	1¾	⅜	3 35	3 95
400	3⅔	2⅜	2⅛	⅜	4 00	4 70
500	6	2¾	2½	½	6 35	7 25
600	10	3⅛	2⅞	½	10 00	11 00

All oilers threaded standard gas pipe tap, and will be shipped with shanks threaded as listed, unless otherwise specified in order.

NEEDLE VALVE FEED

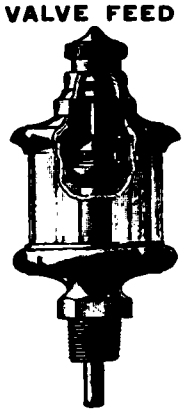


FIG. 3143

AUTOMATIC ROD OILERS

FOR ENGINE CRANK PINS

These automatic screw feed and needle valve rod oilers are simple, compact and well made, and will be found very satisfactory for use on crank pin bearings. The needle valve cups are not made smaller than No. 1. When ordering, mention whether screw feed or needle valve feed is wanted.

SCREW FEED

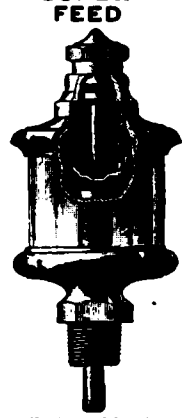


FIG. 3144

PRICES, FIGS. 3143 AND 3144

Numbers	0	1	1½	2	3	4
Extreme outside diameters of cup, inches	1½	1¾	2	2¼	2¾	2 15/16
Extreme height of cup plug raised, open to fill, inches	3 11/16	4 3/16	4 11/16	5 1/8	5 13/16	6 1/8
Outside diameters of glass, inches	1¼	1½	1¾	2	2¼	2½
Height of glass, inches	1⅛	1⅜	1⅝	1⅞	2⅛	2⅜
Capacity, ounces	⅝	1	1½	2½	4	5
Shank pipe thread, inch	⅛	¼	¼	⅜	⅜	⅜
Finished brass, each	$1 10	1 50	2 00	2 50	3 00	4 00
Nickel plated, each	1 25	1 70	2 25	2 75	3 30	4 35

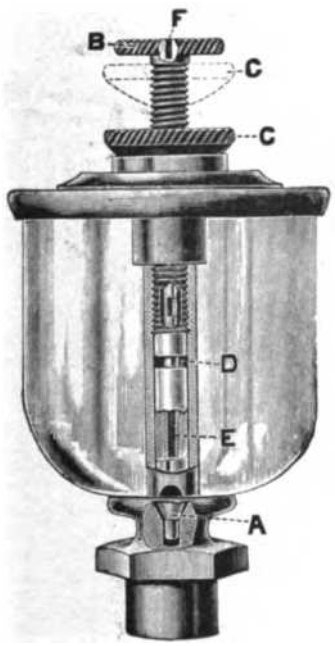


FIG. 3146

AUTOMATIC CRANK PIN OILER

TO FEED LIGHT OR HEAVY OIL

It has perfect adjustment; feeds only when crank is in motion, and stops feeding absolutely when motion ceases.

This cup is composed of a glass body, with strong brass mountings highly polished. Fill cup at C, after which adjust by milled head screw B, which regulates the lift of hollow conical spindle E A. When the proper adjustment is secured, use filling plug C as a check nut on adjusting screw B.

PRICES

Nos.	Outside Diameters, Inches.	Height, Inches.	Capacity, Ounces.	Per Dozen.
90	1⅞	3⅛	¾	$22 00
91	2	3½	1¼	24 00
92	2½	4	2¼	28 00
93	2¾	4½	3½	32 00
94	3⅛	5	5	36 00
95	3½	5¼	8	40 00
96	3¾	5⅝	12	46 00
97	3¾	6¼	16	54 00

SLIDING TOP, NEEDLE FEED, CRANK PIN OILER

DESCRIPTION, FIG. 3145

This cup has been especially designed for the efficient and economical lubrication of crankpins by means of an oiler directly attached to same. The oil is thrown into the center tube through openings near its top, while the rate or speed of feed is regulated by means of a needle pointed screw spindle held firmly in place by a lock nut. The sliding top is a valuable feature, and consists of a cap with a hole in it, which, by a common screw motion, slides over the flat fixed cover of the cup, exposing or covering, whenever necessary, a corresponding opening in said cover, through which the cup is filled with oil. By this arrangement the sliding cover is kept absolutely tight and prevents the leakage of oil, especially when applied on crankpins of high speed engines. The sliding top cannot get loose, being kept in position by a stop which allows it only the necessary play.

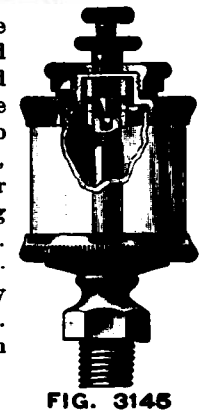


FIG. 3145

PRICES

Nos.	Capacity in Ounces.	Size of Shank Pipe Thread, in Inches.	Per Dozen.
622	⅜	⅛	$16 00
623	½	⅛	18 00
624	1	¼	21 00
625	1½	¼	27 00
626	2	⅜	30 00
627	4	⅜	33 00
628	6	⅜	40 00
629	10	½	54 00
630	15	½	72 00
631	24	½	108 00
632	36	½	168 00

CRANK PIN OILER

FOR ENGINES AND HEAVY BEARINGS

Fig. 3147 represents a crank pin oiler for engines and heavy bearings; the desired feed can be secured by a reduction of the diameter of the feed spindle, or by cutting off some of its length, so as to give it greater freedom and more room for the oil to pass from cup to parts needing lubrication.

PRICES

Nos.	Outside Diameters.	Height.	Capacity, Ounces.	Per Dozen.
20	1½	2⅞	½	$12 00
21	1⅞	3⅛	⅝	15 00
22	2	3½	1¼	18 00
22½	2 5/16	4	2¼	21 00
23	2¾	4½	3½	24 00
23½	3⅛	4¾	5	27 00
24	3½	5	8	30 00



FIG. 3147

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GLASS BODY, SKELETON FRAME, BLIND FEED OILERS

AUTOMATIC CRANK PIN OILER



FIG. 3148

DESCRIPTION AND PRICES, FIG. 3148

This cup can be emptied in five minutes or can be so regulated as to feed for four weeks. On slow running engines, the oil, being continually flowed over convex disk at top of oiler, discharges into the oil tube and runs of its specific gravity to parts to be lubricated. As the speed of engine is increased, the oil is lifted to the top of cup and maintains an accumulated pressure from centrifugal force, which force is increased and diminished in exact proportion to variation of speed of engine, oil ceasing entirely to flow when engine stops. As there are no moving parts to this oiler there is nothing to wear out.

Nos.	Capacity, Ounces.	Diameter of Glass Shell, Inches.	Height of Glass Shell, Inches.	Size of Shank, Inches.	Brass Finish, Each.	Nickeled, Each.
1	¾	1¼	1⅛	¼	$1 60	$1 90
2	1	1⅝	1⅜	¼	2 30	2 70
2½	1½	1¾	1½	⅜	3 00	3 55
3	2¼	2	1¾	⅜	3 80	4 40
4	3⅜	2⅜	2⅛	⅜	4 80	5 50
5	6	2¾	2½	½	6 50	7 40
6	10	3⅛	2⅞	½	10 00	11 00

AUTOMATIC CRANK PIN OILER

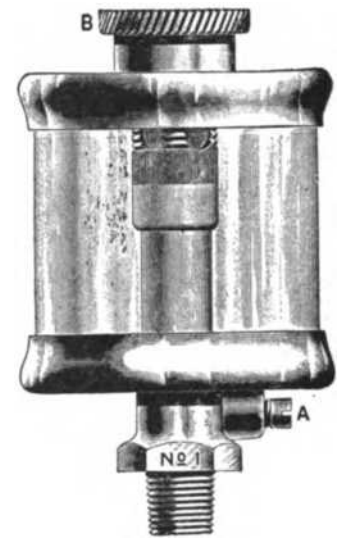


FIG. 3149

DESCRIPTION AND PRICES, FIG. 3149

In the crank pin oil cup the feed is from the bottom, regulated by screw A. The light shaded part of the post is solid. The dark shading covers the part drilled out. The holes in the post permit the oil to pass into the cup. The oiler has an extremely large filler, of which cap B is a part.

Nos.	Capacity, Ounces.	Diameter of Glass Shell, Inches.	Size of Shank, Inches.	Brass Finish, Each.	Nickeled, Each.
1	1½	1¾	⅜	$2 25	$2 75
2	3	2 3/16	⅜	3 50	4 00
3	5	2½	⅜	5 00	5 75

All oilers, Figs. 3148 and 3149, threaded standard gas pipe tap, and will be shipped with shanks threaded as listed, unless otherwise specified.

NEEDLE FEED CRANK PIN OILER

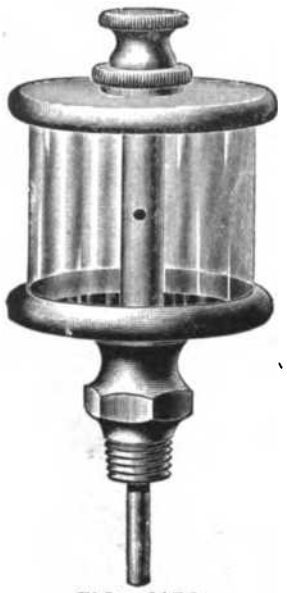


FIG. 3150

PRICES, FIG. 3150

Nos.	Capacity, Ounces.	Diam. Glass, Inches.	Height of Glass, Inches.	Thread, Inches.	Brass, per Dozen.	Nickel, per Dozen.
7 H	¼	1	⅞	⅛	$8 00	$10 00
8 H	½	1¼	1⅛	⅛	9 00	11 00
9 H	1	1½	1⅜	⅛	11 00	13 00
10 H	1¾	1¾	1⅝	¼	13 00	15 00
11 H	2½	2	1⅞	¼	15 00	17 00
12 H	3¾	2¼	2⅛	¼	18 00	20 00
13 H	5	2½	2⅜	⅜	24 00	27 00

DESCRIPTION AND PRICES, FIG. 3151

Absolutely oil tight and positive feed when in motion. Feed of oil stops when machinery is at rest. Requires no attention.

Nos.	Capacity, Ounces.	Diameter Glass, Inches.	Height of Glass, Inches.	Thread, Inches.	Brass, per Dozen.	Nickel, per Dozen.
7 G	¼	1	⅞	⅛	$9 00	$11 50
8 G	½	1¼	1⅛	⅛	11 00	13 50
9 G	1	1½	1⅜	⅛	13 00	15 50
10 G	1½	1¾	1⅝	¼	16 00	19 00
11 G	2½	2	1⅞	¼	19 00	22 00
12 G	3¾	2¼	2⅛	¼	24 00	27 00
13 G	5	2½	2⅜	⅜	30 00	34 00
14 G	7	2¾	2⅝	⅜	32 00	35 00
15 G	10	3	3	½	38 00	44 00
16 G	15	3½	3½	½	48 00	55 00

STANDARD CRANK PIN OILER

Suitable for any crank or eccentric

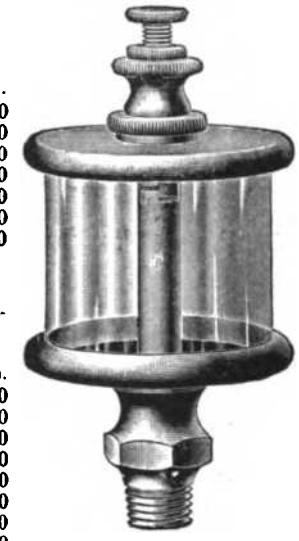


FIG. 3151

HURON OILER

For crank pins, eccentrics, valve stems, rocker shafts, etc.





FIG. 3152

This oiler is for use only on such machinery having a motion that will throw the oil around in the oiler. This motion feeds the oil into the top of oil tube, from which it is carried to the parts to be lubricated. The oil is fed in proportion to the speed of the machinery, and no change in the inside adjustment is necessary when this speed is varied. The oil ceases to flow when the machine stops.

PRICES, FIG. 3152

Nos.	Outside Diameter of Glass, Inches.	Height of Glass, Inches.	Capacity, Ounces.	Pipe Thread.	Brass, Each.	Nickel Plated, Each.
20½	1¼	1⅛	½	⅛	$0 39	$0 45
21	1½	1⅜	1	¼	45	52
21½	1¾	1⅝	1½	¼	60	68
22	2	1⅞	2	⅜	70	79
23	2¼	2⅛	3	⅜	80	90
24	2½	2⅜	4	⅜	1 00	1 12

MIAMI AUTOMATIC SCREW CAP OILER

For stationary and movable bearings.

This simple and substantial airtight oil cup will be found suitable for stationary and movable bearings. It will not leak when placed on movable bearings, has a simple feed regulating arrangement and an improved screw filler enabling convenient and quick refilling. The filling cap, being made of a very thin and light material, is easily screwed tight without the use of a wrench, and will not jar off. When feed is once set, the cup operates automatically and regularly, and stops feeding when the machinery is not in motion.



FIG. 3153

PRICES, FIG. 3153

Nos.	Extreme Outside Diam. of Cup, Inches.	Extreme Ht. of Cup (plug raised, open to fill), In.	Outside Diam. of Glass, Inches.	Height of Glass, Inches.	Capacity, Ounces.	Shank Pipe Thread, Inch.	Finished Brass, Each.	Nickel Plated, Each.
000	1 5/16	2 13/16	1	⅞	¼	⅛	$0 70	$0 80
00	1 7/16	3 1/16	1⅛	1	½	⅛	75	85
0	1½	3⅜	1¼	1⅛	⅝	⅛	80	95
1	1¾	4	1½	1⅜	1	¼	1 00	1 20
1½	2	4 3/16	1¾	1⅝	1½	¼	1 25	1 50
2	2¼	4 13/16	2	1⅞	2½	⅜	1 50	1 75
3	2¾	5 1/16	2¼	2⅛	4	¾	1 90	2 20
4	2 15/16	5 9/16	2½	2⅜	5	⅜	2 40	2 75
5	3 7/16	6⅝	3	3	10	½	3 10	3 50
6	4¼	7½	3½	4	18	½	4 00	4 50

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GLASS BODY, SKELETON FRAME, BLIND FEED OILERS

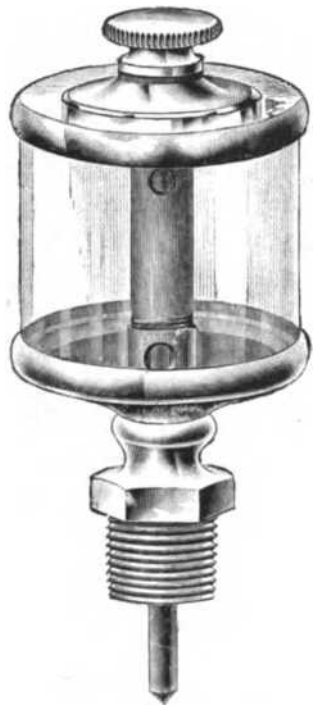


FIG. 3154

WIRE FEED OILER

For Shafting and Engines.

DESCRIPTION

These cups are provided with a hollow tube, inside of which is placed a loose acting solid or hollow wire, which acts as a feeder and regulator. The cup is fixed on the bearing, and the wire rests upon the journal, thereby acting with the shaft in its motion. The wire is also regulated inside the tube so as to feed according to the demand only. There is no flow of oil whatever while the machinery is not in motion. They are as reliable in winter as in summer. Being perfectly airtight vessels, the oil will never gum in them.

PRICES, FIG. 3154

Nickel Plated.

Nos.	Height of Cup, Complete, Inches.	Width of Cup, Complete, Inches.	Capacity, Ounces.	Sizes of Shank Pipe Thread, Inches.	Per Doz.
101	2¾	1⅛	¼	⅛	$8 00
102	3	1¼	⅜	⅛	9 00
103	3¼	1⅜	½	⅛	10 00
104	3¾	1¾	1	¼	11 00
105	4	1⅞	1½	¼	12 00
106	4⅛	2⅛	2	⅜	14 00
107	4¾	2½	4	⅜	17 00
108	5¾	2⅞	6	⅜	21 00
109	6¼	3⅜	10	½	27 00
110	6¾	3¾	15	½	36 00
111	7½	4¼	24	½	54 00
112	8¼	4⅞	36	½	84 00

OILER

For Small Engines, Agricultural Machinery, Shafting, etc.

PRICE

Number 41

Outside diameter, 1½ inch.

Height, 3¼ inches.

Capacity, 1⅛ ounce.

Per dozen, $12 00.

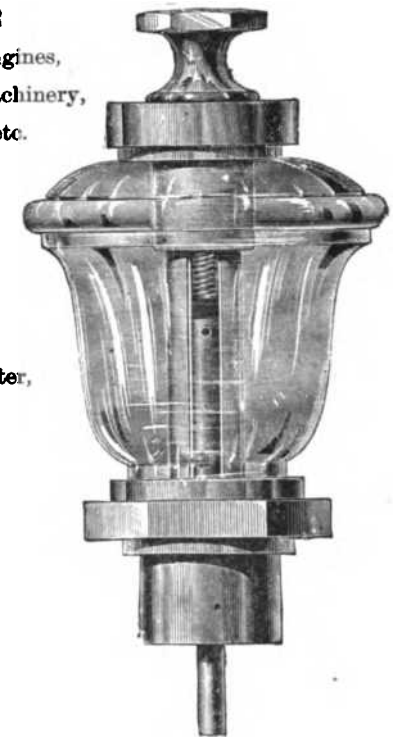


FIG. 3155

YANKEE SLIDE TOP SHAFTING OILER

Suitable for general machinery and engine bearings. It has the same filling and feed regulating arrangement as Pioneer Cup, Fig. 3158.

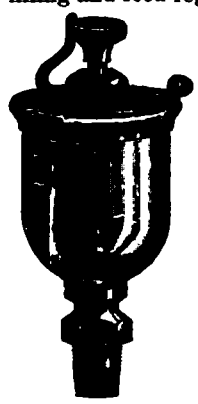


FIG. 3156

PRICES, FIG. 3156

Numbers	00	0	1	1½	2	3	4	5	6
Extreme outside diameters of cup....ins.	1 7/16	1⅝	1⅞	2⅛	2⅜	2 13/16	2 15/16	3⅝	3 15/16
Extreme height of cup (over all)..... "	3½	3 11/16	4⅛	4 7/16	4¾	4 15/16	5⅝	6 5/16	7⅛
Outside diameters of glass..... "	1⅛	1¼	1½	1¾	2	2¼	2½	3	3½
Height of glass..... "	1½	1⅝	2	2¼	2½	2¾	3⅛	3⅝	4½
Capacity.....ounces,	½	⅝	1	1½	2½	4	5	10	18
Shank pipe thread.....inch,	⅛	⅛	¼	¼	⅜	⅜	⅜	½	½
Finished brass.....each,	$0 75	$0 80	$1 00	$1 25	$1 50	$1 90	$2 40	$3 10	$4 00
Nickel plated..... "	85	95	1 20	1 50	1 75	2 20	2 75	3 50	4 50

PRICES, FIG. 3157

Numbers	7	8	9
Extreme height of cup (plug raised to fill).....inches,	3¾	4⅜	4¾
Height of glass..... "	1½	1⅞	2¼
Diameters of glass..... "	1⅝	1⅞	2⅛
Capacity.....ounces,	¾	1⅜	2½
Finished brass..... each,	$0 70	$0 90	$1 05
Extra glasses..... "	08	08	08
Extra cork washers.....per dozen,	15	15	15

PLAIN ENGINE OILER

It is an airtight cup and feeds only while the machinery is in motion.

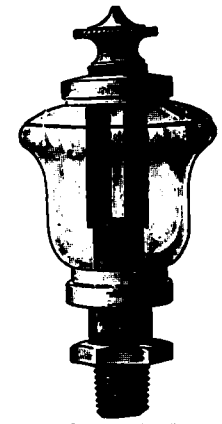


FIG. 3157

PIONEER SLIDE TOP OILER

Especially adapted for Traction Engines, Steam Rollers, etc.

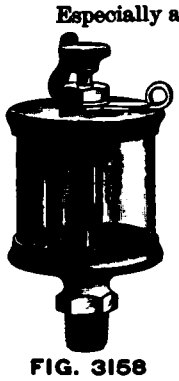


FIG. 3158

The Pioneer Oil Cups are adapted for all engine and machinery bearings. They are made of cast brass (not spun brass), highly finished, will not come apart when placed on jarring machinery, neither will the feed unset nor slide loosen, thereby spilling the oil. They are easily filled and regulated, and are satisfactory to users in every respect. They are especially adapted for traction engines, steam rollers, and other machinery of like character.

PRICES

Numbers	000	00	0	1	1½	2	3	4	5	6
Extreme outside diameters of cup.....inches,	1⅝	1 7/16	1⅝	1⅞	2⅛	2⅜	2 13/16	2 15/16	3⅝	3 15/16
Extreme height of cup (over all).....inches,	2¾	2 15/16	3 1/16	3¾	4 1/16	4 7/16	4¾	5	6	7¼
Outside diameters of glass, inches,	1	1⅛	1¼	1½	1¾	2	2¼	2½	3	3½
Height of glass....inches,	⅞	1	1⅛	1⅜	1⅝	1⅞	2⅛	2⅜	3	4
Capacity.....ounces.	¼	½	⅝	1	1½	2½	4	5	10	18
Shank pipe thread...inch,	⅛	⅛	⅛	¼	¼	⅜	⅜	⅜	½	½
Finished brass.....each.	$0 70	0 75	0 80	1 00	1 25	1 50	1 90	2 40	3 10	4 00
Nickel plated..... "	80	85	95	1 20	1 50	1 75	2 20	2 75	3 50	4 50

SUPERIOR SCREW TOP OILER

For Traction Engines, Bearings, etc.

This cup is fitted with inside adjustment which will not become loosened by any jarring of the machinery. The slot in the cap is to be used as a wrench for the feed stem. When the top is screwed down the cup is airtight, so that there is no flow of oil when the machinery is not in operation; but when the machinery is running the friction starts the flow of oil.

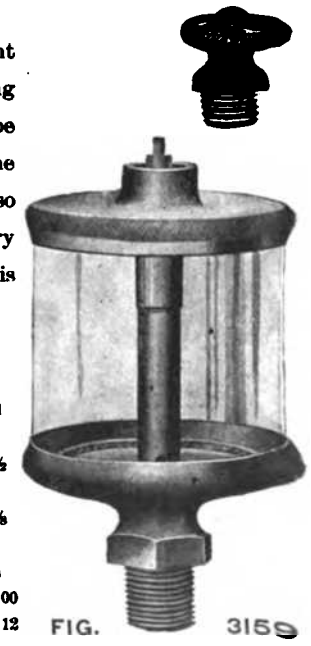


FIG. 3159

PRICES

Numbers	10½	11	11½	12	13	14
Outside diameters of glass..inches,	1¼	1½	1¾	2	2¼	2½
Height of glass, inches,	1⅛	1⅜	1⅝	1⅞	2⅛	2⅜
Capacity, ounces,	½	1	1½	2	3	4
Pipe thread.....	⅛	¼	¼	⅜	⅜	⅜
Brass..... each,	$0 39	$0 45	$0 60	$0 70	$0 80	$1 00
Nickel plated, "	45	52	68	79	90	1 12

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GLASS BODY BLIND FEED OILERS

ERIE SLIDE TOP OILER

For emery grinders, speed lathes, and polishing machines.



FIG. 3160

DESCRIPTION AND PRICES, FIG. 3160

This oiler has a simple and positive outside adjustment which is not influenced by jarring machinery. The filler hole is covered by a slide top.

Numbers	½	1	1½	2	3	4
Outside diameter of glass, inches	1¼	1½	1¾	2	2¼	2½
Height of glass, inches	1⅛	1⅜	1⅝	1⅞	2⅛	2⅜
Capacity, ounces	½	1	1½	2	3	4
Pipe thread	⅛	¼	¼	⅜	⅜	⅜
Brass finish, each	$0 39	$0 45	$0 60	$0 70	$0 80	$1 00
Nickel plated, each	45	52	68	79	90	1 12

MACHINE OILER

With plain valve spindle.



FIG. 3161

PRICES, FIG. 3161

Numbers	1	2	3
Capacity of cup, ounces	1½	2½	3½
Pipe thread on shank	¼	¼	⅜
Brass, each	$1 65	$1 95	$2 25
Nickel, each	1 80	2 10	2 40
Outside height of glass, inches	1¾	2	2¼
Outside diameter of glass, inches	1¾	2	2¼
Extra glasses, each	$0 25	$0 30	$0 40
Extra gaskets, per dozen	25	30	40

Cups will be sent threaded as listed unless otherwise specified.

OILER

For lathes and small bearings.

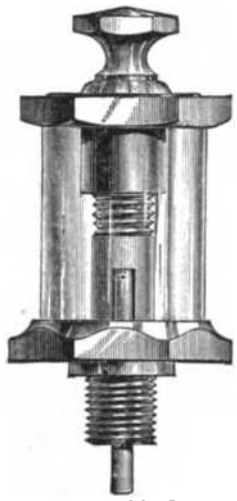


FIG. 3162

1⅛ inches outside diameter; 2 inches high; 1/16 oz. capacity. Price, per dozen, $12.00.

DESCRIPTION AND PRICES, FIG. 3163

The construction of this cup is simple, the round body having a window on each side of same to enable the engineer to see the height of oil in cup. The feeding arrangement consists of tubes, one telescoping within the other, the outer tube fastened permanently in the base of the cup and communicating with the oil hole in the shank of same. The inner tube is fastened to the filling plug, and has small oil holes drilled in it close to the top and carries a regulating nut on the upper threaded portion, said nut being adapted to partially close the oil holes for the purpose of regulating, when the cup is in operation, the quantity of oil to be fed through same. A feature in having the oil tubes telescope is that when filling the cup it is not necessary to entirely remove the filling plug, but simply to raise it high enough to insert the nozzle of the oil can, which prevents losing plugs. The oil ducts are large and straight, and it is easy to keep the cup clean and free from impurities which may be in the oil. The cup having been filled with oil, as soon as it is put in motion the oil begins to travel in a body within the cup and at each revolution of cup is thrown against the feeding apparatus and flows down through it to the bearing. Thus it will be obvious that no matter how little oil there may be in the cup, the centrifugal force, combined with the shape of the body, will carry it to the holes in the feed tube. Care should be taken in attaching the cup so that the circular body of same is placed that it travels in the same direction as the bearing and the glass sides are parallel with the rod. After the cup is once regulated it requires no further attention other than filling. This cup will not throw oil and feeds only while machinery is in motion. It is made of cast brass.

Numbers	1	2	3	4
Finished brass, each	$1 40	$2 00	$2 60	$4 00
Nickel plated, each	1 50	2 20	2 80	4 40
Capacity, ounces	1¼	2½	5	12
Outside diameter, inches	2	2½	3	4
Height of cup, closed, inches	3¼	3⅞	4⅝	5¾
Height of cup, open to fill, inches	4¼	4⅞	5⅞	7¼
Width, inches	1⅝	1 15/16	2¼	3 15/16
Shank pipe thread, inch	¼	⅜	½	¾
Glasses, each	$0 05	$0 08	$0 10	$0 15
Corks, per dozen	20	30	40	60

CHAMPION ROD OILER

Suitable for all movable bearings.



FIG. 3163

GLASS BODY SHELL CASE BLIND FEED OILERS

TAPER SCREW FEED ENGINE OILER

With sliding top.



FIG. 3164

DESCRIPTION AND PRICES, FIG. 3164

The sliding top oiler derives its name from its peculiarly constructed filling arrangement. This consists of a cap with a hole in it, which by means of a common screw motion slides over the flat fixed cover of the cup, exposing or covering whenever necessary a corresponding opening in the latter through which the cup is filled. By this arrangement the sliding cover is kept absolutely tight and prevents the leakage of oil, especially when applied on crank pins of high speed engines. The sliding top can never get loose, being kept in position by a stop which allows it only the necessary play.

Nos.	Extreme Height, Inches.	Extreme Width, Inches.	Capacity in Ounces.	Size of Shank Pipe Thread, Inches.	Prices per Dozen.	Nos.	Extreme Height, Inches.	Extreme Width, Inches.	Capacity in Ounces.	Size of Shank Pipe Thread, Inches.	Prices per Dozen.
321	2⅞	1¼	¼	⅛	$12 00	327	4⅝	2½	4	⅜	$30 00
322	3⅛	1⅜	⅜	⅛	14 00	328	5¼	3	6	⅜	36 00
323	3¼	1½	½	⅛	16 00	329	5⅝	3½	10	½	48 00
324	3⅝	1⅞	1	¼	18 00	330	7	3⅞	15	½	66 00
325	4	2	1½	¼	20 00	331	7¼	4⅜	24	½	90 00
326	4⅛	2¼	2	⅜	24 00	332	8	5	36	½	120 00

AUTOMATIC DOUBLE FEED CRANK PIN OILER



FIG. 3165

DESCRIPTION AND PRICES, FIG. 3165

This oiler feeds only while the engine is in motion and the feed can be regulated to any desired quantity. Cup is filled without disturbing the regulation, and when closed is absolutely dust proof.

Size numbers	400	401	402	403	404	405
Outside diameter of glass, inches	1¼	1½	1¾	2	2¼	2½
Height of glass, inches	1⅛	1⅜	1½	1¾	2⅛	2⅜
Capacity, ounces	½	⅞	1¼	2¼	3½	4¾
Pipe thread of shank, inches	¼	¼	⅜	⅜	½	½
Brass finish, each	$1 50	$1 75	$2 00	$2 50	$3 00	$4 00
Nickel plated, each	1 90	2 20	2 50	3 00	3 60	4 70
Extra glasses, each	08	10	11	12	15	25
Extra cork washers, per dozen	12	18	24	30	36	40

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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GLASS BODY SHELL CASED BLIND FEED OILERS

DESCRIPTION, FIG. 3166

SKELETON OILER FOR JOURNALS

This is an extra strong oiler, and is particularly well adapted for journals where there is more or less jarring. The interior tube has an opening in it near the bottom, and has a closed and flattened upper end. The filler plug has a short slot in it, by which this interior tube can be screwed up or down, thus regulating the feed, by enlarging or decreasing the size of the opening at the bottom.



FIG. 3166

PRICES

No.	70	71	72	73	74	75	76
Diameter of glass, inches	1¼	1¼	1½	1¾	2	2¼	2½
Height of glass, inches	1	1⅛	1⅜	1⅝	1⅞	2⅛	2⅜
Capacity, ounces	⅛	½	1	1½	2	3	4
Pipe thread, inches	⅛	¼	⅜	⅜	½	½	½
Brass, each	$1 50	$1 65	$2 00	$2 50	$3 00	$3 75	$4 75
Nickel, "	1 75	1 90	2 25	2 80	3 30	4 10	5 15
Oil cup glasses, each	07	08	09	10	12	15	20
Cork washers, per dozen	07	08	10	12	20	25	30

DESCRIPTION, FIG. 3167

CRANK PIN OILER WITH LOCK NUT

This is similar in construction to the skeleton oiler, Fig. 3166, except that it has a lock nut which keeps the filler plug firmly in place, so that it cannot become lose or allow the oil to spill.



FIG. 3167

PRICES

No.	70A	71A	72A	73A	74A	75A	76A
Diameter of glass, inches	1⅛	1¼	1½	1¾	2	2¼	2½
Height of glass, inches	1	1⅛	1⅜	1⅝	1⅞	2⅛	2⅜
Capacity, ounces	⅛	½	1	1½	2	3	4
Pipe thread, inches	⅛	¼	⅜	⅜	½	½	½
Brass, each	$2 00	$2 25	$2 40	$2 90	$3 40	$4 15	$5 15
Nickel, each	2 25	2 50	2 65	3 20	3 70	4 50	5 55
Oil cup glasses, each	07	08	09	10	12	15	20
Cork washers, per dozen	07	08	10	12	20	25	30

The shanks of oilers can be reduced below regular sizes, as listed, without extra charges, but if larger shanks are wanted than specified in list an extra charge will be made for same.

AUTOMATIC CRANK OR WRIST PIN OILERS

DOUBLE FEED



FIG. 3168

ECONOMIC NEEDLE FEED

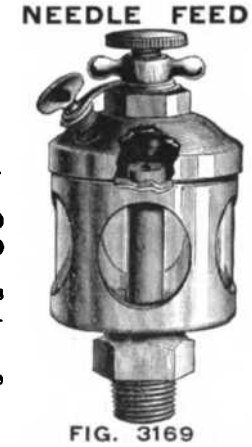


FIG. 3169

PRICES, FIGS. 3168 AND 3169

No.	0	1	1½	2	3	4
Outside diameter of glass, inches	1¼	1½	1¾	2	2¼	2½
Height of glass, inches	1⅛	1⅜	1⅝	1⅞	2⅛	2¼
Capacity, ounces	½	1	1½	2½	4 oz.	6 oz.
Size of shank pipe thread, inches	¼	¼	⅜	⅜	⅜	½
Finished, each	$1 50	$1 75	$2 00	$2 50	$3 00	$4 00
Nickel plated	1 90	2 20	2 50	3 00	3 60	4 70

Fig. 3168 has a plunger valve V, which rises from its seat with every revolution and the oil is forced down through the shank to the wrist pin. The valve V also has holes in the top for the admission of oil.

Fig. 3169 is recommended for its close adjustment and economic use of oil. The feed can be regulated to a nicety.

LOCOMOTIVE ROD CUP



FIG. 3170

PRICE

No.	Ounces.	In. Diam.	In. High.	Per Doz.
42	1¼	2	4	$36 00

LOCOMOTIVE GUIDE CUP

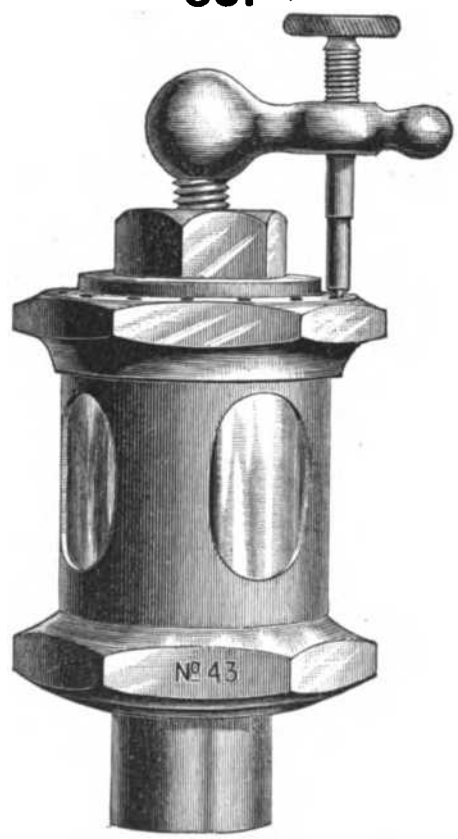


FIG. 3171

PRICE

No.	Ounces.	In. Diam.	In. High.	Per Doz.
43	1¼	2	5	$48 00

DIRECTIONS FOR USING FIG. 3172

Set the spring catch at zero in the notch disk, loosen the jam nut under the thumb wheel and screw the spindle down to its seat, then firmly secure the spindle in place by screwing the small jam nut down on to the head of the brass cup. Fill the cup through the large hole in the dome; the small hole is for vent, but both should remain open. So adjusted, the oil is held in the glass cup; to cause it to feed, the spring catch is withdrawn from the zero notch and turned in the direction that the numerals run, until the desired amount of feed is secured. By turning the spring catch back to zero, the outflow of oil is arrested and the wastage of oil stopped. By noting the number of the notch that gives the desired feed, a method is obtained for securing a uniform and economical operation of the cup every time that it is used. The shanks are left blank and are 1¼ inches in diameter by ¾ inch long. The cup will hold 2¼ ounces and stands 5¾ inches high from the top to the under side of base.

ASHCROFT DUPLEX OILER FOR LOCOMOTIVE OR STATIONARY ENGINE GUIDES



FIG. 3172

PRICE, $5.00 EACH

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GLASS BODY SHELL CASED BLIND FEED OILERS

LOCOMOTIVE OILER



FIG. 3173

DESCRIPTION, FIG. 3173

This cut represents an oil cup suited for rotary motions, with extra heavy brass case and a glass vessel in which the oil is contained, perfectly air tight, so that the cup will feed only when the machinery is in motion, being perfectly automatic. The quantity of oil in cup can be seen at all times through the openings in the case. This cup is adapted to locomotive connecting rods.

PRICES

Nos.	Outside Diameters, Inches.	Height, Inches.	Capacity, Ounces.	Per Dozen.
0	1	1½	⅛	$12 00
30	1¼	2⅛	¼	18 00
31	1½	2¾	⅝	24 00
32	1⅝	3¼	1⅛	32 00
33	1⅞	3¾	1⅝	36 00
34	2¼	4⅛	2½	48 00
34½	2¾	4¾	3½	60 00
35	3½	5½	4½	72 00
36	4½	7	10	84 00

PRICES, FIG. 3174

Nos.	Diameters, Inches.	Height, Inches.	Capacity, Ounces.	Blank Shank.	Each.	Extra Glass.
20	1¾	3	¾	⅝	$2 75	$0 10
21	2⅛	3¼	1¼	¾	3 50	12
22	2⅜	3½	2	¾	4 25	15
23	2⅝	3¾	3	⅞	5 25	20
24	3⅛	4½	5	⅞	6 25	25
25	3⅝	5	8	1⅛	7 50	30

Shanks blank unless otherwise ordered.

LOCOMOTIVE AND CRANK PIN OILER

With Adjustable Feed.

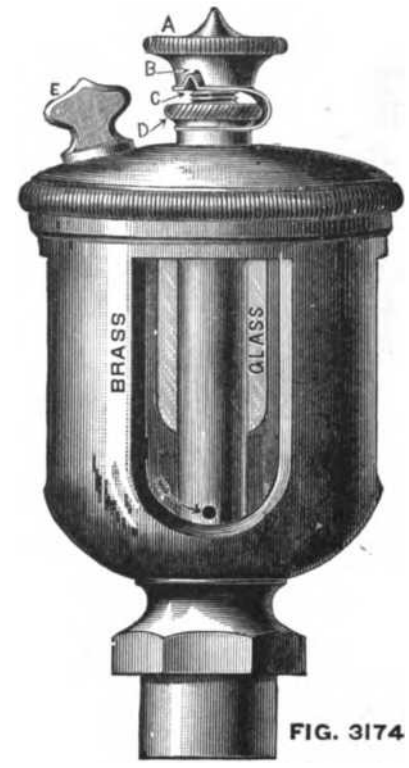


FIG. 3174

SCREW FEED OILER

For Stationary, Marine and Locomotive Engines.



FIG. 3175

PRICES, FIG. 3175

Nos.	Outside Diameters, Inches.	Height, Inches.	Capacity, Ounces.	Brass Cases, per Dozen.
16	1½	2⅞	½	$24 00
17	2¼	3½	1¼	42 00
17½	2⅝	4	2½	48 00
18	3	4½	3½	54 00
18½	3¼	4¾	5	66 00
19	3½	5	8	78 00

Shanks blank unless otherwise ordered.

AUTOMATIC LOCOMOTIVE OILER



FIG. 3176

PRICES, FIG. 3176

Nos.	Diameters of Body, Inches.	Capacity, Ounces.	Each.
6	1¼	½	$1 90
7	1½	1	2 25
8	1¾	1½	2 75
9	2	2	3 10

SHAFTING OILERS



FIG. 3178

DESCRIPTION, FIGS. 3177 TO 3179

Fig. 3178 will feed by agitation, gravity or suction, and is very easy of adjustment by regulating screw in cup. Figs. 3177 and 3179 are excellent shafting oilers, of which many are now in use in cotton, woolen and silk mills. The glass is exceptionally strong, and will seldom break by falling from line of shafting to floor. We can supply a 2 oz. capacity of either figure with flat side for wall bearings.

PRICES

	Diameters, Inches.	Height, Inches.	Capacity, Ounces.	Pipe, Sizes Shanks.	Per Dozen.
Fig. 3178	1½	2½	¾	⅛	$7 00
	2⅛	3½	2	¼	10 00
	2½	4	4	¼	13 00
Fig. 3177	1½	2½	¾	⅛	6 00
	2⅛	3½	2	¼	9 00
	2½	4	4	¼	12 00
Fig. 3179	1½	2½	¾	Smooth shank with wooden conical plug if ordered	6 00
	2⅛	3½	2		9 00
	2½	4	4		12 00



FIG. 3177



FIG. 3179

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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SHAFTING AND LOOSE PULLEY OILERS

SELF OILERS FOR SHAFTINGS, PICKERS, LOOMS AND FANS

NO. 10 NO. 10, W. B. NO. 9

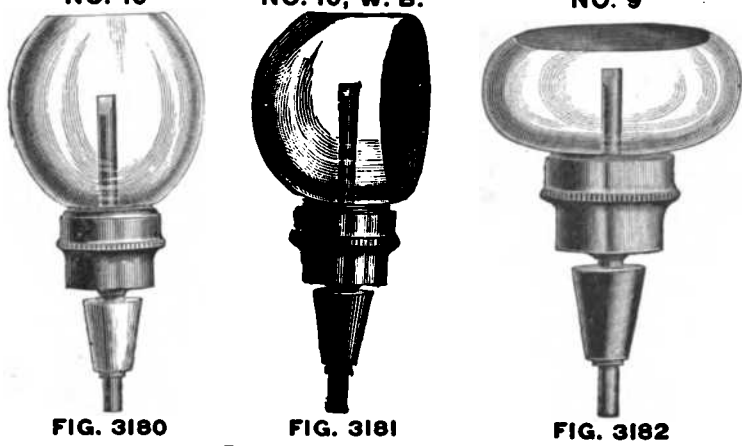


FIG. 3180 FIG. 3181 FIG. 3182

DESCRIPTION, FIGS. 3180 TO 3182

These self oilers are composed of a transparent glass cup, mounted in brass, provided with a hollow tube, inside of which is placed a loose acting solid or hollow wire which acts as a feeder and regulator. The cup is fixed on the bearing, and the wire rests upon the journal, thereby acting with the shaft in its motion. The wire is also regulated inside the tube so as to feed according to the demand only. There is no flow of oil whatever while the machinery is not in motion. They are as reliable in winter as in summer. Being perfectly airtight vessels, the oil will never gum in them.

DIRECTIONS FOR USING

Fill the cup full of oil; then screw the cap down airtight. Place the tube in the oil hole in an upright position or upon an angle of 45 degrees. Permit the rod to rest upon the journal, and have a perfectly free action in the cup. If you desire the oil to flow faster, reduce the size of the wire with sand paper.

Nos.		Capacity, Ounces.	Diams., Inches.	Heights, Inches.	Prices, Per Doz.
9.	For shaftings, pickers, looms and fans.....	1½	2½	3¼	$4 50
9.	W. B. for compact shaftings or connections.	1½	1¾	3¼	4 50
10.	For shaftings, pickers, looms and fans.....	3½	2¼	4¼	4 50
10.	W. B. for compact shaftings or connections.	3	2	4¼	4 50

SHAFTING OILER

With Regulating Screws and Patent Adjusting Knob.

DESCRIPTION, FIG. 3183

This cup is suitable for all kinds of shafting, especially fast running, and is also well adapted for pickers, looms, lathes, etc. It is provided with a threaded shank, to enable it to be screwed firmly into bearings.

The supply of oil is regulated by means of a graduating slotted brass wire, and is capable of being increased or diminished with the utmost precision by adjusting this wire, which extends upwards through the center of the cup and is easily reached by removing the knob. A slot in the knob enables the latter to be used as a wrench to adjust the regulating screw to the desired point.



FIG. 3183

PRICES, FIG. 3183

Nos.	Capacity, Ounces.	Diameters, Inches.	Height, Inches.	Per Doz.
4	⅞	1¾	2⅛	$7 00
5	¾	1¾	2¾	7 50
5 W. B.	⅝	1⅜	2 3/16	7 50
6	2	2 3/16	3⅝	9 00
7	3½	2⅝	4	10 50
8	5	3	4⅞	13 50

DYNAMO AND ELECTRICAL MACHINERY OILERS

The above style of cut, Fig. 3183, fitted with patent loose acting wire of brass, is extensively used for dynamos and electrical light machinery with the best results.

The sizes are as follows:

No. 4a
" 5a
" 6a
" 7a
" 8a

} Capacity and prices same as shafting oiler, Fig. 3183.

LOOSE PULLEY OILERS

STANDARD GLASS



FIG. 3184

STANDARD GLASS OILER

Attached to Pulley.



FIG. 3185

Fig. 3184 is a loose pulley oiler which will feed while the pulley is in motion if attached as shown in Fig. 3185, observing relative position of cup and motion of pulley, as shown by dart on rim of pulley; shank may be detached from cup, so as to render it convenient of attachment and avoid contact with arms of pulley; after the shank is properly screwed into hub then attach cup and fill with oil. All shanks ⅛ inch gas pipe size.

PRICE

Outside diameter, 1⅞ inch.
Height, 3¼ inches.
Capacity, 1⅛ ounce
Per dozen, $18 00.

HODGES



FIG. 3186

HODGES' OILER

Attached to Pulley.

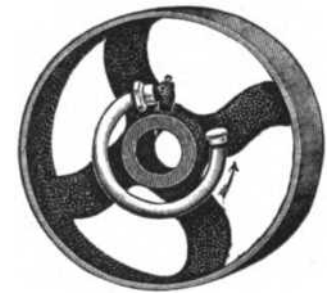


FIG. 3187

PRICES, FIG. 3186

Diameters of Tube, Inches.	Inside Diams. of Oiler, Inches.	Each.	Diameters of Tube, Inches.	Inside Diams. of Oiler. Inches.	Each.
½	2½	$1 20	⅝	4½	$1 60
½	3	1 25	⅝	5	1 70
½	3½	1 30	⅝	5½	1 80
½	4	1 40	⅝	6	1 90
⅝	4	1 50	⅝	7	2 00

DESCRIPTION, FIGS. 3188 AND 3189

WHAT SIZE OILER TO USE AND HOW MANY

Revolutions of shaft.	50	100	200	300	400	600	800	1000	1500	2000
1 in. diam. of shaft..	1 No. 0	1 No. 0	1 No. 1	1 No. 1	1 No. 1	1 No. 1	2 No. 0	2 No. 0	2 No. 1	2 No. 1
1½ " " " ..	1 " 0	1 " 1	1 " 1	1 " 1	1 " 1	2 " 0	2 " 1	2 " 1	2 " 1	
2 " " " ..	1 " 1	1 " 1	1 " 1	1 " 1	1 " 2	2 " 1	2 " 1	2 " 1		
2½ " " " ..	1 " 1	1 " 1	1 " 1	2 " 2	2 " 1	2 " 1	2 " 2			
3 " " " ..	1 " 1	1 " 2	1 " 2	1 " 3	2 " 2	2 " 2				
3½ " " " ..	1 " 1	1 " 2	1 " 2	1 " 3	1 " 4	2 " 3				
4 " " " ..	1 " 2	1 " 3	1 " 3	1 " 4	2 " 3					
5 " " " ..	1 " 3	1 " 4	1 " 4	1 " 5	2 " 4					

NOTE.—No. 00 Oiler is intended only for pulleys where space between hub and rim is limited. On pulleys for high speed, place oilers on opposite sides of hub.

BRASS LOOSE PULLEY OILER

Attached to Pulley.

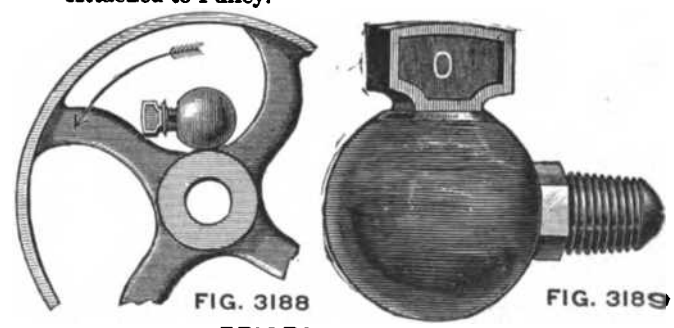


FIG. 3188 FIG. 3189

PRICES, FIG. 3189

Numbers.....	00	0	1	2	3	4	5
Gas pipe thread, inches.	⅛	⅛	¼	¼	¼	⅜	⅜
Each	$0 20	0 25	0 30	0 40	0 50	0 65	0 85

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PLAIN BRASS OIL CUPS

BRASS OIL CUPS FOR LOCOMOTIVES

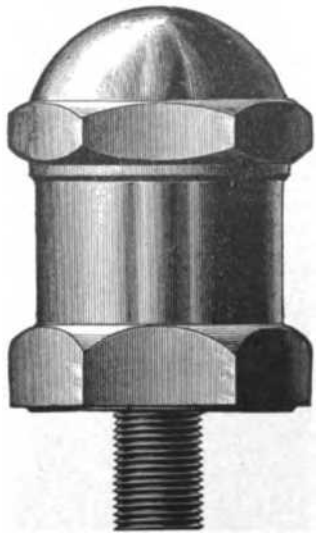
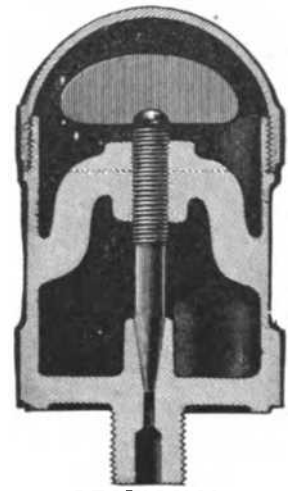


FIG. 3190



SECTIONAL
FIG. 3190

These cups are strong and durable, and their construction is simple, enabling them to be easily regulated. By removing the cover, the regulating screw, which has a needle point, can be adjusted with the thumb and finger. This screw is held in the place it is adjusted to by the friction caused by the thread it passes through being split and tapped when spread apart. The Side and Main Rod Cups have screw tops; the Guide and Truck Cups have slip covers.

Side Rod Cups, Main Rod Cups, Guide Rod Cups, Engine Truck Cups,	Prices on application.	$..... $..... $..... $.....

LOCOMOTIVE GUIDE CUP

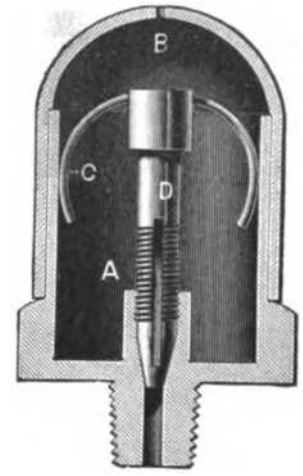


FIG. 3192

PRICES

Outside diam. of body, inches....	1½	2
Sizes of shank pipe thread, inch..	⅜	½
Each	$3 00	$5 00

PENNSYLVANIA R. R. STANDARD OIL CUPS FOR LOCOMOTIVES

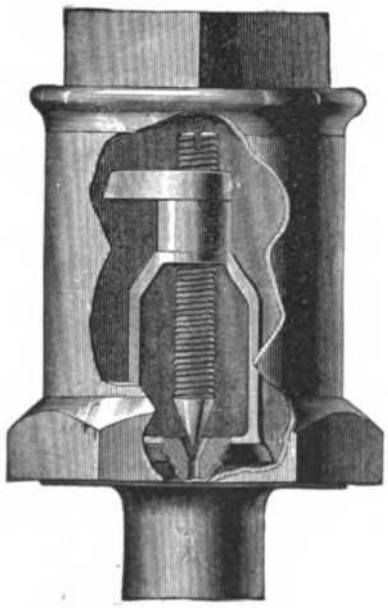


FIG. 3193

PRICES, FIG. 3193

Diameters, Inches.	Height, Inches.	Capacity, Ounces.	Per Dozen.
1½	2½	1	$18 00
2⅛	3	2	24 00
2½	3½	3	32 00
3	4	5	42 00

PRICES, FIGS. 3194 TO 3197

When no style of finish is mentioned, orders will be filled with finished brass.

Numbers	00	0	1	2
Inside diameters, inches.....	1	1¼	1½	2
Shank pipe thread, inch.....	⅛	¼	¼	⅜
Capacity, grease, ounces.....	½	⅔	1	2
Finished brass, each.....	$0 70	$0 90	$1 15	$1 50
Rough brass, each.....	56	74	96	1 28
Nickel plated, each.....	80	1 00	1 30	1 70

EMPRESS PLAIN BRASS GREASE CUPS

NO. 00

FIG. 3194

NO. 0

FIG. 3195

NO. 1



FIG. 3196

NO. 2



FIG. 3197

The above cuts are full size of the Empress Plain Brass Grease Cups. They are of excellent finish and design.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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PLAIN BRASS OIL CUPS

LOCOMOTIVE PATTERN



FIG. 3199

PRICES, FIG. 3199

No.	Diam. of body, Inches.	Pipe Thread.	Brass, Each.	Nickel, Each.
112	⅞	⅛	$0 30	$0 45
113	1	¼	50	65
114	1¼	¼	75	90
115	1½	⅜	1 00	1 15
116	1¾	⅜	1 50	1 65
117	2	½	2 00	2 15
118	2¼	½	2 50	2 70
119	2½	½	3 00	3 20

The shanks of oilers can be reduced below regular sizes, as listed, without extra charge, but if larger shanks are wanted than specified in list an extra charge will be made for same.

LOCOMOTIVE PATTERN

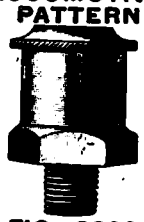


FIG. 3200

PRICES, FIG. 3200

Nos.	Outside Diameters, Inches.	Shank pipe Thread, Inch.	Locomotive Pattern, Finished Brass, Each.	Add to List For Brass Tubes, each.	Add to List For Nickel Plating, Each.
00	⅝	⅛	$0 30	$0 10	$0 10
0	¾	⅛	35	10	10
1	⅞	⅛	40	10	10
2	1	¼	50	10	10
3	1¼	¼	75	15	10
4	1½	⅜	1 00	15	15
5	1¾	⅜	1 50	15	15
6	1⅞	⅜	1 80	15	15
7	2	½	2 00	15	20
8	2¼	½	2 50	20	20
9	2½	½	3 00	20	20

PRICES, FIG. 3201

Outside Diameter of Body, Inches	Sizes of Shank, Pipe Thread, Inch	Flat Base, Each.	Add for Internal Tube, Each.
¾	⅛	$0 35	$0 10
⅞	⅛	40	10
1	¼	50	10
1⅛	¼	60	15
1¼	¼	75	15
1½	⅜	1 00	15
1¾	⅜	1 50	15
2	½	2 00	15
2½	½	3 00	20
3	¾	5 00	25

LOCOMOTIVE PATTERN

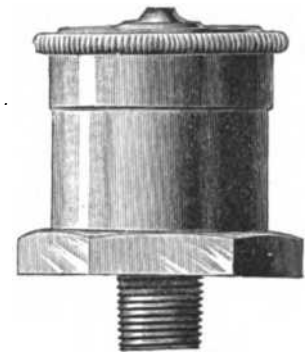


FIG. 3201

I X L SPRING COVER BRASS OIL CUP



FIG. 3202

DESCRIPTION, FIG. 3202

Adapted for Traction, Portable Engines, etc.

This cup has a self-closing spring cover. The spring is attached to the lid, and passes down through the oil way, where it is held by a loop, which admits of the covers being turned at will without affecting the spring. In filling the cup the cover is simply lifted out and to one side, and when released springs back again into place. No amount of jar or motion can displace it, and cover can never be lost. A small amount of wicking is placed at the mouth of the oil way, which prevents the oil feeding faster than necessary. The tension of the spring can be increased by simply giving the loop an extra turn with a pair of nippers.

Size, Nos.	Diameter Of Body, Inches.	Size, Shank, Inches.	Capacity, Ounces.	Finished Brass, Each.	Nickel Plated, Each.	Extra Springs, Per dozen.
0	¾	⅛	¼	$0 50	$0 70	$1 00
0X	⅞	⅛	½	60	80	1 10
1	1	¼	¾	70	95	1 25
2	1⅛	¼	1	85	1 10	1 40
2X	1¼	¼	1½	1 00	1 30	1 55
3	1½	⅜	2	1 25	1 60	1 75
4	1¾	⅜	2¾	1 60	2 00	2 00
5	2	⅜	3½	2 00	2 50	2 25

QUAKER OILER

DESCRIPTION, FIG. 3203

This oiler is provided with a brass tube for wick feed: also has an improved cover, which requires only a half turn to open filler hole.

Nos.	Size, Inches.	Brass, Each.	Nickel Plated, Each.
001	1	$0 42	$0 50
001¼	1¼	59	70
001½	1½	1 00	1 15



FIG. 3203

HINGED LID



FIG. 3204

PRICES FIGS. 3204 AND 3205

Size, Nos.	Outside Diameter, Inches	Pipe Thread, Inch.	Fig. 3204, Brass Finish, Each.	Fig. 3205, Brass Finish, Each.	Add to Price For Brass Tube, Each.	Add to Price For Nickel Plating, Each.
1	⅞	⅛	$0 70	$0 70	$0 10	$0 10
2	1	¼	85	85	10	10
3	1¼	¼	1 20	1 20	15	10
4	1½	⅜	1 60	1 60	15	15
5	1¾	⅜	2 10	2 10	15	15
6	1⅞	⅜	2 50	2 50	15	15
7	2	½	2 70	2 70	15	20

HINGED LID



FIG. 3205

PRICES, FIG. 3206

Outside Diameter of Body, Inches.	Size of Shank Pipe Thread, Inch.	Flat Base, Hinged Lid, Each.	Add for Internal Tube, Each.
¾	⅛	$0 65	$0 10
⅞	⅛	70	10
1	¼	85	10
1⅛	¼	1 00	15
1¼	¼	1 20	15
1½	⅜	1 60	15
1¾	⅜	2 10	15
2	½	2 70	15
2½	½	4 00	20
3	¾	6 25	25

HINGED LID

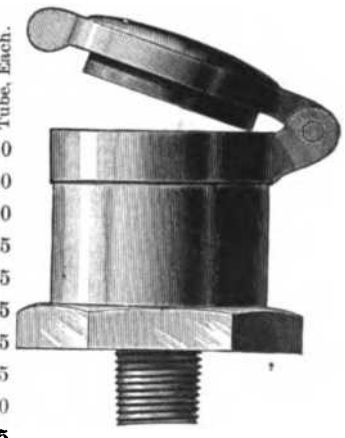


FIG. 3206

SMALL BASE



FIG. 3207

BRASS HINGE LID OIL CUPS

PRICES, FIGS. 3207 AND 3208

Nos.	Outside Diameter, Inches.	Shank Pipe Thread, Inch.	Finished Brass, Each.	Finished Brass with Elbow Shank, not Illustrated, Each.	Add to Price for Brass Tubes, Each.	Add to Price for Nickel Plating, Each.
1	⅞	⅛	$0 70	$0 85	$0 10	$0 10
2	1	¼	85	1 15	10	10
3	1¼	¼	1 20	1 60	15	10
4	1½	⅜	1 60	2 10	15	15
5	1¾	⅜	2 10	2 65	15	15
6	1⅞	⅜	2 50	3 05	15	15
7	2	½	2 70	3 25	15	20

LARGE BASE

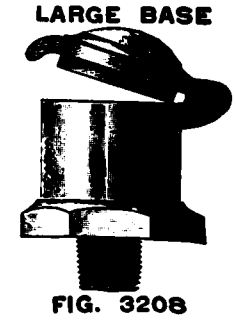


FIG. 3208

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BRASS OIL CUPS

ELBOW SHANK

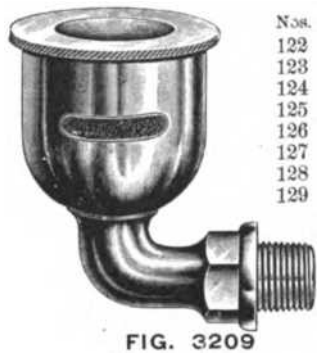


FIG. 3209

PRICES, FIG. 3209

Nos.	Diameters of Body, Inches.	Pipe Thread, Inches.	Brass, Each.	Nickel, Each.
122	⅞	⅛	$0 50	$0 65
123	1	¼	70	85
124	1¼	¼	1 00	1 15
125	1½	⅜	1 40	1 55
126	1¾	⅜	1 85	2 00
127	2	½	2 30	2 45
128	2¼	½	3 00	3 20
129	2½	½	4 00	4 20

The shanks of oilers can be reduced below regular sizes, as listed, without extra charge; but if larger shanks are wanted than specified in list an extra charge will be made for same.

ELBOW SHANK

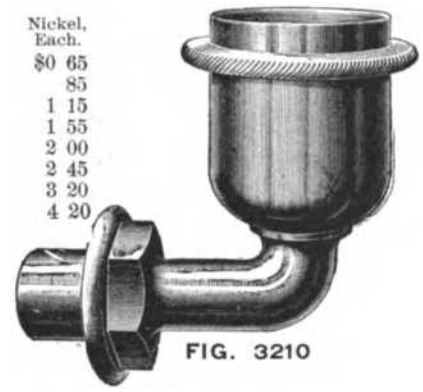


FIG. 3210

PRICES, FIG. 3210

Nos.	Outside Diameters, Inches.	Pipe Thread Inches.	Brass Finish, Each.	Add to list for Brass Tube.	Add to list for Nickel Plating.
1	⅞	⅛	$0 85	$0 10	$0 10
2	1	¼	1 15	10	10
3	1¼	¼	1 60	15	10
4	1½	⅜	2 10	15	15
5	1¾	⅜	2 65	15	15
6	1⅞	⅜	3 05	15	15
7	2	½	3 25	15	20

ELBOW SHANK

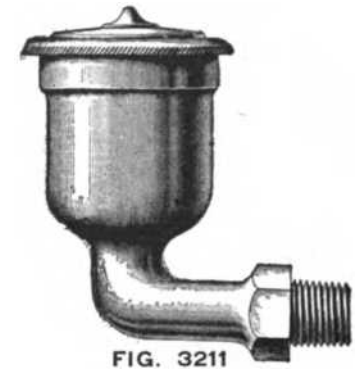


FIG. 3211

PRICES

Outside Diameters of Body, Inches.	Sizes of Shank Pipe Thread, Inches.	Elbow Shank Oil Cup, Each.	Elbow Shank Oil Cup, Hinged Lid (not ill'd.), Each.
¾	⅛	$0 50	.....
⅞	¼	50	$0 85
1	¼	70	1 15
1⅛	¼	80	1 30
1¼	¼	1 00	1 60
1½	⅜	1 40	2 10
1¾	⅜	1 80	2 65
2	½	2 30	3 25

ELBOW SHANK

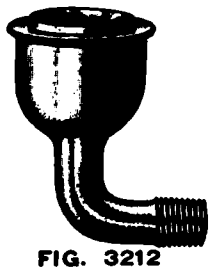


FIG. 3212

PRICES, FIG. 3212

Nos.	Diameters, Inches.	Sizes, Threaded Iron Pipe, Inches.	Each.
2	1	¼	$0 70
3	1⅛	¼	90
4	1¼	⅜	1 00
5	1½	⅜	1 40

T HANDLE

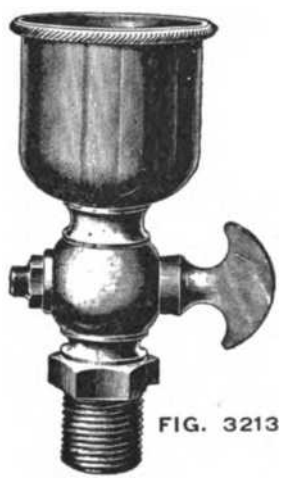


FIG. 3213

LEVER HANDLE

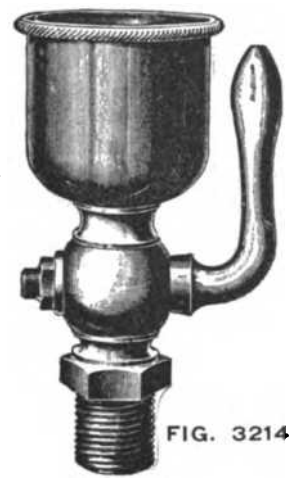


FIG. 3214

PRICES

Nos	Outside Diameters, Inches.	Pipe Thread, Inches.	Fig. 3213, Brass Finish, Each.	Fig. 3214, Brass Finish, Each.	Add to list for Brass Tube.	Add to list for Nickel Plating.
0	¾	⅛	$0 80	$0 90	$0 10	$0 10
1	⅞	⅛	90	1 00	10	10
2	1	¼	1 00	1 10	10	10
3	1¼	¼	1 50	1 60	15	10
4	1½	⅜	2 00	2 20	15	15
5	1¾	⅜	2 50	2 75	15	15
6	1⅞	⅜	2 75	3 00	15	15
7	2	½	3 00	3 25	15	20
8	2¼	½	3 75	4 00	20	20
9	2½	½	4 50	5 00	20	20

PLAIN



FIG. 3217

PRICES, FIG. 3217

Outside Diameters of Body, Inches.	Sizes Shank Pipe Thread, Inches.	Plain Top Oil Cup, Each.	Add for Internal Tube, Each.
⅝	⅛	$0 25	$0 10
¾	⅛	30	10
⅞	⅛	35	10
1	¼	40	10
1⅛	¼	50	15
1¼	¼	60	15
1½	⅜	90	15
1¾	⅜	1 25	15
2	½	1 75	15
2¼	½	2 25	20
2½	½	2 75	20
2¾	¾	3 50	25
3	¾	4 50	25

PLAIN



FIG. 3218

T HANDLE

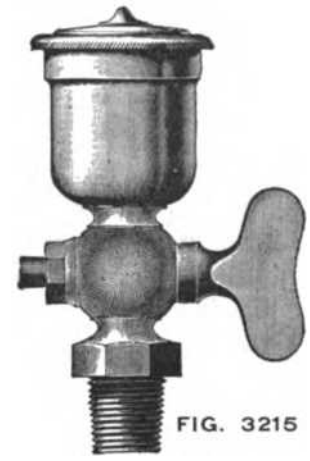


FIG. 3215

LEVER HANDLE

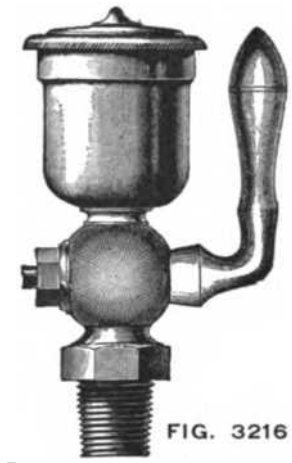


FIG. 3216

PRICES

Outside Diameters of Body, Inches.	Sizes of Shank Pipe Thread, Inches.	T Handle, Each.	Lever Handle, Each.
1	¼	$1 00	$1 10
1⅛	¼	1 25	1 35
1¼	¼	1 50	1 60
1½	⅜	2 00	2 20
1¾	⅜	2 50	2 75
2	½	3 00	3 25
2¼	½	3 75	4 00
2½	½	4 50	5 00
3	¾	6 00	6 50

PRICES, FIGS. 3219 AND 3220

Nos.	Outside Diameters, Inches.	Shank Pipe Thread, Inches.	Plain Finished Brass, Each.	Finished Brass with T. H. Cock, Each.	Finished Brass with L. H. Cock, Each.	Add to list for Brass Tubes, Each.	Add to list for Nickel Plating, Each.
00	⅝	⅛	$0 25	....	....	$0 10	$0 10
0	¾	⅛	30	$0 80	$0 90	10	10
1	⅞	⅛	35	90	1 00	10	10
2	1	¼	40	1 00	1 10	10	10
3	1¼	¼	60	1 50	1 60	15	10
4	1½	⅜	90	2 00	2 20	15	15
5	1¾	⅜	1 25	2 50	2 75	15	15
6	1⅞	⅜	1 60	2 75	3 00	15	15
7	2	½	1 75	3 00	3 25	15	20
8	2¼	½	2 25	3 75	4 00	20	20
9	2½	½	2 75	4 50	5 00	20	20

PLAIN



FIG. 3219

LEVER HANDLE

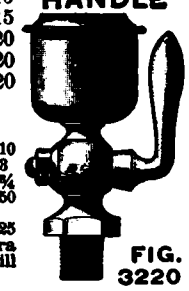


FIG. 3220

PRICES, FIG. 3218

Numbers	100	101	102	103	104	105	106	107	108	109	110
Diameters, Inches	⅝	¾	⅞	1	1¼	1½	1¾	2	2¼	2½	3
Pipe Thread, Inches	⅛	⅛	⅛	¼	¼	⅜	½	½	½	¾	¾
Each	$0 25	0 30	0 35	0 40	0 60	0 90	1 25	1 75	2 25	2 75	4 50
Add to list for Brass Tubes, Each	10	10	10	10	15	15	15	15	20	20	25

The shanks of oilers can be reduced below regular sizes, as listed, without extra charge; but if larger shanks are wanted than specified in list an extra charge will be made for same.

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GLOBE OIL CUPS

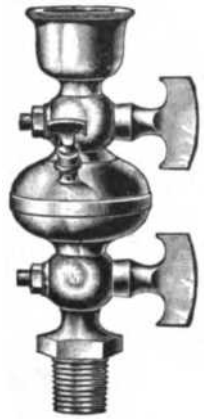


FIG. 3221

PRICES, FIG. 3221

Nos.	Diam., Inches.	Threaded Iron Pipe, Size.	Each.
00	1½	⅜	$3 00
0	2	⅜	3 75
1	2¼	½	4 50
2	2½	½	5 50
3	3	½	6 50
4	3½	¾	9 00
5	4	¾	15 00

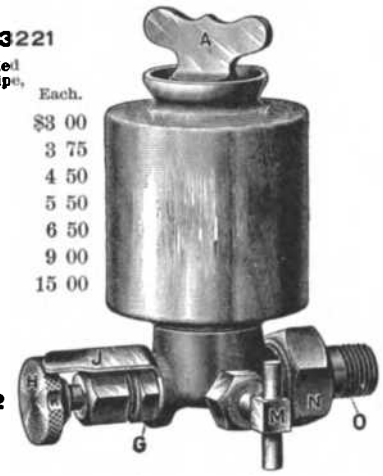


FIG. 3222

DESCRIPTION, FIG. 3222

There are two valves H and M, the former to regulate the feed and the latter to drain the cup when the oil supply is exhausted. To fill the cup, close valve, H, and open drain valve M; unscrew filling plug, A, about three turns. After the water is drained from the cup, close drain valve, M, and fill with oil; then screw down filling plug, A, tightly The feed can then be adjusted by unscrewing valve, H, and, when the desired flow is attained, spring dog, J, can be adjusted by lock nut, G, so that the circular portion of the former engages at K, thus acting as an indicator to show the proper position of the regulating valve. The cup can then be turned on and off at will and the original feed regained. The filling plug is so made that it has two slots in sides of same, which makes it unnecessary entirely to remove the plug when filling. The plug is also provided with a wire mesh strainer, so that impurities in the oil cannot enter the lubricator.

PRICES, FIG. 3222

Size, number	1	2	3
Shank pipe connection, inch	¼	⅜	⅜
Capacity (oil) ounces	4	6	8
Rough brass, each	$2 70	$4 00	$5 20
Finished " "	3 30	4 40	5 50
Nickel plated, "	3 90	5 20	6 60

OIL HOLE COVER AND CUPS

TWO PIECE OIL HOLE, COVER AND CUPS

FULL SIZE CUTS

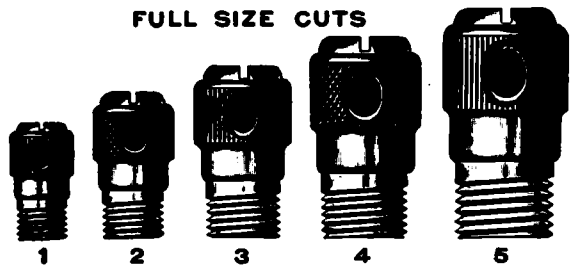


FIG. 3223

These two piece cups will turn in either direction with the fingers, and are oil and dust proof. They have a large opening and reservoir for oil, and can be screwed or driven into place. They are handy for loose pulleys, as they need only to be opened, leaving one hand to hold the pulley and the other to work oil can.

PRICES, FIG. 3223

	Size of Body.	Size of Thread.	Diameter of Head.	Weight, per 100.	Nickel plated, per 100.
No. 1	¼	¼ x 32	⅜	1 lbs.	$7 00
" 2	5/16	5/16 x 32	7/16	1½ "	9 50
" 3	⅜	⅜ x 24	¼	2¼ "	10 70
" 4	7/16	7/16 x 24	9/16	2¾ "	12 50
" 5	½	½ x 24	⅝	4½ "	16 00

STYLE D OIL CUP

PRICES, FIG. 3225

Nos.	Standard Thread. Diam., Inches.	Pitch.	Optional Pipe Thread.	Diam. of Hex., Inches.	Diam. of Cap, Inches.	Per 100, Nickeled.
1	¼	32	....	5/16	⅜	$7 00
2	5/16	32	....	⅜	7/16	9 50
3	⅜	24	....	7/16	½	10 70
4	7/16	24	⅛	½	9/16	12 50
5	½	24	⅛	⅝	¾	16 00
6	½	24	⅛ or ¼	¾	⅞	22 00
7	¼	pipe	⅛	⅞	1	30 00
8	⅜	"	¼	1	1⅛	38 00

OPEN

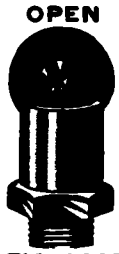


FIG. 3225

CLOSED



FIG. 3226

"2-D" is the cup mostly used on steering heads of automobiles.

STYLE N OIL CUP

OPEN



FIG. 3227

Nos.	Standard Thread Diam., Inches.	Pitch.	Optional Pipe Thread.	Diam. of Cap, Inches.	Price per 100, Nickeled.
1	¼	32	.....	⅜	$7 00
2	5/16	32	.....	7/16	9 50
3	⅜	24	.....	½	10 70
4	7/16	24	⅛	9/16	12 50
5	½	24	¼	⅝	16 00

CLOSED



FIG. 3227

To fill the cup, grasp the cap at the knurl, and turn it either to the right or left, until the oil hole in same registers with that in the body of cup. After oiling close the cup by turning the cap so as to cover the oil hole in inner part.

STYLE A OIL CUP

OPEN



FIG. 3224

Nos.	Standard Thread, Diams., Inches.	Pitch.	Diam. of Hex., Inches.	Diam. of Cap, Inches.	Prices per 100, Nickeled.
1	¼	32	¼	5/16	$7 00
2	5/16	32	5/16	⅜	9 50
3	⅜	24	⅜	7/16	10 70
4	7/16	24	7/16	½	12 50
5	½	24	½	9/16	16 00

Larger sizes furnished when quantity is desired.

CLOSED

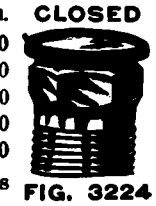


FIG. 3224

To oil, tip over cap of oil cup with spout of oil can. This cap can be tipped over at any point, thus enabling one to fill the cup from any direction. After oiling, the cap drops into place instantly and positively. It cannot jar loose or open. A spring does it.

SELF CLOSING ROTARY HEAD OIL HOLE, COVER AND CUP

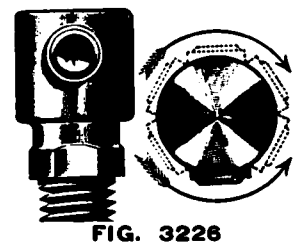


FIG. 3226

This cup can be screwed down to place and the port turned in any position desired to introduce the oil. The port being placed on the side, is not liable to catch dust. You simply press the ball and spring back with snout of can, and pump in the oil. There is nothing to get out of order, or jar loose and become lost. This cover is of good design, and is adapted for all purposes where oil is used for a lubricant. It is dust proof and oil tight. The size of opening in the base can be made small to allow a slow feed for oil if desired.

	Size of Head, Inches.	Size of Thread, Inches.		Weight, per 100.	Prices per 100, Plain Finish.	Prices per 100, Nickel plated.
No. 3	⅜	¼	32	2½ lbs.	$10 70	$10 70
" 4	½	5/16	32	3⅛ "	12 50	12 50
" 5	⅝	⅜	24	6¼ "	16 00	16 00
		¼	pipe			

STYLE B OIL CUP

PRICES, FIG. 3228

OPEN



FIG. 3228

Nos.	Standard Thread. Diam., Inches.	Pitch.	Optional Pipe Thread.	Diam. of Hex., Inches.	Diam. of Cap, Inches.	Per 100, Nickeled.
1	¼	32	....	⅜	7/16	$7 00
2	5/16	32	....	⅜	7/16	9 50
3	⅜	24	....	7/16	½	10 70
4	7/16	24	⅛	½	9/16	12 50
5	½	24	⅛	⅝	¾	16 00
6	½	24	⅛ or ¼	¾	⅞	22 00
7	¼	pipe	⅛	⅞	1	30 00
8	⅜	"	¼	1	1⅛	38 00

CLOSED



FIG. 3228

To oil, raise cap of oil cup by the knurl, thus uncovering oil hole as shown in open view, oil cup can be filled from any direction as the cap is easily turned around; after oiling, the cup closes instantly, positively, and cannot jar open. A spring does it.

A tube and wick are fitted to Nos. 7 and 8, thus feeding the oil at a proper rate.

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CYLINDRICAL AND URN SHAPED OIL CUP GLASSES



FIG. 3229



FIG. 3230



FIG. 3231



FIG. 3232

PRICES

Number	000	00	0	1	1½	2	3	4	5	6	8
Outside Diameters of Cylindrical Glasses, Inches	1	1⅛	1¼	1½	1¾	2	2⅛	2½	3	3½	4¼
Height of Cylindrical Glasses, Inches	⅞	1	1⅛	1⅜	1⅝	1⅞	2⅛	2⅜	3	4	5
Outside Diameters at upper end of Urn Shaped Glasses, Inches	..	1⅛	1¼	1½	1¾	2	2¼	2½	3	3½	
Height of Urn Shaped Glasses, Inches	..	1½	1⅝	2	2¼	2½	2¾	3⅛	3⅝	4½	
Cylindrical or Urn Shaped Glasses, Each	05	06	08	10	10	12	15	25	35	65	1 50
Cork Washers, Per Dozen	15	18	24	30	36	40	45	50	60	75	1 50

PRICES

Largest Outside Diameters, Inches.	Height over all.	Each.
1¼	1¼	$0 10
1⅝	1⅝	20
1¾	1¾	25
2⅛	2 1/16	30
2½	2¼	40
2⅞	2⅝	50
3¼	3	60
3½	3⅜	70
3½	4	80

PRICES

Nos.	Each.
0	$0 18
1	24
2	30
3	35
3½	42
4	50
5	60
6	80

To avoid mistakes when ordering glasses and cork washers, specify name and number of cup as stamped on the cup.

GREASE CUPS

CAST BRASS AUTOMATIC GREASE CUP AND FEEDER

AUTOMATIC GLASS GREASE CUP



FIG. 3233

DESCRIPTION, FIG. 3233

For use on Shafting, Dynamos, Motors, Machinery, etc.

These cups are made of brass fittings and glass. They have an improved spur grease feeder which is automatic, feeding only when the machinery is in motion and increasing or decreasing with it.

Number	0	00
Diameter, Inches	2	2½
Height, Inches	3	4
Capacity, Ounces	1¼	3
Pipe Thread	¼	⅜
Prices, Each	85	$1 10
Per Dozen	$9 00	12 00
Extra Glass, Each	15	20

DESCRIPTION, FIG. 3234

For Engines, Locomotives, Steamships, Mining Machinery, etc.

Directions for ordering cups.—Give the diameter and depth of oil hole through cap and brass, from top of former to shaft, so that tubes of proper length and size may be sent, stating if there is a casting or obstruction of any kind on the cap, and in this case give its nature and dimensions, that the feed may be regulated in the tubes. Please state the diameter of shaft and number of revolutions per minute.

Numbers	3	4	5	6
Diameters, Inches	1¾	2½	3	4
Height, Inches	2½	3½	4½	6
Pipe Thread	¼	⅜	½	½
Each	$1 50	$2 25	$3 25	$4 50
Per Dozen	16 00	25 00	36 00	50 00

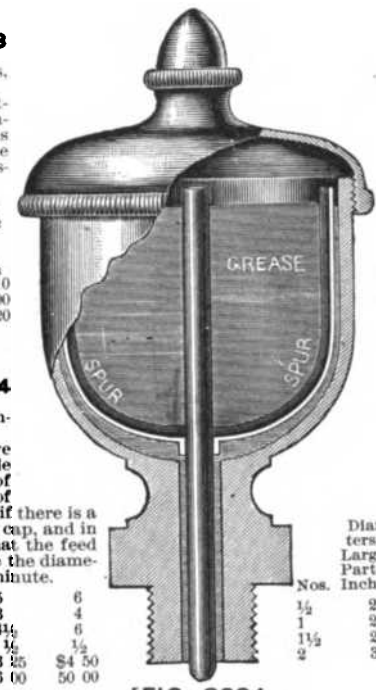


FIG. 3234

OFFSET GLASS

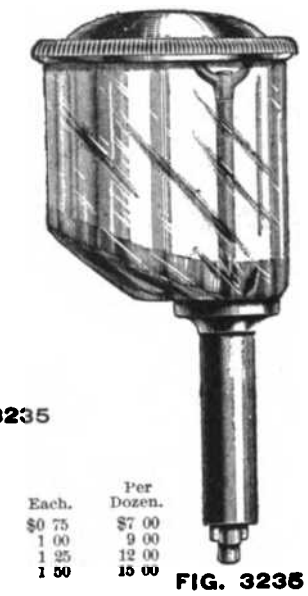


FIG. 3235

PRICES, FIG. 3235

Nos.	Diameters of Largest Part in Inches.	Height in Inches.	Diameters of Tube usually put in this Cup.	Each.	Per Dozen.
½	2	2½	5/16, ⅜, 7/16	$0 75	$7 00
1	2⅝	3	⅜, 7/16, ½	1 00	9 00
1½	2⅝	3⅜	7/16, ½, 9/16	1 25	12 00
2	3	3⅞	9/16, ⅝, ¾	1 50	15 00

GLASS, WITH CAST BOTTOM



FIG. 3236

PRICES, FIG. 3236, FOR SHAFTING

Nos.	Diameters of Largest Part in Inches.	Height in Inches.	Diameters of Tube usually put in this Cup.	Size of Screw, Pipe Tap.	Each.	Per Dozen.
½	2	2½	5/16, ⅜, 7/16		$0 75	$ 7 00
1	2⅝	3	⅜, 7/16, ½		1 00	9 00
1½	2⅝	3⅜	7/16, ½, 9/16		1 25	12 00
2	3	3⅞	9/16, ⅝, ¾		1 50	15 00
1	3⅛	3¾	5/16, ⅜	¼, ⅜	$1 75	$18 00
1½	3⅛	4¼	⅜, 7/16, ½	⅜, ½	2 25	24 00
2	3	4¾	½, 9/16, ⅝, 11/16	½, ¾	2 75	30 00

FIG. 3237, FOR SHAFTING & ENGINES

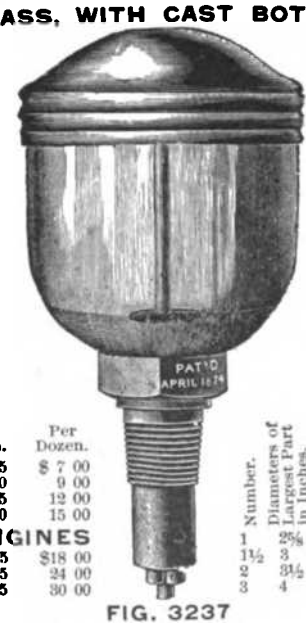


FIG. 3237

BRASS WITH CAST BOTTOM



FIG 3238

PRICES, FIG. 3238, FOR ENGINES

Number.	Diameters of Largest Part in Inches.	Height in Inches.	Diameters of Tube usually put in this Cup.	Size of Screw, Pipe Tap.	Plain, Each.	Nickel Plated, Each.	Plain, Per Dozen.	Nickel Plated, Per Dozen.
1	2⅝	3¾	⅜, 7/16, ½	⅝, ½	$1 75	$2 25	$18 00	$24 00
1½	3	4⅛	⅜, 7/16, ½	⅝, ½	2 25	2 75	24 00	30 00
2	3½	4¾	7/16, ½, 9/16, ⅝	½, ¾	3 00	3 50	32 50	36 00
3	4	5¼	7/16, ½, 9/16, ⅝	½, ¾	3 75	4 50	42 00	48 00

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GREASE CUPS

AUTOMATIC, PISTON GREASE CUP

For clutch pulleys, shafting, engine bearings, etc.

This cup is used on clutch pulleys, shafting, engine bearings, etc., where grease is preferred and where by reason of the motion or inaccessibility of the parts an automatic feed is required. Can be also used for heavy oil.



FIG. 3239

DIRECTIONS

To fill the cup draw the piston well up and run the nut well down to hold it in position, then unscrew the cover and fill the cup. Replace the cover and run the nut up so that the piston will be free to exert a downward pressure in obedience to the spring. If the cup is to operate but a few hours at a time, it is best to run the nut up but a few turns.

The rate of feed is regulated by the transverse screw at base of the cup. To give full head, turn the screw so that the slot in the head stands perpendicular. A half turn to right or left cuts off the feed entirely.

PRICES

Nos.	Sizes, Inches.	Thread, Inches.	Brass, Each.	Nickel, Each.
1	1	⅛	$2 50	$3 00
1½	1¼	¼	3 00	4 00
2	1½	¼	3 75	4 50
2½	1¾	¼	4 50	5 00
3	2	⅜	5 50	6 00
3½	2¼	⅜	6 50	7 50
4	2½	½	8 00	9 00
4½	3	¾	10 00	12 00

IDEAL AUTOMATIC GREASE CUP

For engine crank pins, journals, etc.

SECTIONAL

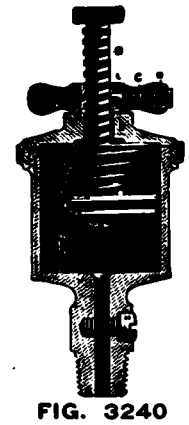


FIG. 3240

The Ideal is a cast brass highly finished automatic compression cup suitable for engine bearings, journals, etc. It is provided with a leather packed plunger, insuring a tight joint and smooth working, which is so constructed that it is easily raised when cup requires recharging with grease. The spring and plunger are conveniently controlled by thumb nut A, which is provided with an automatic lock arrangement to prevent its jarring from position on stem The hole through the shank can be regulated to suit the grease used by means of regulating screw H.



FIG. 3240

PRICES

Nos.	Inside Diameters, Inches.	Extreme Outside Diameters, Inches.	Extreme Height Over All, Plunger Raised, Cup Open, Inches.	Shank Pipe Thread, Inch.	Capacity, Grease, Ounces.	Finished Brass, Each.	Nickel Plated, Each.
00	1	1½	3½	⅛	⅛	$1 50	$1 75
0	1¼	1 23/32	4½	¼	1	2 00	2 25
1	1½	2	5⅜	¼	1½	2 50	2 80
2	2	2 9/16	6⅜	⅜	3	3 20	3 60
3	2½	3 3/16	7½	½	6	4 30	5 00
4	3	3⅝	8⅜	½	10	6 00	6 75

JEWEL AUTOMATIC GREASE CUP

For bearings, shafting, loose pulleys, etc.

The base is of cast brass, while the top is of tubing and spun brass. They are of brass throughout, provided with leather packed plunger, are of neat design, well made and light in weight.

EXTERIOR

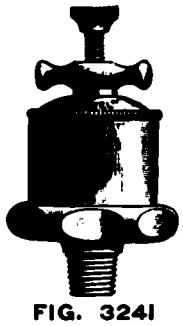


FIG. 3241

PRICES

Nos.	Inside Diameters, Inches.	Extreme Outside Diameters, Inches.	Extreme Height Over All, Plunger Raised, Cup Open, Inches.	Shank Pipe Thread, Inches.	Capacity, Grease, Ounces.	Finished Brass, Each.	Nickel Plated, Each.
00	1	1⅜	3	⅛	⅛	$0 80	$1 00
0	1¼	1 25/32	3 11/16	¼	1	1 00	1 30
1	1½	2	4¼	¼	1½	1 30	1 70
2	2	2 17/32	5½	⅜	3	1 70	2 20
3	2½	3⅛	6 13/16	½	6	2 30	2 90
4	3	3⅞	7⅝	½	10	3 20	3 90

SECTIONAL

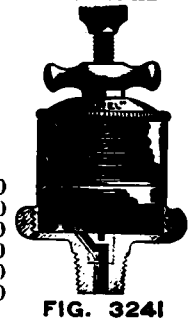


FIG. 3241

COMPRESSION GREASE CUP

PRICES, FIG. 3244

This class A grease cup makes an admirable crank pin cup and can also be used for slides, journals, etc.

CLASS A

ALL BRASS

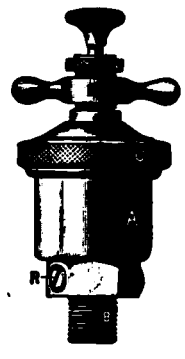


FIG. 3244

Nos.	Diameters of Body, Inches.	Capacity, Ounces.	Sizes of Shank, Pipe Thread, Inches.	Finished, per Dozen.	Nickel Plated, per Dozen.
00	1	⅛	¼	$24 00	$27 00
0	1¼	1	¼	30 00	33 00
1	1½	1½	⅜	36 00	39 00
2	2	3	⅜	46 25	50 00
3	2½	4½	½	60 00	64 00
4	3	9	½	72 00	81 00

PRICES, FIG. 3245

Nos.	Diameters of Cup, Inches.	Capacity, Ounces.	Sizes of Male Shank Pipe Thread, Inches.	Sizes of Female Shank, Pipe Thread, Inches.	Painted, per Dozen.
00	1	⅛	¼	¼	$10 00
0	1¼	1	¼	¼	11 25
1	1½	1½	⅜	⅜	12 00
2	2	3	⅜ & ½	⅜ & ½	12 50
3	2½	4½	½	½	25 00

ALL IRON

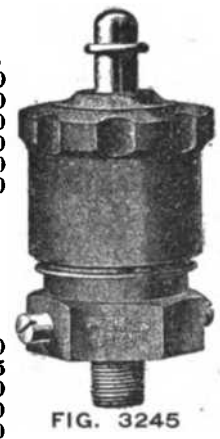


FIG. 3245

The above are of cast iron and adapted for use on overhead lines of shafting, countershafts, friction clutch pulleys, or wherever special finish is not required. Each filling of these cups should last from one to four weeks. These cups, when used on counter or main shafts, work at any angle which the position of the box may require, or even upside down.

COMPRESSION GREASE CUP

CLASS B

ALL BRASS

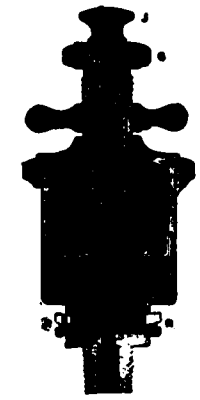


FIG. 3242

For slides, eccentrics and other bearings of engines. Class B makes a crank pin grease cup simple, easily operated and reliable.

CLASS C

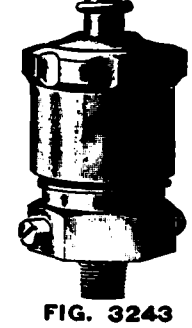


FIG. 3243

PRICES

Nos.	Inside Diameters of Body, Inches.	Capacity.	Size of Shank, Pipe Thread, Inches.	Class B. Finished, per Dozen.	Class B. Plated, per Dozen.	Class C. Finished, per Dozen.	Class C. Plated, per Dozen.
00	1	½ ounce	⅛	$18 00	$21 00	$21 00	$24 00
0	1¼	1 "	¼	24 00	27 00	25 00	28 00
1	1½	1½ "	¼	30 00	33 60	29 00	32 00
2	2	3 "	⅜	38 40	43 20	33 50	37 00
3	2½	6 "	½	51 60	60 00	50 00	54 00
4	3	10 "	½	72 00	81 00		
5	3½	1 pint	½	120 00	144 00		

APOLLO COMPRESSION IRON GREASE CUP

For bearings, shafting, etc.

SECTIONAL

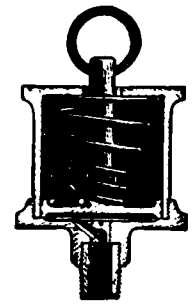


FIG 3246

PRICES

Nos.	Inside Diameters, Inches.	Shank Pipe Thread, Inch.	Capacity, Grease, Ounces.	Iron, Each.
1	1½	¼	1½	$1 50
2	2	⅜	3	1 70
3	2½	½	6	2 80
4	3	½	10	3 20

EXTERIOR

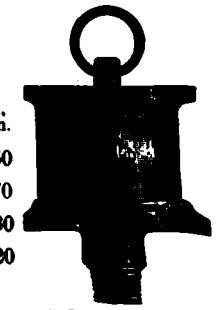


FIG. 3246

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GREASE CUPS

BUFFALO COMPRESSION GREASE CUP

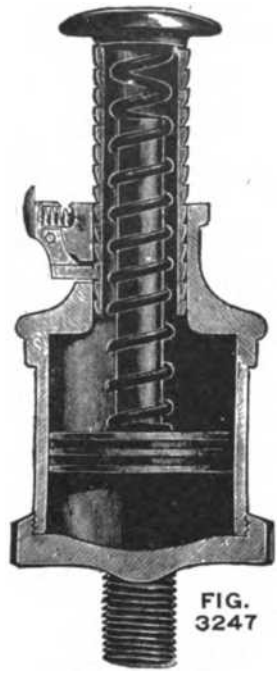


FIG. 3247

DESCRIPTION AND PRICES, FIG. 3247

To compress spring on plunger simply push down on top of sleeve; to release same you have only to release spring pawl which holds the sleeve firmly at any point.

Sizes.	Brass Finished.	Nickeled.	Iron.
No. 1 Holding 1½ oz., each.....	$2 50	$3 00	$1 50
" 1½ " 2 " "	2 75	3 25	1 75
" 2 " 2¾ " "	3 25	3 75	2 00
" 3 " 4 " "	4 00	4 65	2 25
" 4 " 8 " "	5 00	5 75	2 50
" 5 " 1 pint "	8 50	9 25	4 50

PRICES, FIG. 3248

Capacity.....	⅛ oz.	1 oz.	2 oz.	4 oz.	6 oz.	8 oz.
Brass, each.....	$1 25	$1 85	$2 35	$2 80	$3 15	$3 50
Brass, polished, each.....	1 50	2 25	2 75	3 25	3 75	4 50
Sizes of shank, pipe thread, in..	¼	⅜	½	½	¾	¾
Diameters through bore, inches	1¼	2	2½	3	3½	3½

Nickel Plating Extra.

All orders filled with polished cups unless otherwise ordered. Cups can be furnished with blank shanks of any diameter desired without extra charge. An additional charge of 10 per cent. for shanks with special threads. All parts are made to gauge and are thoroughly interchangeable.

COMPRESSION GREASE CUP

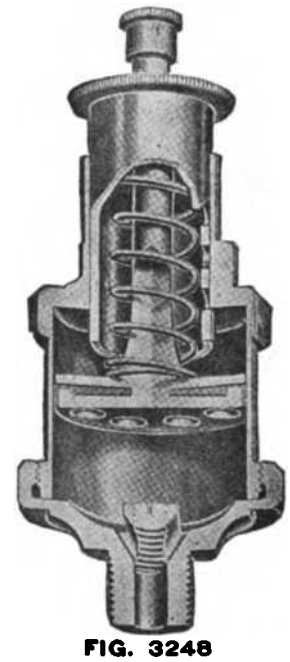


FIG. 3248

COMPRESSION GREASE CUP WITH COCK IN SHANK



FIG. 3249

DESCRIPTION AND PRICES, FIG. 3249

Fig. 3249 illustrates an extra heavy compression grease cup for special service. The cups are full cast brass and highly finished. The plungers are fitted with cup leather washers, which prevent the grease passing.

Numbers.....	3	4
Capacity, ounces.....	1½	2¼
Pressure, pounds.....	600	600
Shank, inches.....	⅜	⅜
Brass finish, each.....	$12 50	$15 00
Nickel plated, each.....	14 00	17 00

Cups furnished with shanks threaded as listed unless otherwise specified.

COMMON SENSE GREASE CUP WITH COCK IN SHANK



FIG. 3250

DESCRIPTION AND PRICES, FIG. 3250

Cut illustrates the Common Sense Grease Cup having ground cock in shank. As both the grease receptacle and plunger are threaded, a friction bearing is obtained which prevents the lubricant from backing past the plunger. When the plunger is screwed down a pressure is obtained which is maintained until the grease is forced out of the cup, and flow of the grease to the bearing can be controlled by the ground cock.

Numbers.....	P	R	S	T	W	O
Outside diameters, inches.....	1¼	1⅝	2	2⅜	2¾	3⅛
Sizes of shank, inches.....	¼	⅜	⅜	⅜	½	½
Capacity, ounces.....	¾	1½	3	4½	7	10
Brass finish, each.....	$2 00	$2 50	$3 50	$5 00	$7 00	$11 00
Nickeled, each.....	2 25	2 80	4 00	5 50	7 75	12 00

For grease cups without covers deduct 25c each from above list.

COMPRESSION DOPE CUP

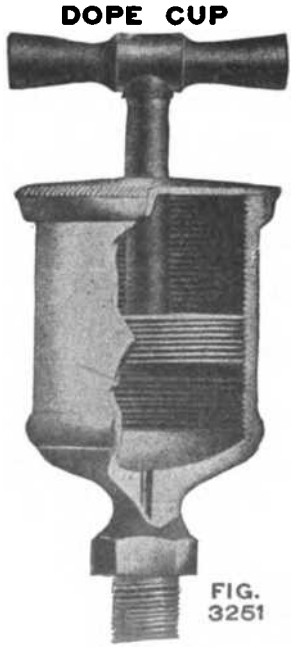


FIG. 3251

DESCRIPTION AND PRICES, FIGS. 3251 AND 3252

The body of cup or grease receptacle is threaded inside, the plunger or piston being threaded to correspond with same. By turning the handle attached to the piston the lubricant is forced out into the journal.

FIG. 3251

Numbers.....	A	B	C	D	E	G
Capacity, ounces.....	¾	1½	3	4½	7	10
Diameters, outside, inches.....	1¼	1⅝	2	2⅜	2¾	3⅛
Shank, inches.....	¼	⅜	⅜	⅜	½	½
Brass finish, each.....	$0 50	$0 60	$1 00	$1 35	$1 68	$2 92
Nickel plated, each.....	58	70	1 20	1 50	1 95	3 30

FIG. 3252

Numbers.....	6	6½	8	10	12	14
Capacity, ounces.....	1	1½	2¼	4	8	16
Size over all, inches.....	1⅜ x 3¼	1¾ x 3¼	2⅛ x 4½	2⅝ x 5⅛	3 x 6⅛	4 x 7½
Brass finish, each.....	$2 00	$2 50	$2 75	$3 75	$5 00	$8 00
Nickeled, each.....	2 50	3 00	3 25	4 50	5 60	8 75

BUFFALO SCREW FEED GREASE CUP

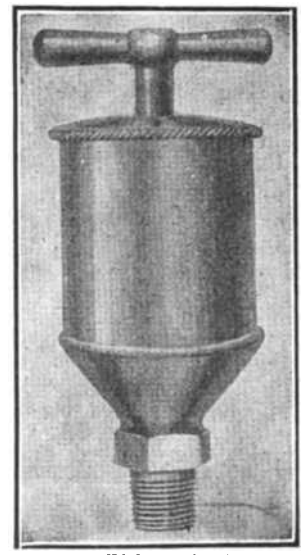


FIG. 3252

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GREASE CUPS

COMPRESSION GREASE CUP



FIG. 3253

This compression cup is provided with a piston which, when screwed up, leaves nearly the full capacity of the cup for use.

Can be furnished with screw piston if wanted.

PRICES FIG. 3253

Sizes, Inches.	Thread.	Brass, Each.	Nickel, Each.
1	⅛	$2 00	$2 50
1¼	¼	2 50	3 00
1½	¼	3 00	3 50
1¾	¼	4 00	4 50
2	⅜	5 00	5 50
2¼	⅜	6 00	6 50
2½	½	7 00	8 00
3	¾	7 50	9 50

SCREW FEED MARINE GREASE CUP

SECTIONAL

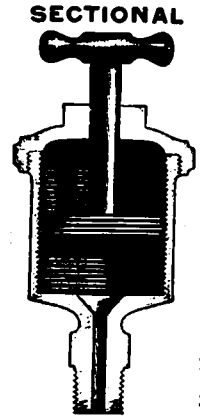


FIG. 3254

PRICES, FIG. 3254

Numbers.	Inside Diameters, Inches.	Extreme Outside Diameter, Inches.	Extreme Height over all, Plunger Raised, Cup Open, Inches.	Shank Pipe Thread, Inch.	Capacity Grease, Ounces.	Finished Brass, Each.	Nickel Plated, Each.
00	1	1 11/32	3½	⅛	⅓	$1 00	$1 20
0	1¼	1 27/32	4 9/16	¼	1	1 20	1 45
1	1½	2	5 7/16	¼	1½	1 60	1 90
2	2	2 9/16	6⅜	⅜	3	2 00	2 40
3	2½	3 3/16	7 15/32	½	6	2 80	3 40
4	3	3⅝	8 27/32	½	10	4 00	4 75

EXTERIOR

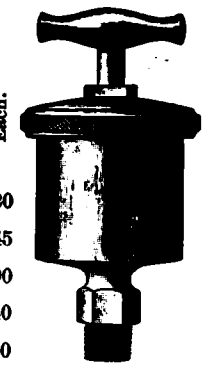


FIG. 3254

JUNIOR COMPRESSION GREASE CUP

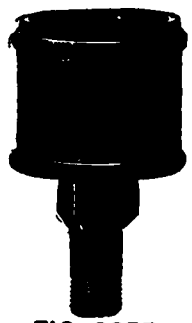


FIG. 3255

It takes up but little space and is convenient to operate. Remove cap and fill with grease, replace and screw down.

PRICES, FIG. 3255

Nos.	Inside Diameters.	Threaded for Pipe.	Each.
1	1	⅛	$0 50
1½	1¼	¼	75
2	1½	½	1 00
3	2	⅜	1 50
4	2½	½	2 25
5	3	¾	3 00

COMPRESSION GREASE CUP

For shoe, printing and textile machines, or small outward bearings of engines and governors.

PRICES, FIG. 3256

Nos.	Capacity, Oz.	Diameters.	Height.	Pipe Thread.	Brass, Each.	Nickel, Each.
1	¾	1⅛	2½	⅛	$1 00	$1 15
2	1¼	1⅜	2¾	⅛	1 25	1 40
3	2	1¾	3¼	¼	1 75	1 90

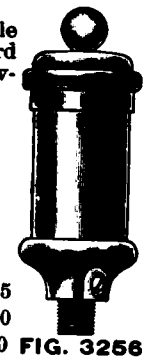


FIG. 3256

GEM PLAIN BRASS GREASE CUP

PRICES, FIG. 3257

Nos.	Inside Diameters, Inches.	Extreme Outside Diameters, Inches.	Extreme Height over all, Cup Open, Inches.	Shank Pipe Thread, Inch.	Capacity Grease, Ounces.	Finished Brass, Each.	Nickel Plated, Each.
00	1	1⅛	1 27/32	⅛	¼	$0 70	$0 80
0	1¼	1 13/32	2 5/32	¼	⅜	90	1 00
1	1½	1⅝	2½	¼	1	1 15	1 30
2	2	2 5/32	2⅞	⅜	2	1 50	1 70
3	2½	2 11/16	3½	½	3½	2 15	2 45
4	3	3¼	3⅞	½	5	2 90	3 20

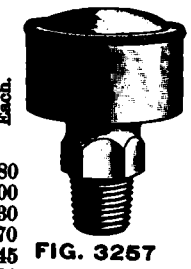


FIG. 3257

RELIABLE GREASE CUP

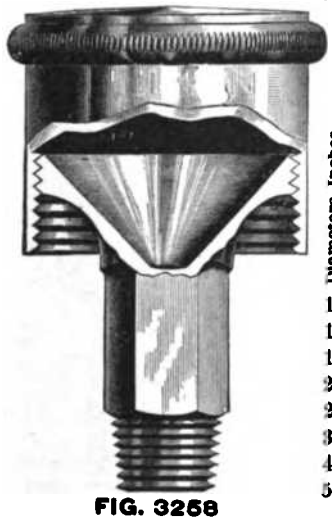


FIG. 3258

PRICES

FIG. 3258

Diameters, Inches.	Pipe Thread.	Brass Finish, Each.	Nickel Plated, Each.	Rough Brass, Each.
1	⅛	$0 70	$0 85	$0 55
1¼	¼	90	1 10	75
1½	¼	1 15	1 40	95
2	⅜	1 40	1 70	1 20
2½	½	2 15	2 60	1 75
3	½	2 90	3 45	2 40
4	¾	6 00	8 00	5 00
5	1	10 00	13 00	9 00

STAUFFER GREASE CUP



FIG. 3259

SECTIONAL



FIG. 3259

PRICES, FIG. 3259

Numbers	1	2	3	4	5	6	7	8	9	10
Diams. of body, inches	⅝	⅞	1¼	1½	2	2⅜	2¾	3⅜	4	5
Threaded for iron pipe, inches	⅛	⅛	¼	¼	¼	¼	¼	⅜	½	½
Steam metal, each,	$0 35	0 45	0 60	0 75	1 00	1 50	2 00	2 50	3 00	3 75
Iron, each	25	30	35	45	60	80	1 00	1 20	1 50	1 75

MUTUAL GREASE CUP

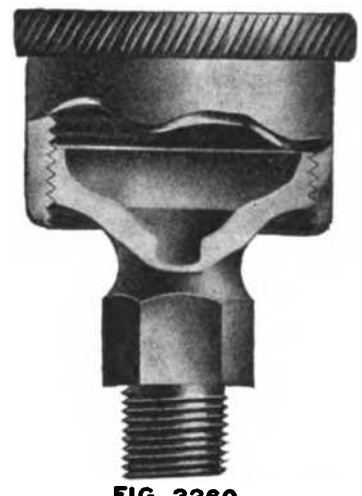


FIG. 3260

Nos.	Sizes, Inches.	Pipe Thread.	Prices, Brass.	Prices, Nickel Plated.
01	1	⅛	$0 25	$0 29
01¼	1¼	¼	34	38
01½	1½	¼	42	50
02	2	⅜	50	60

TIGER PLAIN BRASS GREASE CUP



FIG. 3261

PRICES, FIG. 3261

Nos.	Inside Diameters, Inches.	Extreme Outside Diameters, Finished Pattern, Inches.	Extreme Height over all, Cup Open, Finished Pattern, Inches.	Extreme Outside Diams., Rough Pattern, Inches.	Extreme Height Over all, Cup Open, Rough Pattern, Inches.	Shank Pipe Thread, Inch.	Capacity Grease, Ounces.	Finished Brass, Each.	Finished Brass, Nickel Plated, Each.	Rough Brass, Each.
00	1	1¼	1¾	1¼	1 13/16	⅛	½	$0 70	$0 82	$0 56
0	1¼	1½	2	1 5/16	2 1/16	¼	⅝	90	1 06	74
1	1½	1 11/16	2 5/16	1⅞	2⅜	¼	1	1 15	1 36	96
2	2	2¼	2 9/16	2 5/16	2 11/16	⅜	2	1 50	1 80	1 28
3	2½	2¾	2⅞	2⅞	2 15/16	½	3½	2 15	2 60	1 76
4	3	3¼	3¼	3 7/16	3⅜	½	5	2 90	3 40	2 30

SECTIONAL



FIG. 3261

UNFINISHED BRASS CUPS FOR SOLID OIL



FIG. 3262

PRICES

Numbers	2	3	4	5	6	7	8	9	10
Diams. of cup, in.	⅞	1¼	1½	2	2⅜	2¾	3⅜	4	5
For shaft, in.	¾	1	1½	2	2½	3 1/16	4¾	6	8
Threaded pipe thread	¼	¼	¼	¼	¼	⅜	⅝	½	½
Each	$0 50	0 65	0 85	1 20	1 50	1 75	2 20	2 95	3 95

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GREASE CUPS

SHEET BRASS



FIG. 3263

PRICES, FIG. 3263

Number.	Diameter of Largest Part in Inches.	Height in Inches.	Diameter of Tube usually put in this Cup.	Prices each, Plain.	Prices each, Nickel Plated.	Prices per dozen, Plain.	Prices per dozen, Nickel Plated.
1	2⅝	2¾	⅜ 7-16 ½	$1 25	$1 50	$12 00	$15 00
1½	3	3⅛	7-16 ½ 9-16 ⅝	1 75	2 00	18 00	21 00
2	3½	3⅞	7-16 ½ 9-16 ⅝	2 25	2 75	24 00	30 00
3	4	4¼	9-16 ⅝ ¾	3 00	3 50	30 00	36 00
4	5	5¼	¾ ⅞ 1	3 75	4 25	36 00	42 00

Adapted to engines, shafting, pumps, etc. No screw on these cups. When bushed $3 per dozen for each size additional.

PRICES, FIG. 3264

Number.	Diameter of Largest Part in Inches.	Height in Inches.	Diameter of Tube usually put in this Cup.	Prices each.	Prices per dozen.
1	2⅝	2¾	⅜ 7-16 ½	$1 00	$9 00
1½	3	3⅛	7-16 ½ 9-16 ⅝	1 25	12 00
2	3½	3⅞	7-16 ½ 9-16 ⅝	1 75	18 00
3	4	4¼	9-16 ⅝ ¾	2 25	24 00
4	5	5¼	¾ ⅞ 1	3 00	30 00

Adapted to shafting of every description, it being a substantial cup. No screw. The No. 1 sizes are made with either straight or offset tubes. When bushed $3 per dozen for each size additional.

SHEET ZINC



FIG. 3264



FIG. 3265

CRANK PIN CUP FOR PROPELLER ENGINE

DIRECTIONS FOR ORDERING

Give the width of space between the crank and crank shaft; the diameter of the connecting rod 3 inches above the stub end; the square of the stub end, and the distance from the top of stub end to the crank pin journal. Also a set screw on the connecting rod is required to hold the cup in its position, which is made to fit around the connecting rod.

In this case particularly a sketch of cup, with measurement, should be given.

Prices Figs. 3265, 3265A and 3265B, based on size and material, on application

CRANK PIN CUP FOR BEAM ENGINES

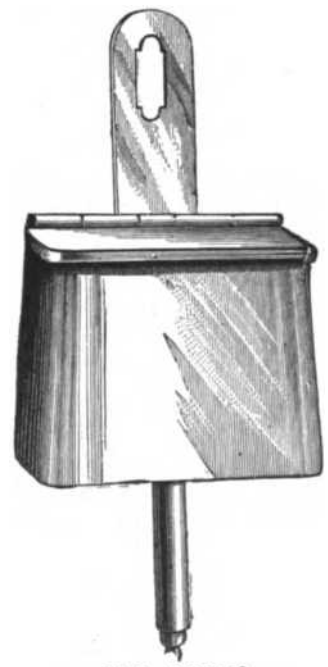


FIG. 3265A.

This cup is secured in position by a set screw in the connecting rod.

It is necessary to place a cup on each side of a connecting rod.

In measuring for these cups, it is essential to give the width of space between the crank and crank shaft; to have the hole close to the stub end through the collar of the brasses to the journal. If the hole should be on a bevel, state the bevel, also the depth and diameter of the hole from the top of the collar of the brasses to the journal.

In this case, a sketch of cup, with measurement, should be given.

SHEET METAL CUP

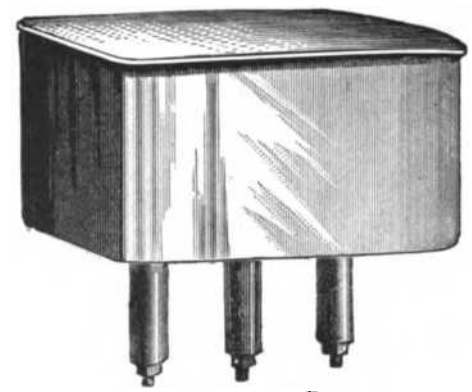


FIG. 3265B

This cup merely represents a sheet metal cup. A sketch is required with measurements.

SHAFTING CUP



½

FIG. 3266

PRICES, FIG. 3266

Size	½	11/16	⅞	1	1½
Price	$0 15	$0 20	$0 25	$0 30	$0 50

From ¾ to 1¼ inch shaft.....drill for the ½ inch cup.
" 1½ " 2 " " ..... " " 11/16 " "
" 2½ " 3 " " ..... " " ⅞ " "
" 3½ " 6 " " ..... " " 1 " "
" 6 inch up..... " " 1½ " "

The cut illustrates the ½ inch size shafting cup, in full size. The cups are made of sheet brass and without seams. The ⅜ cup is threaded to fit ⅜ inch standard pipe thread; the ⅝ inch cup to fit ½ inch standard pipe thread; the ¾ inch cup to fit ¾ inch standard pipe thread.

PRICES, FIG. 3267

In applying the cups, place them 1/16 inch from shaft. Grease the shaft well before pulley is placed in position.

⅜ of finished brass.....$0 75
⅝ " " 1 00
¾ " " 1 50

LOOSE PULLEY CUP

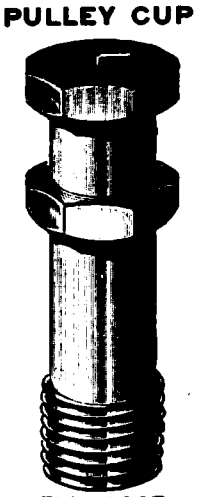


FIG. 3267

FOR STATIONARY ENGINES

This cup is made on the same principle as the loose pulley cup, Fig. 3267, with a light spring which overcomes the throw and jar of the rod, and keeps the lubricator always in contact with the pin.

PRICES, FIG. 3268

⅜ inch.....$2 00
⅝ " 2 50
¾ " 3 00

CRANK PIN CUP

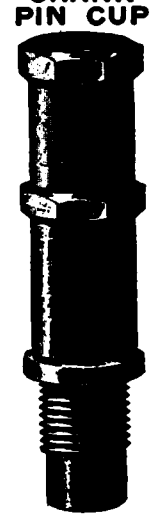


FIG. 3268

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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LUBRICATORS FOR JOURNALS

PRICES, FIG. 3269

Put up in boxes of 50 each.

Sizes, ⅜	for the ½	inch cup	$2 00	per	hundred.
" ⅝	" " 11/16	" "	2 50	"	"
" ¾	" " ⅞	" "	4 00	"	"
" ⅞	" " 1	" "	5 00	"	"
" 1¼	" " 1½	" "	8 00	"	"

This lubricator is manufactured in different grades to accommodate various speeds of machinery. In ordering, note the letter.

Speed of shaft	250 and less	M
" " "	300 to 450	A
" " "	500 to 1000 and over	AA

FOR LOOSE PULLEYS.

Speed of pulleys	Up to 250	M
" " "	Over 250	A

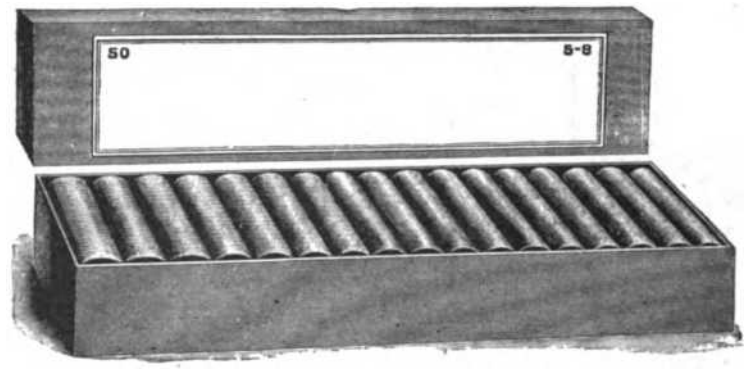


FIG. 3269

DROP LUBRICATORS

PRICES, FIG. 3270

For machines, bolt and screw machines, etc.

Pints.		Per Doz.
1	Brass cr copper	$18 00
2	" " "	21 00
3	" " "	24 00
4	" " "	30 00
1	Tin, zinc top and bottom	10 00
2	" " " " "	12 00
3	" " " " "	15 00
4	" " " " "	18 00



FIG. 3270

ENGINEERS' PERFECTION OILERS

PRICES, FIG. 3272

Nos.	Capacity.	Tin, Per Doz.	Brass, Per Doz.	Nickel, Per Doz.
34	½ pt.	$8 50	$12 00	$15 00
36	1 "	10 00	15 00	18 00
38	1 qt.	12 00	18 00	21 50
39	2 "	14 50	21 00	26 50

FIXED SPOUT



DETACHABLE SPOUT



Lengths of spouts, 6, 8, 10, 12, 14, 18, 24 inches.

All spouts 14 inches and over are made double, giving them additional strength.

PRICES, FIG. 3273

Nos.	Capacity.	Tin, Per Doz.	Brass, Per Doz.	Nickel, Per Doz.
036	1 pt.	$15 00	$21 00	$24 00
038	1 qt.	18 00	24 00	27 50
039	2 "	21 00	27 00	32 50

Lengths of spouts, 8, 10, 12, 14, 18, and 24 inches.

All spouts 14 inches and over are made double, giving them additional strength.

PRICES, EXTRA SPOUTS FOR FIGS. 3272 AND 3273

Ins.	Tin, Per Doz.	Brass, Per Doz.	Nickel, Per Doz.
8	$3 75	$5 00	$8 00
10	4 00	5 50	8 50
12	4 25	6 00	9 00
14	4 50	6 50	9 50
18	5 00	7 00	10 00
20	5 25	7 50	10 50
24	6 00	8 50	12 00

These spouts, being made double, are very strong and durable. The couplings are heavy cast brass, and will fit any of the detachable spout cans.

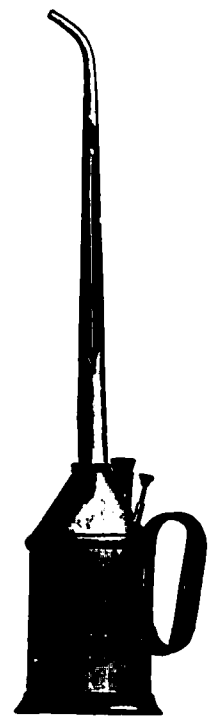
FIG. 3272



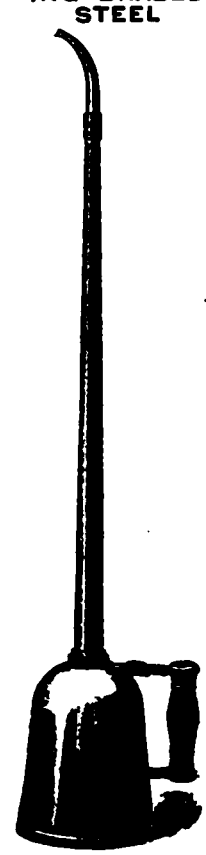
FIG. 3273

LOCOMOTIVE OILERS

TIN AND BRASS WITH VALVE



EVERLASTING BRAZED STEEL



DESCRIPTION
FIG. 3275

Heavy steel pressed body in one piece. Brazed with hard spelter. Steel drawn tubes with detachable steel tips. Any length tubes, straight or curved tip. A vent controls the flow of oil as perfectly as a valve. Paper or wood handles, held in place by a ¼ inch bolt. Recess in shoulder of spout to retain gasket.

FIG. 3274

FIG. 3275

PRICES, FIG. 3274

Pints.				Per Doz.
1	Brass,	with	valve	$36 00
2	"	"	"	48 00
3	"	"	"	60 00
1	"	no	valve	24 00
2	"	"	"	36 00
3	"	"	"	48 00
1	Tin,	with	valve	24 00
2	"	"	"	33 00
3	"	"	"	45 00
1	"	no	valve	12 00
2	"	"	"	21 00
3	"	"	"	33 00

PRICES, FIG. 3275

Nos.	Capacity.	Diameters, Inches.	Heights, Inches.	Nozzles, Inches.	Per Doz.
160	1½ pint	4	5	12	$16 00
162	1½ "	4	5	23	17 00
164	1 quart	4½	6	12	17 00
166	1 "	4½	6	23	18 00

All seams are brazed.

All 12 inch nozzles furnished straight, and 23 inch bent, unless otherwise ordered.

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THE MARANVILLE IMPROVED ENGINEER'S OILER



FIG. 3276

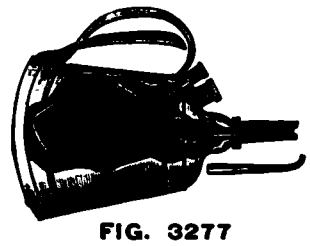


FIG. 3277

The cuts show the level flow principle of the Maranville oilers, which permits their being emptied from a horizontal position.

The Improved Engineer's Oiler is fitted with an automatic vent, permitting a continuous and steady flow of oil until, with the release of pressure, the flow is stopped with the oiler in any position.

PRICES

No. 114, tin, 3 pints, per dozen	$24 00
" 114, tin, 3 " copper or nickel plated, per dozen	27 00
" 114, brass or copper, 3 pints, per dozen	30 00
" 114, brass or copper, nickel plated, 3 pints, per dozen	36 00

MARANVILLE LOCOMOTIVE OR STATIONARY ENGINEER'S OILER



FIG. 3278

Fig. 3278 combines the principles exactly used in No. 114, Fig. 3276, but is an oiler of a size, shape and length of spout adapted to the needs and requirements of a locomotive engineer.

PRICES

No. 132, 1 quart, tin, per doz.	$18 00
" 132, 1 " brass, "	24 00

SPOUTS INTERCHANGEABLE

TIN	Per Dozen.	BRASS	Per Dozen.
8 inches or 10 inches	$2 75	8 inches or 10 inches	$3 50
12 " " 14 "	3 50	12 " " 14 "	4 50
18 " " 20 "	5 00	18 " " 20 "	6 00
24 " " 26 "	6 50	24 " " 26 "	8 00

MARANVILLE ENGINEER'S OILER

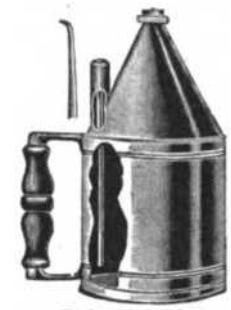


FIG. 3279

Spouts any size or length and are all interchangeable. Double seamed top and bottom. Handle held in place with malleable iron fitting.

PRICES

	Per Dozen.
No. 27, tin, 3 pints, 4 inches in diameter	$9 00
" 27, brass, 3 " 4 " " "	12 00
" 28, tin, 2 quarts, 5 inches in "	12 00
" 28, brass, 2 " 5 " " "	18 00

LOCOMOTIVE OILER



FIG. 3281

STEEL AND BRASS RAILROAD OILER



FIG. 3283

PRICES FIG. 3283

STEEL COPPERIZED

No. 10. 1 pint Railroad Oiler, 3⅜ inch diameter, 5 inches high, 12 inch nozzle.
Per dozen $14 00

No. 11. 1 quart Railroad Oiler, 4⅛ inch diameter, 6 inches high, 18 inch nozzle.
Per dozen $18 00

STEEL NICKEL PLATED

No. 17. 1 pint Railroad Oiler, 3⅜ inch diameter, 5 inches high, 12 inch nozzle.
Per dozen $18 00

No. 18. 1 quart Railroad Oiler, 4⅛ inch diameter, 6 inches high, 18 inch nozzle.
Per dozen $21 00

BRASS

No. 17. 1 pint Railroad Oiler, 3⅜ inch diameter, 5 inches high, 12 inch nozzle.
Per dozen $18 00

No 18. 1 quart Railroad Oiler, 4⅛ inch diameter, 6 inches high, 18 inch nozzle.
Per dozen $21 00

No. 18A. 2 quart Railroad Oiler, 5 inch diameter, 8 inches high, nozzle 10 inches or 14 inches.
Per dozen $24 00



FIG. 3282

PRICES, FIG. 3282

	Tin.	Brass.	Copper Plated.
Capacity, 1½ pints, per dozen.	$7 50	$16 00	$12 00
" 3 " "	10 00	20 00	16 00

ENGINEERS' HEAVY OILERS

WITH SHORT SPOUTS

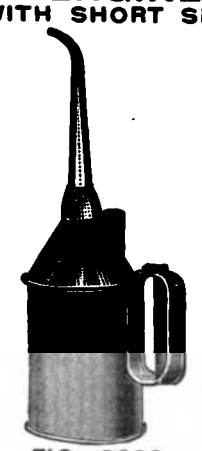


FIG. 3280

PRICES, FIGS. 3280 AND 3281

	Per Dozen.
2 quarts, tin	$9 00
2 " brass	18 00
1 pint, tin	4 00
1 quart, tin	6 00
2 " "	8 00
1 pint, brass	9 00
1 quart, "	12 00
2 " "	18 00

WITH LONG SPOUTS

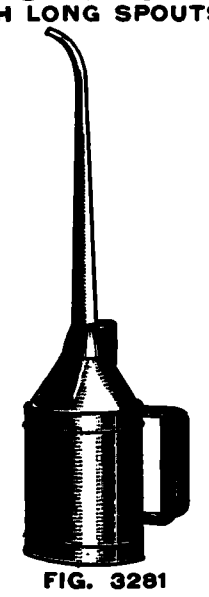


FIG. 3281

STEEL RAILROAD OILER



FIG. 3286

PRICES, FIG. 3286

STEEL COPPERIZED

No. 101. 1 quart, 4⅛ inch diameter, 6 inches high, 12 inch nozzle.
Per dozen $18 00

No. 111. 2 quarts, 5 inch diameter, 8 inches high, 10 inch or 14 inch nozzle.
Per dozen $20 00

ENGINEER'S DRIP OILER



FIG. 3287

PRICES, FIG. 3287

	Per Dozen.
1 pint, tin	$3 75
1½ " "	4 25
2 " "	4 50
1 " brass	12 00
1½ " "	16 00
2 " "	20 00

BROAD TOP OILER



FIG. 3284

PRICES, FIG. 3284

	Per Dozen.
½ pint	$9 00
1 "	10 00
1 quart	11 00
2 "	13 00
3 "	15 00
Extra spouts	3 00

PRICES, FIG. 3285

	Per Dozen.
1 pint	$8 50
1 quart	8 75
3 pints	10 00
2 quarts	12 00
3 "	14 00
4 "	17 00
Extra spouts	3 00

Other sizes to order.

These oilers are made of best quality heavy sheet steel brazed with hard spelter solder which will not melt at a welding heat. The above prices are for 9 inch spouts, straight or curved. Extra length spouts and other sizes made to order.

PYRAMID OILER



FIG. 3285

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PERFECTION ENGINE OILERS

STRAIGHT

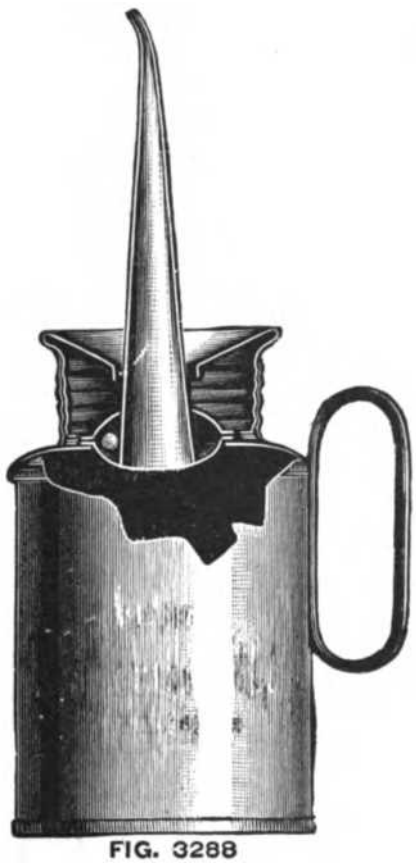


FIG. 3288

The ball valve is intended to give vent, and to carry all drippings on outside of spout back into can, thus keeping outside perfectly clean. It is easily cleaned out and filled, requires no funnel, and has, what is often a great convenience, a reversible spout, which can be instantly changed to any position desired.

PRICES

Nos.	Size of Spouts, Inches.	Tin, Straight, per Doz.	Tin, Flaring, per Doz.	Brass, Straight, per Doz.	Brass, Flaring, per Doz.	Copper Plated, Straight, per Doz.	Copper Plated, Flaring, per Doz.
1	8	$2 75	$3 75	$8 00	$10 00	$4 00	$5 25
2	8	3 25	4 25	10 00	12 00	4 75	6 00
3	8	3 75	4 75	12 00	15 00	5 25	6 75

SPECIAL OILERS

Nos.		Per Dozen.
2	Heavy tin, wired bottoms, straight	$5 00
3	" " " " "	5 75
1	" " " " flaring	5 25
2	" " " " "	6 00

	Tin.	Brass.	Copper Plated.
Extra spouts, 8 in. long, per doz	$0 85	$1 25	$1 00
" 10 " " " "	1 00	1 75	1 20
" 15 " " " "	1 15	1 90	1 40
" 18 " " " "	1 25	2 25	1 60
" 21 " " " "	1 50	2 50	2 00

The capacity of these oilers is about as follows: No. 1, ½ pint; No. 2, 1 pint; No. 3, 1½ pints. Put up ½ dozen in box. All cans on list have 8 inch spouts. If longer are desired, deduct price of 8 inch spout and add cost of spout required.

FLARING



FIG. 3289

ENGINEERS' HORIZONTAL OILERS

PERFECTION

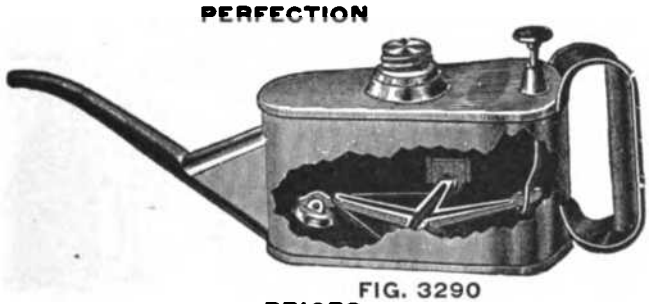


FIG. 3290

PRICES

Nos.	Capacity.	Length Spout, Inches.	Tin, per Doz.	Brass, per Doz.	Nickel, per Doz.
25	½ pint	4½	$8 00	$12 00	$14 50
27	1 "	6	9 00	13 50	17 00
29	1 quart	7	12 00	18 00	22 50
31	2 "	8	18 00	25 00	30 00

ENGLISH PATTERN

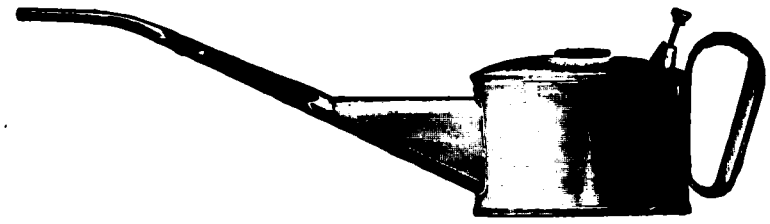


FIG. 3291

PRICES

With Valve.	Per Doz.	No Valve.	Per Doz.
1 pint, brass	$36 00	1 pint, brass	$24 00
2 " "	48 00	2 " "	36 00
1 " tin	24 00	1 " tin	12 00
2 " "	33 00	2 " "	21 00

KAYE'S PATENT SEAMLESS OILER

In this oiler, the bottom and sides are made of one piece of sheet steel, and, being without joint, leakage becomes almost an impossibility. The oil is made to flow by pressing the valve at the handle, and this can be regulated by the tongue at the base of the spout so that the stream may be reduced or increased at will. The spouts are detachable, seamless, can be bent without breaking, and in case of injury a new one can be readily inserted.

The oiler is adapted for all purposes where clean work is essential.

PRICES

Sizes.	Spouts.	With Fixed Spout, per Dozen.	With Interchangeable Spout, per Dozen.
⅓ pint	Spouts 5¼ in. to 14 in. long.	$6 50	$7 90
½ "		7 20	8 60
¾ "		8 60	10 00
1 "		11 00	12 25
1½ "		18 00	14 50

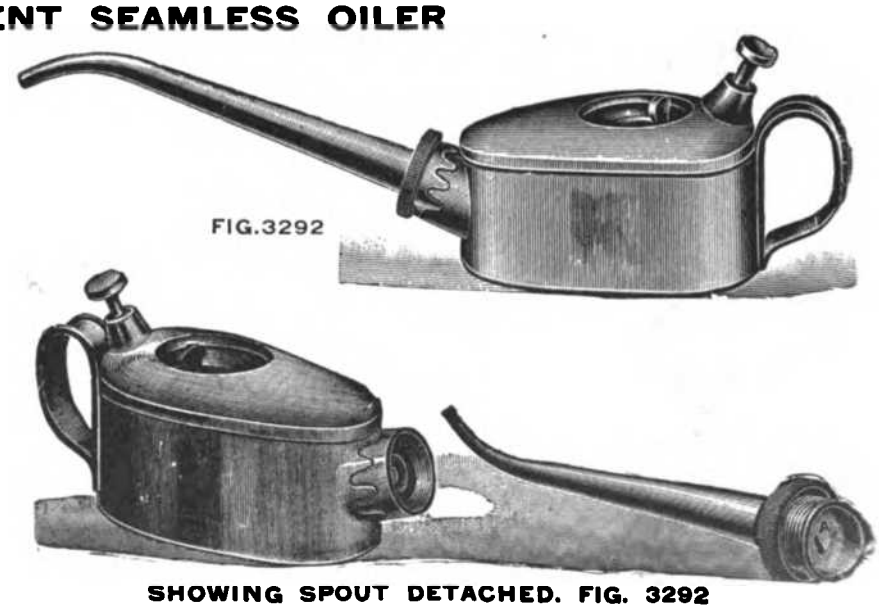


FIG. 3292

SHOWING SPOUT DETACHED. FIG. 3292

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MAMMOTH OILER

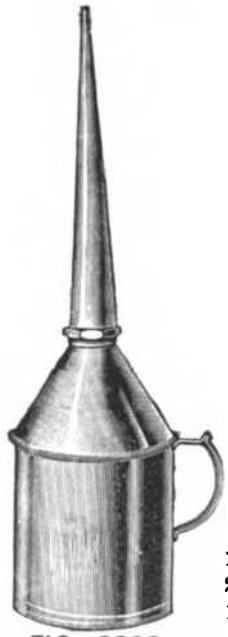


FIG. 3293

The orifice for filling this oiler is 1¼ inches in diameter. The nozzle of the spout ¼ inch in diameter, except the one quart size, which has smaller proportionate openings. The can is quickly filled with the very heaviest oils, and the large opening in the spout readily discharges them. Made of heavy sheet steel brazed with hard spelter; can not be broken, bruised or melted.

PRICES

	Per Doz.
1 quart	$18 00
2 "	27 00
1 gallon	33 00
Extra spouts	6 00

MARANVILLE FACTORY OILER



FIG. 3294

This oiler is especially used where it is necessary to use the oiler upside down or at a great angle. It is very quick acting, as the oil is held in the spout by a valve, and no time is required for it to flow from the can. The valve is adjustable and can be replaced by removing spout. No dribbling or spilling of oil; nothing about oiler that can get out of repair. Admitting of the instantaneous application of the quantity of oil wanted just when and where it is desired.

PRICES, FIG. 3294

No. 113, 1½ pint, per dozen, tin, $15.00; tin, copper or nickel plated, $18.00; brass or copper, $19.00; brass or copper, nickel plated, $22.00.

OILERS FOR ELECTRIC PLANTS, ETC.

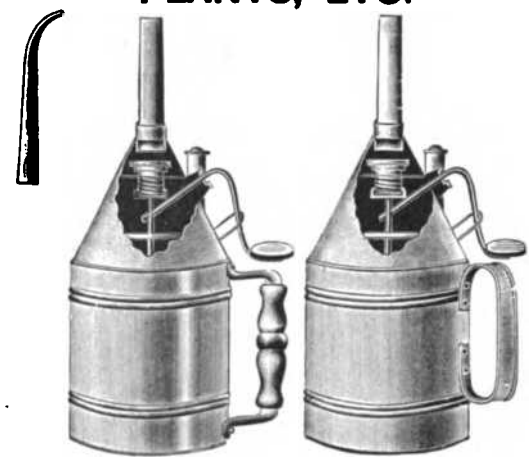


FIG. 3295 FIG. 3296

Oilers No. 32 and No. 33 have stop valve. The valve is always open, and allows the operator to fill large oil cups at any angle. To cut off the flow press down on thumb piece on top of handle. Strongly and substantially made.

Oilers No. 34 and No. 35 have stop valve, but are made and operated the reverse of oilers No. 32 and No. 33, as the valve is always closed and keeps the spout full. The flow of oil is started by the pressing down on thumb piece. Made with any length of spout.

PRICES, FIG. 3295

Nos.		Diameters, Inches.	Tin, Each.	Brass or Copper, Each.	Brass or Copper Nickel Plated, Each.
32	3 pints	4	$15 00	$21 00	$25 00
33	2 quarts	5	20 00	25 00	30 00

PRICES, FIG. 3296

Nos.		Diameters, Inches.	Tin, Each.	Brass or Copper, Each.	Brass or Copper, Nickel Plated, Each.
34	1 pint	3	$12 00	$18 00	$22 00
35	1 quart	4	15 00	20 00	25 00

MACHINE OR MILL OILERS

PRICES, FIG. 3297

Nos.	Pints.	Height, Inches.	Per Gross, Each.
1	¼	3½	$33 00
2	½	4½	36 00
3	1	5½	39 00

No. 1 tubes always sent with oilers unless otherwise ordered.

THOMPSON



FIG. 3297

PRICES, TUBES FOR THOMPSON OILERS

Nos. 16, 17, 18, 19, 20, 21 or 22 wire gauge bore.
Nos. 18 and 19 are the regular sizes.

Nos.	Height, Inches.	Per Gross, Each.
1	3½	$12 00
2	6	16 00
3	8	24 00
4	10	30 00
5	12	40 00
6	16	48 00

DESCRIPTION, FIG. 3298

Has a seamless drawn steel body and is practically indestructible. The nozzle is a solid steel tube, the same as used on the Thompson oilers.

PRICES

Nos.	Height, Inches.	Diameters, Inches.	Nozzle, Inches.	Per Gross, Each.
1	4½	2½	3½	$48 00
2	5	2⅝	5	52 00

SIPHON



FIG. 3298

COPPER PLATED STEEL OILER

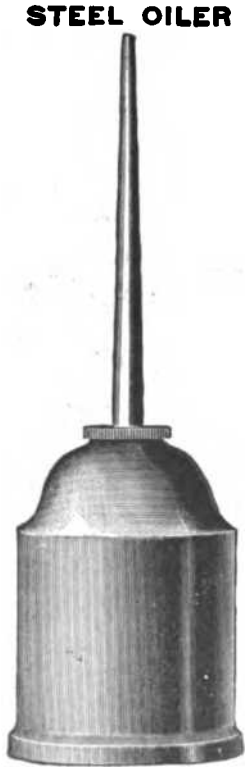


FIG. 3302

MACHINE OILER

DESCRIPTION, FIG. 3302

This oiler has clock spring steel bottom, is made from one piece of steel and is copper plated inside and out.

PRICE

5 inches high, 2¾ inches diameter, 5 inch nozzle, per gross.... .....$60 00

TIN



FIG. 3304

TIN OILERS



FIG. 3299 FIG. 3300 FIG. 3301

	Per Doz.
Fig. 3299, 1 pint, 3 in. diameter, 4 in. high	$3 75
" 3300, 1½ " 4 " " 4 " "	4 25
" 3301, 1 quart, 4 " " 6 " "	4 50

MACHINE OILERS

DESCRIPTION FIG. 3304

Oval, with straight or bent spouts.

PRICE

1 pint oval, spring bottom, per gross...$22 00

DESCRIPTION FIG. 3305

Round, with straight or bent spouts.

PRICE

1 pint round, spring bottom, stock No. 210, per gross.....$21 00

TIN



FIG. 3305

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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CHASE'S MACHINE OILERS

EXTRA SPOUTS FOR CHASE'S OILERS

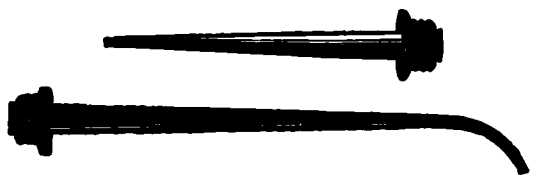


FIG. 3306

EXTRA SPOUTS

ZINC				BRASS AND COPPER			
PRICES							
Nos.	Per Gross.	Nos.	Per Gross.	Nos.	Per Gross.	Nos.	Per Gross.
00	$3 50	3	$4 75	0	$4 00	3	$6 25
0	3 50	4	5 00	1	4 50	4	7 25
1	4 00	5	5 50	1½	4 75	5	8 25
1½	4 25	6	6 00	2	5 50	6	9 25
2	4 50						

Inches.	Straight.	Bent.	Inches.	Straight.	Bent.
7	$6 50	$7 00	7	$10 25	$10 75
8	7 75	8 25	8	11 25	11 75
9	8 25	8 75	9	12 75	13 25
10	9 00	9 50	10	14 50	15 00

ZINC OILERS, WITH TIN BOTTOMS

PRICES, FIG. 3307

Nos.	Stock Nos.	Per Dozen.	Nos.	Stock Nos.	Per Dozen.
00	100	$1 00	3	105	$2 25
0	101	1 25	4	106	2 75
1	102	1 50	5	107	3 50
1½	103	1 75	6	108	4 50
2	104	2 00			

ZINC OILERS, WITH BRASS BOTTOMS

PRICES

Nos.	Stock Nos.	Per Dozen.	Nos.	Stock Nos.	Per Dozen.
00	110	$1 25	3	115	$3 00
0	111	1 50	4	116	3 50
1	112	1 75	5	117	4 50
1½	113	2 00	6	118	5 50
2	114	2 50			

BRASS OILERS

PRICES

Nos.	Stock Nos.	Per Dozen.	Nos.	Stock Nos.	Per Dozen.
0	120	$2 25	3	124	$4 00
1	121	2 50	4	125	4 75
1½	122	3 00	5	126	6 00
2	123	3 50	6	127	7 50

COPPER OILERS

PRICES

Nos.	Stock Nos.	Per Dozen.	Nos.	Stock Nos.	Per Dozen.
0	130	$2 50	3	134	$4 25
1	131	2 75	4	135	5 00
1½	132	3 25	5	136	6 25
2	133	3 75	6	137	8 00



FIG. 3307

PARAGON OILERS

SPOUTS FOR PARAGON OILERS

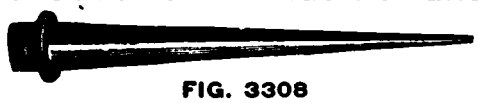


FIG. 3308

PRICES, TIN SPOUTS FOR FIG. 3309

Nos.	Per Gross.	Nos.	Per Gross.
0	$3 75	3	$4 75
1	4 00	4	5 00
1½	4 25	5	5 50
2	4 50	6	6 00

Inches	Straight.	Bent.
7	$6 75	$7 00
8	7 25	7 50
9	7 75	8 25
10	8 75	9 25

BRASS SPOUTS, FOR BRASS AND COPPER PARAGON OILERS

FIG. 3309

Nos.	Per Gross.	Nos.	Per Gross.
0	$4 00	3	$6 25
1	4 50	4	7 00
1½	4 75	5	7 75
2	5 50	6	8 25

Inches.	Straight.	Bent.
7	$9 00	$9 25
8	10 00	10 25
9	11 00	11 50
10	12 50	13 00

PRICES, FIG. 3309

ZINC OILERS, WITH TIN BOTTOMS

Nos.	Stock Nos.	Per Dozen.
0	140	$2 00
1	141	2 25
1½	142	2 50
2	143	3 00
3	144	3 25
4	145	3 75
5	146	4 50
6	147	5 50

ZINC OILERS, WITH BRASS BOTTOMS

Nos.	Stock Nos.	Per Dozen.
0	150	$2 25
1	151	2 50
1½	152	3 00
2	153	3 50
3	154	4 00
4	155	4 50
5	156	5 50
6	157	6 50

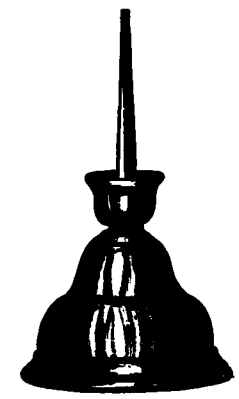


FIG. 3309

BRASS OILERS

PRICES

Nos.	Stock Nos.	Per Dozen.	Nos.	Stock Nos	Per Dozen
0	160	$3 00	3	164	$5 25
1	161	3 50	4	165	6 00
1½	162	4 00	5	166	7 00
2	168	4 50	6	167	8 50

COPPER OILERS

PRICES

Nos.	Stock Nos.	Per Dozen.	Nos.	Stock Nos.	Per Dozen.
0	170	$3 25	3	174	$5 50
1	171	3 75	4	175	6 25
1½	172	4 25	5	176	7 25
2	173	4 75	6	177	8 75

TIN OILERS

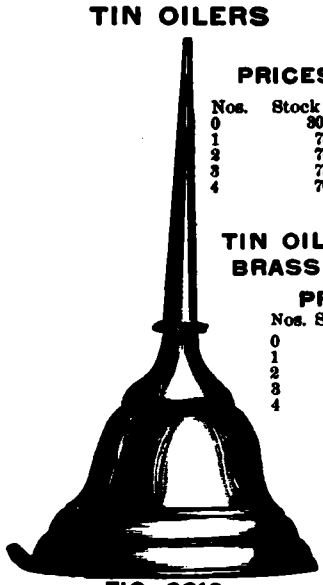


FIG. 3310

PRICES FIG. 3310

Nos.	Stock Nos.	Per Dozen
0	306	$1 25
1	73	1 50
2	74	2 00
3	75	2 25
4	76	2 75

TIN OILERS, WITH BRASS BOTTOMS

PRICES

Nos.	Stock Nos.	Per Doz.
0	306	$1 50
1	77	1 75
2	78	2 50
3	79	3 00
4	80	3 50

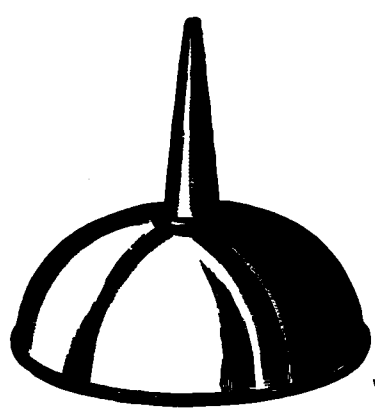


FIG. 3311

MOWING MACHINE OILERS

PRICES, FIG. 3312

ROUND ZINC

Stock No. 208.....Per gross, $21 00

PRICES, FIG. 3311

In	Diam. Inches.	Stock Nos.	Per Gross.
Boxes,	3¾	206	$20 00
Bulk,	3¾	206	18 00
Boxes,	3	207	19 50
Bulk,	3	207	17 50

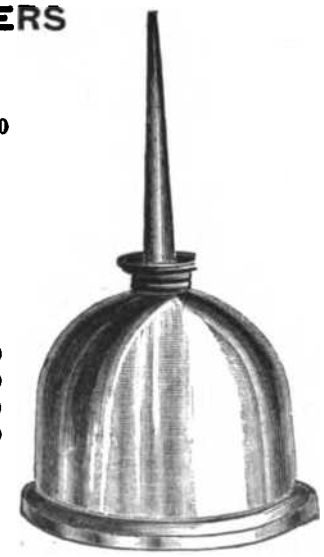


FIG. 3312

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EXTRA HEAVY OILER

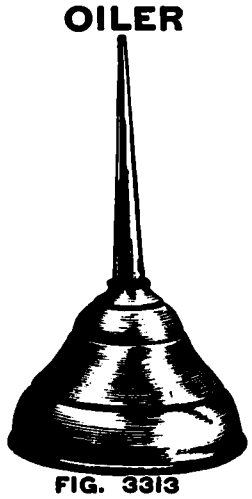


FIG. 3313

ZINC TOP BRASS BOTTOM

Nos.	Per Dozen.
1	$2 50
2	3 50
3	4 50
4	6 00
5	7 50

ALL BRASS

Nos.	Per Dozen.
1	$3 50
2	4 50
3	5 50
4	7 00
5	8 50

PARAGON OILER



FIG. 3314

ZINC TOP, SPUN TIN BOTTOM Nos.	Per Dozen.	ALL BRASS Nos.	Per Dozen.
0	$2 00	0	$3 00
1	2 25	1	3 50
2	3 00	2	4 50
3	3 25	3	5 25
4	3 75	4	6 00
5	4 50	5	7 00
6 Long bent spouts	5 50	6 L. B. S.	8 50
1 Nickel plated			4 50
2			5 25
3			6 35
4			7 50

AUTOMATIC OILER

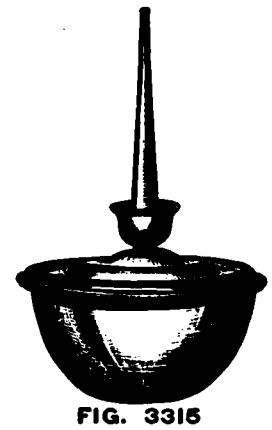


FIG. 3315

ZINC

Nos.	Stock Nos.	Per Dozen.
0	350	$3 00
1	351	3 50
2	352	4 00
3	353	4 50

BRASS

0	354	5 00
1	355	5 50
2	356	6 50
3	357	7 50

COPPER

0	358	5 25
1	359	5 75
2	360	6 75
3	361	7 75

STEEL TIP OILER

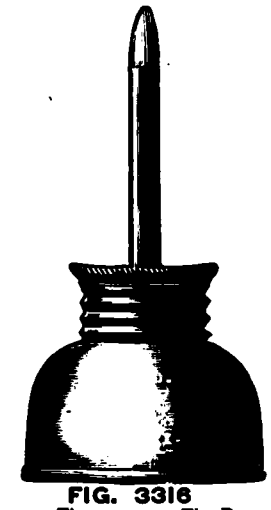


FIG. 3316

Nos.	Tin, per Doz.	Tin, Brass Bottom, per Doz.	Brass, per Doz.	Tin, Brass Bottom, Steel Tip, per Doz.	Copper Plated, per Doz.
1	$1 50	1 75	2 75	2 25	2 20
2	1 60	2 00	3 75	2 75	2 50
2½	2 00	2 50	4 40	3 10	3 00
3	2 50	3 00	5 00	3 50	3 60

PRICES OF EXTRA SPOUTS

Tin, per Doz.		Brass, per Doz.		Steel Tip. per Doz.	Copper Plated, per Doz.
4¼	$0 40	4¼	$0 60	....	$0 50
5½	45	5½	75	....	60
9	60	9	1 00	....	80
12	80	12	1 50	$1 00	1 20

LITHO OILER

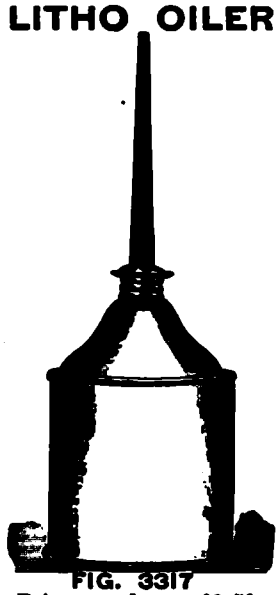


FIG. 3317
Price, per dozen. $2 50

COPPERIZED STEEL OILER

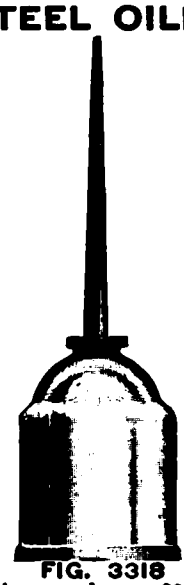


FIG. 3318
Price, per dozen. $6 00

MACHINE OILER

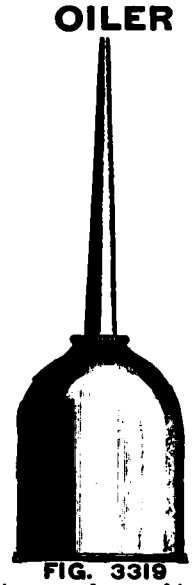


FIG. 3319
Price, per dozen. $4 00

STEEL AND BRASS OILER

DOUBLE SEAMED BOTTOMS

PRICES, FIG. 3320

STEEL

Nos.	Diameters, Inches.	Spout, Inches.	Per Gross.
00	2 1/16	1½	$12 00
0	2 3/16	1½	15 00
1	2 5/8	3	18 00
1½	2 7/8	3	21 00
2	3 3/16	4	24 00
3	3 3/4	4	27 00
4	4 1/8	5	33 00
5	4½	5	42 00
6	4¾	5	54 00

BRASS

Nos.	Diameters, Inches.	Spout, Inches.	Per Gross.
00	2 1/16	1½	$15 00
0	2 3/16	1½	18 00
1	2 5/8	3	21 00
1½	2 7/8	3	24 00
2	3 3/16	4	30 00
3	3 3/4	4	36 00
4	4 1/8	5	42 00
5	4½	5	54 00
6	4¾	5	66 00

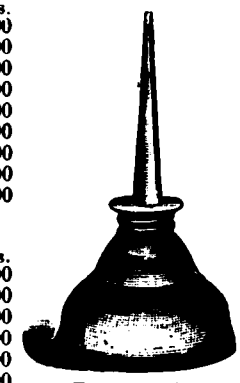


FIG. 3320

GEM OILER



FIG. 3321

DESCRIPTION, FIG. 3321

It has a cleaning device that will keep the spout free from all obstructions. It will always work. It is an oil saver and time saver, because it has the cleaning device. It is made of the highest quality of cold rolled low phosphorous steel. It is machine made in such a manner as to develop the highest measure of strength. It is spelter brazed and interchangeable in all parts.

PRICES, FIG. 3321

STEEL Pints.	Spout, Inches.	Per Dozen.	BRASS Pints.	Spout, Inches.	Per Dozen.
½	4	$6 00	½	4	$9 00
½	6	6 50	½	6	9 50
½	9	7 00	½	9	10 00
1	4	8 00	1	4	11 00
1	6	8 50	1	6	11 50
1	9	9 00	1	9	12 50

STEEL MACHINE OILERS

DOME



FIG. 3322

PRICES Per Gross.

Steel bottom $5 25
Brass " 6 50

ROUND

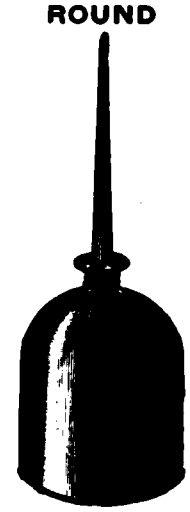


FIG. 3323

PRICES Per Gross.

Steel bottom $4 00
Brass " 5 25

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STEEL SPRING BOTTOM OILER

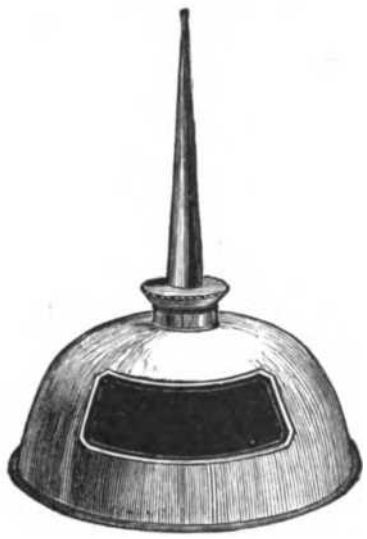


FIG. 3324

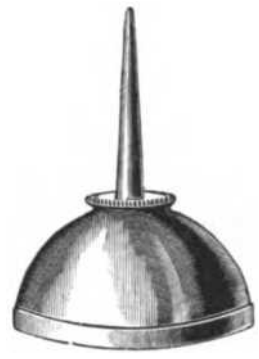
DESCRIPTION, FIG. 3324

The body of this oiler is made of the best No. 20 steel, and is stamped and spun from one piece.

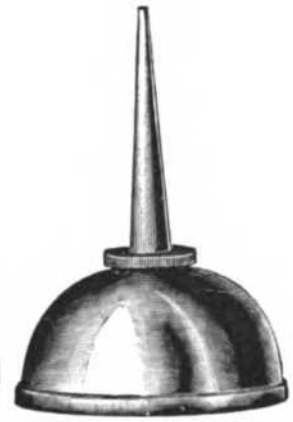
The bottom is made of specially prepared spring steel, and is brazed into the body with spelter, and will stand a heat of 1,700 degrees without melting. It will stand almost any abuse.

Half pints, per dozen,	$8 00
One " "	10 00

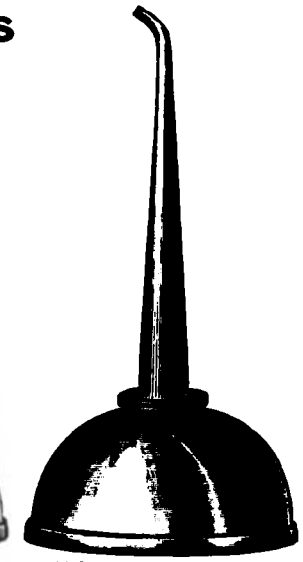
COPPERIZED AND NICKEL PLATED STEEL OILERS



NOS. 12 AND 120
FIG. 3325



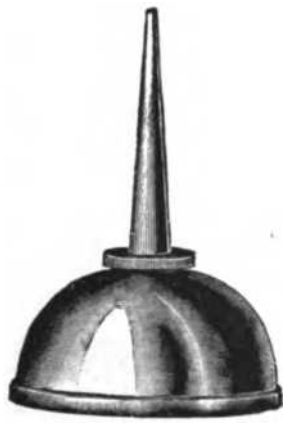
NOS. 13 AND 130
FIG. 3326



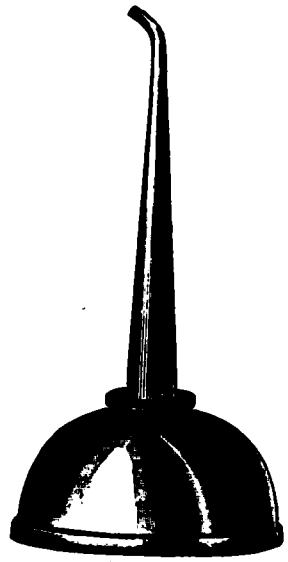
NOS. 14 AND 140
FIG. 3327

BLACK ENAMELED STEEL OILERS

WITH IMPROVED PLAIN STEEL SPRING BOTTOMS



NO. 3
FIG. 3328



NO. 4
FIG. 3329

PRICES, FIGS. 3328 AND 3329

Nos.	Capacity.	Diameters.	Nozzles.	Per Doz.
3	½ pint	3⅜ inches	3 inches	$5 00
4	⅓ "	3⅜ "	9 "	6 00

These oilers are made from a lighter grade of steel than "copperized" oilers and finished in black enamel.

PRICES, FIGS. 3325 TO 3327

COPPERIZED

The outside perfectly resembles burnished copper.

Nos.	Capacity, Pint.	Diameters, Inches.	Nozzles, Inches.	Per Doz.
12	¼	2¾	2½	$4 50
13	⅓	3⅜	3	5 50
13A	⅓	3⅜	5	6 00
14	⅓	3⅜	9	6 50
14A	½	3¾	3	7 50
14AA	½	3¾	5	8 00
14B	½	3¾	9	8 50
15	1	4⅛	3	9 25
15A	1	4⅛	5	9 75
16	1	4⅛	9	10 50

NICKEL PLATED

These oilers are heavily nickel plated on electro copper plate and highly polished.

Nos.	Capacity, Pint.	Diameters, Inches.	Nozzles, Inches.	Per Doz.
120	¼	2¾	2½	$6 50
130	⅓	3⅜	3	8 00
130A	⅓	3⅜	5	8 75
140	⅓	3⅜	9	9 20
140A	½	3¾	3	10 00
140AA	½	3¾	5	10 75
140B	½	3¾	9	11 25
150	1	4⅛	3	12 00
150A	1	4⅛	5	13 00
160	1	4⅛	9	14 00

All nozzles from 3 to 18 inches are interchangeable, and will fit any size oiler.

Smooth surface cold rolled, No. 20 gauge steel is used in the manufacture of all these oilers; they are heavily electro copper plated inside to prevent rusting and the oil from becoming gritty.

BRASS

Nos.	Capacity.	Diameters, Inches.	Nozzles, Inches.	Per Doz.
120	3 ounces	2¾	2½	$6 50
130	5 "	3⅜	3	8 00
140	5 "	3⅜	9	9 20
140A	½ pint	3¾	3	10 20
140B	½ "	3¾	9	11 20
150	1 "	4¼	3	12 00
160	1 "	4¼	9	14 00

COPPERIZED AND NICKEL PLATED STEEL AND BRASS NOZZLES

PRICES, FIG. 3330

COPPERIZED

2½ inch nozzles	per dozen,	$2 25		
3 " "	" "	2 75		
5 " "	" "	3 25		
9 " "	" "	4 25		
12 " "	" "	5 75		
18 " "	" "	7 00		

NICKEL PLATED

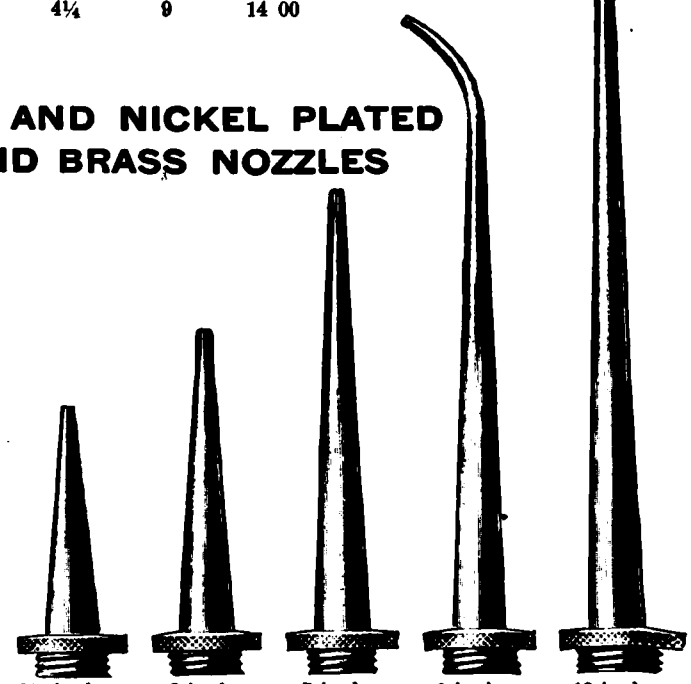
2½ inch nozzles	per dozen,	$3 00		
3 " "	" "	3 50		
5 " "	" "	4 25		
9 " "	" "	5 00		
12 " "	" "	6 25		
18 " "	" "	7 50		

All above nozzles heavily electro copper plated inside to prevent rusting and the oil from becoming gritty. At a trifling extra expense copper nozzles of same lengths are furnished instead of steel for use on electric dynamos.

BRASS

2½ inch nozzle	per dozen,	$3 00		
3 " "	" "	3 50		
5 " "	" "	4 25		
9 inch nozzle	per dozen,	$5 00		
12 " "	" "	6 25		
18 " "	" "	7 50		

Nozzles 3 inches to 18 inches are interchangeable and fit any size oilers. We furnish straight nozzles 9 to 18 inches, same list as bent.



2½ inches. 3 inches. 5 inches. 9 inches. 12 inches.

FIG. 3330

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EVERLASTING BRAZED STEEL BENCH OILERS

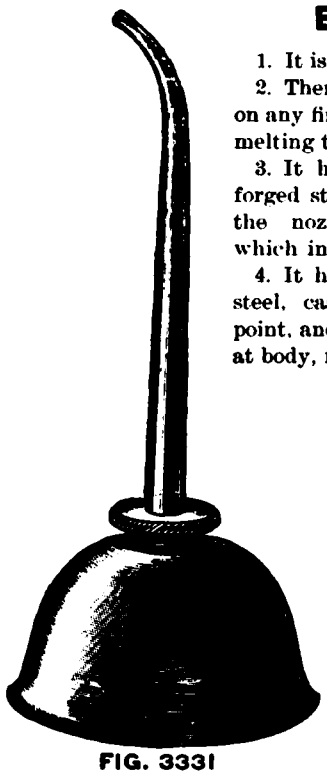


FIG. 3331

1. It is brazed or soldered with hard solder.
2. There is no soft solder to melt; it can be placed on any fire to heat the oil in cold weather, without melting the bottom out.
3. It has a steel spring bottom, brazed to drop forged steel body. It will not corrode or choke up the nozzle with verdigris, which injures the oil.
4. It has a nozzle made of steel, case hardened at the point, and has a large opening at body, making it easy to fill.

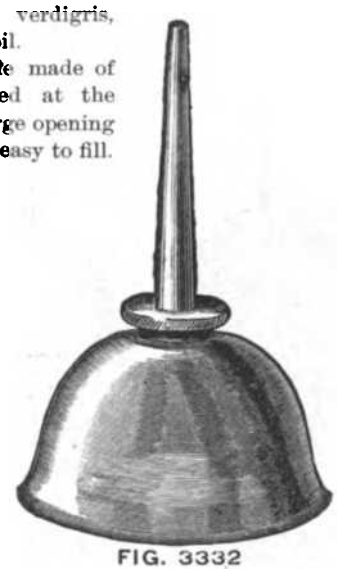


FIG. 3332

PRICES, FIGS. 3331 AND 3332

Nos.	Diameters, Inches.	Nozzles, Inches	Per Doz.
100	2¾	2½	$4 00
104	2¾	4	4 50
204	3⅜	4	5 00
206	3⅜	6	5 50
209	3⅜	9	6 00
304	3¾	4	6 00
306	3¾	6	6 50
309	3¾	9	7 00
404	4⅛	4	7 00
406	4⅛	6	7 50
409	4⅛	9	8 00
504	4⅝	4	8 00
506	4⅝	6	8 50
509	4⅝	9	9 00
512	4⅝	12	9 00

Spout and body polished. Extra heavy steel nozzle. Solid cut brass bushings. Nozzles, 6 inches and upwards, furnished bent unless otherwise ordered. All lengths are interchangeable. We also furnish this oiler in nickel finish and in brass. Prices on application.

PRICES, EXTRA NOZZLES, FOR FIGS. 3331 AND 3332

		Per Doz.
2½ inch nozzle		$1 50
4 " "	These sizes are interchangeable	2 00
6 " "		2 50
9 " "		3 00
12 " "		3 50

Six inch and upwards furnished bent, unless otherwise ordered.

MALLEABLE IRON OILERS

IMPROVED

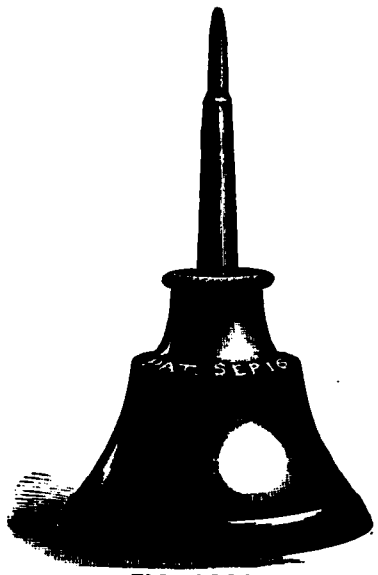


FIG. 3333

PRICES, FIG. 3333

Numbers	11	12	13
Per dozen	$3 60	$4 00	$4 40

Section showing the patent improved bottom.

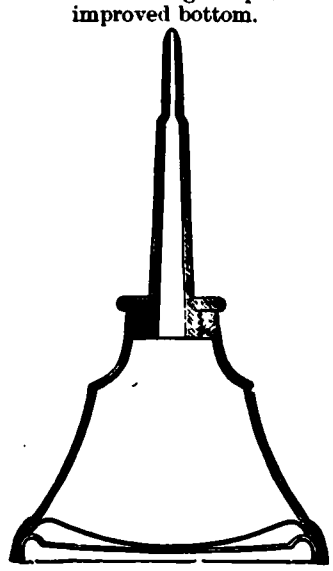


FIG. 3333

NO. 1

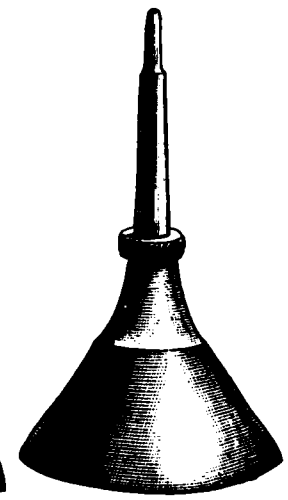


FIG. 3334

NOS. 2 AND 3



FIG. 3335

NO. 4, EXTRA LARGE

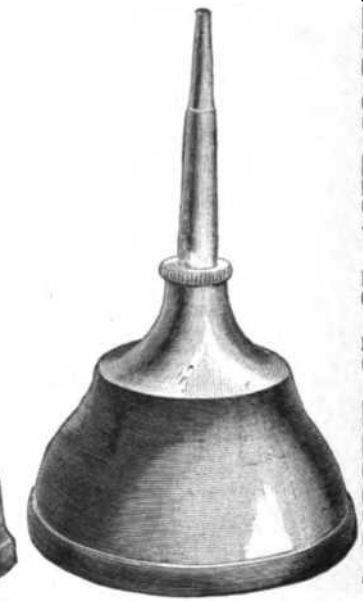


FIG. 3336

PRICES, FIGS. 3334 TO 3336

Numbers	1	2	3	4
Capacity, ounces	2⅝	3¾	5½	8
Per dozen	$3 60	$4 00	$4 40	$5 20

Extra tubes, $1.80 per dozen.

O. K., NO. 10



FIG. 3337

O. K., NOS. 20 AND 30

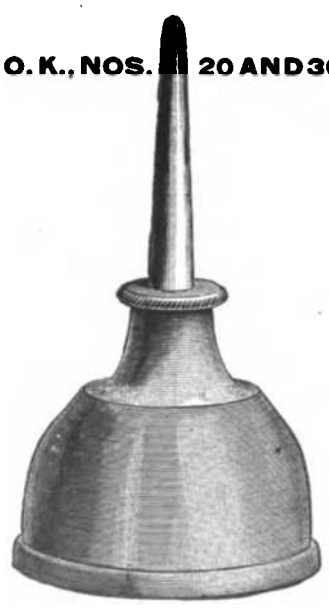


FIG. 3338

Figs. 3337 to 3339, and Figs. 3343 and 3344 oilers all have wide mouth and automatic spring bottoms.

PRICES, FIGS. 3337 AND 3338

Capacity No. 10, 4½ ounces. No. 20, 5¼ ounces. No. 30, 7½ ounces.

No. 10	$5 40 per dozen
" 20	6 00 " "
" 30	6 60 " "
Extra tubes	1 80 " "

PRICES, FIG. 3339

Capacity No. 22, 5 ounces. No. 44, very large, 12 ounces.

No. 22	$5 60 per dozen
" 44	9 50 " "

DOME, NOS. 22 AND 44



FIG. 3339

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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MALLEABLE IRON OILERS

WITH LONG TUBE, WIDE MOUTH AND AUTOMATIC SPRING BOTTOM

O. K.



FIG. 3342

DOME

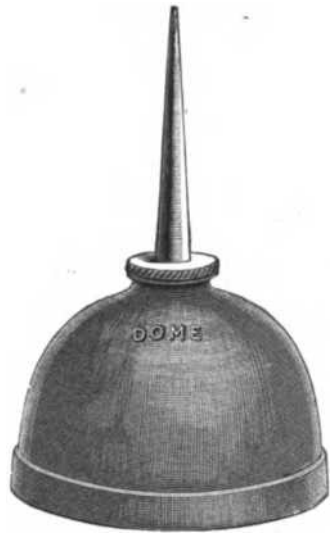


FIG. 3343

PRICES, FIG. 3342

Nos.	Tubes, Inches.	Capacity, Ounces.	Straight, per Doz.	Bent, per Doz.
10	9	4½	$7 00	$7 25
20	9	5¼	7 50	7 75
30	9	7½	8 00	8 25
Extra 9 inch tubes			8 40	8 75

PRICES, FIG. 3343

Nos.	Tubes, Inches.	Capacity, Ounces.	Straight, per Doz.	Bent, per Doz.
22	9	5	$7 25	$7 50
44	9	12	11 00	11 25

ENGINEER'S HAND OILER

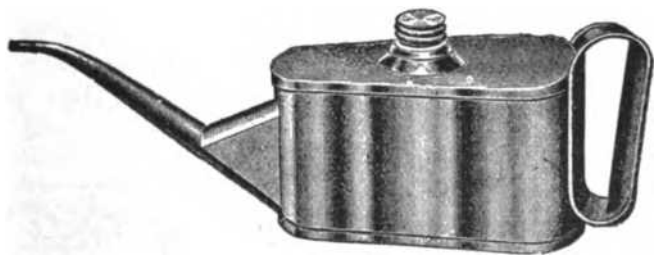


FIG. 3344

Nos.		Tin, per Doz.	Brass, per Doz.	Nickel, per Doz.
250	½ pint	$5 00	$9 00	$12 00
270	1 "	6 00	10 50	13 50
290	1 quart	9 00	15 00	18 00
310	2 "	15 00	21 00	24 00

ENGINEER'S OIL FILLER

BRASS, ZINC AND TIN



FIG. 3345

PRICES

	Per Dozen.		Per Dozen
1 pint, brass	$12 00	1 pint, zinc	$7 00
1½ " "	14 00	1½ " "	8 50
2 " "	16 00	1 quart "	10 00
3 " "	20 00	1 " tin	3 50
4 " "	24 00	2 " "	5 00

PIT CAR OILER

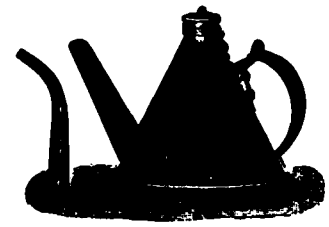


FIG. 3340

Made with detachable slip spouts of best quality heavy sheet steel, brazed with hard spelter; can not be broken, bruised or melted without intentional carelessness.

PRICES

	Per Dozen.
1 pint	$ 8 00
1 quart	10 00
2 "	12 00
4 "	18 00

Other sizes to order.

Extra spouts	3 00

BICYCLE OR POCKET OILER



FIG. 3341

Per dozen....$2 00

TIN, BRASS AND COPPER OIL FILLER

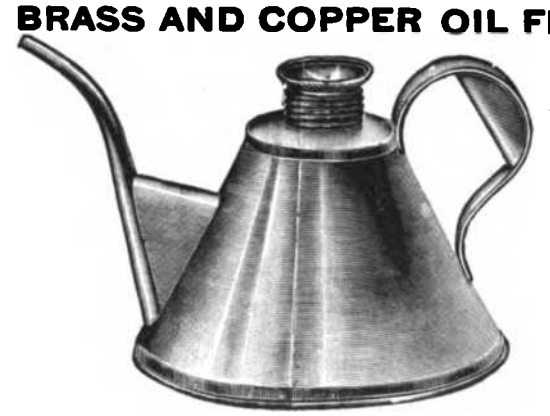


FIG. 3346

	Tin, per Dozen.		Brass, per Dozen.	Copper Plated, per Dozen.
1 quart	$6 00	1 quart	$16 00	$8 00
2 "	9 60	2 "	24 00	12 00

ENGINEER'S BRASS AND COPPER OIL FILLER



FIG. 3347

PRICES

		Brass, per Dozen.
Pint,	stock No. 233	$12 00
1½ pint,	" 234	18 00
Quart,	" 235	21 00
Pint,	with long spout	15 00
Quart,	" "	24 00
		Copper, per Dozen.
Pint,	stock No. 230	$12 00
1½ pint,	" 231	18 00
Quart,	" 232	21 00
Pint,	with long spout	15 00
Quart,	" "	24 00

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ENGINEER'S STEEL OIL FILLER

COPPER PLATED, NICKEL PLATED AND BRASS



FIG. 3350

Nos.	Capacity.	Diams., Inches.	Height, Inches.		Per Dozen.
19	1 pint, copper plated,	4⅛	3½	screw top,	$14 00
19A	1½ " "	4¾	4	"	17 00
210	1 quart, "	5	5	"	20 00
211	2 " "	6	6	"	24 00
190	1½ pt., nickel plated,	4¾	4	"	22 00
200	1 quart, "	5	5	"	30 00
201	2 " "	6	6	"	34 00

These oilers are heavily copper plated inside to prevent rusting and the oil from becoming gritty.

No. 190 1½ pint, brass, 4¾ inches diameter, 4 inches high, screw top; per dozen.....$22 00
" 200 1 quart, " 5 " " 5 " " " " 30 00
" 201 2 " " 6 " " 6 " " " " 34 00

TIN AND BRASS TALLOW CAN

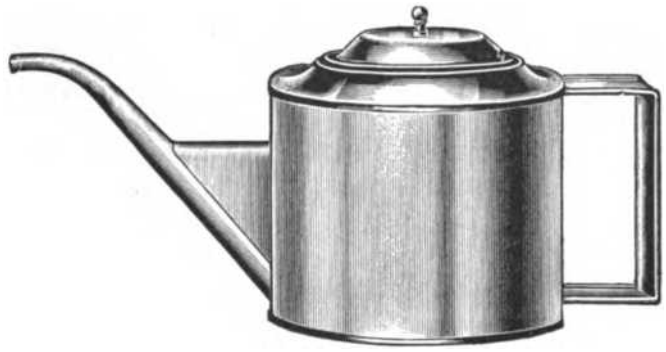


FIG. 3352

PRICES

1 quart, tin; per dozen.....	$9 00	1 quart, brass; per dozen.....	$18 00
2 " " "	12 00	2 " " "	24 00
3 " " "	18 00	3 " " "	30 00
4 " " " with bail.....	24 00	4 " " " with bail.....	42 00

EVERLASTING BRAZED STEEL ENGINEER'S OIL FILLER



FIG. 3351

Heavy steel, all seams brazed.

PRICES

Nos.	Diameters, Inches.	Height, Inches.	Per Dozen.
515	4½	3½	$12 00
520	6½	6½	18 00

We also furnish this filler in nickel finish and in brass. Prices on application.

TALLOW POT AND OIL FILLER



FIG. 3353

Made of heavy sheet steel, brazed with hard spelter. Tallow can be melted over the hottest fire without danger of injuring the pot.

PRICES

1 quart, per dozen.....	$11 00
3 pints, "	12 00
2 quarts, "	13 00
3 " "	15 00
4 " "	16 00

Other sizes to order.
With strainers, 75 cts. per doz. additional.

HEAVY TIN TALLOW POT



FIG. 3354

Having screen on the inside.

PRICE

No. 41. 4 x 7 in., 4½ in. high; per dozen, $10 00

STEEL TALLOW POT



FIG. 3356

Quarts, per dozen.....	$13 00
Three pints, per dozen	13 50
Half gallon "	16 00

These pots are made of very heavy stock and handsomely finished. They are heavily copper plated inside to prevent rusting.

No. 212. 1 quart, copper plated, 5 inches diameter, 5 inches high; per dozen.....$21 00
No. 213. 2 quart, copper plated, 6 inches diameter, 6 inches high; per dozen..... 25 00
No. 214. 1 quart, nickel plated, 5 inches diameter, 5 inches high; per dozen..... .... 32 00
No. 215. 2 quart, nickel plated, 6 inches diameter, 6 inches high; per dozen..... 36 00

EVERLASTING BRAZED STEEL TALLOW POT



FIG. 3357

Heavy steel, all brazed. A red heat will not cause a leak.

PRICES

No. 40	½ gallon.....	$15 00
" 41	1 "	18 00

STEEL TALLOW POT



FIG. 3355

BRASS GREASE CUP



FIG. 3358

PRICES

½ pint, per dozen.....	$9 00
1 " "	12 00
2 " "	18 00

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ENGINEERS' OILER SETS

ENGINE TRAY SETS, BRASS TIN AND COPPER PLATED

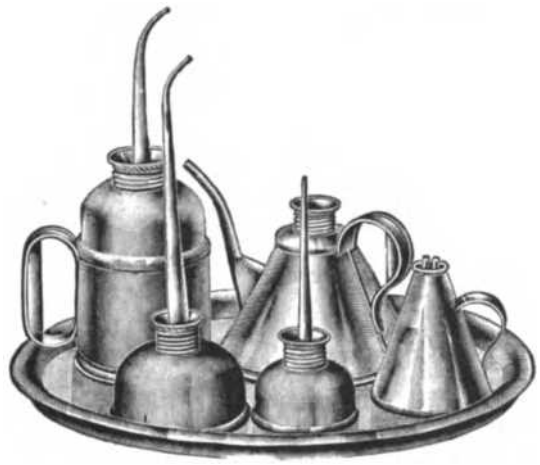


FIG. 3360

3 pieces and tray, brass	Per set,	$6 00
5 " " " "	"	9 00
5 " " " tin	"	3 00
5 " " " copper plated	"	6 00
3 " " " "	"	4 50

STEAMBOAT SETS, OVAL PATTERN. RECESSED DRAINER



FIG. 3362

Has recessed drainer to hold cans in place when boat is in motion.

No. 2—Brass, size 16x11½ inches inside, 6 pieces and tray..Per set, $12 00
Nickel plating, extra 1 50

OVAL FLAT TRAY. NO DRAINER



FIG. 3364

No. 9—Brass, size 9x11½ inches inside, 1 filler, 3 cans, and tray... Per set, $6 00
Nickel plating, extra..... 1 50
No. 11—11x13½ inches inside, 1 filler, 4 cans, and tray..... 7 00
Nickel plating, extra..... 2 00

ENGINEERS' PERFECTION SETS

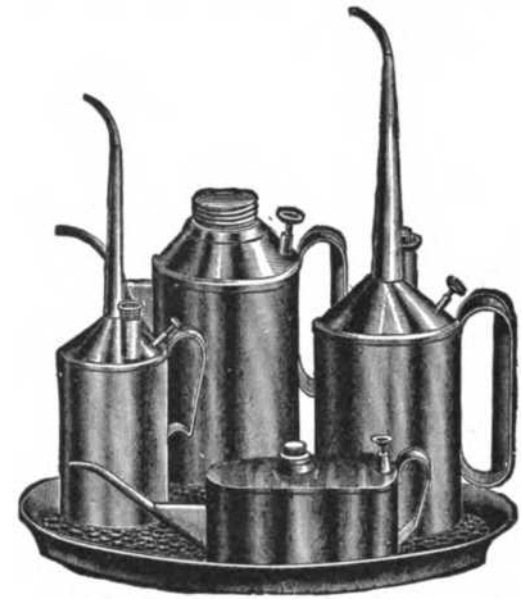


FIG. 3361

No. 501—4 pieces, tray brass	Per set,	$5 00
" 502—5 " " "	"	6 50
" 503—6 " " "	"	8 00
" 504—4 " " nickle	"	7 00
" 505—5 " " "	"	9 00
" 506—6 " " "	"	11 00

OBLONG PATTERN WITH PERFORATED DRAINER



FIG. 3363

No. 4—Brass, size 16½x11½ inches inside, 6 pieces and tray.... Per set, $11 00
Nickel plating, extra..... 1 50

SQUARE PATTERN WITH PERFORATED DRAINER

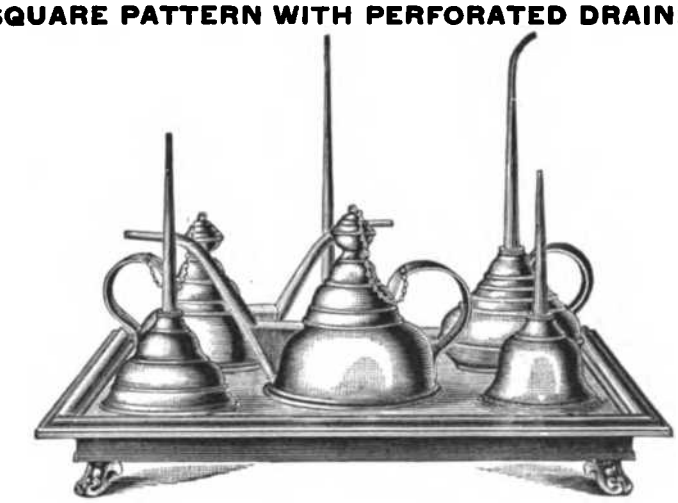


FIG. 3365

No 5—Brass, size 14x9 inches inside, 5 pieces and tray...Per set, $14 00
Nickel plating, extra..... 1 50
No. 6— " " 16½x11 inches inside, 6 pieces and tray, Per set 16 00
Nickel plating, extra 2 00

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ENGINEERS' OILER SETS



FIG. 3366

Nos.										Per Set.
10	13	inch	round	tray,	1	filler,	3	cans	and tray, brass	$6 00
10	13	"	"	"	1	"	3	"	" nickel plated	9 00
12	15	"	"	"	1	"	4	"	" brass	8 00
12	15	"	"	"	1	"	4	"	" nickel plated	11 00

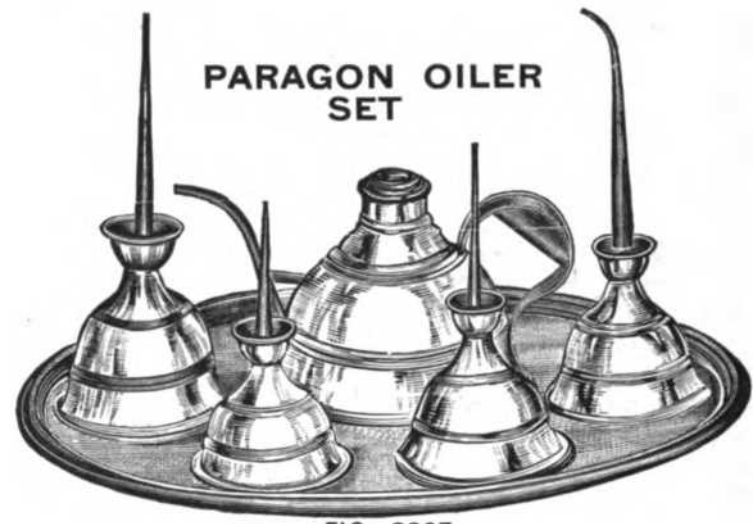


FIG. 3367
Prices include Tray.

	Stock Nos.	Small Set, 4 Pieces, per Set.		Stock Nos.	Large Set, 5 Pieces, per Set.
Copper,	250	$7 00	Copper,	251	$8 00
Brass,	252	6 00	Brass,	253	7 00
Nickel plated,	254	10 00	Nickel plated,	255	12 00

Trays, 11 x 13½ and 13 x 16 inches.

EVERLASTING BRAZED STEEL ENGINEERS' SET NICKEL PLATED

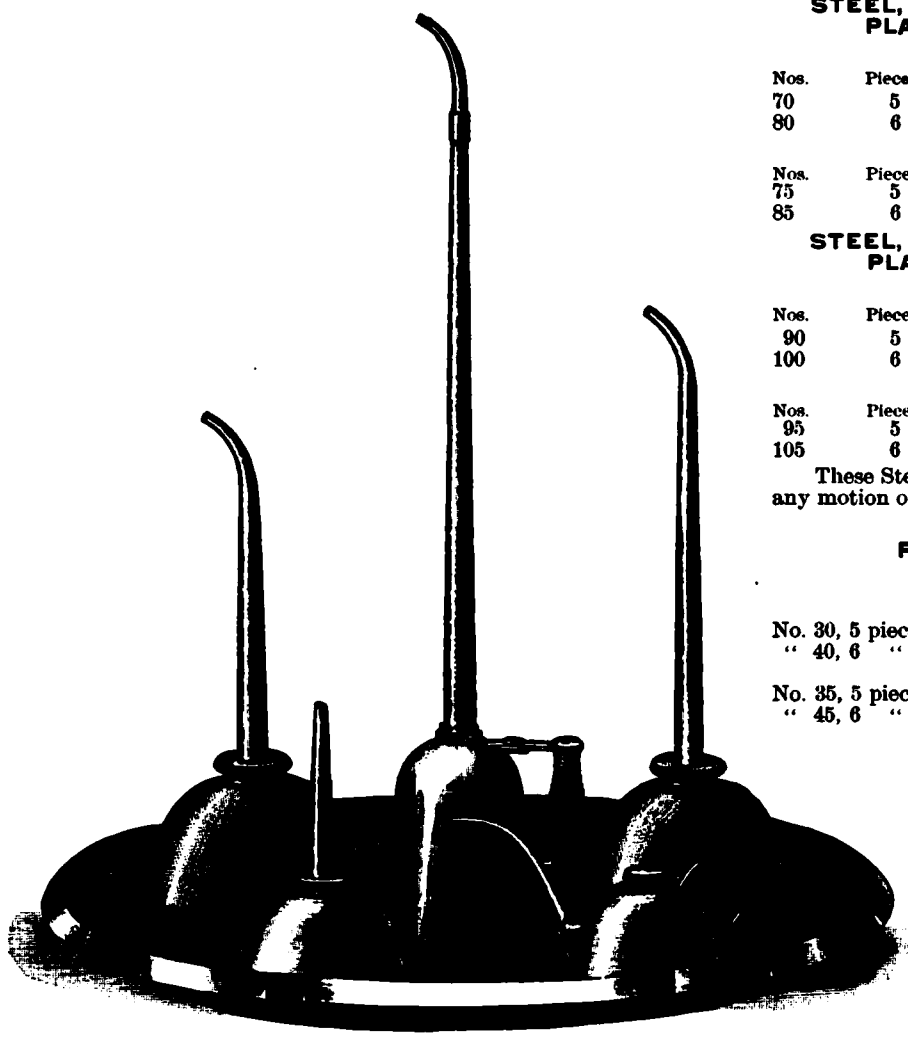


FIG. 3369

Round Tray.		Oval Tray.	
No. 140, 5 pieces and tray, per set	$7 00	No. 150, 5 pieces and tray, per set	$8 00
" 141, 6 " " "	10 00	" 151, 6 " " "	11 00

COPPER PLATED, NICKEL PLATED, STEEL AND BRASS ENGINEERS' AND STEAMBOAT SETS

PRICES, FIG. 3368 STEAMBOAT SETS

STEEL, COPPER PLATED

Nos.	Pieces.	With Round Double Tray per Set.
70	5	$6 00
80	6	9 00

Nos.	Pieces.	With Oval Double Tray per Set.
75	5	$9 00
85	6	12 00

STEEL, NICKEL PLATED

Nos.	Pieces.	With Round Double Tray per Set.
90	5	$8 00
100	6	11 00

Nos.	Pieces.	With Oval Double Tray per Set.
95	5	$10 00
105	6	13 00

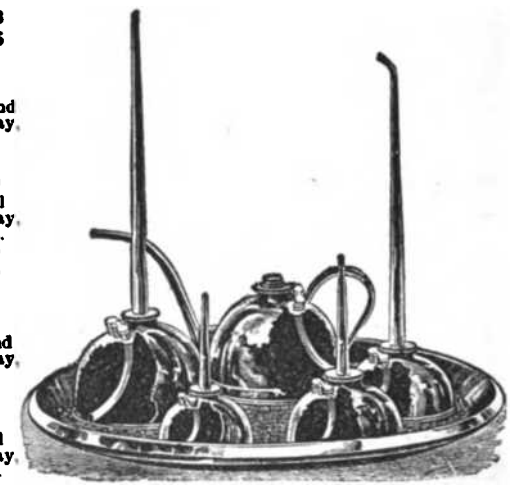


FIG. 3368

These Steamboat Sets are so constructed that in case there should be any motion of the boat the oilers will remain in their places.

PRICES, FIG. 3368. ENGINEERS' SETS

COPPER PLATED

With Round Tray.

No. 30, 5 pieces and tray, per set	$5 00
" 40, 6 " " "	7 00

With Oval Tray.

No. 35, 5 pieces and tray, per set	7 00
" 45, 6 " " "	10 00

NICKEL PLATED

With Round Tray.

No. 50, 5 pieces and tray, per set	$7 00
" 60, 6 " " "	10.00

With Oval Tray.

No. 55, 5 pieces and tray, per set	8 00
" 65, 6 " " "	11 00

PRICES, FIG. 3368. STEAMBOAT SETS

No. 70, 5 pieces, brass, and tray, per set	$7 00
" 80, 6 " " " "	10 00
" 90, 5 " " nickel plated, and tray, per set	9 00
" 100, 6 " " " " "	12 00

PRICES, FIG. 3368. ENGINEERS' SETS

No. 30, 5 pieces, brass, and tray, per set	$6 00
" 40, 6 " " " "	9 00
" 50, 5 " " nickel plated, and tray, per set.	8 00
" 60, 6 " " " " "	11 00

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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NEW IDEA OIL SET STAND

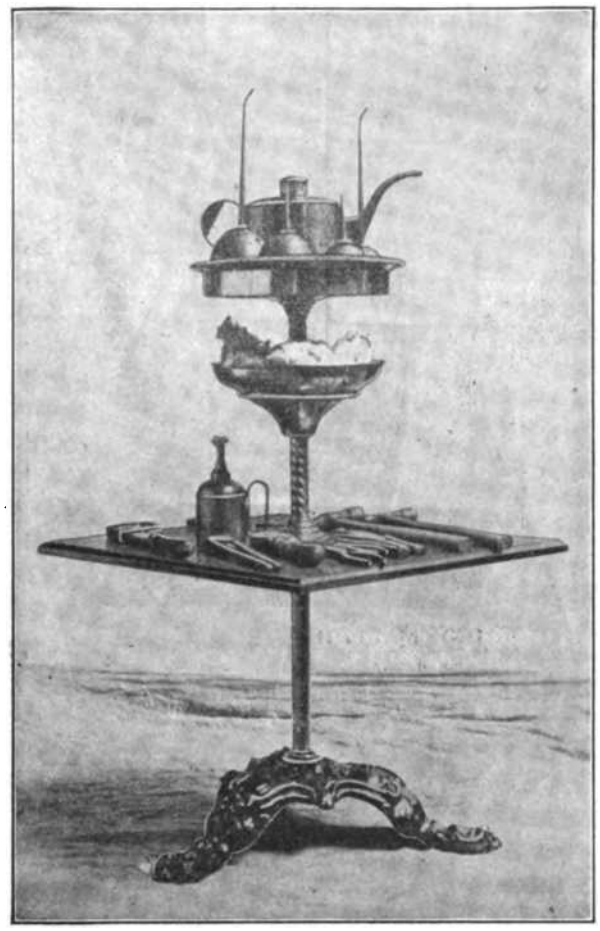


FIG. 3370

PRICES, FIG. 3370

Prices do not include oiler sets or tools, as shown in cut.

No. 4 Oiler Set Stand

Base—Handsomely carved iron, 24 pounds, black enameled.

Tubing—Plain brass, base to board. Ornamental rope brass from board to oiler set tray.

Board—Oak filled and varnished, 24 inches square.

Waste Tray—Brass, diameter 12 inches.

Table for Oiler Sets—Brass, diameter 12½ inches. Price, $25.00.

No. 3 Oiler Set Stand

Is made lighter and has a 13 pound base, and has rope brass tube from base to top tray and is fitted with brass waste and oiler set trays. Price, $12.00.

No. 2 Oiler Set Stand

Is the same as No. 3, excepting it is fitted with plain brass tube in place of rope tubing. Price, $10.00.

No. 1 Oiler Set Stand

Is fitted with a 13 pound base, and is plain brass tubing to the oiler set tray; has no waste tray. Price, $8.00.

State if for 5 or 6 piece set.

PRICES, FIG. 3371

Stand lamp, torch and seven oilers, brass or copper, $25.00; steamboat, $30.00.

Stand lamp, torch and seven oilers, brass or copper, nickel plated, $30.00; steamboat, $35.00.

All metal highly finished in brass and nickel.

ENGINEER'S HEATING STAND AND SET OF MARANVILLE OILERS

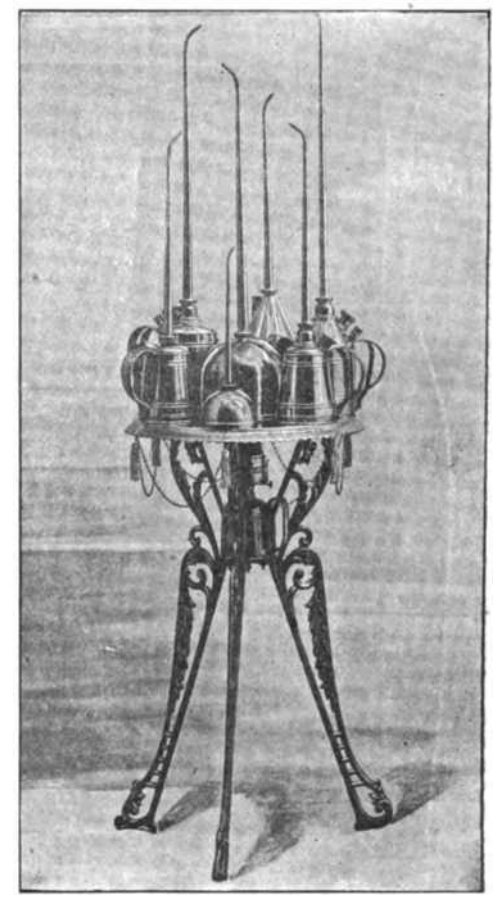


FIG. 3371

EVERLASTING BRAZED STEEL GREASE BUCKET



FIG. 3372

DESCRIPTION AND PRICES, FIG. 3372

For rolling mills and all places where heavy grease that requires heating is used.

Extra heavy steel, all brazed, absolutely indestructible.

Nos.	Gallons.	Top as Shown, Each.	Without Top, Each.
50	2	$2 50	$2 00
51	3	3 00	2 50
52	4	3 50	3 00
53	5	4 00	3 50

State when ordering whether straight bucket or with top, as shown in cut, is desired.

OIL CARRIER



FIG. 3375

PRICES, FIG. 3375

Tin, Gallons.	Per Dozen.	Brass, Gallons.	Per Dozen.
½	$4 00	½	$24 00
1	5 00	1	36 00
2	8 00	2	42 00
3	10 00	3	48 00
5	14 00	5	60 00

PRICES, FIGS. 3376 AND 3377

Nos.	Gallons.	Each.
60	1	$2 00
61	2	2 50
62	3	3 00
63	4	3 50
64	5	4 00

TIN GREASE PAIL

Slip Cover



FIG. 3373

PRICES, FIG. 3373

Capacity, Lbs.	Diams., In.	Height, In.	Each.
1	3⅜	3½	$0 04
2	4¼	4¼	07
5	6	5¼	15
10	8	5¾	20
25	10⅜	9½	35
50	12	13¼	50

WASTE PAIL

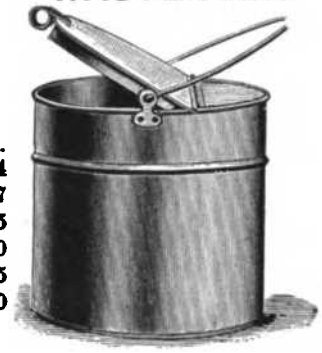


FIG. 3374

Tin Waste Pail, Fig. 3374—Height, 9 inches, per dozen, $8.50.

EVERLASTING BRAZED STEEL OIL CARRIERS

For Locomotive and Factory Use.



FIG. 3376



FIG. 3377

Larger sizes to order, any capacity. Prices on application.

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EXTRA HEAVY OIL CANS

BANDED

PRICES, FIG. 3378

2	gallons,	per dozen	.....	$8 00
3	"	" "	.....	10 00
4	"	" "	.....	12 00
5	"	" "	.....	14 00
10	"	" "	.....	18 00

With brass faucets, 75c. extra.



FIG. 3378

PRICES, FIG. 3379

½	gallon,	per dozen	.....	$5 00
1	"	" "	.....	6 50
2	"	" "	.....	8 00



FIG. 3379

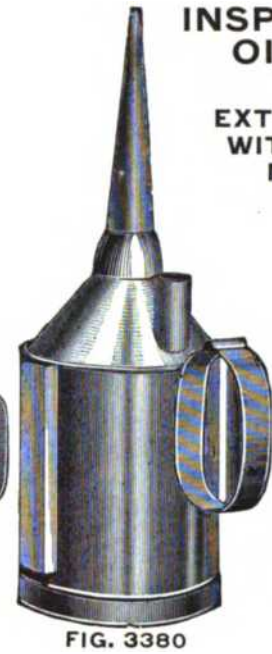


FIG. 3380

INSPECTOR'S OIL CAN

EXTRA HEAVY WITH STEEL NOZZLE

PRICE FIG. 3380

2½ gallons.
Per doz., $24 00

PRICES FIG. 3381

1 gallon.
Per doz., $9 00
2 gallons.
Per doz., 12 00
3 gallons.
Per doz., 15 00
4 gallons,
Per doz., 18 00
5 gallons.
Per doz., 21 00

STANDARD RAILWAY GALVANIZED OIL CAN



FIG. 3381

JOURNAL CAN



FIG. 3382

Made of best bloom galvanized iron, well riveted and soldered, with strong handles.

PRICES

3 gallon Journal Cans, per dozen.....$10 50
5 gallon Journal Cans, per dozen..... 12 00

GALVANIZED CAR OILER



FIG. 3383

No. 54. 11 inches high, 9 in. diameter, spout opening, 1 in., per doz., $20 00

STANDARD RAILWAY OIL CANS

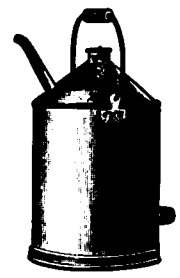


FIG. 3384

			Per Doz.
No. 46.	1	gallon.....	$9 00
"	2	"	12 00
"	3	"	15 00
"	4	"	18 00
"	5	"	21 00



FIG. 3385

			Per Doz.
No. 47.	1	gallon.....	$6 00
"	2	"	10 00
"	3	"	12 00
"	4	"	15 00
"	5	"	18 00

GALVANIZED OIL CAN

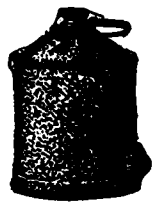


FIG. 3386

PRICES, FIG. 3386

Gal.	Height Diams., In.	Height Body, In.	Cone Top, In.	Each.
1	6¼	7	2½	$2 30
2	8	9	2¾	2 40
3	9	10	3	2 80
5	10¾	12	3½	3 00

SEAMLESS STEEL OIL CAN



FIG. 3391

PRICES FIG. 3390

	Per Doz.
1 gal.	20 00
2 "	24 00
3 "	28 00
4 "	30 00
5 "	32 00

2 quarts, per dozen..$7 50

GALVANIZED IRON FAUCET CAN



FIG. 3387

Made of No. 26 BB. galvanized iron, very strong. Well made and tight.

⅝ in. Lever Faucet.

	Each.
5 gal.	$1 50
10 "	2 25

Compression Faucet.

	Each.
3 gal.	$1 00
5 "	1 25
10 "	2 00

SQUARE OIL CAN, WITH FAUCET



FIG. 3388

½	gallon,	each...	$0 22
1	"	" ..	25
2	"	" ..	35
5	"	" ..	50

VALVE OIL CAN



FIG. 3389

6½ inches diameter, 10 inches high.

No.	Per Doz.
49	$16 00

SUPPLY CAN

SHEET STEEL



FIG. 3390



FIG. 3392

KEROSENE CANS

PRICES, FIG. 3392

1	quart,	per dozen	$5 00
2	"	" "	5 65
4	"	" "	6 90

PRICES, FIG. 3393

1	gallon,	per dozen	$6 50
2	"	" "	12 50
3	"	" "	17 50
5	"	" "	22 50
10	"	" "	47 50

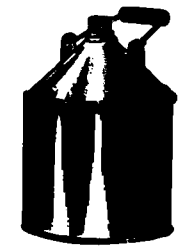


FIG. 3393

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GAUGE COCK DRIP

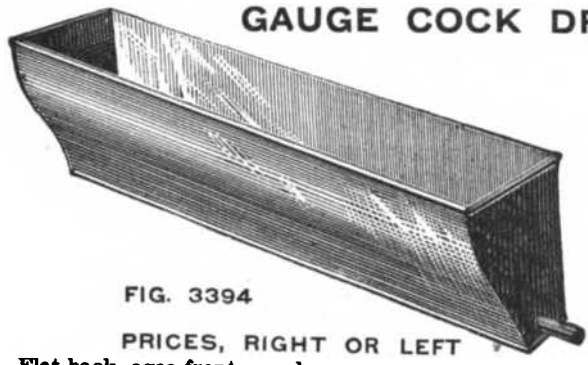


FIG. 3394

PRICES, RIGHT OR LEFT

No. 1 Flat back, ogee front, per dozen $24 00
" 2 Ogee front and back, " 36 00
Nickel plating, extra, each, 75 cents.

JAPANNED, GALVANIZED OR TIN STORING OIL CAN

IXXXX Tin Cylinder, No. 18 Gauge Steel Bottom, Brass Cock.



FIG. 3396

PRICES

Capacity, Gallons.	Diameters, Inches.	Height, Inches.	Tin, Each.	Galv'd., Each.	Japanning, Extra.
15	14	24	$5 00	$6 25	$1 50
20	15¼	27	5 75	7 00	
30	18⅛	28	6 75	8 00	
40	18⅛	37	7 75	9 00	
50	18⅛	45	8 00	9 25	
60	20½	43	9 25	10 50	
80	22½	48	10 25	11 50	
100	22½	60	12 25	13 50	

GALVANIZED STEEL OIL TANK

FOR FACTORY USE

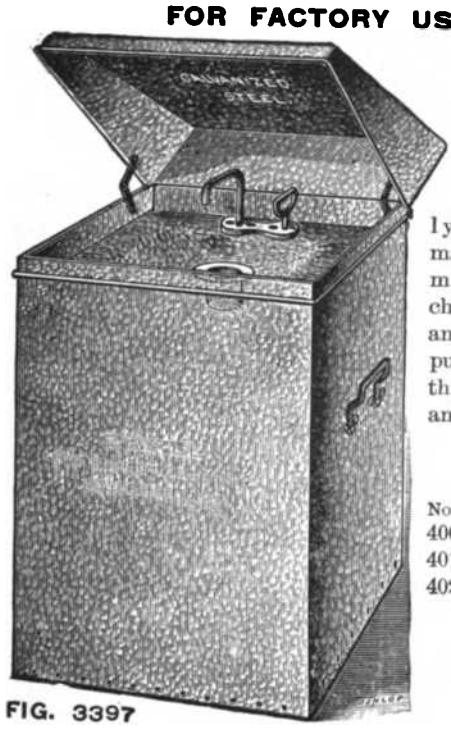


FIG. 3397

Made of heavy steel, strongly riveted and galvanized. Neatly japanned in maroon. Entire metal pump, chamber plunger and valves. The pump is metal throughout, bolted and screwed.

PRICES
FIG. 3397

Nos.	Gallons.	Each.
400	30	$8 00
401	60	12 00
402	120	18 00

WARREN OIL TANK

FOR HEAVY OILS

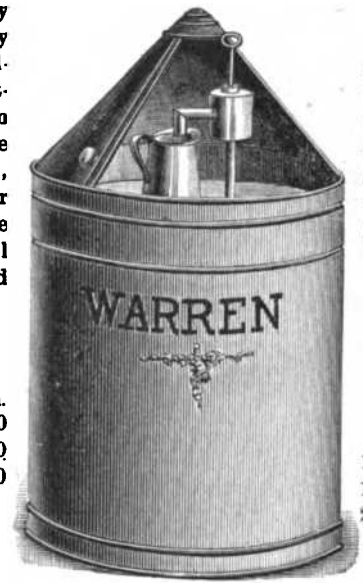


FIG. 3398

These tanks are made of heavy galvanized iron, with wood bottom under metal bottom, and revolving top which closes tightly when not in use.

PRICES
FIG. 3398

Gallons.	Plain Galvanized Iron, Each.	Painted and Lettered, Each.
60	$12 00	$13 00
100	20 00	22 00
150	25 00	27 00
250	35 00	38 00

STAR TANK

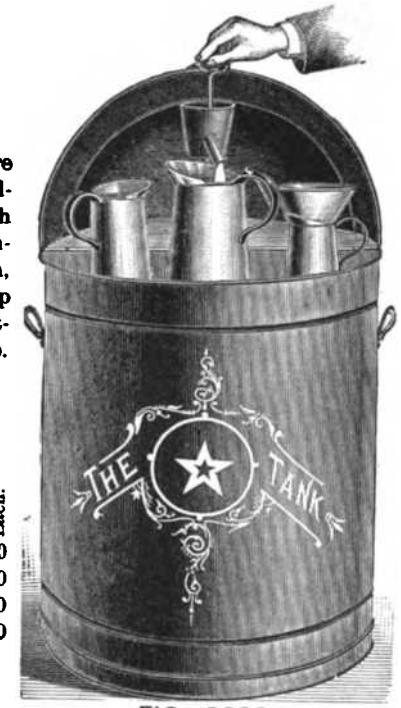


FIG. 3399

60 gallons. Price, each.....$6 00

W. & B. TANK



FIG. 3400

PRICES

Nos	Capacity.	Each.
0	6 gallons	$5 00
00	12 "	6 00
000	25 "	7 50
1	60 "	10 50
2	120 "	16 50
3	150 "	21 00
4	200 "	24 00
5	250 "	28 00

STYLE H TANK



FIG. 3401

PRICES, STYLE H

Capacity, gals....	32	55	60	120
Each.....	$6 00	7 50	8 50	15 50

STYLE A, SIMILAR TO STYLE H

Capacity, gals....	60	120	150	200	250
Each....	$9 75	15 50	20 00	22 50	25 00

Set of measures (4) and funnel..... 1 50
Brass padlock and stopcock for filling oilers..... 1 25

PERFECTION

Showing Process of Transferring Oil from the Barrel to the Tank.



FIG. 3402

PRICES

Nos.	Capacity, Gallons.	Each.	Nos.	Capacity, Gallons.	Each.
0	6	$5 00	2	100	$18 00
00	12	6 00	3	150	24 00
000	25	7 50	4	200	30 00
1	60	12 00	5	250	33 00

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WOODEN AND IRON CASED CABINETS

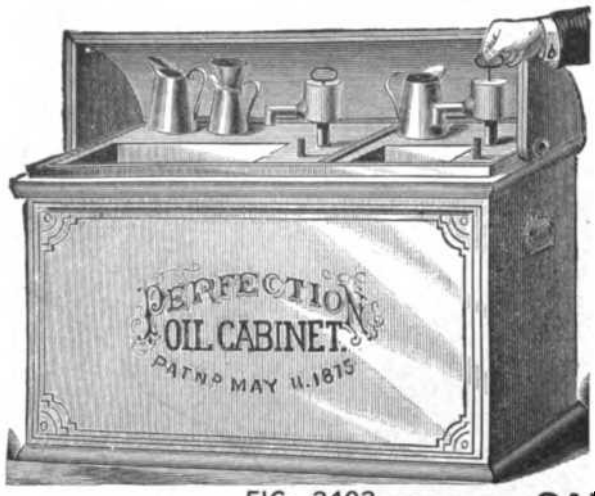


FIG. 3403

PRICES OF WOODEN CASED CABINETS

Securely packed for shipping.

Prices include movable pumps, gauge rods, rolling cover.

1 Compartment	60 Gallons	Each	$25	00
1 "	120 "	"	30	00
2 "	120 "	"	36	00
2 "	180 "	"	45	00
2 "	240 "	"	60	00

PRICES OF IRON CABINETS

Securely packed for shipping.

Prices include movable pumps, gauge rods, rolling cover.

1 Compartment	60 Gallons	Each	$18	00
1 "	120 "	"	24	00
2 "	120 "	"	28	00

SAFETY OIL CABINETS

STORE CABINETS

60 Gallons.



FIG. 3404

120 Gallons double, 60 gallons on each side.

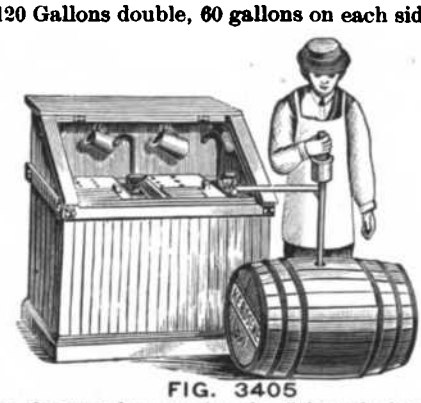


FIG. 3405

Each store cabinet is supplied with a tin pump for pumping the oil from the barrel into the cabinet, or four feet of rubber tubing for siphoning the oil from the barrel into the cabinet, as preferred; also a full set of measures.

PRICES, FIGS, 3404 AND 3405

Gallons.	Each.	No. of Compartments.	Capacity.	Sizes in Inches.
25	$20 00	..	41 inches high	20 x 22
60	25 00	1	for 1 barrel	22 x 31
110	35 00	1	" 2 "	26 x 41
120	45 00	2	" 2 "	26 x 49
160	40 00	1	" 3 "	28 x 53
170	50 00	2	" 3 "	28 x 57
180	60 00	3	" 3 "	26 x 71
210	45 00	1	" 4 "	34 x 56
220	55 00	2	" 4 "	34 x 60
260	50 00	1	" 5 "	34 x 69
270	60 00	2	" 5 "	34 x 71
300	90 00	5	" 5 "	36 x 82

FACTORY CABINETS

60 Gallons.



FIG. 3406

3 Bbls. in 3 parts; one for kerosene.

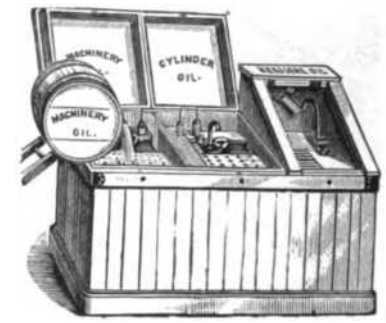


FIG. 3407

Each factory cabinet is supplied with a tin pump for pumping the oil from the barrel into the cabinet, or four feet of rubber tubing for siphoning the oil from the barrel into the cabinet, as preferred.

PRICES, FIGS. 3406 AND 3407

Gallons.	Each.	No. of Compartments.	Capacity.	Sizes in Inches.
25	$20 00	1	32 inches high	22 x 22
60	25 00	1	for 1 barrel	26 x 26
110	35 00	1	" 2 "	26 x 47
120	45 00	2	" 2 "	26 x 52
160	40 00	1	" 3 "	26 x 66
170	50 00	2	" 3 "	28 x 64
180	60 00	3	" 3 "	26 x 76
210	45 00	1	" 4 "	30 x 73
220	55 00	2	" 4 "	30 x 77
260	50 00	1	" 5 "	30 x 89
270	60 00	2	" 5 "	30 x 94
300	90 00	5	" 5 "	30 x 106

FIRST FLOOR SELF MEASURING OIL TANK

Three measure pump.

NO. 19

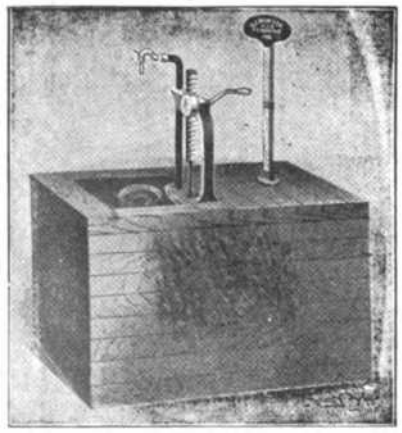


FIG. 3408

Every stroke discharges a correct gallon, half gallon, or quart, as you wish, and puts the same directly into the customer's vessel, of whatever size or shape it may be. Full stroke for a gallon; if half gallon is wanted, move small lever to point marked half gallon; if quart is desired, move lever to point marked quart. The indicator tells approximately the amount of oil on hand. The dial discharge register registers each gallon, half gallon and quart as pumped. Prices on application.

THREE MEASURE SELF MEASURING OIL TANK

For lard and miner's oil.

NO. 32

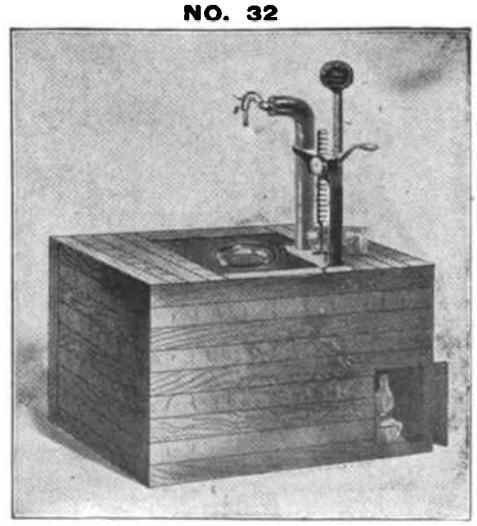


FIG. 3409

It is well known that in cold weather these oils congeal, and in order to pump them they must be kept warm. This tank is so constructed that the lamp, with a small blaze, will keep the oil warm in the same manner that an incubator is kept warm. The muffler, or chimney, extends to the end of discharge pipe. Prices on application.

FIRST FLOOR GASOLINE TANK

NO. 21



FIG. 3410

The above cut is designed to show a first floor gasoline tank and self-measuring pump, which measures a gallon, half gallon or quart at a stroke, as desired by the operator. The tank is square in shape, and is built of the best quality of galvanized steel, double seamed and turned, soldered inside and out. The cabinet is strongly built of good clear lumber, well painted and handsomely grained and varnished.

The working parts of the pump are all metal. The pump is equipped with steel ball cage valves and is set into the tank through a brass plate, and surrounding every opening is a felt stuffing box, and the discharge pipe is fitted with a handsome nickeled shut off cock which positively precludes evaporation. The drip pan is so arranged that the tank is perfectly tight. With these tanks we send a gauge stick, and with it the amount of gasoline on hand may be learned by unscrewing cap and using stick. Prices on application.

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DOUBLE TANK

For Two Grades of Oil, or Oil and Gasoline.

NO 12

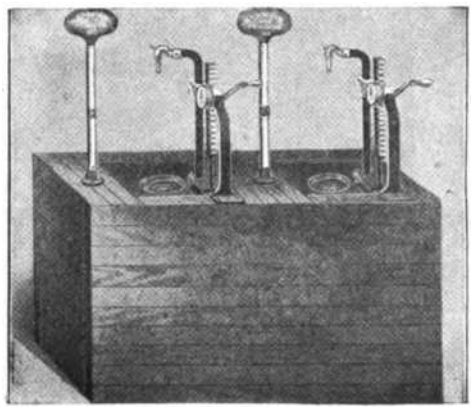


FIG. 3411

DESCRIPTION, FIG. 3411

This shows two tanks cased together, simply for convenience. The cost is just the same as if cased separately. Three or four are often cased together, but partitions are never built in one large tank, as they are liable to break loose and permit the different oils and gasoline to mix.

Tanks cased as above may be put into a smaller space than if cased separately; otherwise they are separate, and are so listed.

Prices on application.

DESCRIPTION, FIG. 3412

The cut shows the tank proper raised about 15 inches, and a small pocket only extends to the bottom of the case. This pocket is only large enough to receive the pump and deep enough so that pump will yet be entirely submerged in oil when the tank is empty. The pocket holds about 2 gallons, hence you have no surplus of oil to carry for this purpose.

We furnish these tanks any size, and for cellar as well as first floor. The above shows first floor outfit. This requires an empty soap box or a little bench to step upon.

Prices on application.

PERFECT SELF-MEASURING OIL TANK

For Raw and Boiled Linseed Oils, Turpentines and Varnishes.

NO. 9

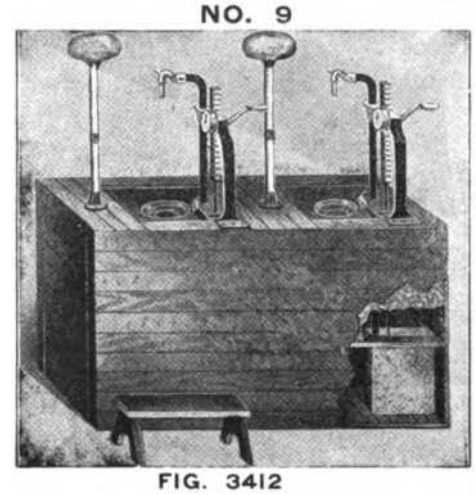


FIG. 3412

THE PERFECTION SIPHON

NO. 20

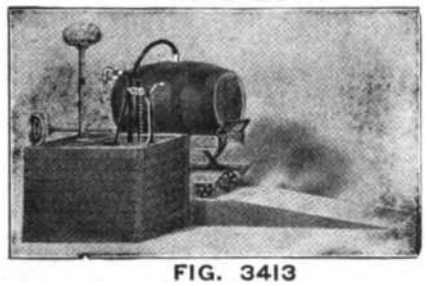


FIG. 3413

The above cut shows how a siphon may be used with a first floor tank. In such cases the barrel must in some manner be raised so its lower side is above top of tank. Then the siphon may be used.

Prices on application.

TRANSFER PUMP

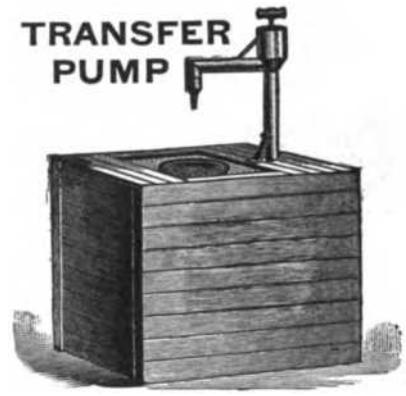


FIG. 3414

For transferring oil from barrel to tank. This pump is 1¾ inches in diameter with 20 inch stroke; discharges about one-half gallon at each stroke. It has brass instead of marble valves, which are generally used. The discharge arm is 16 inches long. Prices on application.

TIN PUMP

For Oil.

PRICES

Diameters, Inches.	Discharge to, Feet.	Each.	Diameters, Inches.	Discharge to, Feet.	Each.
1½	3	$1 50	1½	5	$2 50
1½	4	2 00	1½	6	3 00

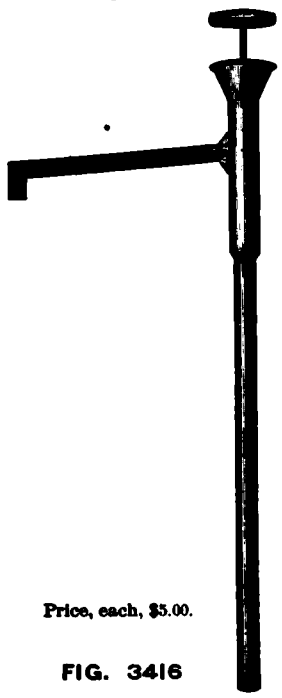
GALVANIZED IRON PUMP

PRICES

Diameters, Inches.	Per Lineal Foot, Each.	Diameters, Inches.	Per Lineal Foot, Each.
2	$0 60	4	$0 80
2½	65	4½	90
3	70	5	1 20
3½	75		

Pumps shorter in length than 5 feet charged as 5 feet.

ALL COPPER PUMP



Any length or size. All copper, with valve in if desired.

Price, per dozen, $18.00.

Price, each, $5.00.

FIG. 3416

COPPER THIEF



FIG. 3417

ROTARY BARREL FORCE PUMP

With Improved Barrel Attachment or Holder.

The cut shows a hand rotary pump arranged with an improvement for holding the suction pipe of the pump rigid in the bung of a barrel. The holder is a tapering sleeve in two halves and can be used in barrels having any size of bung, from 1½ to 4 inches in diameter. A suction pipe of 8 feet in length is furnished with each pump as well as a hose coupling. With this apparatus fluids of any character or consistency can be pumped from a barrel, tierce or hogshead, and forced into a reservoir or receptacle at any distance removed.

The prices given below include suction pipe, hose coupling, hook and holder.

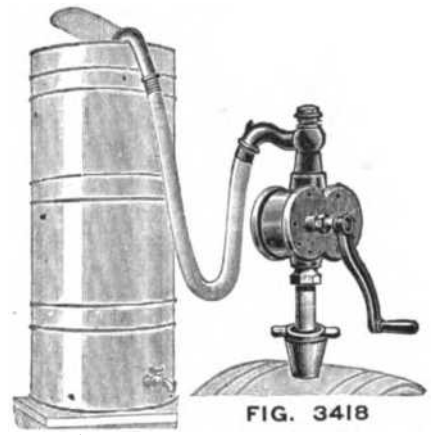


FIG. 3418

SIZES AND PRICES, FIG. 3418

Nos.	Capacity per Minute 100 Revs., Gallons.	Suction, Pipe, Inches.	Discharge Hose, Inches.	*Lift and Force, Feet.	Iron, Each.	†Bronze Each.
1	10	1	1	60	$17 00	$39 00
2	13	1	1	60	20 00	44 00
3	17	1¼	1¼	60	24 00	49 00

* Total lift and force from supply to point of delivery. Pump not more than 20 feet above water.

† Bronze pumps have bronze cases, cams and spouts.

ROTARY OIL SERVICE PUMP

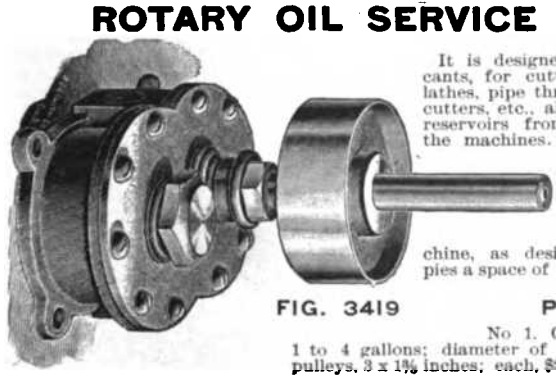


FIG. 3419

It is designed for pumping lubricants, for cutting tools on monitor lathes, pipe threading machines, bolt cutters, etc., also to return oil to the reservoirs from the drip pan under the machines. With the exception of the pulley, the pump is entirely of bronze. We furnish the pump as shown or with a bracket for bolting to the machine, as desired. The pump occupies a space of 5 x 4¼ x 6½ inches.

PRICE

No. 1. Capacity, per minute, 1 to 4 gallons; diameter of pipes, ½ inch; size of pulleys, 3 x 1⅝ inches; each, $25.00.

WAYNE PATENT BARREL TRUCK

DESCRIPTIONS, FIGS. 3421 AND 3422

Fig. 3422 shows the truck attached ready for use. Fig. 3421 shows truck with barrel at rest and in place ready for use while on tap with lever removed. Those who have experienced the disagreeable and constant annoyance and labor placing their barrels on a platform high enough for tap cannot fail to appreciate this barrel truck, by the use of which you are enabled to load your barrels and run them to any part of your store or cellar; remove your lever and the barrel is on tap.



FIG. 3421

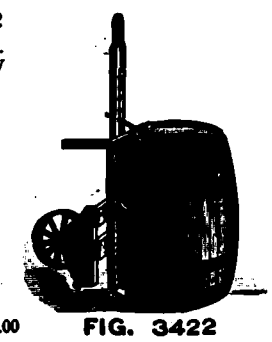


FIG. 3422

PRICES

Each.....$2.50 Per dozen.....$26.00

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TIN AND COPPER MEASURES



FIG. 3423

	Tin.	Copper, Tinned Inside.
¼ Pint, per dozen.....	$0 80	$4 00
½ " "	90	5 00
1 " "	1 20	7 00
1 Quart, "	1 50	9 00
2 " "	3 00	12 00
4 " "	4 50	17 00
2 Gallons, with bail, each.	1 50	3 25
3 " " " "	2 00	4 50
5 " " " "	2 50	6 00



FIG. 3424

ENAMELED STANDARD MEASURE

Nos.....	01	02	03	04	05	06
Capacity	1 Gill	½ Pt.	1 Pt.	1 Qt.	2 Qts.	4 Qts.
Per doz.	$9 00	12 00	13 25	15 00	19 00	24 00

ALL COPPER MEASURE

PRICES, FIG. 3425

Nos.	Gallons.	Each.
82	2	$4 50
83	3	5 00
84	4	5 50
85	5	6 50



FIG. 3425

TIN AND COPPER FUNNEL

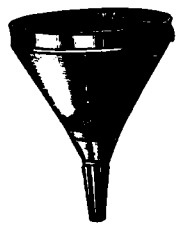


FIG. 3426

PRICES

Pints.	Tin. per Dozen.	Copper, Tinned Inside, per Dozen.
¼	$1 50	$3 50
½	1 75	4 50
1	2 25	6 00
Quarts.		
1	2 75	8 00
2	3 50	11 00
4	5 00	15 00
8	12 00	30 00

COPPER FUNNEL

Without Strainer.



FIG. 3427

PRICES

Nos.	Pints.	Per Dozen.
225	¼	$3 50
226	½	3 50
227	1	4 00
	Quarts.	
228	1	5 00
229	2	6 00
230	4	14 00
	Gallons.	
232	2	30 00
233	3	36 00

HEAVY COPPER FUNNEL

With Loose Strainer.

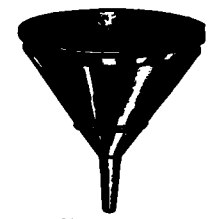


FIG. 3428

PRICES

Nos.	Pints.	Per Dozen.
233	¼	$4 00
234	½	4 00
235	1	4 50
	Quarts.	
236	1	5 50
237	2	7 50
238	4	14 00

ALL COPPER VALVE FUNNEL

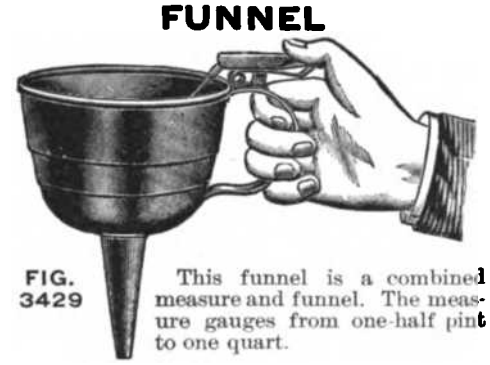


FIG. 3429

This funnel is a combined measure and funnel. The measure gauges from one-half pint to one quart.

No. 910, 1 quart, per dozen, $12.00.
No. 912, 2 quarts, per dozen, $20.00.

HARD RUBBER FUNNEL



FIG. 3430

PRICES
FIG. 3430

Pint.	Per dozen.
¼	$5 50
⅜	6 00
½	6 50
1	9 00
Quart.	
1	11 00
2	33 00
Gallon.	Each.
1	2 75

ENAMELED FUNNEL



FIG. 3431

Nos.....	01	02	03
Capacity	1 Gill	½ Pt.	1 Pt.
Per doz.	$8 75	9 50	10 50
Nos.....	04	05	06
Capacity	1 Qt.	2 Qts.	4 Qts
Per doz.	$12 25	14 50	20 00

TIN FUNNEL

With Strainer.

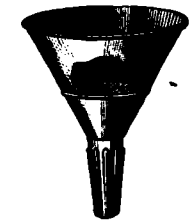


FIG. 3432

Pints	¼	½	1
	$1 50	1 70	2 10
Quarts	1	2	4
	$2 50	3 75	5 25

THE CROSS OIL FILTER

The illustrations show the construction of this filter. It is made of extra heavy galvanized iron, all joints soldered, lapped and riveted. It is neatly painted and decorated in gold, with polished brass fittings and bosses and nickel plated rim. All inside work is rigidly braced and reinforced. The Special filters are fitted with a cover having nickel plated handles; also with a gauge to show amount of filtered, pure oil in reservoir. Any size of cocks will be furnished at buyer's option.

THE CROSS REGULAR



FIG. 3433

PRICES

	Nos.	Filtering Capacity, Gallons, per Day.	Each.
Regular.....	1	15 to 20	$25 00*
"	2	3 5	15 00*
Special.....	3	30 40	60 00
"	4	50 60	75 00
"	5	70 90	90 00
"	6	100 120	120 00
"	7	120 150	140 00
"	8	150 200	200 00
"	9	200 250	250 00
"	10	250 300	300 00.

*All special filters have extra heavy brass fittings, water gauge and cover. If desired, we can furnish water gauge and cover on the No. 1 or No. 2 filter at $4.50 additional.

The capacity of a filter depends upon the heaviness of the oil to be filtered. The above figures are the minimum and maximum capacities for the heaviest and thinnest oils.

Prices on filters, constructed of burnished brass or nickel plated copper, quoted upon application. Filters made to order from customers' designs. Estimates furnished upon request.

THE CROSS SPECIAL

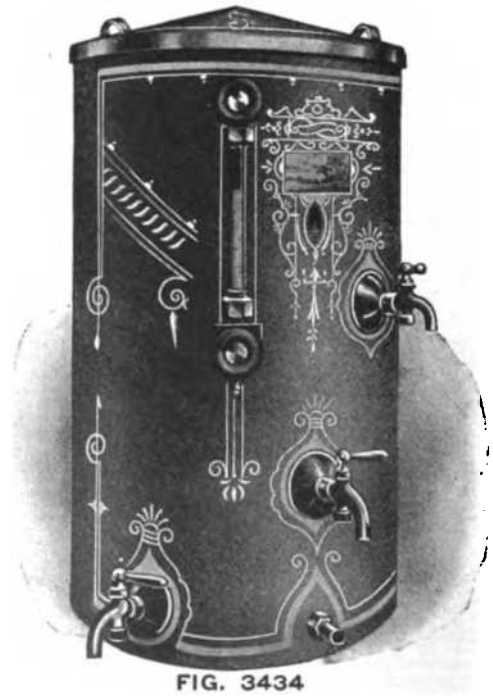


FIG. 3434

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THE ECONOMY WASTE OIL FILTER



FIG. 3435

It is made of galvanized iron, nicely japanned, and is very strong and durable.

The filter is shipped in a box with a stand to put it on. Place the filter in position as shown in cut, remove the cover and you will find the top can partly filled with cotton.

Spread the cotton as evenly as possible, keeping it close to the sides of pan, take the iron ring and place it on top of cotton to weight it down. Pour the waste oil directly on the cotton in the top pan and continue to renew the supply until the pure oil appears in the glass. It is then fit for use and must be drawn from the faucet in front, marked Pure. If water is collected with the waste oil they will separate in the filter, and once each day the water can be drawn off from upper right hand faucet, marked Water. The cotton can be renewed occasionally at a cost of a few cents—filling it half full and replacing the iron ring. The filtering pads in lower pan should be wiped off with the finger occasionally.

The smallest size will filter from 100 to 200 gallons of oil without renewing the cotton or cleaning the pads. The largest size will filter from 200 to 300 gallons without renewing or cleaning.

The filter pads will last a year or more, an extra set being sent with each filter. Pour only the fluid portion of your waste oil in the top pan on the cotton. Don't throw in mud or solids.

PRICES FIG. 3435

The smallest, 18 by 22 inches (capacity, 12 gallons), will filter from 3 to 5 gallons of oil in 24 hours. Each.....$40 00

The largest, 26 by 30 inches (capacity, 1 barrel), will filter from 10 to 20 gallons in 24 hours. Each..... 60 00

WASTE OIL PURIFIER AND REFILTER

It saves all the waste oil that can be secured from machinery.

The face of the oil, not the surface of the foreign matter, comes in contact with the filtering pads.

The clean oil remains in the filter while the filter is being cleaned.

If the faucets leak, a bib washer will repair them; they will not open by striking against them.

The filter is placed on an iron stand and, if needed, a steam coil is placed on the stand and the filter rests on the coil.

This filter is especially adapted to filtering the waste oil of high speed engines.

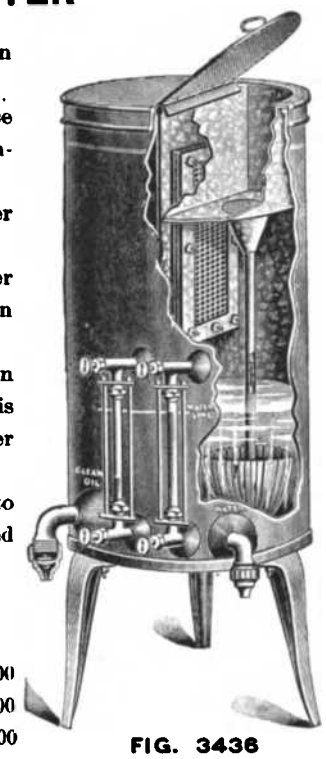


FIG. 3436

PRICES

10 gallons, each			$35 00
30	"	"	50 00
60	"	"	65 00
120	"	"	120 00

TRACY OIL FILTER



FIG. 3437

The tanks are made of the best quality rolled iron and steel, heavily plated and frosted. The trimmings are of burnished brass and Princess metal; they are strong and durable and can be repaired in an ordinary shop.

Each filter is provided with a glass indicator gauge, showing what is going on in the filter.

Every part of the filter is made so that it can readily be cleaned or repaired.

The usual warmth of the engine room is sufficient for the operation of the filter ordinarily, but in filtering heavy oils the filter is provided with a radiating chamber, in the base of which a steam coil is placed (or any convenient means of artificial heating), thus producing sufficient warmth to render the oil more fluid and to facilitate the filtering process.

SECTIONAL



FIG. 3437

To operate, pour in sufficient soft water to fill the casing to the height of the water mark. Then pour in the oil to be filtered through the funnel at the top.

The oil descends into the distributing chamber at the base, where the flow of the liquid is temporarily checked, precipitation taking place; it then passes through the distributing chamber, and in ascending through the water to its surface by specific gravity the dirt and acid are partly thrown off; it then accumulates in the storage chamber, where further precipitation takes place. The oil gradually passes through the clarifying disks into the accumulator, and as clean oil is drawn for use the accumulator is constantly refilled.

PRICES

Nos.	Storage Capacity.	Filtering Capacity.	Each.
x	5 gallons	1 to 2½ gallons per day	$15 00
0	12 "	2 " 7 " "	20 00
1	1 barrel	4 " 10 " "	30 00
2	1 "	7 " 18 " "	40 00
3	1½ barrels	10 " 25 " "	50 00
4	2 "	15 " 30 " "	60 00

On application, prices furnished on copper, nickel plated and special designs. Other sizes furnished to order on short notice.

SUPERIOR OIL FILTER

DESCRIPTION, FIG. 3438

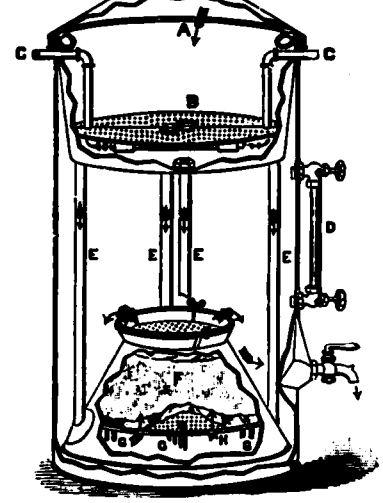


FIG. 3438

This filter consists of a new and improved method and mechanical device for filtering oil after being used one or more times, so that it can be used over and over again.

The oil to be cleansed is poured into receiver A, where it passes through strainer B, which will at once remove the coarser impurities from the oil. E E E E are pipes through which oil passes to filtering material F, G G G being magnets for the purpose of collecting any particles of iron or mineral substances that may be in the oil, caused by the friction and wearing of bearings. C C is a heater which, by connecting up with steam pipe, will cause the oil to flow more freely in cold weather. H shows the flow of oil through filtering material F, and, after passing through same, is drawn off at faucet for use. D is a gauge glass for showing water, should any appear.

Water may be used for filtering if desired.

PRICES

Nos.	Sizes.	Capacity.	Each.
1	30 x 20	5 gallons	$25 00
2	36 x 20	10 "	30 00
3	38 x 20	15 "	40 00
4	40 x 20	20 "	50 00

WASTE OIL FILTER

This filter is simple, automatic, and practical.

Reclaims waste oil; purifies new oil.

Is neatly japanned; has brass trimmings.

The filtering trays, being removable, can be cleaned in five minutes.

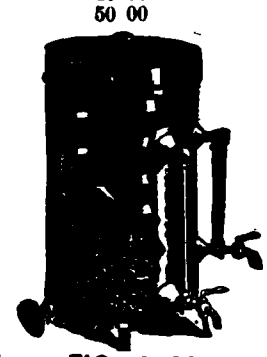


FIG. 3439

PRICES

15 gallons	$18 00
30 "	30 00
60 "	45 00

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OIL FILTERS AND PURIFIERS

ACME OIL FILTER

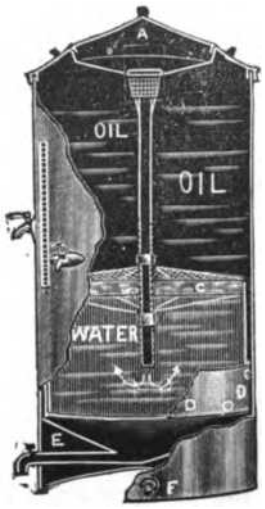


FIG. 3440

DESCRIPTION, FIG. 3440

It is built of heavy galvanized iron; the filtering materials employed are animal boneblack or charcoal.

Nos. 1, 2, 3 and 4 have steam connections, inducing greater and more effective filtering capacity. In accompanying figure, A is receptacle for oil to be filtered, the oil falls by its own weight, rises by gravity through water and filtering material (immersed in water) and is drawn off from faucets as shown. C indicates filtering material and its location. D is pan that catches dirt precipitated by oil coming in contact with water. E is double bottom or steam chamber for heating the water in Nos. 1, 2, and 3. No. 4 is equipped with steam coil in bottom. F is inlet—outlet is on reverse side for steam for heating filter

Nos. 1, 2 and 3 have double bottoms as shown in cut, for admission of steam. No. 4 is equipped with wrought iron coil, located in the double bottom.

Steam attachment will increase filtering capacity about 10 per cent. Nos. 0, 1, 2 and 3 are kept constantly on hand. No. 4 is made on order only. No. 0 has no steam connections.

PRICES, FIG. 3440

Nos.	Capacity, Gallons.	Filters Gallons Every 24 Hours.	Each.
0	7	1½ to 2	$15 00
1	10	3 " 3	20 00
2	25	4 " 7	30 00
3	50	10 " 16	40 00
4	100	25 " 35	75 00

OIL PURIFIER

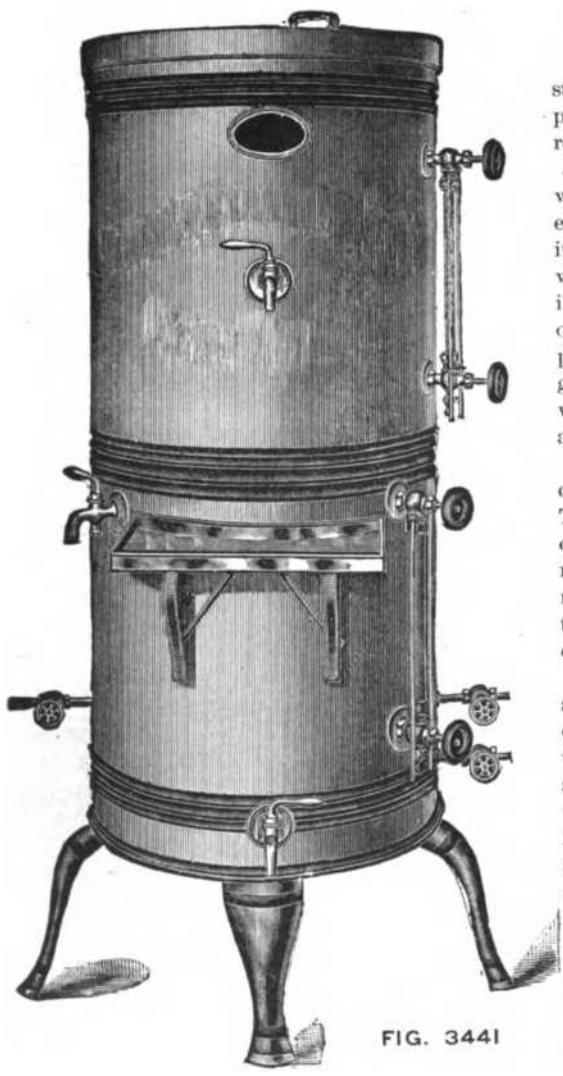


FIG. 3441

DESCRIPTION, FIG. 3441

Operation: This Oil Purifier is constructed on scientific principles; the purification is mechanical and automatic, requiring no skill or attention.

Connection should be made at valve with the sewer, and at valves with the exhaust steam. The operation is simplicity itself; the Purifier is filled one-third with water, and gently warmed by turning on the steam at valve. The impure oil is thrown into the top chamber, passes by gravity through a strainer, gradually finds its way into and down the vertical pipe in the center of the tank, and mixes with the water in the bottom.

An inverted bell prevents the dirty oil from rising to the top of the water. The heat from the steam coil forms fine oil globules from the mass. These gently rise as cream rises on milk—the sediment, grit, dirt and all impurities heavier than the water being precipitated and dropped to the bottom.

From the chamber the oil passes out at the bottom and through outlets into chamber. Here it is washed by passing through the water. Around the outside and flush with the top of the bell, is a wire gauze screen which prevents such impurities of the same specific gravity as the oil from rising with it into the storage reservoir above.

The best results are obtained by using distilled water from the condenser. The water should never be more than warm—under no conditions more than 120 degrees Fahr.; too much heat thickens the oil and spoils it.

PRICES, FIG. 3441

Size numbers	0	1	2	3	4	5	6
Capacity, gallons	25	50	80	100	150	225	300
Amount of oil purified every 24 hours, gallons	1 to 2	2½ to 3½	5 to 6	7½ to 8½	10 to 11½	15 to 17	20 to 23
Each	$35 00	$50 00	$75 00	$95 00	125 00	$175 00	$225 00

Estimates for special designs will be furnished at request.

KEYSTONE OIL FILTER, PURIFIER AND STORAGE TANK COMBINED

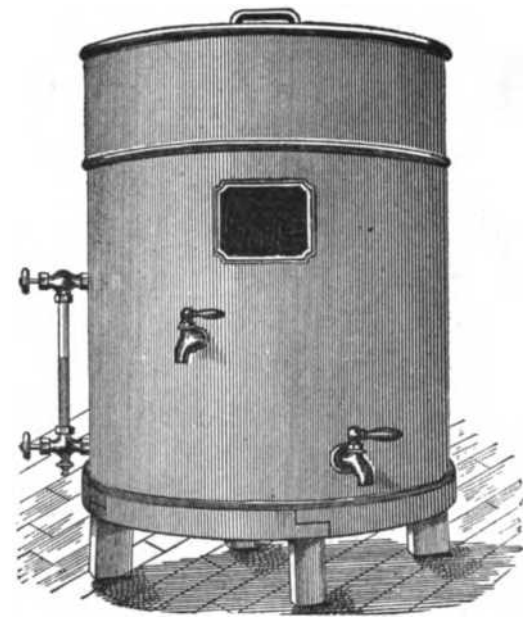


FIG. 3442

DESCRIPTION

A Filter designed to purify waste oil without the aid of steam heat or water, thereby retaining the efficiency of oil, to use over again. It only requires the waste oil to be emptied into top. No attention required, and no heat or steam to operate and the absence of water in the purified oil makes the product efficient and ready to use again. Makes dirty oil and drippings as clean as new. It contains but four (4) parts to handle when necessary to clean, all of which are easily taken out and replaced without emptying the oil from the storage tank. It is made strongly and substantially, of galvanized iron, outer surface painted, and circular stand included with each.

PRICES

10	Gallon	painted	$15 00
20	"	"	25 00
30	"	"	35 00
40	"	"	50 00
60	"	"	70 00
70	"	"	75 00

Larger sizes built on order.

The construction is such that they need not be built circular to perform the work intended, but can be made to fit in an angle, or corner, or any location where vacant space may be utilized.

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THE TURNER OIL FILTER

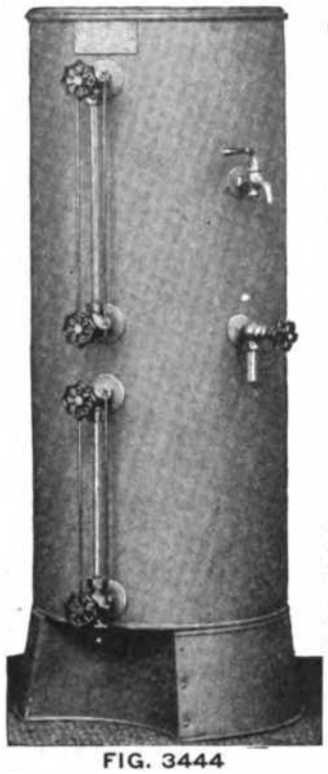
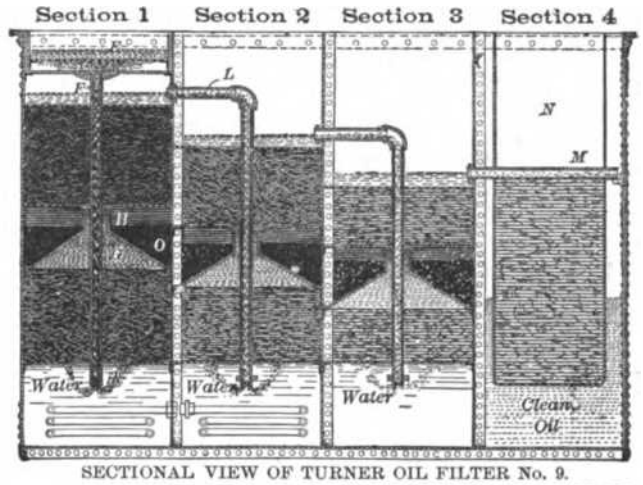


FIG. 3444



SECTIONAL VIEW OF TURNER OIL FILTER No. 9.

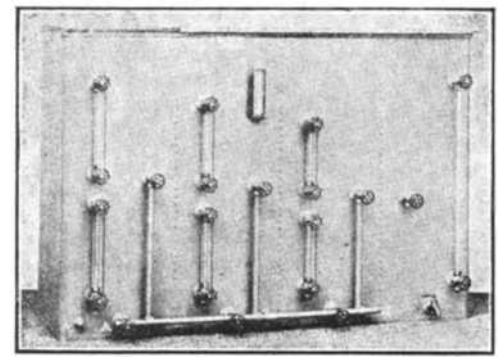


FIG. 3445

DESCRIPTION, FIGS. 3444 AND 3445

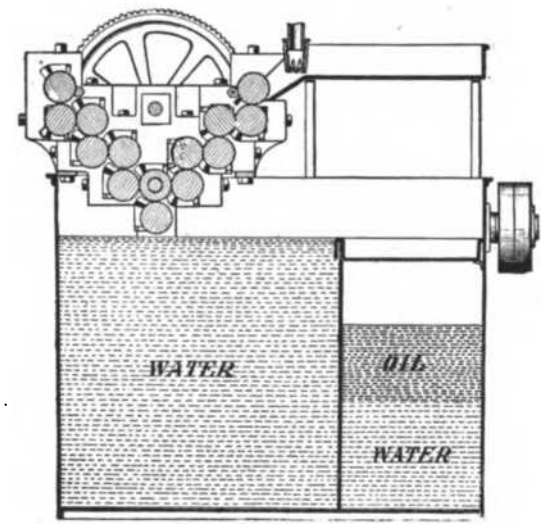
By referring to the accompanying cut the action of the filter can easily be seen. The dirty oil is poured into pan E in section 1, and descends through pipe F, discharging into the water, below a perforated plate. The oil now rises through the perforations of the plate and passes up through filtering material and water into the cone G, escaping through perforations at the top of the collar of this cone. The oil now rises, passing through the second perforated plate and filtering material, while a certain amount of the heavy dirt settles in the dirt chamber H and should be drawn off. The partially filtered oil, having reached the pipe L, passes into section 2, repeating the same operation as in section 1, and so on until section 4 is reached, when it enters pipe M in cylinder N, descending through filtering material into the oil reservoir. The arrangements of the dirt chambers in sections 1, 2 and 3, as above described, are a great advantage, as they do away with the passing of the oil through impurities left by previous filtrations. It is impossible for the dirt, after being deposited in the dirt chamber, to mix with the oil or water, as the chamber is packed with oakum at O.

We can furnish filters of any shape and capacity to conform to unusual conditions which may exist in the plans of engine rooms, oil rooms or other places in which it may be desirable to locate them.

PRICES, FIGS. 3444 AND 3445

Nos. of Filters.	Length in Inches.	Height in Inches.	Width of Case in Inches.	Width over all Fittings in Inches.	No. of Sections.	No. of Filtering Beds.	No. of Steam Coils.	Sizes of Steam Pipe.	Sizes of Water and Sewer Pipe.	Capacity of Gallons in 24 Hours.	Gross Weight in Pounds.	Each.
3	Round	36	15	20	1	2	1	¼	0	5	100	$35 00
4	"	42	18	23	1	2	1	¼	0	10	125	45 00
5	35	36	15	21	2	4	1	¼	0	20	225	65 00
6	36	42	15	21	2	4	1	¼	0	30	250	75 00
7	47	36	15	22	3	5	2	¼	½	50	350	100 00
8	48	42	15	22	3	5	2	¼	½	75	400	125 00
9	63	42	18	25	4	7	2	¼	½	100	450	160 00
10	77	48	21	28	5	9	3	¼	½	150	660	225 00
11	84	54	25	30	5	9	3	¼	½	200	1100	320 00
12	94	60	28	33	5	9	3	¼	½	250	1400	385 00
A	108	60	30	35	5	9	3	¼	½	300	1700	450 00

TURNER WASTE CLEANER



ELEVATION VIEW OF WASTE CLEANER

FIG. 3446

This waste cleaning machine is a most useful machine, and contributes considerably to the economy of large plants. A boy will gather the soiled waste from the various engines and machines, and, instead of putting it into the furnace and burning it, will pass it through the machine, and in one process collect the oil at one end and the washed waste at the other and use both over again.

It consists of 14 steel rollers, with suitable guides, so that each roller has two contacts, making 13 contacts for the material. The rollers have a pressure of 200 pounds each on 10 of them and 300 pounds on each of the remaining 4.

There are 3 1¼ inch jets of hot water at a temperature of 195 degrees F., one discharging over a perforated inclined plate, washing out the sand and loose dirt before the waste enters the machine, the other two discharging into the basin formed by the rollers, and so arranged that the waste in passing from one pair of rollers to the next is thoroughly saturated and the oil and dirt driven out, the cleaned waste discharging at one end of the machine and the oil passing into the receiver at the other. The water is taken from near the bottom of the tank and used over again. Cold water is furnished to the machine by means of a quarter inch pipe entering close to the steam jet, and thus regulating the temperature of the hot water so as to keep it at 195 to 198 degrees F. The machine is not submerged, so that all the dirt and oil is driven out of the waste, and the oil flows over into the oil receiver, and with a suitable overflow the dirt and water passes off into the sewer, leaving the oil to be drawn off and filtered and put in as good condition as new oil. The power required to run the machine is less than one-half horse power. Prices and further information on application.

ECONOMY WASTE PRESS



FIG. 3447

The press consists of a wrought iron cylinder 8 x 24 and 12 x 24 inches with perforations. Cast iron base, plunger, nut and bar, lathe cut steel screw, U. S. standard thread, steel side rods. Total weight, 250 lbs. Capable of 8,000 lbs. pressure

A 50 lb. pull and push will give an actual pressure of 252 lbs. to the square inch on the contents of the press.

To fill the press, remove the plunger and screw by unscrewing the thumb screws of the side rods.

After the press is filled, screw the plunger in position, and the oil will be forced through the perforations into the well at the base of the press and will run direct to the filter or oil cans.

The cotton waste, after the oil is extracted, is in good condition to be used again; the oil can then be filtered.

PRICES

The 8-inch machine.....$35 00
The 12-inch machine..... 40 00

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ASHCROFT OIL TESTING MACHINE

For Testing the Lubricating Properties of Oil.



FIG. 3448

Price, each..... $150 00

OIL EXTRACTOR



FIG. 3450

With hoist and lever to be worked by the foot for raising pan out of machine to be emptied of chips; pan itself weighs 17 pounds, and will hold about 40 pounds of chips. The pans are made of bell metal and are very strong.

No. 1. Weight of machine, about 600 pounds; floor space required to run it, about 6 feet by 4 feet; floor space of machine, 24 inches by 18 inches; speed of counter shaft, 500. Price, each, $75.00

No. 2. Weight with countershaft, 450 pounds; the same as No. 1 exactly, but without the hoist. Price, each, 65.00

No. 3. It will hold two bushels of chips; floor space, 30 inches in diameter; speed of countershaft, 350 revolutions; tight and loose pulleys are 14 inches diameter and 4 inches wide. Price, each, 200.00

This machine is especially designed to be used in connection with large automatic screw machines and hub machines.

No. 4. The pan is made of bell metal and is very strong; weight machine with countershaft, 350 pounds; speed of countershaft, 600 revolutions; floor space required, about 3 feet square. Price, each, $50.00

The pan holds about five quarts of chips, or screws and nuts, and is designed for cleaning fine chips but not wide light chips.

GALVANIZED STEEL OIL SAVERS

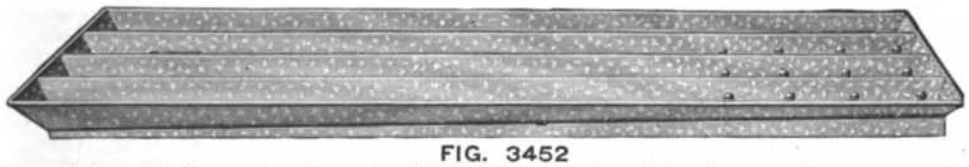


FIG. 3452

These Oil Savers are for use with bolt threading and tapping machines, etc.; very strong; will stand severe use or abuse; lighter and more convenient to handle than cast iron pans; equally durable. Any size and thickness of steel to order. State quantity, size, thickness of steel, etc., when writing for prices.

OILY WASTE CAN



FIG. 3454

Made from sheet steel; seams brazed with hard spelter. Waste can burn in this can without melting solder or injuring can.

14 inches high, 12 inches in diameter; price, each..... $3 00



FIG. 3455

SPECIAL OIL METER



FIG. 3449

This machine has been designed with special reference to the measurement of extremely small quantities of oil or other fluids under light heads where the amount to be measured does not exceed one gallon per minute. The size of the pipe opening is ¼ inch. The space occupied by the meter is 6 x 7 x 8 inches, and its weight is 12 pounds. The entire meter and its moving parts are constructed of a special composition. It is very delicately adjusted and will register almost on drops. For the measurement of oil used in connection with oil burning apparatus, and in all situations where it is desired to obtain an accurate record of the consumption of small quantities of oil and other fluids, this machine will be found quite invaluable. In ordering, full particulars and conditions should be given, as follows:

1 The nature of the fluid.

2 The head or pressure under which the fluid will come to the meter.

3 The average quantity to be handled per minute. If subject to wide variations, the limits should be stated.

4 Temperature of the fluid and its specific gravity.

5 Where there are systems of pipe distribution or any peculiarities, a sketch should be sent showing all the connections to and from the meter.

The counters are usually arranged to register in United States gallons, but can be furnished with any form of notation desired. Prices on application.

BRASS COTTON WASTE POCKET

PRICES, FIG. 3451

Nos.	Brass. Inside Measurement, Inches.	Deep, Inches.	Each.
1	5¾ x 3	5¼	$2 00
2	6¾ x 3	5¼	2 75
3	7 x 3¼	6½	3 50

Nickel plating, Nos. 1 and 2, 50 cents each; No. 3, 75 cents.

Special kinds or sizes made to order and made to fit room spaces.

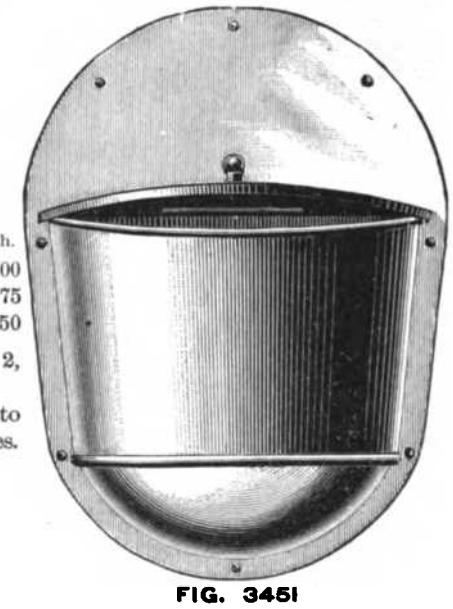


FIG. 3451

OILY WASTE SAFE

DESCRIPTION FIG. 3453

Plain, black or galvanized plate steel, self closing and blaze proof, with hinged lid and brackets, which may be bent to suit the machine, wall, post, etc., to which the safe is to be attached.

Convenient size, 8 in. long, 5 in. wide, 4 in. deep. Larger sizes in same shape, up to 24 in. long, 8 in. wide, 7 in. deep, made to order.

Prices on application.



FIG. 3453

OILY WASTE CANS

DESCRIPTION AND PRICES FIG. 3456

Has Clean and Dirty Waste Compartments.

These waste cans are constructed according to the rules of insurance and inspection boards; fire proof; cover can not be left open; made in other designs or dimensions to order.

No. 220, 15 inches diameter, 20 inches high; each..... $3 25

PRICES, FIG. 3456

No. 210, 15 x 15 x 15 inches; each.....$3 00

Clean and dirty waste compartments.



FIG. 3456

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SELF-CLOSING COVER OIL WASTE CAN

PRICES, FIG. 3457

11¼ in. diam. x 15 in. high, per doz., $18. Special sizes made to order.



FIG. 3457

Round				Rectangular				
Diameters, Inches.		Height, Inches.	Per Doz.	Length, Inches.		Width, Inches.	Depth, Inches.	Per Doz.
12	x	18	$24 00	20	x	15 x 20		$70 00
13		20	28 00	20		18	24	90 00
14		22	36 00	24		20	30	132 00
16		24	42 00	26		22	30	140 00
18		26	56 00	28		24	34	170 00
20		30	90 00	30		24	36	190 00
24		36	130 00					

The iron clad oil waste cans are made without the use of solder and are galvanized after being put together. They are recommended by the leading insurance companies.

GALVANIZED STEEL WASTE CAN

Nicely japanned in maroon. A thoroughly fireproof can. Adopted by insurance underwriters. Cover self-closing; has a heavy forged rim and closes by its weight. Legs are malleable iron. Waste can be fired in this can without danger.

PRICES, FIG. 3458

Nos.	Length, Inches.	Width, Inches.	Depth, Inches.	Each.
410	12	12	30	$4 50
411	16	16	30	6 50
412	16	16	36	8 50
413	22	22	36	10 50

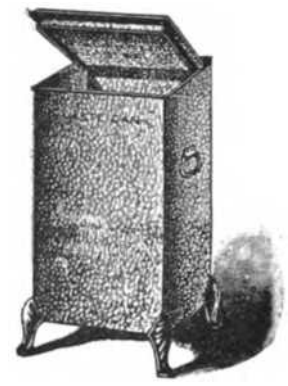


FIG. 3458

GALVANIZED ASH CANS



FIG. 3459

PRICES, FIG. 3459

Numbers	2½	3	4	5	6
Inches...	14 x 19	15 x 26	17 x 26	18 x 26	20 x 26
Each....	$4 00	$4 50	$5 25	$5 50	$6 50

Covers

Numbers...	2½	3	4	5	6
Per dozen..	$7 50	$8 50	$9 50	$10 00	$10 50

PRICES, FIG. 3460

Numbers....	7	8	9	10
Inches.....	15 x 26	17 x 26	18 x 26	20 x 26
Each	$5 25	$6 00	$6 25	$7 25

Covers

Numbers.....	7	8	9	10
Per doz.....	$8 50	$9 50	$10 00	$10 50

With Eight Wood Straps.

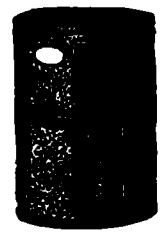


FIG. 3460

PRICES, FIG. 3460

With Eight Wood Straps

Numbers....	70	80	90	100
Inches.....	15 x 26	17 x 26	18 x 26	20 x 26
Each.....	$7 25	$8 00	$8 25	$9 25

PRICES, FIG. 3461

With Heavy Bail for Hoisting.

Numbers	250	300	400	500	600
Inches...	14 x 19	15 x 26	17 x 26	18 x 26	20 x 26
Each	$5 50	$6 50	$7 25	$7 50	$8 50



FIG. 3461

GALVANIZED ASH CANS

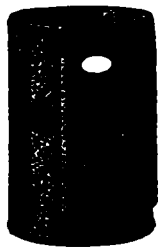


FIG. 3462

PRICES, FIG. 3462

Standard Pattern.

Numbers....	13	14	15	16
Inches.....	15 x 26	17 x 26	18 x 26	20 x 26
Each.....	$8 25	$9 00	$9 50	$10 25

Covers, Heavy. Fitting Outside.

For Can Numbers	13	14	15	16
Each.....	$1 25	$1 35	$1 50	$1 75

The Standard Ash Can is made of steel, galvanized after being made. The body or cylinder is protected by eight V shaped metal ribs running lengthwise of the can and rendering the can more serviceable.

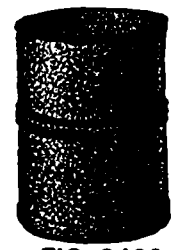


FIG. 3463

PRICE, FIG. 3463

Elevated Railroad Pattern.

Made of 16 gauge steel. Weight, 40 lbs.

Number..	150
Inches..	18 x 25
Each..	$15 00

PRICES, FIG. 3464

Extra Heavy.

Numbers.	20	30	40	50	60
In.....	13 x 17	15 x 24	17 x 24	18 x 24	20 x 24
Weight..	14 lbs.	27 lbs.	28 lbs.	30 lbs.	40 lbs.
Each.....	$5 80	$7 00	$8 00	$9 25	$10 50

JAPANNED STEEL ASH CAN



FIG. 3464

ENGINEER'S ASH CAN

Steel Throughout.

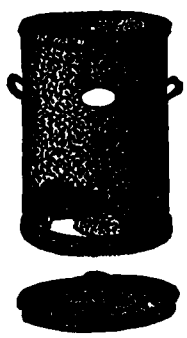


FIG. 3465

Japanned.					Galvanized.					Covers, Galvanized.			
Numbers.	35	45	55	65	Numbers..	305	405	505	605	Heavy Coned Shaped.		Fitting Outside.	
Inches....	15 x 24	17 x 24	18 x 24	20 x 24	Inches....	15 x 24	17 x 24	18 x 24	20 x 24	Inches..	15	17	18	20
Weight...	34 lbs.	40 lbs.	42 lbs.	47 lbs.	Weight...	37 lbs.	43 lbs.	45 lbs.	50 lbs.	For cans, Numbers	35 & 305	45 & 405	55 & 505	65 & 605
Each.....	$8 75	$9 25	$10 00	$11 50	Each.....	$11 00	$11 75	$12 25	$14 50	Each....	$1 25	$1 35	$1 50	$1 75

The Engineers' Ash Can is made of steel throughout, with heavy forged stationary handles and reinforced eyeholes for the purpose of handling the can with block and fall if required. The bottom presents four thicknesses of metal—the bottom proper, the cylinder and the inner and outer hoop. See illustration. The galvanized cans may be soldered water tight, and are then available for grease or hot liquids.

STEEL BUSHEL BASKET



FIG. 3466

PRICES, FIG. 3466

Standard Measure.

No. 1	Lacquered,	weight, each,	8	lbs.. per doz..	$18 00
" 2	Galvanized,	"	" 9	" " ..	20 00
" 3	Tinned,	"	" 8½	" " ..	21 00

Packed half dozen the crate. Shipping weight, 60 pounds.

These baskets are made of cold rolled steel drawn from one piece and furnished with malleable iron handles.

STEEL BASKET

Indestructible, corrugated, galvanized. Adapted to carrying any material, either dry or wet, hot or cold.

Nos.	Capacity, Bushels.	Diameters, Inches.	Depth, Inches.	Weight, Pounds.
A1	1	17	11½	6
A1½	1½	19	13	7
A2	2	20	15	8
A3	3	23	17	10
A4	4	25	20	12
A5	5	25	22½	14
A6	6	25	25	16

Prices on application.

These baskets will be furnished with iron drop handles unless otherwise specified. Rope handles, $1 00 per dozen extra. All A baskets furnished with reinforced bottoms.

The A1 Basket with roped handles and reinforced bottoms.

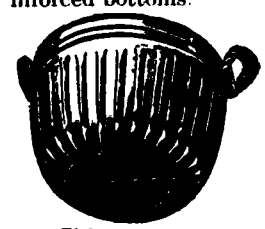


FIG. 3467

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INDESTRUCTIBLE CORRUGATED GALVANIZED STEEL BASKETS

THE B BASKET

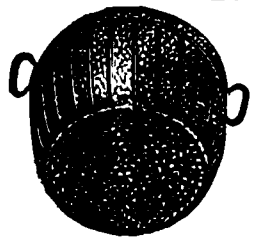


FIG. 3468

Adapted to Carrying Any Material, Either Dry or Wet, Hot or Cold.

DESCRIPTION, FIGS. 3468 AND 3469

This basket is not as heavy or as strongly made as Fig. 3467, but gives good satisfaction in ordinary use. Always furnished with iron drop handles.

Nos.	Capacity, Bushels.	Diameters, Inches.	Depth, Inches.	Weight, Pounds.
B½	½	12¼	9½	4½
B1	1	17	11½	6
B1½	1½	19	13	7¾

PRICES ON APPLICATION

HALF BUSHEL BASKET

Flat Steel Bail.

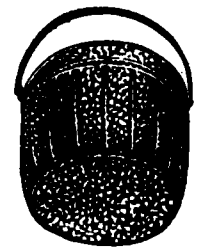


FIG. 3469

IRON STRAPPED BAMBOO COAL BASKET

PRICES FIG. 3470

1 bushel, per dozen, $13.00.

1½ bushel, per dozen, $15.00.

2 bushel, per dozen, $18.00.

3 bushel, per dozen, $21.00.



FIG. 3470

PLAIN FACTORY BASKETS

PRICES, FIG. 3471

OBLONG

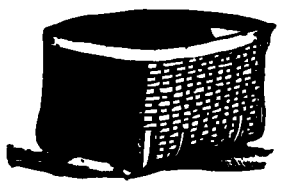


FIG. 3471

Sizes in Bushs.	Length in Ins.	Width in Ins.	Depth in Ins.	Plain, Each.
1	21	12	12	$0 75
1½	24	17	11	85
2	24	17	13	1 00
3	28	17	16	1 20
4	30	19	17	1 60
5	30	21	20	1 80
6	33	22	21	2 25
8	33	22	26	3 00
8	36	26	20	3 00
10	36	26	24	3 75
12	40	28	24	4 50
12	36	26	28	4 50
16	40	28	33	6 00
20	42	31	32	7 50

Inside dimensions: Odd sizes will be made to any measurement. Anti-friction castors, $1.00 per basket.

IMPROVED FACTORY BASKETS

Iron Strapped or Wood Strapped.

PRICES, FIG. 3471

Sizes in Bushs.	Length in Ins.	Width in Ins.	Depth in Ins.	Improved, Each.
1	21	12	12	$1 00
1½	24	17	11	1 30
2	24	17	13	1 35
3	28	17	16	1 60
4	30	19	17	2 00
5	30	21	20	2 40
6	33	22	21	3 00
8	33	22	26	3 50
8	36	26	20	3 50
10	36	26	24	4 25
12	40	28	24	5 00
12	36	26	28	5 00
16	40	28	33	7 50
20	42	31	32	9 00

Inside dimensions: Odd sizes will be made to any measurement. Covers on 2, 3 and 4 bushel baskets, $1.50 each, extra; covers on 5, 6 and 8 bushel baskets, $1.70 each, extra; common trucks, $1.00 per basket, extra.

IRON STRAPPED OR WOOD STRAPPED

PRICES, FIG. 3472

ROUND, SQUARE BOTTOM

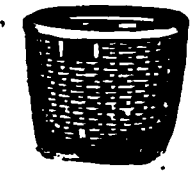


FIG. 3472

Sizes in Bushs.	Diams. in Ins.	Depth in Ins.	Improved, Each.
1	18	13	$1 00
1½	20	12	1 30
2	20	17	1 35
2½	24	15	1 50
3	24	19	1 60
4	27	17	2 00
4	24	24	2 00
5	27	20	2 40
5	22	30	2 40
6	24	30	3 00
6	27	22	3 00
8	28	30	3 50

RAWHIDE BASKETS, ETC.

PRICES, FIG. 3474

Numbers.	Capacity, Bushels.	Diameters, Inches.	Depth, Inches.	Per Dozen.
1	1	15	12	$36 00
2	1¼	15	15	38 00
3	1½	15	18	43 00
4	2	18	17	58 00
5	2½	20	17	62 00
6	3	20	21	73 00
7	3½	20	24	77 00
8	4	20	27½	81 00

PRICES, FIG. 3475

Numbers.	Capacity, Bushels.	Diameters, Inches.	Depth, Inches.	Per Dozen.
1	½	13½	8	$23 00
2	¾	15½	11	27 00
3	1	16	14	36 00
4	1½	17	15½	43 00
5	2	19	15½	53 00
6	2½	19½	19	62 00
7	3	20½	23	73 00

ROUND



FIG. 3474

ROUND TAPER



FIG. 3475

OBLONG

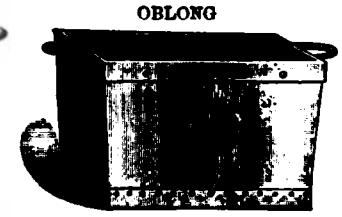


FIG. 3476

PRICES, FIG. 3476

Numbers.	Capacity, Bushels.	Length, Inches.	Breadth, Inches.	Depth, Inches.	Per Dozen.
1	¼	10½	8⅛	6	$17 00
2	½	16	10	7	25 00
3	¾	16	10½	9½	33 00
4	1	18	12½	11	39 00
5	1½	20	15	12	45 00
6	2	20½	14	17	54 00
7	2½	22½	16½	16	63 00
8	3	23	17	19	75 00
9	3½	24	18	18	78 00
10	4	27	18	18½	82 00
11	4½	30	18	18½	88 00
12	5	30	18½	20	90 00

These dimensions are all inside measure, and diameter, length and breadth refer to top of basket only. Prices for special sizes given on application. The bottoms are protected by thick strips of hard wood, which, if worn out, can be easily renewed by anyone. We can furnish the strips if desired at 10 cents per basket.

THREE PIECE STEEL TOTE BOXES

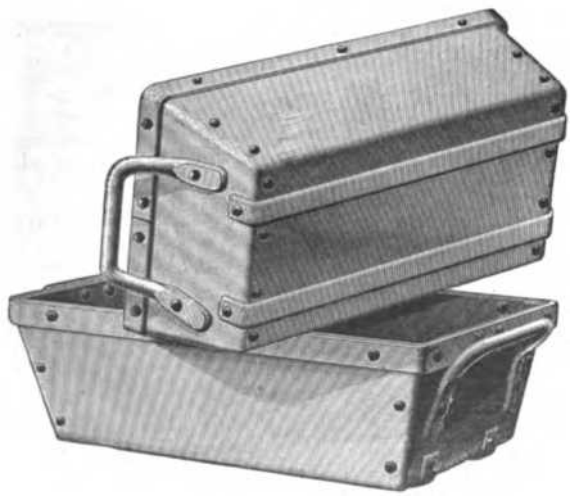


FIG. 3477

DESCRIPTION FIG. 3477

With wrought handles, flaring ends and sides, banded top edge and runners or wearing guards on bottom.

Any size and thickness of steel to order.

State quantity, size, thickness of steel, etc.

Prices on application.

THREE PIECE FLARING STEEL TOTE BOX

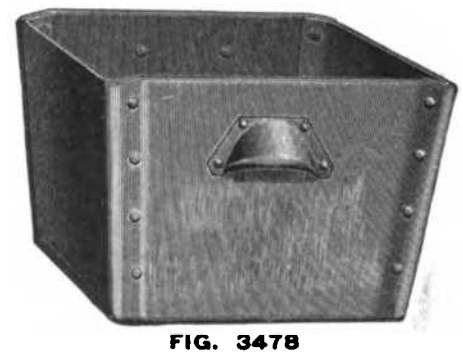


FIG. 3478

Stamped handle, 14 inches square at top, 9 inches high. Used at collieries for carrying out bone and slate from the picking room, etc. Made of No. 14 steel to withstand the extraordinary hard usage to which they are subjected.

PRICES ON APPLICATION

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STEEL TOTE BOX

Size K, No. 16 Gauge.

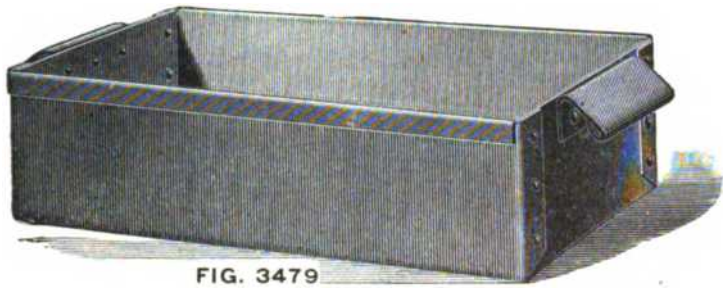


FIG. 3479

Suitable for handling bolts, rivets, screws, nails, nuts, washers, small castings, ore quartz, and other rough or heavy substances.

Size—16¼ inches long, 9¼ inches wide, 4½ inches deep. No. 16 gauge steel.

The upper edges of the sides are lapped ½ inch, stiffening and strengthening the box, giving it a smooth finish.

Handle riveted on each end of the same gauge steel as box.

This box, being flat on bottom, and corners stiffened by laps, as seen in cut, can be piled one upon another, ten or twelve deep, without danger of buckling or crushing under the strain.

Weight of box complete, 8 pounds. Made of any gauge of steel and any special size desired. Prices on application.

PRESSED STEEL SHOP PANS

For Machine Shops and Foundries, Bolt Works, etc.

Size J, with Handles.



FIG. 3482

Size G, without Handles.

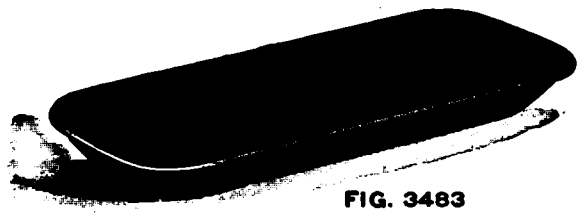


FIG. 3483

PRESSED STEEL SHOP PANS

For Machine and Boiler Shops, Bolt and Rivet Factories.

Sizes A to F.

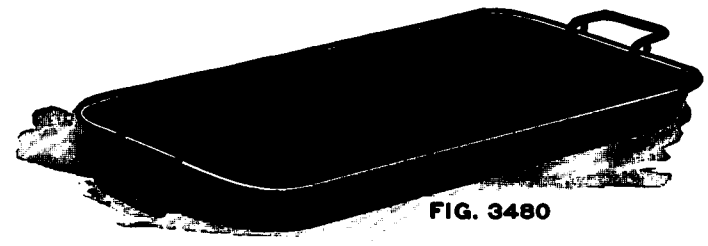


FIG. 3480

Size H.



FIG. 3481

These Pressed Steel Pans are used in machine shops, bolt, rivet, screw, nail, nut and washer factories, being adapted to handling these articles while in process of manufacture, from one machine to another; also used under lathes and kindred machinery to catch the oil drippings, turnings, trimmings and borings from the machines.

Flange or top edge of pan is turned over a 5/16 inch steel rod, stiffening and strengthening it and giving it a smooth finish.

The handles are ⅜ inch round iron, and drop down against end.

All these sizes are No. 16 gauge, except size G, Fig. 3483, which is No. 17, and this pan has no handles, and flange is not wired, but flat, and ½ inch wide. All sizes are painted black, or unpainted, as ordered.

PRICES, FIGS. 3480 AND 3481

Sizes.	Width, Inches.	Lengths, Inches.	Depth, Inches.	Weight, Lbs.	Each.	Sizes.	Width, Inches.	Lengths, Inches.	Depth, Inches.	Weight, Lbs.	Each.
A	15	23	3½	9	$1 60	E	19	35	3½	17	$2 40
B	17	29	3½	13	2 00	F	19	39	3½	19	2 60
C	17	35	3½	16	2 30	G	18¼	24	2½	4½	1 75
D	19	29	3½	15	2 20						

DESCRIPTION, FIGS. 3482 AND 3483

Made of any gauge of sheet steel desired. Suitable for handling bolts, rivets, nails, screws, nuts, washers, castings, ore, quartz and other substances, and for use under lathes and drill presses to catch the turnings, trimmings, borings, oil drippings, etc. Both these pans made regularly of No. 16 gauge sheet steel, but can make lighter or heavier gauges, as preferred, at corresponding changes in price. The improved roll handle, of steel plate, will commend itself to every one as being all that is desired for the purpose. Both the pans here represented are made with these handles, when so ordered, at slight advance in price. The measurements given are inside of pan at top, the bottom of size H measuring 11¼ inches wide by 18½ inches long. Size J is not flared so much, and is more rounded at bottom and corners.

Sizes.	Width, Inches.	Lengths, Inches.	Depth, Inches.	Weight, Pounds.
H	13¾	21½	5¾	9
J	8¾	16½	5¼	6

Prices, with or without handles, on application.

STEEL TOTE PAILS

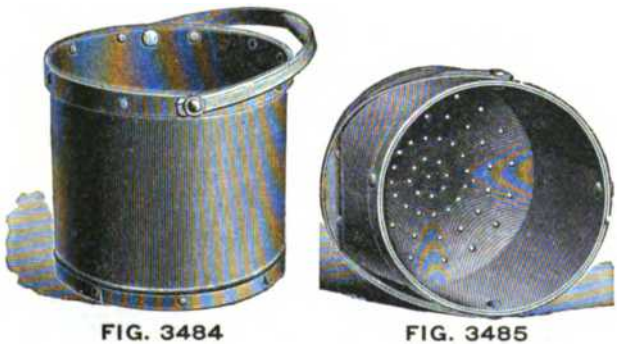


FIG. 3484 FIG. 3485

These Steel Tote Pails are made with both solid and perforated bottoms, and are more convenient than the boxes, where it is desirable to carry the load with one hand.

The perforated bottoms are used where it is desired to clean articles by dipping.

REGULAR SIZES

No. 50—9 inches diameter, 8 inches deep. Solid bottom.
No. 51—11 inches diameter, 10 inches deep. Solid bottom.
No. 52—9 inches diameter, 8 inches deep. Perforated bottom.
No. 53—11 inches diameter, 10 inches deep. Perforated bottom.

Sides are made of 18 gauge and bottoms of 16 gauge steel. Prices on application.

STEEL KEGS



FIG. 3486 FIG. 3487

For handling all classes of manufactured articles, where a keg is more preferable than a box or pail.

The woven wire bottom affords an easy means for draining or washing the articles.

REGULAR SIZES

No. 30—15 in. high, 12 in. diameter, wood bottom.
No. 31—18 " " 12 " " " "
No. 32—15 inches high, 12 inches diameter, woven wire bottom.
No. 33—18 inches high, 12 inches diameter, woven wire bottom.

Unless otherwise specified, we furnish these of 18 gauge steel. Prices on application.

STEEL SHOP KEG



FIG. 3488

With plain grooved seam body, open top, banded, drop handles, recessed flanged bottom (riveted), as shown in cut.

Any size and thickness of steel to order. Not fluid tight unless so ordered. State quantity, size, thickness of steel, etc. Prices on application.

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PAILS AND BUCKETS

GALVANIZED PAIL



FIG. 3489

Heavy, with iron clad bottom.

Numbers	107	110	112	114	116	120
Quarts	7	10	12	14	16	20
Per dozen	$4 75	$5 50	$6 00	$6 25	$9 50	$16 00

Extra heavy. Heavy wrought iron ears. Bottom reinforced with band iron straps.

Number	314
Quarts	14
Per dozen	$12 00

COVERS FOR EXTRA HEAVY GALVANIZED PAILS



FIG. 3491

Number	314
Per dozen	$2 50

GALVANIZED WATER CARRIER

Numbers	810	812	814	816	820
Quarts	10	12	14	16	20
Per dozen	$8 25	$10 25	$12 00	$14 50	$22 50

GALVANIZED WELL BUCKET

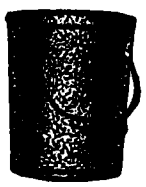


FIG. 3492

Medium.

Numbers	708	710	712	714
Quarts	8	10	12	14
Per dozen	$6 00	$6 50	$7 00	$7 50

GALVANIZED ROUND BOTTOM FIRE BUCKET

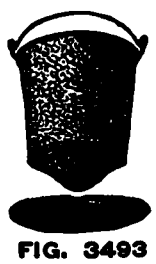


FIG. 3493

Numbers	410	412	414
Quarts	10	12	14
Per dozen	$6 75	$7 25	$7 50

Painted red, $1.00 per dozen extra.

COVERS FOR GALVANIZED FIRE BUCKETS

Numbers	10	12	14	16
Per dozen	$2 00	$2 25	$2 50	$3 00

Painted red, 25 cents per dozen extra.

GALVANIZED PAIL

PRICES, FIG. 3490



FIG. 3490

Heavy, with iron clad bottom.

Numbers	210	212	214	216	220
Quarts	10	12	14	16	20
Per dozen	$5 50	$6 00	$6 25	$7 50	$16 00

COVERS FOR GALVANIZED PAILS

Numbers	210	212	214	216	220
Per dozen	$2 00	$2 25	$2 50	$3 00	$4 00

MORTAR OR CEMENT PAIL

PRICES, FIG. 3495



FIG. 3495

Hudson River Tunnel pattern, galvanized.

Number	514
Quarts	14
Per dozen	$22 50

Black Iron.

Number	524
Quarts	14
Per dozen	$20 00

MORTAR OR CEMENT PAIL

PRICES, FIG. 3496



FIG. 3496

Aqueduct pattern, galvanized.

Number	614
Quarts	14
Per dozen	$26 00

Black Iron.

Number	624
Quarts	14
Per dozen	$24 00

GALVANIZED MULE BUCKET

PRICES, FIG. 3497



FIG. 3497

Nos.	Quarts.	Per Dozen.	Nos.	Quarts.	Per Dozen.
100	10	$7 60	500	18	$9 70
200	12	8 10	600	20	10 60
300	14	8 75	700	22	11 15
400	16	9 15	800	24	11 90

GALVANIZED FIRE BUCKET

PRICES, FIG. 3498



FIG. 3498

Numbers	10	12	14	16
Quarts	10	12	14	16
Per dozen	$4 50	$5 00	$5 50	$7 50

Painted red, $1.00 per dozen extra.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

INDURATED FIBER BUCKETS AND PAILS

STAR PAIL



FIG. 3499

PRICES, FIG. 3499

8½ inches deep, 11 inches diameter, capacity about 12 quarts; packed ½ dozen in a crate. $4.20 per dozen; 35 cents each.

DECK OR MASONS' PAIL

8½ inches deep, 11 inches diameter, capacity about 12 quarts; one dozen in crate; $4.80 per dozen; 40 cents each. Same size as Star, but heavier; fitted with heavy malleable iron ears and galvanized iron bail; especially adapted for canal or steamboat use as a deck pail; most excellent for masons or other outdoor use.

RAILROAD OR FACTORY PAIL

11 inches deep, 11 inches diameter, capacity about 14 quarts; one dozen in crate; $5.40 per dozen; 45 cents each.

FOR FIRE ONLY

No extra charge for this stenciling. Special stenciling, to a reasonable amount, 50 cents per dozen.

Holds about 10 quarts, 8 inches diameter at mouth, 13 inches deep; $4.80 per dozen; 40 cents each; half dozen in crate; all stenciled "For Fire Only."

We recommend this pail to hang up, as its small mouth prevents its pulling together, and we cannot warrant any other fiber pails not to do this when hung up.

Hooks for this pail, $1.50 per dozen.

DEEP FIRE PAIL



FIG. 3501

FIRE PAIL



FIG. 3500

PRICES, FIG. 3500

11 inches deep over all, 11 inches diameter, capacity about 12 quarts; packed one dozen in crate; $5.40 per dozen; 45 cents each.

We recommend that these round bottom pails be set in shelves, and for that purpose we are prepared to furnish shelves and brackets for sets of either two, three or four pails.

	Each.
Shelves holding two pails	$0 50
" " three "	60
" " four "	70

Brackets and screws are included with shelves.

We do not recommend this style of pail when hung up.

If pail is desired to hang up, we recommend the deep fire pail.

ICE WATER BUCKET

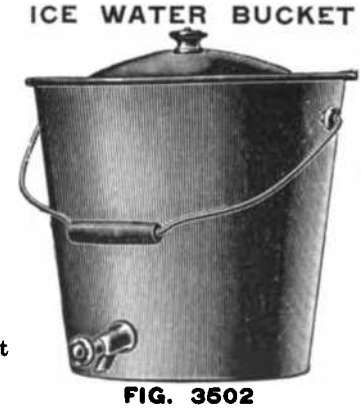


FIG. 3502

Ice Water Bucket, Nos. 4, 5, 6; nickel self closing faucet.

PRICES, FIG. 3502

Tapering self-closing faucet.

Numbers.	Inside Diameters, Inches.	Depth, Inches.	Per Dozen.
4	11	9	$12 00
5	11	11	15 00
6	12½	13	18 00

Nested, one each size, per nest, $3.75 } 1 nest

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FIRE BUCKETS

NO. 1



FIG. 3503

NO. 2



FIG. 3504

PRICES

No. 1	Ordinary, per dozen	$36 00
No. 2	N. Y. F. D. style, leather handles, per dozen	54 00

FIRE PAIL



FIG. 3505

PRICES

Per dozen		$42 00
Acid buckets, per dozen		60 00
" "	Solid gutta percha, per dozen	120 00

HARD RUBBER BUCKET



FIG. 3505A

PRICES

1 Gallon, each		$10 50
2 Gallons, "		12 00

FOLDING PAIL

CLOSED

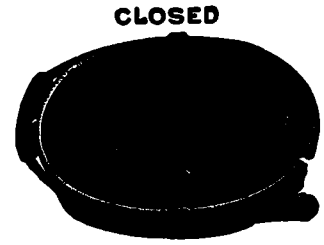


FIG. 3506

OPEN



FIG. 3506

PRICES

Japanned mountings, per dozen		$33 50
Nickeled "	"	46 50

WATER COOLER



FIG. 3509

Japanned, with Side Handles. Made from Heavy Stock.

PRICES

FIG. 3509

Nos.	Gallons.	Each.
200	2	$7 50
300	3	8 35
400	4	9 40
600	6	12 50
800	8	15 00
1000	10	17 50
1200	12	21 25
1400	14	25 00

WATER COOLER STAND



FIG. 3510

WATER COOLER DRAINER

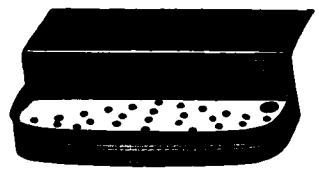


FIG. 3511

PRICES

Small, per dozen	$22 50
Large, "	25 00

PRICES, FIG. 3510

Nos.	Each.
14	$9 00
15	10 50
16	13 25

CLIMAX WATER FILTER

WITH PORCELAIN LINED COOLER, JAPANNED, STONE COLOR



FIG. 3512

Nos.	Gallons.	Diameters, Inches.	Each.
52	2	9½	$5 00
53	3	12	6 50
54	5	12½	8 00
55	7½	14½	10 50

THE PASTEUR GERM PROOF FILTER

Style Vesta. Combined Filter and Cooler —Non-Pressure.



FIG. 3513

DESCRIPTION AND PRICE

Nos.	3	5
Capacity of reservoir, gallons	2½	2½
Number of tubes	3	5
Height of filter, inches	42	42
Diameter of base, inches	15	15
Each	$24 00	$27 00

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PORTABLE ARMY FILTER

ARMY FILTER NO. 1

SET UP

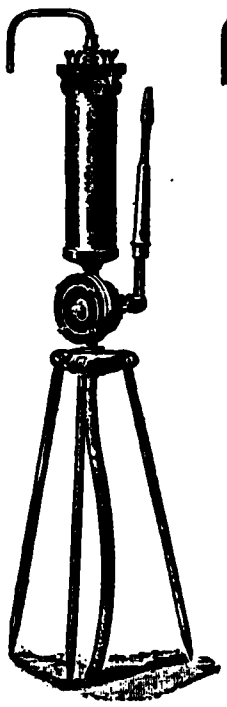


FIG. 3514

FOLDED



FIG. 3514

Filters are placed in a bucket of unfiltered water, or in a stream, and by working pump filtered water runs out of the small pipe at the top.

ARMY FILTER NO. 1

The filter rests on a double acting hand pump attached to a tripod, so arranged that it can be easily folded together (like cut) and placed in a box or satchel while on the march or traveling. The filter case is of brass, nickel plated outside and tinned inside. Height of filter, ready for use, 3½ feet; when folded together, 2 feet long and 7 by 6 inches wide. Weight, 19 pounds. Capacity, ½ gallon of filtered water per minute. The rubber hose at lower end of filter is placed in unfiltered water, which is forced, by working of the pump, through the filter cylinder, and runs out filtered through the small pipe on top. Price, $25.00. Extra cylinder, with safety tube, $3.00 each.

ARMY FILTER NO. 2

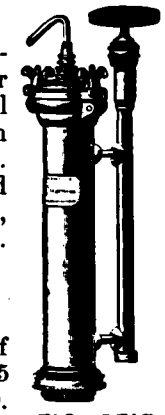


FIG. 3515

ARMY FILTER NO. 2

Similar style of filter; has pump attached at the side of filter case; made of brass; nickel plated outside and tinned inside. Height, 18 inches; width, 5 by 5 inches. Capacity, ½ gallon filtered water per minute. Weight, 6½ pounds. Price, $20.00. Extra cylinder, with safety tube, $3.00 each.

ARMY FILTER NO. 3

Same style as No. 2, but smaller; filter capacity, one quart per minute. Height, 14 inches; width, 3 by 2 inches. Weight, 3 pounds. Price, $10.00. Extra cylinder, No. 1, $1.50 each.

HOUSE AND LARGE SUPPLY FILTERS

WITH PUMP CONNECTIONS

In places where no direct pressure from water works can be obtained these filters may be successfully operated by a hand pump, as the following cuts illustrate.



FIG. 3516

Fig. 3516 represents filter style similar to Army Filter Fig. 3514, connected to a pump mounted on a board to be fastened to the wall. The filter case is entirely nickel plated, pump black or dark red enamel. Price, mounted on board complete, $20.00.

Fig. 3517 represents a 3, 5 or 9 cylinder Large Supply Filter mounted on a board to be fastened to the wall. Price of pump, Fig. 3517, $12.00, not mounted.

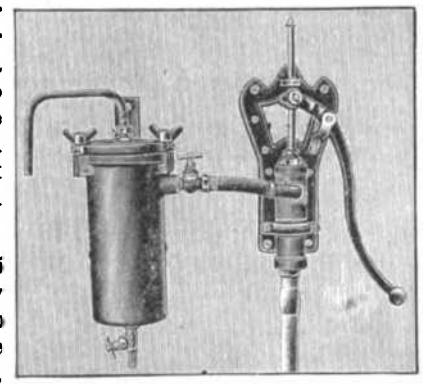


FIG. 3517

Fig. 3518 represents 15 cylinder Large Supply Filter on a portable wooden stand, showing how filter may be used in camps, in mining districts, or in yards or shops of manufacturing establishments.



FIG. 3518

PRICES OF FILTERS, FIGS. 3516 TO 3518

	Height.	Diameter.	Capacity per Minute with 40 Pounds Pressure.	Each.
Filter with 3 cylinders	21 inches	6 inches	about 1½ gallons	$30 00
" 5 "	22 "	7 "	" 2½ "	40 00
" 9 "	24 "	8½ "	" 4½ "	60 00
" 15 "	24½ "	12 "	" 7½ "	80 00

Fig. 3518 is of special construction and made to order only. Prices will be quoted on application.

OVAL WATER CARRIER



FIG. 3519

GRAINED OAK

Gallons	2½	5
Heavy tin, each	$1 50	$1 80
Galvanized iron, each	3 00	

RAILROAD WATER CARRIER



FIG. 3520

2½ GALLONS

Tin, japanned and striped, each	$2 00
Tin, japanned and striped, copper bottomed, each	3 00
All copper, each	4 00

TRAIN WATER CAN



FIG. 3521

No. 51. 10 inches high, 12 inches diameter.

Price, per dozen $22 00

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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CABOOSE WATER CAN



FIG. 3522

No. 52. 12 inch diameter, 18 inches high. Per dozen, $27.00.

CAR SPRINKLING CAN



FIG. 3523

No. 53. 10 inches high, 10 inches diameter. Per dozen, $20.00.

FOUNDRY SPRINKLER



FIG. 3524

DESCRIPTION

Body and spout stamped from one piece. Galvanized after being put together. Bottom strengthened and re-enforced by an additional bottom made of wood.

PRICES

3 gallons, per doz.		$42 00
4 "	"	48 00
5 "	"	54 00

GALVANIZED WATER POT



FIG. 3525

Cylinder and spout stamped in one piece.

PRICES

4 quarts, per doz.,		$9 00
6 "	"	12 00
8 "	"	15 00
10 "	"	18 00
12 "	"	21 00
16 "	"	24 00
20 "	"	42 00

JAPANNED AND GALVANIZED COAL HODS

OPEN TOP



FIG. 3526

PRICES

JAPANNED

15 inch, per doz.		$8 25
16 "	"	8 75
17 "	"	9 50
18 "	"	10 00

GALVANIZED

15 inch, per doz.		$11 50
16 "	"	12 50
17 "	"	13 50
18 "	"	14 50

FUNNEL TOP



FIG. 3527

PRICES

JAPANNED

15 inch, per doz.		$12 00
16 "	"	13 00
17 "	"	14 00
18 "	"	15 00

GALVANIZED

15 inch, per doz.		$15 00
16 "	"	16 00
17 "	"	18 00
18 "	"	20 00

EXTRA HEAVY OPEN TOP



FIG. 3528

PRICES

JAPANNED

15 inch, per doz.		$8 25
16 "	"	8 75
17 "	"	9 50
18 "	"	10 00

GALVANIZED

15 inch, per doz.		$11 50
16 "	"	12 50
17 "	"	13 50
18 "	"	14 50

FIRE SHOVELS

SHORT HANDLE



FIG. 3529

Size, 4¾ x 8 x 16.

Galvanized, per gross,		$21 00
Tinned,	"	24 00
Japanned,	"	15 00

LONG HANDLE



FIG. 3530

Size, 5 x 8 x 23.

Galvanized, per gross.		$35 00
Tinned,	"	40 00
Japanned,	"	25 00

CUSPIDORS

GALVANIZED HOTEL SPITTOONS



FIG. 3531

No. 200. Inches, 9¼ x 4. Per dozen, $8.00. Case lots, 2 dozen.

CAST IRON



FIG. 3534

Cast iron, banded in assorted colors.
No. 7. Size, 8½x6 in., per dozen..$30 00

RAILROAD CAR PATTERN

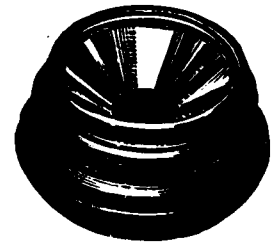


FIG. 3532

No. 15, 7 inches diameter, 4 inches deep.

Nickel, per doz.	$15 00
Brass, "	13 50

RUBBER

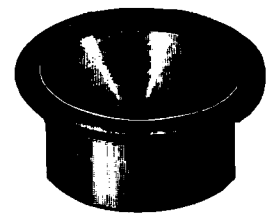


FIG. 3535

Colors, oak and walnut.

Nos.		Diams., Inches.	Per Doz.
0	Large	12½	$24 00
1	"	11	21 00
2	Medium	10	18 00
3	Small	9	15 00

BRASS SELF RIGHTING



FIG. 3533

Gilt finish, per doz.	$12 00
Nickel plated, "	15 00

INDURATED FIBER



FIG. 3536

Nos.	Height, In.	Diams., In.	Per Doz.
0	8	16	$10 00
1	5½	12	6 60
2	5½	11½	6 00
3	4½	9½	5 40

Nested, one each size, per nest, $1.25.

No. 0	Tops only	$4 80
" 1	"	3 20
" 2	"	3 00
" 3	"	2 80

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HOLYSTONES

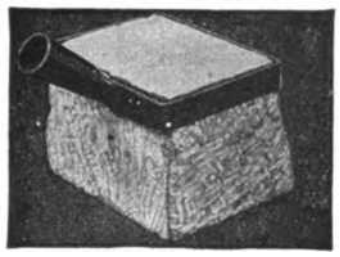


FIG. 3537

	Per Dozen.
Hand	$6 00
Band	18 00
Ring	36 00

Special sizes made to order.

SQUEEGES OR FLOOR SCRUBS



FIG. 3538

Size.	Per Dozen.
14 inch, ¼ inch rubber	$2 50

Above price includes handles.

MOPS

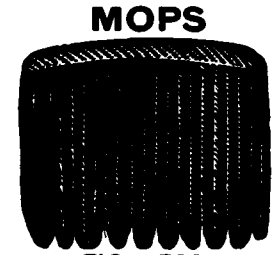


FIG. 3539

	Per Dozen.
6 lb. cotton	$0 65
9 " "	85
12 " "	1 00
15 " "	1 25
18 " "	1 75
9 " extra cotton	1 60
12 " " "	2 00
9 " cotton twine	1 20
12 " " "	1 65
15 " " "	2 00
For self-wringing sticks	1 25

MOP STICKS

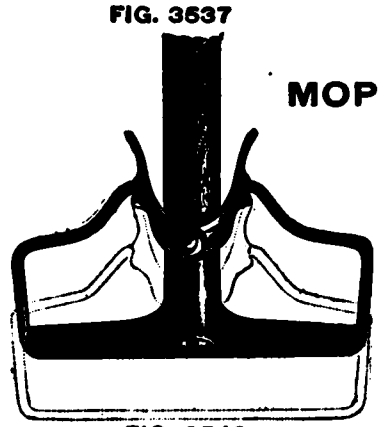


FIG. 3540

PRICES

Ideal, with spring	$0 85
Williams, "	1 10
Invincible, with spring, heavy,	2 25

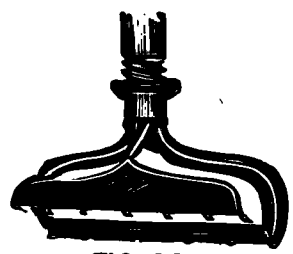


FIG. 3541

PRICE

Star for mop and brush, 90c.

OAKUM

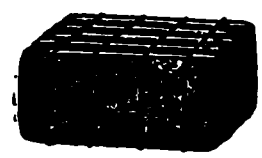


FIG. 3542

Grades.	Per Lb.
Best	
U. S. Navy	
Navy	
Plumbers', spun	
Best, "	
U. S. Navy, "	
Navy, "	

In 50 lb. bales.

WASTE

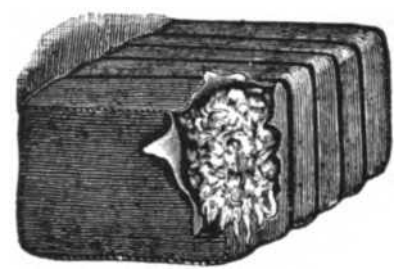


FIG. 3543

Machine cop, X white cotton, per pound	
" " XXX white cotton " "	
Colored cotton " "	
" wool " "	

In 100 lb. bales.

WIPING TOWELS

Nos.	Raw Silk Machine Wipers, Inches.	Per Gross, 144 Pieces. Unhemmed.	Hemmed.	Per Bale, 10 Gross. Unhemmed.	Hemmed.
1	12x15	$7 50	$8 50	$75 00	$85 00
2	12x24	11 50	12 70	115 00	127 00
3	12x30	15 00	16 30	150 00	163 00
4	18x18	15 00	16 30	150 00	163 00
5	18x30	25 00	26 50	250 00	265 00
6	18x36	30 00	32 00	300 00	320 00

We can furnish any size desired, price proportionate. Unhemmed we ship in rolls of one piece, which can be cut in lengths to suit convenience.

Size No. 1 consists of a continuous roll folded into 16 sheets, 9 wipers each.
" 2 " " " " " 24 " 6 " " a. s. f.

LUBRICATING COMPOUND



FIG. 3544

PRICES

Cans	5, 10,	25 lbs.,	at	per lb.
Cans		50 "	at	"
Kegs	about	100 "	at	"
Half barrels.	"	200 "	at	"
Barrels	"	375 "	at	"

BADGER LUBRICANTS

LIGHT COLORED, TRANSPARENT

Badger Lubricant No. 1.—This is the softest and is for use on light bearings. It can be applied by means of a squirt can or oil cup. Its consistency is much greater than that of machinery oil. Badger Lubricant No. 2.—For general use on shafting and in open boxes; feeds nicely in cups with spindle; does not drip, and requires very little attention. Badger Lubricant No. 3.—Same as No. 2, only harder; for use on heavy bearings, and specially recommended for use in iron cups. Badger Lubricant No. 4.—Same as No. 3, only harder; for use in large open bearings and in place of tallow. Badger Lubricant No. 5.—The hardest grade, especially adapted for journals which are subjected to great heat. Badger Crank Pin Lubricant.—Dark green in color, heavy body, very high melting point; for use only in compression grease cups.

PRICES

Nos. 1, 2, 3, 4, 5, and Crank Pin.

Packed in 25 and 50 lb. tin pails, in cases	
Half barrels, about 200 lbs	
Barrels, about 400 lbs	

ALBANY COMPOUND



FIG. 3545

This lubricating compound is made in four regular numbers and one extra. No. 0 is very soft, being used in extreme cold weather and on exposed journals. No. 1 is harder than No. 0, and is used on ordinary journals in cold weather, or on very cool or slow running journals. No. 2 is harder than No. 1, and is the grade ordinarily used in moderate and warm weather. No. 3 is adapted to the use of all stationary, marine and tugboat engines; also, shafting in warm weather, and seldom fails to cool the warmest journals and make lubrication easy. We also furnish a grade of extra hardness, No. X, which will lubricate journals when no oil would work.

PRICES

Cans	5, 10,	25 lbs.,	at	per lb.
"		50 "	at	"
Kegs	about	100 "	at	"
Half barrels.	"	200 "	at	"
Barrels	"	375 "	at	"

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OILS

	Per Gallon.		Per Gallon.
Ex. B. W. Sperm Oil		Ex. Royal Drill Oil	
" " Whale "		" " Cutting Oil	
" " Neatsfoot Oil		" " Car "	
" W. S. Lard Oil		" Royal Cylinder Oil	
" No. 1 Lard Oil		" XXX " "	
" Royal Machinery Oil		" Valve " "	
" Golden " "		" Royal Wool "	
" Red " "		" No. 1. " "	
" Royal Engine Oil		" Special " "	
" ◆ " "		" Royal Mineral Burning Oil	
" ◆ " "		" " Signal Oil	
" Royal Dynamo Oil		" " Lamp "	
" No. 1 " "		" " Paint, "	
" Royal Spindle Oil		" " Frothing Oil	
" No. 1 " "		" W. Va. Black "	

LUBRICATING BALLS

FOR VALVES AND CYLINDERS OF MARINE, STATIONARY AND LOCOMOTIVE ENGINES



FIG. 3547

The patent lubricating ball is chemically prepared, and is an absolutely pure mineral compound. It is a perfect cleanser and lubricator of the highest order, works equally as well in high steam as it does in low steam. It leaves no filthy grease sediment or deposit in surface condenser or in the boiler. After using it a short time the valves, rings and cylinder surfaces present a smooth, highly polished appearance, showing a most decided reduction in friction. By the constant use of these patent lubricating balls the wear and tear of machinery is reduced to the lowest possible minimum.

The balls are 1½ inches in diameter, and are packed in boxes containing one gross each.

PRICE, $5.00 PER GROSS

LUBRICATING GRAPHITE

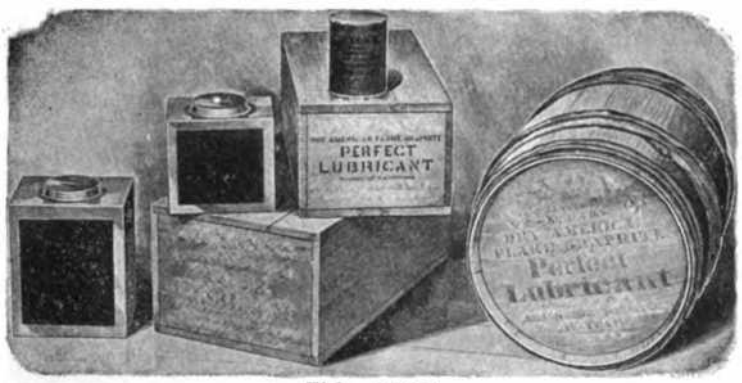


FIG. 3548

Trade Nos.			
632—	1 pound paper cans (36 in case) each		$0 20
633—	5 " tin cans screw top (1, 5, 10, in case) "		85
634—	10 " " " " " (1, 2, 5 " ") "		1 60
644—	25 " paper bag inclosed in case, per pound		14
645—	50 " " " " " " " "		13
646—	100 " keg		12
646—	200 " ½ barrel		12
647—	350 " barrel " "		10

Trade numbers and sizes of packages of regular graphite are as above. If finely pulverized graphite, known as No. 2, is wanted, so specify it in the order. The trade numbers will be the same, but each can or package will have a distinguishing label attached to the package.

GUM-OLEO

A WIRE ROPE LUBRICANT AND PRESERVATIVE

Is a neutral product. It prevents and destroys rust. Keeps the ropes always pliable. Prevents strand friction. Reduces drum and sheave friction. Prolongs the life of the rope. Odorless. Price, per gallon, $2.00. Sold in 1 gallon cans only.

WATER PROOF GRAPHITE GREASE

It is adapted for gears exposed to the action of water, for chains cables and wire ropes used in mines, quarries, etc., which are exposed to water, and for all other uses calling for a lubricant not affected by even running water. The finest flake graphite is used, with a peculiarly strong and adhesive grease. Also used for railroad switches, interlockings, etc.

Put up in packages of 10, 25, 50 and 100 pounds, and in barrels of 400 to 500 pounds. Prices same as Standard Grease given above.

HELMET OIL

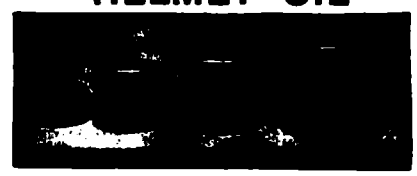


FIG. 3546

A solid oil adapted for use on all kinds of machinery.

PRICE IN TIN CANS				PRICE IN PACKAGES
1 lb. can	3 lb. can	5 lb. can	10 lb. can	Pail about 28 lbs, 40c. per lb.
$0 50	$1 50	$2 25	$4 25	Tub, " 60 " 39c. " "

OILED GRAPHITE NO. 7847



FIG. 3549

The graphite used is pure Ticonderoga flake graphite, which is carefully and thoroughly ground in the best of lubricating oil. Each flake of graphite is thereby coated with a film of oil; and graphite prepared in this manner is especially recommended by engineers for cylinders and valves where superheated steam and high pressure are used, as there is usually some difficulty in lubricating steam cylinders and valves under such conditions. It mixes readily with cylinder oil. This graphite is also recommended for steam cylinders where it is desired to introduce little if any, oil.

5 pound cans	(1, 5, 10 in case)	each	$2 00
10 " "	(1, 2, 5 ")	"	3 50
25 pound boxes, per pound			32
50 " " " "			30
100 " kegs " "			28
350 " barrels " "			24

SPECIAL GRAPHITE NO. 635



FIG. 3550

Specially intended for lubricating cylinders of gas engines, the delicate parts of locomotive air brakes and similar mechanisms, scientific instruments, light and close fitting bearings, spindles and bobbins in textile mills, and for the making of lubricants for bicycle chains and bearings, and for use generally where the regular flake graphite is not suitable because of its large flake.

Largely increases the lubricating value of any oil or grease.

Can be used dry or mixed with water, alcohol, benzine, oil or grease, tallow or vaseline, according to requirements.

1 pound paper cans	(36 in box)	each	$0 40
5 " tin "	(1, 5, 10 in box)	"	1 50
25 " bag inclosed in case, per pound			25
50 " " " " " "			25
100 " keg		"	25
200 " barrel		"	25

NO. 688

Is a specially fine graphite lubricating compound for the gears of electric motors.

	Per Pound.		Per Pound.
10 pound cans	20 cents	100 pound kegs	17 cents
25 " "	19 "	Barrels	15 "
50 " kegs	18 "		

GRAPHITED LUBRICANTS

STANDARD GRAPHITE GREASE

This is recommended for gears, for loose fitting journals and bearings, or wherever the conditions are such that an ordinarily stiff grease can be introduced. The pure flake graphite used in this grease is the celebrated Ticonderoga. This grease is not intended for use in an oil cup, but will feed nicely through a tallow cup.

	Each.		Each.
10 pound firkin	$1 50	50 pound keg	$6 50
25 " "	3 50	100 " "	12 00

Barrels of 400 pounds, 10 cents per pound.

GRAPHITE ROPE, CABLE, AND CHAIN GREASE

This graphite grease will be found a great preservative. It is water proof and will resist the action of even running water.

Put up in packages of 10, 25, 50 and 100 pounds, and in barrels of about 400 pounds. Prices same as Standard Grease given above.

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AXLE GREASE



FIG. 3551

Trade Nos.		Each.
600	1 pound cans, 36 in case	$0 15
601	2 " " 36 "	25
603	10 firkins, 6 "	1 20
624	25 "	2 75
625	50 pound kegs	5 00
626	100 " "	9 00
	200 " ½ barrels	8½ cents
627	375 to 400 pound barrels	per pound.

GRAPHITE GREASE FOR GEARS

Order the water proof brand when wanted for gears coming in contact with moisture or water. Prepared in packages of 10, 25, 50 and 100 pounds, and in barrels of 300 to 400 pounds.

10 pound firkins, $1.50 each; 50 pound kegs, $6.50 each; 25 pound firkins, $3.50 each; 100 pound kegs, $12.00 each. Barrels of 400 pounds, 10 cents per pound.

GRAPHITE CURVE GREASE

This grease is made to meet the demand of trolley and horse car companies for a durable lubricant for curves and switches. Flake graphite is used. It is furnished in barrels of 375 to 425 pounds. Prices on application.

GRAPHITE CAR BOX GREASE

It is an excellent lubricant for boxes, engines, freight cars, passenger cars, ore cars, coal and coke cars, and especially valuable for cooling hot boxes. Prices on application.

COOLING COMPOUND

When a car box commences to run hot through mechanical defects, such as unequal bearing surface, rough spots on the journal or brasses, or poor lubrication, the most satisfactory method of cooling is by the use of a special compound made exclusively for this purpose. It is a well known fact that the only way to remove roughness from journals or brasses is by grinding such defects away. This cooling compound grinds away the obstruction. Prices on application.

CHERRY HEAT WELDING COMPOUND



FIG. 3552

PRICES, FIG. 3552

1 lb. tins, 50 or 100 lbs. in box, 25c., 17½c.; 5 lb. or 10 lb. boxes, 100 or 200 lbs. in box, 20c., 16c.; 25 lb. boxes (4 or 8 in case), 15½c.; assorted cases, 4 10s, 8 5s, 20 1s, or 16 5s, 20 1s, 16 3/10c.; 50 lb. boxes, in bulk, 15c.; 100 lb., 14½c.; half bbls., 14c.; bbls., 13c. per lb.

A flux for welding iron to iron, steel to steel, or malleable iron to steel.

SILICA-GRAPHITE PAINT

For metal or wood work, roofs, bridges, telegraph and trolley poles, smoke stacks, boiler fronts and iron construction work of buildings. Four standard shades only—a dark olive green, natural or slate color, a dark red shade, and a jet black.

THICK, GROUND IN OIL

		Per Pound.
5 lbs.	in tin pail, 6 in case	15c.
10 "	" 6 "	15
25 "	" 1 "	14
50 "	keg	13½
100 "	"	13
½ bbl.	300 to 350 lbs.	12½
1 bbl.	575 to 700 lbs.	12

THINNED, READY MIXED

		Per Gallon.
½ gal.	in tin pail, 6 in case	$1 50
1 "	" 6 "	1 40
5 "	keg	1 30
10 "	"	1 25
25 "	"	1 20
50 "	"	1 15

FRAZER'S AXLE GREASE

Small wood boxes, 3 doz. in case, per case	$2 50
Small wood boxes, 3 doz. in case, per gross	9 50
Med. wood boxes, with bails, 1 doz. in case, per doz.	3 00
Large wood boxes, with bails, 1 doz. in case, per doz.	5 75
1 lb. flat tin boxes, 3 doz. in case, per gross	9 50
Carriage grease, one doz. in case, per doz.	1 25

BULK

	Per Pound.
Wood pails, 15 lbs.	$0 05
Wood pails, 25 and 32 lbs.	04½
Tubs, 36 and 68 lbs.	04
Kegs, 112 lbs.	03½
Half barrels, 225 to 250 lbs.	03½
Barrels, 400 to 475 lbs.	03½

DIAMOND X

Small wood boxes, 3, 4 and 6 doz. in case, per gross	$7 00

WHITE SLUSHING OIL

An improved oil for preventing rust. Suitable for the protection of files, saws, firearms, bicycles, tools, hardware, needles and all small metal ware, liable to suffer from rust.

It is non-oxidizable and can be neither dried, gummed nor altered; at the same time, it possesses the highest viscosity or property to adhere to the metal to which it is applied. It will not chill in cold weather and can therefore be applied without warming at all times, as it remains fluid at 20° Fahr. Pieces slushed with this oil and exposed to the light will not turn dark.

1 gallon cans	$1 00
5 " "	4 50
10 " "	8 00
½ barrels (about 30 gallons) per gallon,	77
Barrels (about 50 gallons) "	75

COSMETIC

For coating bright machinery and all polished surfaces of iron or steel to prevent oxidation, rust or corrosion, or injuries resulting from deposits of dust or from sudden changes in the weather.

	Per Pound.
Barrels (about 350 lbs.)	$0 15
½ barrels (about 200 lbs.)	16
Tubs (about 100 lbs.)	17
Cans (50 and 25 lbs.)	18

PEERLESS DRILLING COMPOUND

Peerless drilling compound is manufactured expressly for use in drilling, threading, punching, milling, planing, etc., all kinds of iron and steel, and for no other purpose. It is used in the same way and manner as are oils, hence the user does not have to rig up his machinery with special cups, pumps, etc.

Barrels, 300 lbs., 10c. per lb.; ½ barrels, 200 lbs., 10c. per lb.; kegs, 100 lbs., 10c. per lb.

CHALLENGE DRILLING SOAP

In barrels, containing 340 lbs, 6c per pound; in half barrels, containing 230 lbs., 7c. per pound; in 100 lb. boxes, 10c. per pound.

Receipt for making:—Dissolve thoroughly eight pounds of the soap in fifty gallons of water by using a steam jet. Stir well before using; let it stand twelve hours, until thoroughly cooled.

PUTZ CREAM

WHITE LIQUID METAL POLISH

Sizes.					Prices per Gross.
⅛ pint can,	1 gross	in case,	weight 40 lbs		$14 40
¼ "	2 dozen	" "	10 "		21 60
½ "	3 "	" "	29 "		36 00
1 "	2 "	" "	32 "		72 00
1 quart can,	2 "	" "	59 "	per dozen	9 00
½ gal. "	1 "	" "	54 "	"	15 00
1 " "	½ "	" "	55 "	"	27 00

PUTZ POMADE

A PASTE POLISH

Sizes.						Prices per Gross
Small,	No. 1½,	5	gross	in case,	weight 65 lbs	$2 50
Large,	" 4,	5	"	"	150 "	5 00
¼ lb. tins	" 6,	2½	"	"	130 "	10 00
½ "	" 12,	½	"	"	46 "	20 00
1 "	" 16,	½	"	"	80 "	36 00
2½ and 5 lb. tins					per pound,	22

SCOUREE METAL POLISHING PASTE

No. 1, 2 oz.	boxes,	in gross	lots,	$6 00	5 lb.	pails, in 30 lb.	lots. $0 22
" 1, 2 "	"	" ½	"	3 30	5 "	" 5 to 30	" " 25
" 1, 2 "	"	" ¼	"	1 80	2½ lb.	boxes, in 100 lb.	lots. 20
" 3, ¾ lb.	"	gross	"	21 60	2½ "	" 60	" " 21
" 3, ¾ "	"	½	"	11 25	2½ "	" 30	" " 22
" 3, ¾ "	"	¼	"	6 00	1 lb "	" 100	" " 20
5 lb. pails,	in 100 lb.	lots		20	1 "	" 60	" " 21
5 "	" 60	"		21	1 "	" 30	" " 22

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SCREW WRENCHES

COE KNIFE HANDLE



FIG. 3553

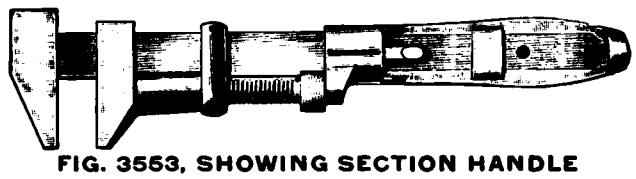


FIG. 3553, SHOWING SECTION HANDLE

Sizes wrench, inches	4	6	8	10	12	15	18	21
Will open, "	½	⅞	1¼	1¾	2⅛	2⅝	3	4⅛
Case contains, dozen	6	6	6	6	6	3	2	1

PRICES, FIG. 3553

BLACK Sizes.	Per Doz.	BRIGHT Sizes.	Per Doz.
6 inch	$9 00	4 inch	$10 00
8 "	10 00	6 "	10 00
10 "	12 00	8 "	11 00
12 "	14 00	10 "	14 00
15 "	24 00	12 "	16 00
18 "	30 00	15 "	26 00
21 "	36 00	18 "	32 00
		21 "	38 00

SOLID HANDLE WRENCH

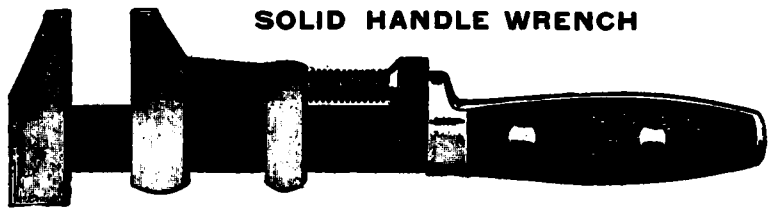


FIG. 3554

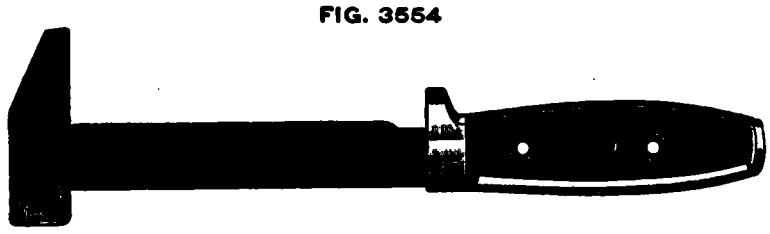


FIG. 3554, SECTIONAL

Entire bar one solid steel forging.

PRICES, FIG. 3554

Sizes, inches	6	8	10	12	15	18	21
Will open, inches	⅞	1¼	1¾	2⅛	2¾	3⅛	4¼
Black, per dozen	$9 00	$10 00	$12 00	$14 00	$24 00	$30 00	$36 00
Bright, "	10 00	12 00	14 00	16 00	26 00	32 00	38 00

MACHINISTS' SCREW WRENCH
KNIFE HANDLE



FIG. 3554A

BLACK

6 inch, per dozen	$9 00	15 inch, per dozen	$24 00
8 " "	10 00	18 " "	30 00
10 " "	12 00	21 " "	36 00
12 " "	14 00		

REGULAR WRENCH

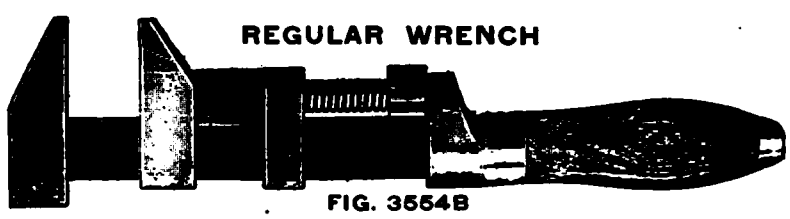


FIG. 3554B

This wrench has extra heavy wrought bar and head forged from one piece; deep milled screw thread; opens full.

PRICES

6 inch, per dozen	$9 00	12 inch, per dozen	$14 00
8 " "	10 00	15 " "	24 00
10 " "	12 00		

ENGINEERS' AND STANDARD WRENCHES

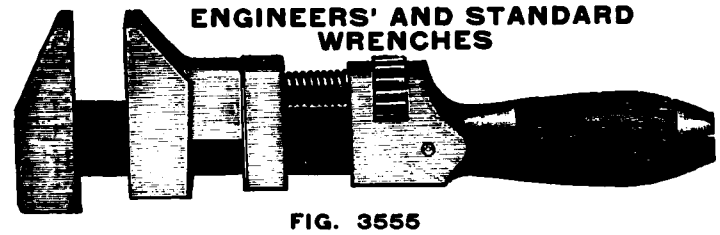


FIG. 3555

PRICES, FIG. 3555, ENGINEERS'

Extra heavy, thoroughly case hardened.

BRIGHT

Inches	6	8	10	12	15	18	21
Dozen	$10 00	$11 00	$14 00	$16 00	$26 00	$32 00	$38 00

BLACK

Inches	6	8	10	12	15	18	21
Dozen	$9 00	$10 00	$12 00	$14 00	$24 00	$30 00	$36 00

PRICES, FIG. 3555, STANDARD

Same pattern as engineers'. Not case hardened.

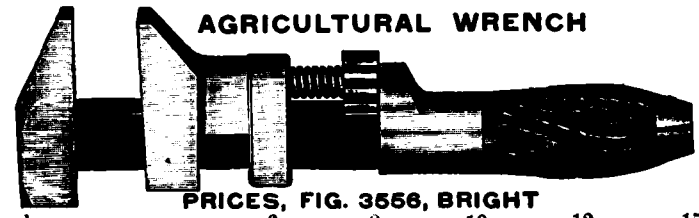
BRIGHT

Inches	6	8	10	12	15	18	21
Dozen	$10 00	$11 00	$14 00	$16 00	$26 00	$32 00	$38 00

BLACK

Inches	6	8	10	12	15	18	21
Dozen	$9 00	$10 00	$12 00	$14 00	$24 00	$30 00	$36 00

AGRICULTURAL WRENCH



PRICES, FIG. 3556, BRIGHT

Inches	6	8	10	12	15
Dozen	$10 00	$11 00	$14 00	$16 00	$26 00

BLACK

Inches	6	8	10	12	15
Dozen	$9 00	$10 00	$12 00	$14 00	$24 00

AGRICULTURAL WRENCH



FIG. 3557

PRICES, FIG. 3557, BLACK

Inches	6	8	10	12	15
Dozen	$9 00	$10 00	$12 00	$14 00	$24 00

BRIGHT

Inches	6	8	10	12	15
Dozen	$10 00	$12 00	$14 00	$16 00	$26 00

MACHINISTS' EXTRA HEAVY WROUGHT BAR WRENCH



FIG. 3558

PRICES, FIG. 3558, BLACK

Inches	6	8	10	Inches	12	15	18
Dozen	$9 00	$10 00	$12 00	Dozen	$14 00	$24 00	$30 00

BRIGHT

Inches	6	8	10	Inches	12	15	18
Dozen	$10 00	$12 00	$14 00	Dozen	$16 00	$26 00	$32 00

EXTRA HEAVY SCREW WRENCH WITH WROUGHT IRON BAR



FIG. 3559

PRICES, FIG. 3559, BRIGHT

12 inch, per dozen	$26 00	18 inch, per dozen	$40 00
15 " "	32 00	21 " "	55 00

These wrenches are one half heavier than the regular screw wrenches, being proportionately enlarged in all their parts, making them very strong and inflexible, and are made from the best of material and in a superior workmanlike manner.

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SCREW WRENCHES

BRIGGS PATTERN
LONG NUT OR SLEEVE

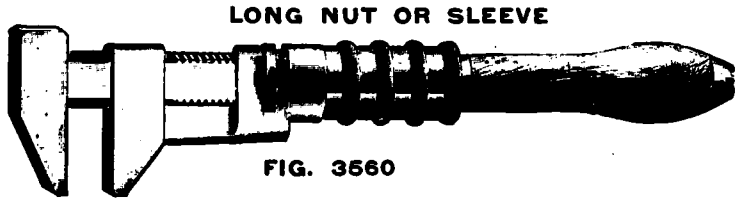


FIG. 3560

MERRICK PATTERN

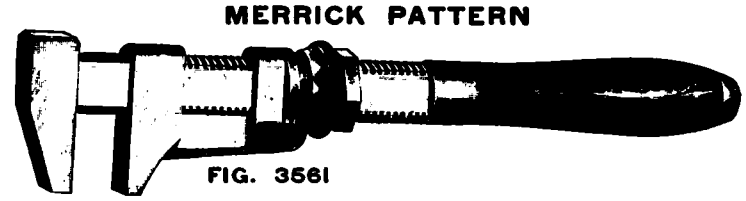


FIG. 3561

THE HEAD AND BAR OF THESE WRENCHES ALL ONE PIECE FORGING

PRICES

Sizes, inches	8	10	12	15	18
Bright, per dozen	$13 75	$17 50	$20 00	$32 50	$40 00
Opens, inches	1¾	2⅛	2⅜	2⅞	4

PRICES

Sizes, inches	8	10	12	15	18
Bright, per dozen	$11 00	$14 00	$16 00	$26 00	$32 00
Black, " "	10 00	12 00	14 00	24 00	30 00
Opens, inches	1½	1⅞	2¼	2¾	4
Weight, pounds	12	19	30	45	70

ADJUSTABLE 5 INCH AND 6 INCH WRENCHES



FIG. 3562

DROP FORGED FROM BAR STEEL

Finished and graduated with solid handles and oval edge sliding bars.

PRICES, 5 INCH WRENCH

Length, Closed, Inches.	Opens, Inches.	Weight, Ounces.	Black, per Dozen.	Nickeled, per Dozen.
6	1½	11¼	$10 00	$12 00

PRICES, 6 INCH WRENCH

Length, Closed, Inches.	Opens, Inches.	Weight, Ounces.	Black, per Dozen	Nickeled, per Dozen.
7	1¾	19	$12 00	$15 00

ADJUSTABLE WRENCHES
FOR MACHINISTS, PLUMBERS, ETC.

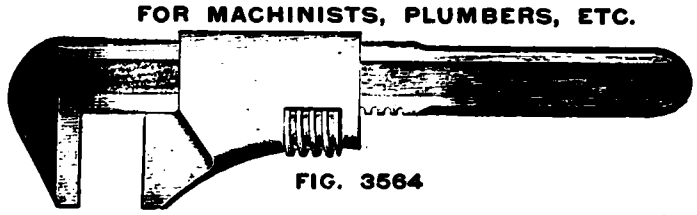


FIG. 3564

Bar is drop forged from bar steel, and is finished in two styles of case hardened finish.

	Total Length, Inches.	Opens, Inches.	Thickness of Jaw, Inches.	Depth of Jaw, Inches.	Weight, Pounds.
10 inch wrench	10¾	2	7/16	1½	2
14 inch wrench	14¾	2½	9/16	1¾	4
18 inch wrench	18¾	3	¾	2⅛	7

PRICES

	Per Dozen.
10 inch wrench, semi-finished and case hardened	$10 00
" " full " " " "	12 00
14 inch " semi- " " " "	24 00
" " full " " " "	28 00
18 inch " semi- " " " "	30 00
" " full " " " "	36 00

WESTCOTT ADJUSTABLE S WRENCH

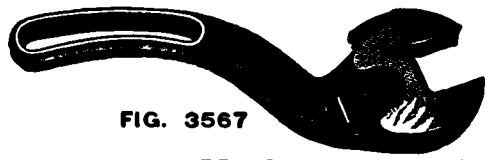


FIG. 3567

PRICES

	Each.	Per Dozen.
6 inch opens to ¾ inch	$0 60	$7 20
8 " " " 1 "	75	9 00
10 " " " 1⅜ "	1 00	12 00
12 " " " 1⅝ "	1 25	15 00
14 " " " 2 "	1 75	21 00

BAXTER S WRENCH

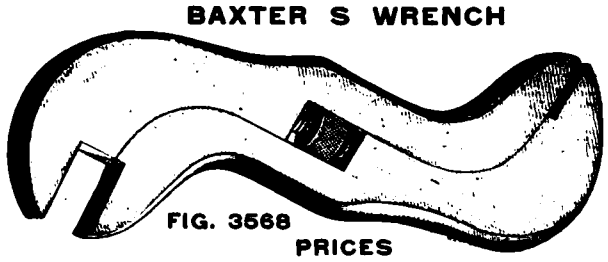


FIG. 3568

PRICES

Sizes, inches	4	6	8	10	12
Per dozen	$6 00	$9 00	$12 00	$18 00	$24 00

ADJUSTABLE POCKET WRENCHES

Drop forged from bar steel, and finished in black and full nickel plated. Sliding bar graduated to 32ds of an inch, with oval edges.

MODEL A

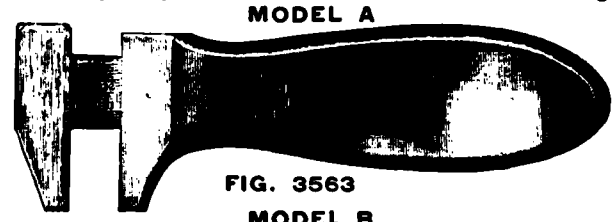


FIG. 3563

MODEL B

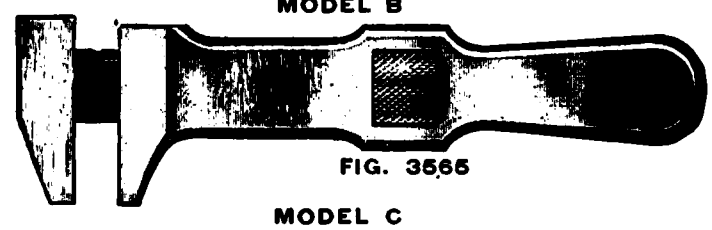


FIG. 3565

MODEL C

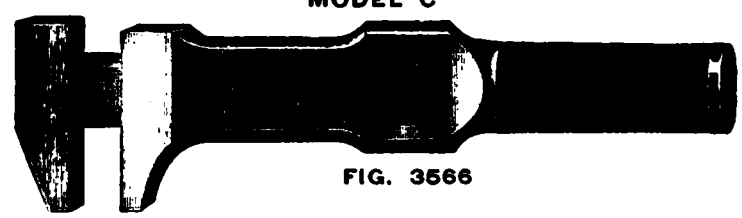


FIG. 3566

PRICES, FIGS. 3563, 3565, AND 3566

Model.	Length, Closed, Inches.	Opens, Inches.	Weight, Ounces.	Black, per Dozen.	Nickeled, per Dozen.
A	4¼	1	7¼	$9 00	$10 00
B	5	1	7½	9 00	10 00
C	5	1	7	9 00	10 00

ACME BRIGHT STEEL WRENCH



FIG. 3569

Made in four parts and of a high grade of steel.

PRICES

	Per Dozen.		Per Dozen.
6 inch	$9 00	15 inch	$24 00
8 "	10 00	18 "	30 00
10 "	12 00	21 "	36 00
12 "	14 00		

HERCULES WRENCH
BRIGHT FINISH, ALL STEEL



FIG. 3570

PRICES

	Per Dozen.		Per Dozen.
6 inch	$9 00	12 inch	$14 00
8 "	10 00	15 "	24 00
10 "	12 00		

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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S WRENCHES, DROP FORGED FROM BAR STEEL

FOR U. S. STANDARD NUTS, SET SCREWS, SQUARE AND HEXAGON HEAD CAP SCREWS

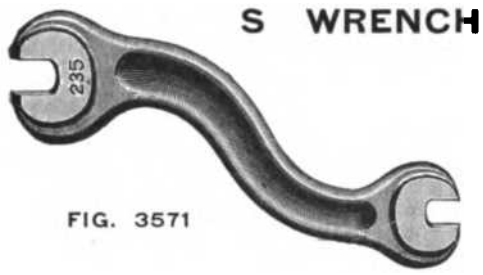


FIG. 3571

These wrenches are, unless otherwise specified, furnished regularly in three conditions, namely: Unfinished wrenches, plain forgings, with openings milled to fit the nut or screw on which they are to be used. Semi-finished wrenches, milled to fit the nut or screw on which they are to be used and case hardened all over, but otherwise plain. Finished wrenches, milled to fit the nut or screw on which they are to be used, ground, polished, case hardened all over, lacquered, heads bright, packed in separate envelopes. Unfinished wrenches are sold in nine (9) sizes, viz.: Numbers 235, 240, 246, 251, 255, 263, 274, 281 and 288, but each can be milled to several combinations. See list, Fig. 3571.

PRICES

Nos.	For U. S. Standard Nuts. Sizes Bolts.	For Set Screws, Sizes.	For Square Head Cap Screws, Diameters Screws.	For Hexagon Head Cap Screws, Diameters Screws.	Openings Finished.	Extreme Lengths.	Thickness Heads.	Unfinished, Each.	Semi-finished, Each.	Finished, Each.
235		¼ and 5/16			¼ and 5/16	3⅜	¼ and 9/32	$0 10	$0 15	$0 20
236		¼	5/16		¼	3¼		10	15	20
237		¼	7/16		¼	7/16		10	15	20
238		5/16	5/8		5/16	5/8		10	15	20
239	⅛ and 5/16				5/16	13/32		10	15	20
240		5/16	7/16		5/16	7/16	4⅞ 9/32 5/16	12	18	24
241	⅛ ¼				5/16	½		12	18	24
242		⅜	7/16	¼ and 5/16	⅜	7/16		12	18	24
243	5/16 ¼				13/32	½		12	18	24
244	5/16 5/16				13/32	19/32		12	18	24
245	¼ 5/16				½	19/32		12	18	24
246		⅜ ½	¼ ⅜	5/16 5/16	⅜	½		15	22	30
247		⅜ 9/16	¼ 7/16	5/16 ⅜	⅜	9/16		15	22	30
248		7/16 ½	5/16 ⅜	¼ 5/16	7/16	½		15	22	30
249		7/16 9/16	5/16 7/16	¼ ⅜	7/16	9/16		15	22	30
250	¼ ⅜				½	11/16		15	22	30
251		½ 9/16	⅜ 7/16	5/16 ⅜	½	9/16	6½ ⅝ 13/32	19	28	38
252		½ ⅝	⅜ ½	5/16 7/16	½	⅝		19	28	38
253	5/16 ⅜				19/32	11/16		19	28	38
254	5/16 7/16				19/32	23/32		19	28	38
255			⅜ 9/16		½	11/16	7¼ 13/32 7/16	24	36	48
256		½ ¾		5/16 ½	½	¾		24	36	48
257		9/16 ⅝	7/16 ½	⅜ 7/16	9/16	⅝		24	36	48
258			7/16 9/16		9/16	11/16		24	36	48
259		9/16 ¾	7/16 ⅝	⅜ ½	9/16	¾		24	36	48
260			½ 9/16		⅝	11/16		24	36	48
261	⅝ 7/16				11/16	25/32		24	36	48
262	⅝ ½				11/16	⅞		24	36	48
263		⅝ ¾	½ ⅝	7/16 ½	⅝	¾	8 ½ 17/32	30	45	60
264				7/16 9/16	⅝	13/16		30	45	60
265		⅝ ⅞	½ ¾		⅝	⅞		30	45	60
266			9/16 ⅝		11/16	¾		30	45	60
267			9/16 ¾		11/16	⅞		30	45	60
268				½ 9/16	¾	13/16		30	45	60
269		¾ ⅞	⅝ ¾	½ ⅝	¾	⅞		30	45	60
270	7/16 ½				25/32	⅞		30	45	60
271	7/16 9/16				25/32	31/32		30	45	60
272	½ 9/16				⅞	31/32		30	45	60
273	½ ⅝				⅞	1 1/16		30	45	60
274		¾ 1		½ ¾	¾	1	10 17/32 9/16	38	57	76
275				9/16 ⅝	13/16	⅞		38	57	76
276				9/16 ¾	13/16	1		38	57	76
277		⅞ 1		⅝ ¾	⅞	1		38	57	76
278	9/16 ⅝				31/32	1 1/16		38	57	76
279	9/16 ¾				31/32	1¼		38	57	76
280	⅝ ¾				1 1/16	1¼		38	57	76
281		⅞ 1⅛	¾ ⅞	⅝ ¾	⅞	1⅛	11½ ⅝ 1 1/16	49	74	98
282		1 1⅛		¾ ⅞	¾	1⅛		49	74	98
283		1 1¼		¾ 1	1	1¼		49	74	98
284		1⅛ 1¼	⅞ 1	⅞ 1	1⅛	1¼		49	74	98
285	⅝ ⅞				1 1/16	1 7/16		49	74	98
286	¾ ⅞				1¼	1 7/16		49	74	98
287			⅞ 1¼	⅞ 1¼	1⅛	1⅜	14½ ¾ ⅞	65	98	1 30
288			⅞ 1¼	⅞ 1¼	1⅛	1½		65	98	1 30
289			1 1⅛	1 1⅛	1¼	1⅜		65	98	1 30
290			1 1¼	1 1¼	1¼	1½		65	98	1 30
291			1⅛ 1¼	1⅛ 1¼	1⅜	1½		65	98	1 30
292				1¼ 1	1¾	1⅝		65	98	1 30
293	¾ 1				1¾	1⅝		65	98	1 30
294	⅞ 1				1 7/16	1⅝		65	98	1 30
295	⅞ 1⅛				1 7/16	1 13/16		65	98	1 30

When ordering, please use numbers and state whether unfinished, semi-finished or finished wrenches are desired.

S WRENCHES
HEXAGON

The size of finished openings on list shows the largest size the openings can be finished.



FIG. 3572

PRICES

Nos.	Lengths, Inches.	Thickness of Head, Inches.	Finished. Sizes of Opening.	Finished. Each.	Unfinished. Sizes of Opening.	Unfinished. Each.
70	4	¼	⅜ and 7/16	$0 20	5/16 and ⅜	$0 10
71	5	5/16	½ 9/16	30	7/16 ½	15
72	6	¾	¾ 13/16	40	9/16 ⅝	20
73	7	7/16	⅞ 1	50	11/16 ¾	25
74	8	½	1 1¼	60	13/16 ⅞	30
75	9	9/16	1 13/16 1¼	70	15/16 1	35

We also furnish these wrenches finished to following sizes for standard nuts.

Nos.			Each.
71	½ and	19/32	$0 30
72	11/16	25/32	40
73	⅞	31/32	50
74	31/32	1 1/16	60
75	1 1/16	1¼	70

In ordering finished wrenches state which sizes are wanted, the regular or standard.

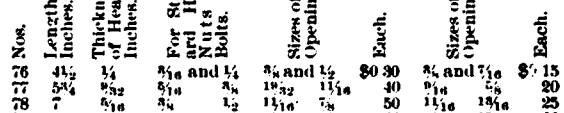


FIG. 3573

New line of Double End Wrenches to finish for Standard hexagon or square nuts. These wrenches are light and are intended to meet the wants of our customers for a light wrench.

PRICES

Nos.	Lengths, Inches.	Thickness of Head, Inches.	For Standard Hex. Nuts for Bolts.	Finished. Sizes of Opening.	Finished. Each.	Unfinished. Sizes of Opening.	Unfinished. Each.
76	4½	¼	5/16 and ¼	⅜ and ½	$0 30	⅜ and 7/16	$0 15
77	5¾	5/16	⅜	19/32 11/16	40	9/16 ⅝	20
78	7	⅜	½	11/16 ⅞	50	11/16 13/16	25
79	8	13/32	7/16 9/16	25/32 31/32	60	¾ 15/16	30
80	9¼	⅜	9/16 ⅝	31/32 1 1/16	70	⅞ 1	35
81	10½	7/16	⅝ ⅞	1 1/16 1 7/16	80	1 1/16 1 5/16	40

DOUBLE END ANGLE WRENCH



FIG. 3574

For nuts for U. S. Standard bolts, square head set screws, square and hexagon head cap screws. All wrenches in this list have openings milled to sizes given.

PRICES, FIG. 3574

Nos. of Wrench.	Nuts for U. S. S. Bolts. Bolts, Sizes.	Nuts for U. S. S. Bolts. Milled Openings for Nuts.	Set Screws. Diameters of Screws.	Set Screws. Milled Openings for Heads.	Square Head Cap Screws. Diameters of Screws.	Square Head Cap Screws. Milled Openings for Heads.	Hexagon Head Cap Screws. Diameters of Screws.	Hexagon Head Cap Screws. Milled Openings for Heads.	Extreme Lengths.	Thickness of Heads.	In Forged State, Each.	In Finished State, Each.
367½		5/16 and ¼		5/16 and ¼		5/16 and ¼		5/16 and ¼	31/32	13/64	$0 10	$0 20
368			⅜ and 7/16	⅜ 7/16			5/16 and ¼	⅜ 7/16	4½	¼	15	30
369	5/16 and ¼	13/32 ½							4½	¼	15	30
370			⅜ ½	⅜ ½	¼ ⅜	⅜ ½	5/16 ⅜	⅜ ½	4½	¼	15	30
371			7/16 ½	7/16 ½	5/16 ⅜	7/16 ½	¼ 5/16	7/16 ½	4½	¼	15	30
372			½ 9/16	½ 9/16	⅜ 7/16	½ 9/16	5/16 ⅜	½ 9/16	5¾	9/32	20	40
373	¼ 5/16	½ 19/32							5¾	9/32	20	40
374			½ ⅝	½ ⅝	⅜ ½	½ ⅝	5/16 7/16	½ ⅝	5¾	9/32	20	40
375	¼ ⅜	½ 11/16							5¾	9/32	20	40
376			9/16 ⅝	9/16 ⅝	7/16 ½	9/16 ⅝	⅜ 7/16	9/16 ⅝	5¾	9/32	20	40
377					7/16 9/16	9/16 11/16		9/16 11/16	5¾	9/32	20	40
378	5/16 ⅜	19/32 11/16							5¾	9/32	20	40
379	⅜ ½	11/16 ⅞							7	5/16	25	50
380					9/16 ¾	11/16 ⅞			7	5/16	25	50
381			¾ ⅞	¾ ⅞	⅝ ¾	¾ ⅞	½ 9/16	¾ ⅞	7	5/16	25	50
382	7/16 ½	25/32 ⅞					½ ⅝	¾ ⅞	7	5/16	25	50
383	7/16 9/16	25/32 31/32							8	11/32	30	60
384			¾ 1	¾ 1			½ ¾	¾ 1	8	11/32	30	60
385	½ 9/16	⅞ 31/32							8	11/32	30	60
386							9/16 ⅝	¾ 1	8	11/32	30	60
387			⅞ 1	⅞ 1			⅝ ¾	⅞ 1	9¼	⅜	35	70
388	½ ⅝	¾ 1 1/16							9¼	⅜	35	70
389	9/16 ⅝	31/32 1 1/16							9¼	⅜	35	70
390									9¼	⅜	35	70
391	⅝ ⅞	1 1/16 1 7/16	⅞ 1⅛	⅞ 1⅛	¾ ⅞	⅞ 1⅛	⅝ ⅞	⅞ 1⅛	10½	7/16	40	80

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ENGINEERS' WRENCHES

DROP FORGED FROM BAR STEEL

DOUBLE HEAD

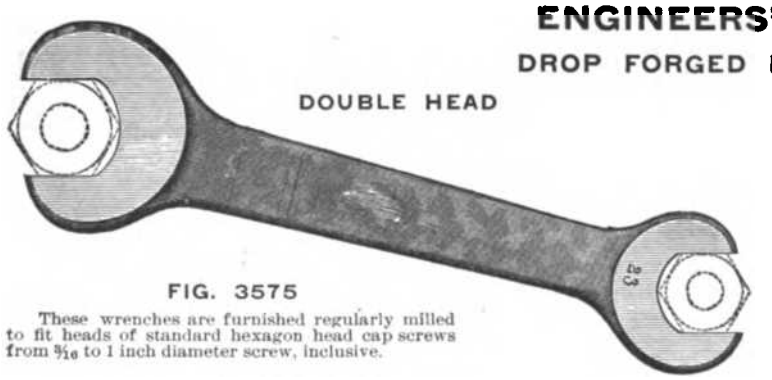


FIG. 3575

These wrenches are furnished regularly milled to fit heads of standard hexagon head cap screws from 5/16 to 1 inch diameter screw, inclusive.

SINGLE HEAD

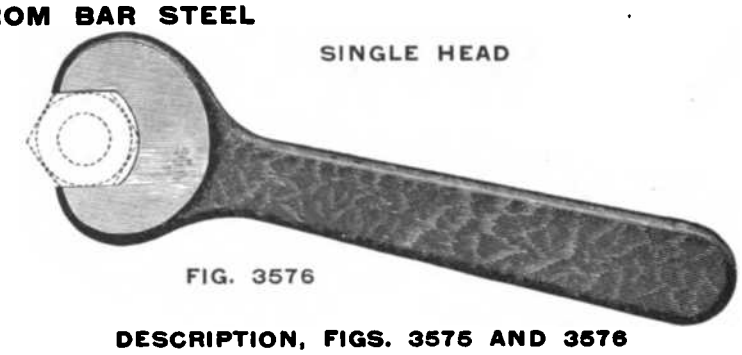


FIG. 3576

PRICES

Nos.	For U. S. Standard Nuts, Sizes Bolts.	Openings, Finished.	Extreme Lengths.	Thickness, Heads.	Unfinished, Each.	Semi-finished, Each.	Finished, Each.
21	1/8 and 5/16	5/16 and 13/32	3¼	13/64 and 7/32	$0 12	$0 18	$0 24
22	1/8	5/16	4	13/64	14	21	28
23	5/16	13/32	4	7/32	15	23	30
24	5/16	13/32	4⅞	7/32	17	25	34
25	¼	13/32	4⅞	¼	18	27	36
26	¼	½	5⅞	¼	20	30	40
27	5/16	15/32	5⅞	9/32	21	32	42
28	5/16	15/32	6⅞	9/32	23	35	46
29	⅜	17/32	6⅞	5/16	25	38	50
30	⅜	17/32	7⅞	5/16	28	42	56
31	7/16	19/32	⅞	11/32	30	45	60
32	7/16	19/32	8¼	11/32	34	51	68
33	½	⅝	8¼	25/64	36	54	72
34	½	⅝	9¼	25/64	41	61	82
35	9/16	21/32	9¼	7/16	43	65	86
36	9/16	21/32	11⅞	7/16	50	75	1 00
37	⅝	11/16	11⅞	29/64	53	80	1 06
38	⅝	11/16	13½	29/64	62	93	1 24
39	¾	⅞	13½	15/32	65	98	1 30
40	¾	1	15½	9/16	78	1 17	1 56
41	⅞	1	15½	21/32	82	1 23	1 64
42	⅞	1 1/16	17⅝	21/32	1 00	1 50	2 00
43	1	1 1/16	17⅝	¾	1 08	1 62	2 16
44	1	1¼	19⅝	¾	1 27	1 91	2 54
45	1 1/16	1¼	19⅝	23/32	1 35	2 03	2 70
46	1 1/16	1 5/16	21¼	23/32	1 65	2 48	3 30
47	1¼	1 5/16	21¼	29/32	1 75	2 63	3 50
48	1¼	1½	23¼	29/32	2 10	3 15	4 20
49	1 3/16	1½	23¼	15/16	2 25	3 38	4 50
50	1 3/16	1 5/8	25⅛	15/16	2 65	3 98	5 30
51	1 5/16	1 5/8	25⅛	1 1/16	2 85	4 28	5 70
52	1 5/16	1¾	27⅛	1 1/16	3 30	4 95	6 60
53	1 7/16	1¾	27⅛	1⅛	3 55	5 33	7 10
53½	1 7/16	1 7/8	27⅛	1⅛	3 55	5 33	7 10
54	1 7/16	2	30⅛	1⅛	4 15	6 23	8 30
55	1½	2	30⅛	1 3/16	4 55	6 83	9 10
55½	1 9/16	2	30⅞	1 3/16	4 55	6 83	9 10
56	1½	2 1/16	33⅛	1 7/32	5 45	8 18	10 90
56½	1 9/16	2 1/16	33⅛	1 7/32	5 45	8 18	10 90
57	2	2 1/16	33⅛	1⅜	6 15	9 23	12 30
57½	2	2 1/16	33⅛	1⅜	6 15	9 23	12 30
58	2 1/16	2 1/16	33⅛	1⅜	6 15	9 23	12 30
59	2 1/16	2 3/16	41¼	1 9/32	8 45	12 68	16 90
60	2 1/16	2 3/16	41¼	39	9 75	14 63	19 50
61	2 1/16	3	41⅛	1⅝	13 25	19 88	26 50
62	2 1/16	3	41¼	1⅝	13 25	19 88	26 50
63	2 1/16	3 1/16	41¼	1⅝	13 25	19 88	26 50
64	3	3 1/16	45⅛	1⅞	15 75	23 63	31 50

When ordering, please use numbers and state whether unfinished, semi-finished or finished wrenches are desired. Prices will be given for special wrenches upon receipt of samples or models.

DESCRIPTION, FIGS. 3575 AND 3576

These wrenches are adapted for machine tools, locomotives, pumps, engines and general shop use; they will be milled to special sizes when required.

Each opening is at an angle of fifteen degrees with the handle, which admits of turning a hexagon nut completely around where the swing of the handle is limited to thirty degrees. See top page 501 for the conditions on which these wrenches are furnished. All unfinished wrenches have milled openings.

PRICES

Nos.	For U. S. Standard Nuts, Sizes Bolts.	Opening, Finished.	Extreme Length.	Thickness Heads.	Unfinished, Each.	Semi-finished, Each.	Finished, Each.
00	1/8	5/16	2½	5/16	$0 08	$0 12	$0 16
0	3/16	13/32	2⅞	7/32	09	13	18
1	¼	½	3¾	¼	10	15	20
2	5/16	19/32	4¾	9/32	12	18	24
3	⅜	11/16	5⅝	5/16	14	21	28
4	7/16	25/32	6½	11/32	17	25	34
5	½	⅞	7½	25/64	20	30	40
6	9/16	31/32	8⅜	7/16	25	38	50
7	⅝	1 1/16	9¼	31/64	32	48	64
8	¾	1¼	11⅛	9/16	40	60	80
9	⅞	1 7/16	13	21/32	50	75	1 00
10	1	1⅝	14⅞	¾	65	98	1 30
11	1⅛	1 15/16	16⅝	53/64	85	1 28	1 70
12	1¼	2	18½	29/32	1 10	1 65	2 20
13	1⅜	2 3/16	20¼	63/64	1 40	2 10	2 80
14	1½	2⅜	22¼	1 1/16	1 75	2 63	3 50
15	1⅝	2 5/16	24	1⅛	2 10	3 15	4 20
16	1¾	2¾	25⅝	1 7/32	2 50	3 75	5 00
16½	1 7/8	2 15/16	25⅝	1 7/32	2 50	3 75	5 00
17	2	3 1/16	29½	1⅜	3 50	5 25	7 00
18	2¼	3½	33	1 17/32	4 75	7 13	9 50
19	2½	3 7/8	37	1⅝	6 50	9 75	13 00
19½	2¾	4¼	37	1⅝	6 50	9 75	13 00
20	3	4⅝	44	1 7/8	10 50	15 75	21 00
20½	3½	5⅜	44	1 7/8	10 50	15 75	21 00
521	4	6⅛	59	2⅝	27 50	41 25	55 00
521½	4½	6⅞	59	2⅝	27 50	41 25	55 00

No. 521 milled to order for nuts on 5 inch bolts.

DROP FORGED ANGLE END MACHINE WRENCHES

DOUBLE END FOR STANDARD HEXAGON NUTS

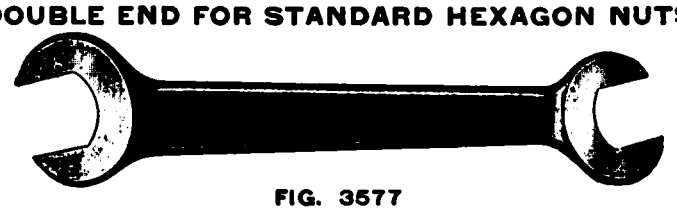


FIG. 3577

PRICES

Nos.	Lengths, Inches.	Thickness of Head, Inches.	Finished. Sizes of Opening.	Finished. Each.	Unfinished. Sizes of Opening.	Unfinished. Each.
108	3	5/32	5/16 and 13/32	$0 24	9/32 and 5/8	$0 12
109	5	¼	½	36	15/32	9/16	18
110	6½	5/16	11/16	50	21/32	¾	25
111	7	⅜	11/16	⅞	60	21/32	27/32	30
112	9	7/16	⅞	31/32	70	27/32	15/16	35
113	12	9/16	1 1/16	1¼	1 00	1 1/32	1 7/32	50
114	15	¾	1 7/16	1⅝	1 60	1 13/32	1 19/32	80
115	19	15/16	1 13/16	2	2 50	1 29/32	1 31/32	1 25
116	21	1⅛	2 1/16	2⅜	4 00	2 5/32	2 11/32	2 00
117	24	1 5/16	2 9/16	2¾	6 00	2 17/32	2 23/32	3 00

SINGLE END FOR STANDARD HEXAGON NUTS



FIG. 3578

PRICES

Nos.	Lengths, Inches.	Thickness of Head, Inches.	Finished. Sizes of Opening.	Finished. Each.	Unfinished. Sizes of Opening.	Unfinished. Each.
90	3	5/32	5/16	$0 16	9/32	$0 08
91	3⅜	5/32	13/32	18	⅜	09
92	5	¼	½	20	15/32	10
93	5⅝	¼	19/32	24	5/16	12
94	6½	5/16	11/16	28	21/32	14
95	7½	5/16	25/32	34	¾	17
96	8⅜	7/16	⅞	40	27/32	20
97	9¼	7/16	31/32	50	15/16	25
98	10	9/16	1 1/16	64	1 1/32	32
99	11¾	9/16	1¼	80	1 7/32	40
100	13⅛	¾	1 7/16	1 00	1 13/32	50
101	14⅞	¾	1⅝	1 30	1 19/32	65
102	16¾	15/16	1 13/16	1 70	1 29/32	85
103	18½	15/16	2	2 20	1 31/32	1 10
104	20¼	1⅛	2 3/16	2 80	2 9/32	1 40
105	22¼	1⅛	2⅜	3 50	2 11/32	1 75
106	25	1 5/16	2 9/16	4 20	2 17/32	2 10
107	28	1 5/16	2¾	5 00	2 29/32	2 50

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STRAIGHT DOUBLE END DROP FORGED WRENCHES

HEXAGON OPENINGS

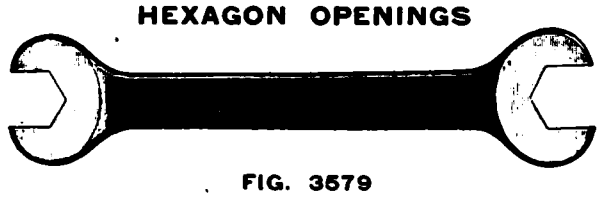


FIG. 3579

For United States Standard Nuts for bolts from ⅛ inch to 2¼ inches diameter, inclusive. All wrenches, either in forged state or finished, have milled openings.

PRICES

Nos. of Wrench.	Size Bolts U. S. Standard Nuts.	Milled Openings U. S. Standard Nuts.	Extreme Lengths.	Thickness of Head.	Forged State, Each.	Finished State, Each.
223	⅛ and 5/16	5/16 and 13/32	3½	7/32 and ¼	$0 12	$0 24
224	⅛	¼	5/16	½	4½	¼	5/16	14	28
225	5/16	¼	13/32	½	4½	¼	5/16	16	32
226	5/16	5/16	13/32	13/32	6	3/8	3/8	18	36
227	¼	5/16	½	13/32	6	3/8	3/8	20	44
228	¼	3/8	½	11/16	6½	3/8	3/8	22	44
229	5/16	3/8	13/32	11/16	6½	3/8	3/8	23	46
230	5/16	7/16	13/32	25/32	7¼	3/8	½	24	48
231	3/8	7/16	11/16	25/32	7¼	3/8	½	25	50
232	3/8	½	11/16	⅞	8¼	½	½	28	56
233	7/16	½	25/32	⅞	8¼	½	½	30	60
234	7/16	9/16	25/32	31/32	9½	½	5/8	33	66
235	½	9/16	⅞	31/32	9½	½	5/8	35	70
236	½	5/8	⅞	1 1/16	10¾	5/8	¾	40	80
237	9/16	5/8	31/32	1 1/16	10¾	5/8	¾	43	86
238	9/16	¾	31/32	1¼	12	¾	¾	48	96
239	5/8	¾	1 1/16	1¼	12	¾	¾	50	1 00
240	5/8	⅞	1 1/16	1 7/16	13	⅞	¾	53	1 06
241	¾	⅞	1¼	1 7/16	13¾	¾	¾	58	1 16
242	¾	1	1¼	1⅝	14¾	¾	⅞	60	1 20
243	⅞	1	1 7/16	1⅝	15¾	¾	⅞	65	1 30
244	⅞	1⅛	1 7/16	1 13/16	16¾	¾	⅞	75	1 50
245	1	1⅛	1⅝	1 13/16	17½	⅞	⅞	90	1 80
246	1	1¼	1⅝	2	18½	⅞	1	1 10	2 20
247	1⅛	1¼	1 13/16	2	19½	⅞	1	1 25	2 50
248	1⅛	1⅜	1 13/16	2 1/16	20½	⅞	1⅛	1 40	2 80
249	1¼	1⅜	2	2 1/16	21¼	1	1⅛	1 60	3 20
250	1¼	1½	2	2⅛	22¼	1	1⅛	1 80	3 60
251	1⅜	1½	2 1/16	2⅛	23¼	1⅛	1⅛	2 00	4 00
252	1⅜	1⅝	2 1/16	2 1/16	24¼	1⅛	1¼	2 25	4 50
253	1½	1⅝	2⅛	2 1/16	25	1⅛	1¼	2 50	5 00
254	1½	1¾	2⅛	2¼	26	1⅛	1¼	2 75	5 50
255	1⅝	1¾	2 1/16	2¼	27	1¼	1¼	3 00	6 00
256	1⅝	1⅞	2 1/16	2 15/16	28	1¼	1⅜	3 25	6 50
257	1¾	1⅞	2¼	2 15/16	29	1¼	1⅜	3 50	7 00
258	1¾	2	2¼	3 1/16	30	1¼	1⅜	4 00	8 00
259	1⅞	2	2 15/16	3 1/16	31	1⅜	1½	4 50	9 00
260	1⅞	2¼	2 15/16	3½	32	1⅜	1½	5 00	10 00
261	2	2¼	3 1/16	3½	33	1⅜	1½	5 75	11 50

DOUBLE HEAD SET SCREW WRENCHES

DROP FORGED FROM BAR STEEL



FIG. 3582

Each opening forms an angle of twenty-two and a half (22½) degrees with the handle, which admits of turning any square head bolt or screw completely around where the swing of the handle is limited to forty-five degrees.

Unfinished wrenches are furnished in ten sizes, as per odd numbers, but twenty sizes unfinished milled, semi-finished and finished wrenches are made, see list, as each forging is milled to two combinations.

These wrenches can be milled one or two sizes larger than stated in table.

When ordering, please use numbers and state whether unfinished, semi-finished or finished are desired. All unfinished wrenches have milled openings.

See top page 501 for the conditions on which they are furnished.

PRICES

Numbers Unfinished.	Numbers Finished.	For Set Screws, Sizes.	Extreme Lengths.	Thickness of Heads.	Unfinished, Each.	Semi-finished, Each.	Finished, Each.
65	65	5/16 and ¼	3⅝	5/16 and ¼	$0 13	$0 20	$0 26
	66	5/16	3⅝			20	26
67	67	¼	4	¼	15	23	30
	68	¼	4			23	30
69	69	5/16	5	5/16	18	27	36
	70	5/16	5			27	36
71	71	⅜	5⅛	13/32	22	33	44
	72	⅜	5⅛			33	44
73	73	7/16	6⅛	⅜	27	41	54
	74	7/16	6⅛			41	54
75	75	½	7½	7/16	33	50	66
	76	½	7½			50	66
77	77	9/16	8⅛	½	40	60	80
	78	9/16	8⅛			60	80
79	79	⅝	10	9/16	48	72	96
	80	⅝	10			72	96
81	81	¾	11⅛	⅝	58	87	1 16
	82	¾	11⅛			87	1 16
83	83	⅞	12⅝	11/16	68	1 02	1 36
	84	⅞	12⅝			1 02	1 36

STRAIGHT DROP FORGED SINGLE END WRENCHES

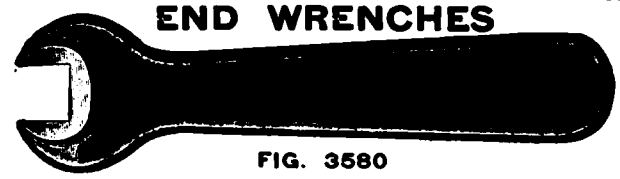


FIG. 3580

For set screws and square head cap screws, furnished in forged state, with openings milled to sizes given in list. Also in finished state.

PRICES

Nos. of Wr'ch.	Set Screws. Diameters of Screw.	Set Screws. Milled Opening for Head.	Square Head Cap Screws. Diameters of Screw.	Square Head Cap Screws. Milled Opening for Head.	Extreme Lengths.	Thickness of Head.	Forged State, Each.	Finished State, Each.
392	¼	¼			4½	⅝	$0 12	$0 24
393	5/16	5/16			4½	⅝	12	24
394	⅜	⅜	¼	⅜	4½	⅝	12	24
395	7/16	7/16	5/16	7/16	6¼	7/16	20	40
396	½	½	⅜	½	6¼	7/16	20	40
397	9/16	9/16	7/16	9/16	7¼	½	25	50
398	5/8	5/8	½	5/8	7¼	½	25	50
399	11/16	11/16	9/16	11/16	7¼	½	25	50
400	¾	¾	5/8	¾	8½	9/16	35	70
401	⅞	⅞	¾	⅞	8½	9/16	35	70
402	1	1			8½	9/16	40	80
408	1⅛	1⅛	⅞	1⅛	8½	9/16	40	80

SINGLE HEAD SET SCREW WRENCHES

DROP FORGED FROM BAR STEEL

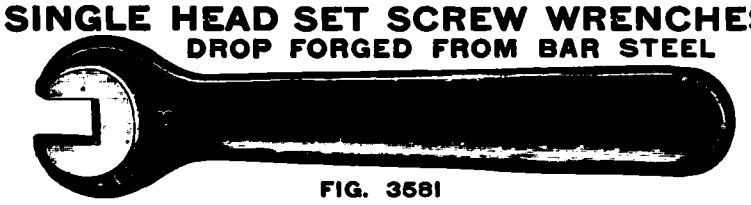


FIG. 3581

These wrenches can be milled one or two sizes larger than stated in table. See top page 501 for the conditions on which they are furnished. All unfinished wrenches have milled openings.

PRICES

Nos.	For Set Screws, Sizes.	Extreme Lengths.	Thickness of Head.	Unfinished, Each.	Semi-finished, Each.	Finished, Each.
92	3/16	3	3/16	$0 08	$0 12	$0 16
93	¼	3⅜	¼	10	15	20
94	5/16	4½	5/16	12	18	24
95	¾	5⅝	13/32	15	23	30
96	7/16	6¼	⅜	20	30	40
97	½	7	7/16	25	38	50
98	9/16	7½	½	27	41	54
99	⅝	8	9/16	30	45	60
100	¾	9¼	⅝	35	53	70
101	⅞	10½	11/16	42	63	84
102	1	11½	¾	50	75	1 00
103	1¼	12	13/16	60	90	1 20

CHECK NUT WRENCHES

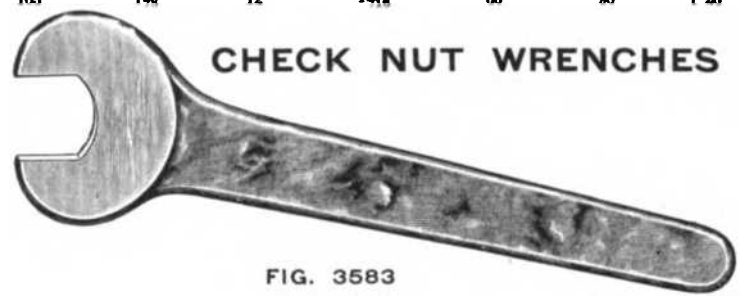


FIG. 3583

These are for use on check, jam or lock nuts. In thickness the heads are one-half diameter of bolt. Each opening is at an angle of fifteen degrees with the handle, which admits of turning a hexagon nut completely around where the swing of the handle is limited to thirty degrees. See top page 501 for the conditions on which they are furnished.

When ordering, please use numbers and state whether unfinished, semi-finished or finished are desired. All unfinished wrenches have milled openings.

PRICES

Nos.	For U. S. Standard Nut, Sizes. Bolt.	Opening, Finished.	Extreme Lengths.	Thickness of Head.	Unfinished Each.	Semi-finished, Each.	Finished, Each.
605	½	⅞	6¾	¼	$0 18	$0 27	$0 36
607	⅝	1 1/16	8¼	5/16	28	42	56
608	¾	1¼	10	⅜	36	54	72
609	⅞	1 7/16	11½	7/16	46	69	92
610	1	1⅝	13¼	½	59	89	1 18

Other sizes in preparation.

SINGLE HEAD BOX WRENCHES

DROP FORGED FROM BAR STEEL

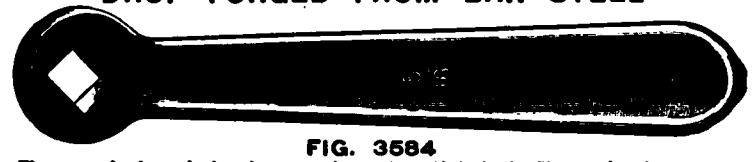


FIG. 3584

These can be broached to hexagonal openings if desired. Sizes and prices on application. See top page 501 for the conditions on which these wrenches are furnished.

PRICES

Nos.	For Set Screws, Sizes.	Extreme Lengths.	Thickness of Head.	Unfinished, Each.	Semi-finished, Each.	Finished, Each.
107	3/16	3	¼	$0 09	$0 12	$0 18
108	¼	3⅜	9/32	10	15	20
109	5/16	3¾	5/16	11	17	22
110	⅜	4¼	⅜	13	20	26
111	7/16	4⅞	7/16	16	24	32
112	½	5½	15/32	19	28	38
113	9/16	6¼	½	22	33	44
114	⅝	7	9/16	26	39	52
115	¾	8	⅝	30	45	60
116	⅞	9	11/16	36	54	72
117	1	10	¾	44	66	88

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BOX TOOL POST WRENCHES

DROP FORGED FROM BAR STEEL FINISHED AND CASE HARDENED

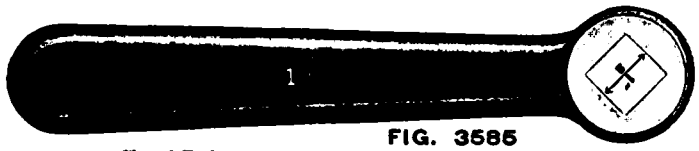


FIG. 3585

Nos.	Closed End for Set Screws, Sizes, Inches.	Extreme Length, Inches.	Prices, Unfinished.	Prices, Finished.
1	½	5½	$0 25	$0 40
2	⅝	7	30	50
3	¾	7½	35	55

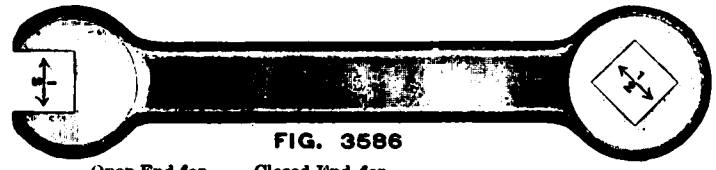


FIG. 3586

Nos.	Open End for U. S. Standard Nuts; Size Bolts, Inches.	Closed End for Set Screws; Size, Inches.	Extreme Length, Inches.	Prices, Unfinished.	Prices, Finished.
4	⅝	⅝	6¼	$0 40	$0 60
5	½	½	5½	35	50
6	11/16	11/16	7½	50	70
7	13/16	13/16	8¼	60	85
8	15/32	15/32	4½	30	50

DOUBLE HEAD TOOL POST WRENCHES

DROP FORGED FROM BAR STEEL

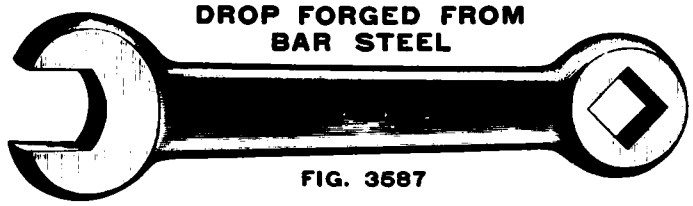


FIG. 3587

These wrenches can be milled a size larger than stated in table. See top page 501 for the conditions on which they are furnished.

Nos.	Open End for U. S. Standard Nuts; Size Bolt, Inches.	Closed End for Set Screws; Size, Inches.	Extreme Length, Inches.	Prices, Unfinished.	Prices, Semi-Finished.	Prices, Finished.
124	⅜	9/16	6½	$0 30	$0 45	$0 60
129	½	7/16	7	35	52	70
131	½	9/16	7	35	52	70
132	½	⅝	7	35	52	70
139	⅝	⅝	7½	40	60	80
140	⅝	¾	8	45	68	90
143	¾	¾	9	55	82	1 10

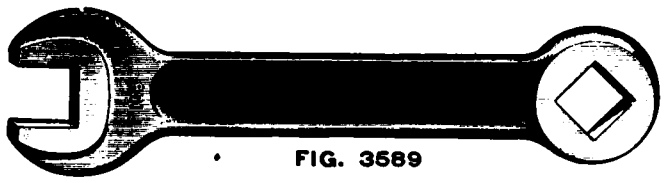


FIG. 3589

These wrenches can be milled a size larger than stated in table. The forgings for Nos. 154 and 158 are furnished in two milled or finished combinations (Nos. 156 and 160), as stated in table. See top page 501 for the conditions on which these wrenches are furnished.

Nos.	Open End for Set Screws; Size, Inches	Closed End for Set Screws; Size, Inches.	Extreme Length, Inches.	Prices, Unfinished.	Prices, Semi-Finished.	Prices, Finished
152	7/16	7/16	5½	$0 25	$0 37	$0 50
154	½	½	6	27	40	54
156	9/16	½		27	40	54
157	9/16	9/16		27	40	54
158	⅝	⅝	6¾	32	48	64
160	11/16	⅝		32	48	64
161	11/16	11/16		32	48	64
162	¾	¾	7½	40	60	80

CONSTRUCTION WRENCHES

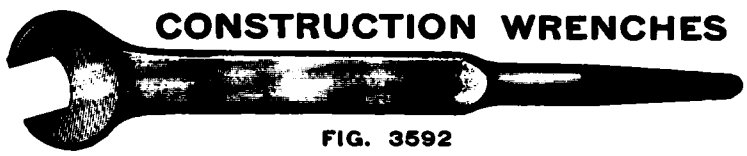


FIG. 3592

For use in erecting bridges, iron frame buildings, refrigerating apparatus, and for general construction service. The opening is at an angle of fifteen degrees with the handle, which admits of turning a hexagon nut completely around where the swing of the handle is limited to thirty degrees. The tang is for bringing bolt holes into line and for insertion into convenient openings when wrench is not in use, preventing loss and keeping tool in sight. See top page 501 for the conditions on which they are furnished. Milled to special sizes when required.

Nos.	For U. S. Standard Nut; Size Bolt, Inches.	Opening Unfinished, Inches.	Opening Semi-Finished, Inches.	Extreme Length, Inches.	Thickness Head, Inches.	Prices, Unfinished.	Prices, Semi-Finished.	Prices, Finished
223	⅜	19/32	11/16	9	11/32	$0 20	$0 30	$0 40
225	½	13/16	⅞	11½	7/16	32	48	64
226	9/16	29/32	31/32	12½	½	40	60	80
227	⅝	1	1 1/16	14	9/16	50	75	1 00
228	¾	1 3/16	1¼	16	⅝	65	97	1 30
229	⅞	1⅜	1 7/16	17½	11/16	85	1 28	1 70
230	1	1 17/32	1⅝	19	¾	1 10	1 65	2 20

DOUBLE HEAD TOOL POST WRENCHES

DROP FORGED FROM BAR STEEL

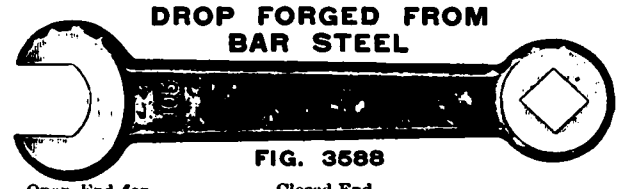


FIG. 3588

Nos.	Open End for U. S. Standard Nuts; Size of Bolt, Inches.	Size of Opening, Inches.	Closed End for Set Screws, Inches.	Extreme Length, Inches.	Prices, Unfinished.	Prices, Finished.
101	⅜	11/16	7/16	6½	$0 30	$0 50
102	⅜	11/16	9/16	6½	30	50
103	½	⅞	5/16	7¼	30	50
104	½	⅞	½	7¼	35	60
105	½	⅞	9/16	7¼	35	60
106	½	⅞	⅝	7¼	35	60
107	⅝	1 1/16	⅝	7¼	35	60
108	⅝	1 1/16	9/16	8	45	80
109	⅝	1 1/16	⅝	8	45	80
110	¾	1¼	11/16	9	55	1 00
111	¾	1¼	¾	9	55	1 00
112	⅞	1 5/16	13/16	10¼	65	1 20
113	1	1⅜	13/16	11	80	1 50
114	1	1⅝	⅞	11	80	1 50

NOTE.—We furnish the unfinished wrenches on above list with openings milled and broached to sizes given on list.

FACE SPANNERS



FIG. 3591

The pins on these spanners are forged integral with the wrench, thus making the tools very strong and durable. They are regularly furnished with pins milled to sizes given below, but will be supplied with pins in the rough (not milled) if desired. When ordering, please state whether unfinished milled, semi-finished, or finished are wanted.

Nos.	PINS: Distance C. to C, Inches.	PINS: Finished Diameter, Inches.	PINS: Length, Inches.	Span of Jaws in Clear, Inches.	Length from C. of Pins, Inches.	Thickness, Inches.	Prices, Unfinished, Pins Milled.	Prices, Semi-Finished.	Prices, Finished.
418	1	3/16	3/16	1 1/16	4½	3/16	$0 15	$0 22	$0 33
420	1¼	7/32	7/32	2 9/32	5	3/16	17	24	36
422	1½	7/32	7/32	1⅛	5½	3/16	19	27	39
424	1¾	7/32	7/32	1⅜	6	7/32	22	30	43
426	2	¼	¼	1⅝	6½	7/32	25	34	47
428	2¼	¼	¼	1⅞	7	7/32	29	38	52
430	2½	9/32	9/32	2 3/32	7½	¼	33	43	57
432	2¾	9/32	9/32	2 11/32	8	¼	38	48	63
434	3	5/16	5/16	2 19/32	8½	¼	43	54	70
436	3¼	5/16	5/16	2 13/16	9⅛	¼	49	60	77
438	3½	5/16	5/16	3 1/32	9¾	¼	55	67	85
440	3¾	⅜	⅜	3¼	10⅜	¼	62	75	94
442	4	⅜	⅜	3 7/16	11	¼	70	85	1 05

PIN SPANNERS

DROP FORGED FROM BAR STEEL



FIG. 3593

Numbers	204	205	206	207	208	209	210	211	212	213	214	215	216	218	220
For Circle, Sizes	1	1¼	1½	1¾	2	2¼	2½	2¾	3	3¼	3½	3¾	4	5	6
Extreme Length	4	4½	5	5½	6	6½	7	7½	8	8½	9	9½	10	12	14
Pin will finish Sizes	5/16	15/64	7/32	15/64	¼	17/64	9/32	19/64	5/16	21/64	11/32	23/64	⅜	7/16	½
Prices	$0.18	.19	.20	.21	.22	.23	.24	.26	.28	.30	.32	.34	.36	.48	.65

KNOX WHEN THERE'S LIFE THERE'S HOPE

MANNING, MAXWELL & MOORE, 85, 87, 89 AND 91

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CHUCK WRENCH

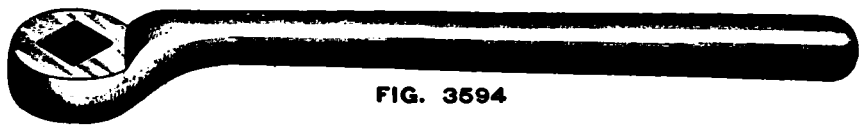


FIG. 3594

Holes are broached to sizes given in list below:

Chucks, Inches.	Length, Inches.	Hole, Inches.	Prices, Each.	Chunks, Inches.	Length, Inches.	Hole, Inches.	Prices, Each.
4	6	13/32	$0 25	12	7¾	15/32	$0 35
6	6½	7/16	25	15	10	17/32	45
9	7¾	15/32	35	18	11½	17/32	50

WROUGHT IRON KEY WRENCH



FIG. 3595

Length of jaw	2½	3	3½
Prices	$3 00	$4 00	$5 00
Length of jaw	4	4½	5
Prices	$6 00	$8 00	$10 00

RATCHET WRENCHES

BRIDGE BUILDERS' WRENCH

Made only to order.

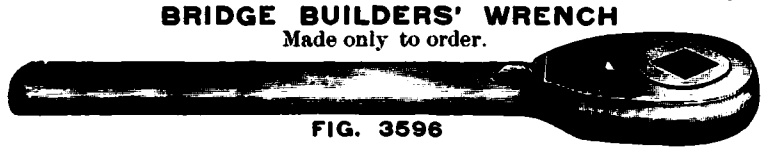


FIG. 3596

PRICES

No.					Prices.
1	3 ft. lever..	1⅛, 1¼ in. sq. nut,	1½, 1¾ hex. nut		$8 00
2	3 " " ..	1½, 1¾, 2 " "	2, 2¼, 2½ " "		14 00
3	3¼ " " ..	2, 2¼, 2½ " "	2¾, 3, 3¼ " "		16 00
4	3½ " " ..	2½, 2¾, 3, 3¼ " "	3½, 3¾, 4 " "		18 00
5	3½ " " ..	3¼, 3½, 3¾ " "	4¼, 4½ " "		20 00

The above prices cover only one gear for each wrench.

Nos.	1	2	3	4	5
Extra gears	$1 00	$2 00	$3 00	$3 50	$4 00

PATTERN OF 1886

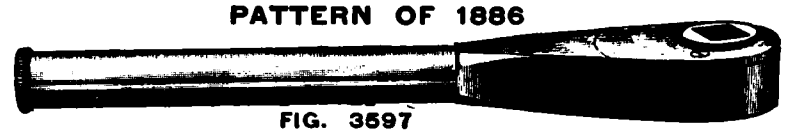


FIG. 3597

It can be changed into a ratchet drill by removing the cap and replacing the gear by a drill socket. A nut or bolt is turned either way without taking off the wrench.

This wrench, like the ratchet drill, can be changed to a right or left hand motion at pleasure.

PRICES

No. 1	10 inch lever.	Any one gear on the list, Fig. 3599						$3 00
" 2	12 "	" " "	"	"	"	"	"	4 00
" 3	15 "	" " "	"	"	"	"	"	5 00
* " 3½	18 "	" " "	"	"	"	"	"	6 00
" 4	18 "	" " "	"	"	"	"	"	7 00

*This handle takes a No. 3 gear.

WRENCH GEARS

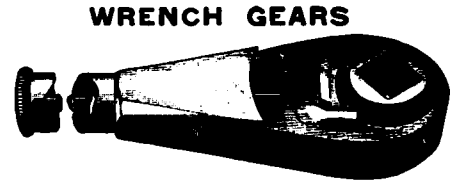


FIG. 3599

PRICES

No.		Each.
1.	⅜, ½, ⅝ inch square nut, ⅝, ¾ inch hexagon	$0 50
2.	½, ⅝, ¾ " " " ¾, ⅞, 1 " "	60
3.	¾, ⅞, 1, 1⅛ " " " 1, 1⅛, 1¼ " "	75
4.	1⅛, 1¼, 1⅜, 1½ " " " 1¼, 1½, 1¾ " "	1 00

In ordering wrenches, please state what gears are desired, as a No. 1 wrench may contain either a gear for ⅜, ½, ⅝ square nut, or for ⅝ or ¾ hexagon.

In the following gears the hole is large, leaving too little stock on the corners for severe strains. No. 1, ⅝; No. 2, ¾; No. 3, 1⅛; No. 4, 1½, square.

STEEL SOCKET BRIDGE WRENCH

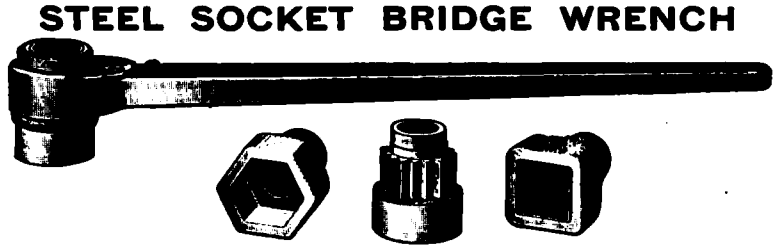


FIG. 3598

They will turn nuts on or off without removing the wrench and soon make good their cost by saving labor.

PRICES

No. 1. Length of handle, 2 feet. Clear hole through the socket for 1⅛ inch bolt. Weight, about 10 pounds.
Price, with a single socket.....$6 00 Price of each additional socket.....$1 00
This handle will take sockets for { 1⅛, 1⅛, 1⅝, 1⅛, 2 inch square nuts. / 1⅛, 1⅝, 1⅛, 2 inch hexagon nuts.

No. 2. Length of handle, 3 feet. Hole for bolt, 1¾ inches. Weight, 23 pounds.
Price, with a single socket.....$14 00 Price of each additional socket.....$2 50
This size will take sockets for.... { 2¼, 2½, 2¾, 3 inch square nuts. / 2¼, 2½, 2¾, 3, 3¼ inch hexagon nuts.

No. 3. Length of handle, 3 feet. Hole through the socket, 2½ inches. Weight, about 50 pounds.
Price, with a single socket.....$20 00 Price of each additional socket.....$4 50
This size will take sockets for.... { 3, 3¼, 3½, 3¾, 4, 4¼, 4½ inch square nuts. / 3, 3¼, 3½, 3¾, 4, 4¼, 4½ inch hexagon nuts.

Please order by size of nut, small diameter, rather than by size of bolt. Odd sizes made to order.

LAG SCREW WRENCH

FOR STREET RAILWAY BUILDERS, TELEGRAPH AND ELECTRIC LIGHT COMPANIES

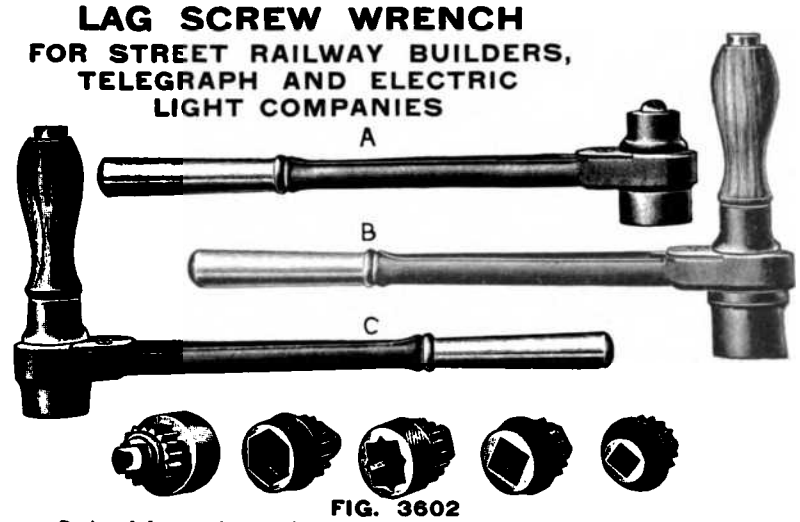


FIG. 3602

Designed for turning coach screws, nuts or bolts, either way, without taking off the wrench. These wrenches are easily changeable for various sizes, by means of the different sockets. The cut B shows a long socket such as we furnish only to order. The No. 3 with long socket is particularly adapted to handling nuts under the broad tread on street railway rails.

PRICES, FIG. 3602

No. 1, 12 inch handle, as shown in A, $1.75. No. 1, 12 inch handle, as shown in C, $2.00. The sockets for this wrench will turn nuts measuring (smaller outside diameter) ½, ⅝, ¾, ⅞, 1, 1 1/16, 1¼ inch square, ¾, ⅞, 1, 1 1/16, 1¼ inch hexagon. Price, 40 cts. each.

No. 2, 16 inch handle, shown in A or C, $3.00. The openings in these sockets are (smaller diameter) 1 1/16, 1¼, 1 5/16 inch either square or hexagon. Price, 75 cts. each.

No. 3, 20 inch handle, like A or C, $4.50. With sockets to fit (smaller outside diameter) nuts 1¼, 1 5/16, 1⅝ inch square or hexagon. Price, $1.00 each.

These prices include only one socket.

SINGLE HEAD SOCKET WRENCHES

DESCRIPTION, FIG. 3601

These wrenches are adapted for nuts, set screws and cap screws. They are designed for use either with another wrench, which may be adjusted to the hexagon end of shank as a handle, or with a pin handle, see table, which will be fitted to hexagon end of wrench at extra cost (see list). The openings are finished to U. S. standard dimensions. Special sizes to order.

When ordering please use numbers and state whether wrenches are desired with or without handles; if not specified, they will be sent without.

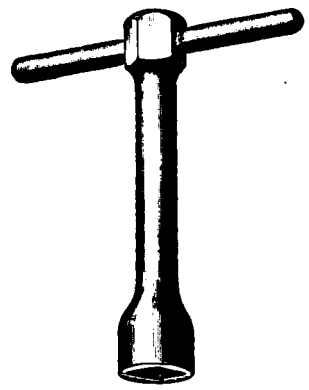


FIG. 3601

PRICES, FIG. 3601

No.	OPENINGS. Hexagon — For U. S. Standard Nuts. Size Bolts.	Hexagon — For Cap Screws. Diameter Screws.	Square — For U. S. Standard Nuts. Size Bolts.	Square — For Cap Screws. Diameter Screws.	Square — For Set Screws. Sizes.
321	⅛	.....	.....	.....	¼
322	3/16	3/16 or ¼	.....	.....	5/16
323	¼	5/16	.....	¼	⅜
324	5/16	⅜	.....	5/16	7/16
325	⅜	7/16 or ½	¼	⅜ or 7/16	½ or 9/16
326	7/16 or ½	9/16 " ⅝	5/16 or ⅜	½ " 9/16	⅝
327	9/16	¾	7/16	⅝	¾
328	⅝	⅞	½	¾	⅞
329	¾	1	9/16 or ⅝	.....	1
330	⅞	1⅛ or 1¼	¾	⅞ or 1	1⅛ or 1¼
331	1 or 1⅛	.....	⅞	1⅛	.....
332	1¼	.....	1	1¼ or 1⅜	.....
333	1⅜ or 1½	.....	1⅛ or 1¼	.....	.....

When ordering please state size nut, set screw or cap screw the wrenches are to fit.

Extreme Length.	Diameter of Head.	Diameter of Shank.	Hexagon End, Same Size as U.S. Nut, for Size Bolt.	Size of Pin Handle. Diameter.	Size of Pin Handle. Length.	Prices with Opening Finished — Without Pin Handle or Hole for Same.	Prices with Opening Finished — With Pin Handle and Hole for Same.
4	½	5/16	3/16	3/16	4	$0 20	$0 28
4⅝	1 1/16	⅜	¼	¼	4⅝	23	31
5 3/16	⅝	7/16	5/16	5/16	5½	26	36
5¾	⅞	½	⅜	5/16	5½	31	41
6⅛	1 1/16	9/16	⅜	⅜	6⅛	36	48
7 1/16	1 9/32	5/8	½	7/16	7¼	43	57
7⅝	1½	1 1/16	9/16	½	8⅛	52	68
8¼	1 21/32	¾	5/8	½	8⅛	64	80
8⅞	1⅞	⅞	¾	⅝	9	78	1 00
9⅝	2 3/16	1	⅞	1 1/16	10	98	1 27
10⅝	2½	1⅛	1	¾	11	1 28	1 64
11½	2 13/16	1¼	1¼	⅞	12	1 96	2 46
12½	3⅛	1⅜	1½	1	13	2 80	3 44

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FAVORITE REVERSIBLE RATCHET WRENCH

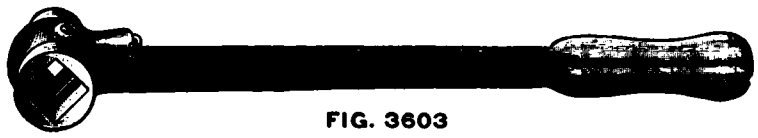


FIG. 3603

HEAD



FIG. 3604



FIG. 3605
Short socket for No. 0 Wrench, fitting hexagon nuts.



FIG. 3606
Short socket for No. 0 Wrench, fitting square nuts.



FIG. 3607

Drill head, fitting handles of Nos. 0 and 1 wrenches.

PRICES

No.		Per Set.
1.	This wrench consists of one handle 15 in. long and one head like Fig. 3604, either A, B or C as wanted; the A head will be sent unless otherwise specified	$3 00
	A head has two openings, one square and one hexagon; exact size of openings 15/16 in. to fit ½ in. square and hexagon nuts United States Standard sizes	1 50
	B head has two openings, one square and one hexagon; exact size of openings 1⅛ in. to fit ⅝ in. square and hexagon nuts United States Standard sizes	1 50
	C head has two hexagon openings; exact size of smaller 1 1/16 in. to fit ⅝ in. hexagon nuts United States Standard sizes; exact size of larger 1 5/16 in. to fit ¾ in. hexagon nuts United States Standard sizes	1 50
	With two heads, each, $4.50. With three heads, each, $6.00.	
2.	This wrench consists of one handle either 23 in. or 28 in. long as wanted and one head like Fig. 3604, either E, F or G as wanted. Orders will be filled with the 23 in. handle and the E head unless otherwise specified	3 50
	E head has two openings, one square and one hexagon, exact size of openings 1 5/16 in. to fit ¾ in. square and hexagon nuts United States Standard sizes	2 00
	F head has two openings, one square and one hexagon; exact size of openings 1½ in. to fit ⅞ in. square and hexagon nuts United States Standard sizes	2 00
	G head has 2 hexagon openings; exact size of smaller 1 7/16 in. to fit ⅞ in. hexagon nuts United States Standard sizes; exact size of larger 1 11/16 in. to fit 1 in. hexagon nuts United States Standard sizes	2 00
	With two heads and either handle, each, $5.50. With three heads and either handle, each, $7.50.	
	There are two extra heavy extension sockets 10 in. long to fit hexagon opening of E head, one to fit ¾ in. square nuts United States Standard sizes, the other to fit ¾ in. hexagon nuts United States Standard sizes	1 00

The head or barrel of the wrench is made with an opening for the bolt to pass through, making it valuable for the reason that the nut, being encompassed on all sides, has no chance to turn or slip, thereby avoiding all danger of defacing the nut.

Its reverse motion is instantaneous by simply turning the pawl from right to left, or vice versa.

PRICES, FIG. 3603

No.		Per Set.
0.	This wrench consists of one handle 15 in. long; one head with two square openings to fit ¼ in. and ⅜ in. square nuts United States Standard sizes; exact size of openings 9/16 in. and ¾ in.; seven sockets like Fig. 3605, to fit hexagon nuts United Standard sizes from ¼ in. to ¾ in. inclusive; eight sockets like Fig. 3606 to fit square nuts United States Standard sizes from 5/16 in. to ¾ in. inclusive; one extension socket 8 in. long	$5 00
	Without sockets, each, $2.50.	

PRICES

No.		Per Set.
3.	This wrench consists of one handle 28 in. long and one head like Fig. 3604, either H, K or L as wanted; the H head will be sent unless otherwise specified	$5 00
	H head has two openings, one square and one hexagon; exact size of openings 1 11/16 in. to fit 1 in. square and hexagon nuts United States Standard sizes	2 50
	K head has two openings, one square and one hexagon; exact size of openings 1⅞ in. to fit 1⅛ in. square and hexagon nuts United States Standard sizes	2 50
	L head has two openings, one square and one hexagon; exact size of openings 2 1/16 in. to fit 1¼ in. square and hexagon nuts United Standard sizes	2 50
	With two heads, each, $7.50. With three heads, each, $10.00.	
4.	This wrench consists of one handle 28 in. long and one head 5 in. long like Fig. 3604, either X or Y as wanted; the X head will be sent unless otherwise specified	5 00
	X head has two openings, one square and one hexagon; exact size of hexagon opening 1 13/32 in. to fit ¾ in. hexagon nuts Manufacturers' Standard sizes; exact size of square openings 1 15/32 in. to fit ⅞ in. square nuts United States Standard sizes	2 50
	Y head has two openings, one square and one hexagon; exact size of the square opening 1 23/32 in. to fit 1 in. square nuts United States Standard sizes; exact size of hexagon opening 1 29/32 in. to fit 1⅛ in. hexagon nuts United States Standard sizes	2 50
	With two heads, each, $7.50.	
	This No. 4 wrench was made especially for the N. Y. Central R. R., these heads fitting all the nuts used on their bridges and rails.	
	Favorite Reversible Ratchet Drill.—This consists of No. 0 handle and a drill head like Fig. 3607	4 00

CLIMAX RATCHET WRENCH

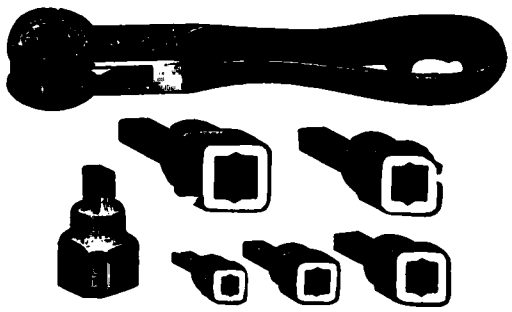


FIG. 3608

For machinists, engineers, millwrights, factories, car builders, iron ship builders, cable and electric railways, bridge builders, planing mills, farmers, R. R. shops, mills, etc.

Nos.		Prices.
1.	Wrench and 5 sockets	$2 25
1.	" 9 in. long (no sockets)	1 75
2.	" and 5 sockets	3 25
2.	" 11 in. long (no sockets)	2 50
3.	" and 4 sockets	4 50
3.	" 15 in. long (no sockets)	3 50

The three wrenches take all sizes up to and including 1 inch of set screws, square and hexagon head cap screws, square and hexagon nuts (both United States and Manufacturers' Standard) and lag screws.

TABLE SHOWING THE SIZE SET SCREWS, CAP SCREWS, NUTS AND LAG SCREWS THE DIFFERENT SIZE WRENCHES WILL TAKE

Sockets. Nos.		Set Screws. Inches.	Square Head Cap Screws. Inches.	Hexagon Head Cap Screws. Inches.	Square and Hexagon Nuts, U. S. Standard. Inches.	Square and Hexagon Nuts, Mfr. Standard. Inches.	Lag Screws. Inches.
No. 1 Wrench	1	¼					
	2	5/16					
	3	⅜	¼	....	....	....	¼
	4	7/16	5/16	¼			
	5	½	⅜	5/16 and ⅜	¼	¼	5/16
No. 2 Wrench	1	9/16	7/16 and ½	7/16	5/16	5/16	⅜
	2	⅝	9/16	....	⅜	⅜	
	3	¾	⅝	½	7/16	7/16	
	4	⅞	¾	⅝	½	½	½
	5	1	....	¾	9/16	9/16	⅝
No. 3 Wrench	1	1⅛	⅞	⅞	⅝	⅝	
	2	1¼	1	1	¾	¾	¾
	3	....	1⅛ and 1¼	1⅛	⅞	⅞	⅞ and 1
	4	....	1⅜	....	1	1	

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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RATCHET DRILLS AND WRENCHES

TAP WRENCH OR STUD DRIVER, WITH REVERSIBLE RATCHET

PRICES, FIG. 3609

No.					
1	10 inch handle,	socket	⅝	inch square	$4 25
2	14 "	"	⅞	" "	5 00
3	16 "	"	1⅛	" "	5 75
4	18-22 "	"	1¼	" "	6 50
4	24 "	"	1½	" "	7 00
4	28 "	"	1½	" "	7 50

PRICES, STUD NUTS

No.		
1	Each	$0 75
2	"	1 00
3	"	1 25
4	"	1 50

In ordering stud nuts state size of studs for which nuts are required.

Stud driver sockets, interchangeable, with either drill holder, Fig. 3611, or socket wrench holder, Fig. 3610.

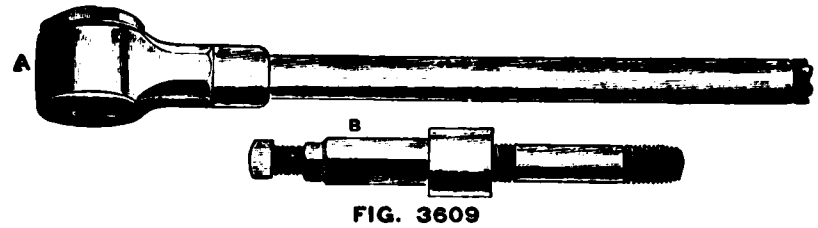


FIG. 3609

Fig. "A" shows nut socket adjusted. Cut "B" shows stud nut with stud. This tool consists of holder, socket and stud nut. In addition to its merits for stud driving purposes, it will be found very useful and convenient for boilermakers' use on flue expanders, stay bolts, etc., as shown in cut "A." Plumbers and steam fitters also find it useful for tap work, and it is a very useful tool for gas and waterworks purposes.

SOCKET WRENCH, WITH REVERSIBLE RATCHET

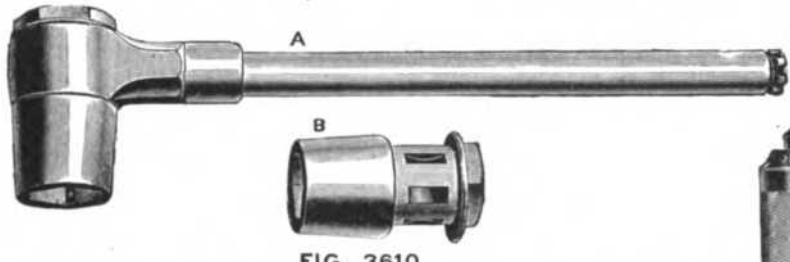


FIG. 3610

The body of this wrench is made of drop forged steel. The nut socket, Fig. "B" (on periphery of which ratchet teeth are cut), is steel; the handle is of bar steel. The ratchet is entirely inclosed and concealed, preventing dirt or other obstacles interfering with its working; it can be made reversible instantly, by slightly withdrawing the knob at end of handle and making a half turn.

A ⅜ inch hole runs through the handle, in which extends a ¼ inch steel rod, on the end of which is a ⅝ inch direct pawl, engaging in the ratchet, and controlled by a strong coil spring. The pawl is not strictly rigid, allowance being made to prevent its binding. The nut socket is secured by a threaded cap screwed down on neck of socket, and is easily removed when required.

It is highly recommended for use in railroad construction; also for work about machinery where a powerful wrench is required.

PRICES

No.							Extra Sockets, Each.
1	10 inch handle with one socket					$4 50	$1 00
2	14 "	"	"	"	"	5 25	1 25
3	16 "	"	"	"	"	6 00	1 50
4	18-22 "	"	"	"	"	7 00	....
4	24 "	"	"	"	"	7 50	....
4	28 "	"	"	"	"	8 00	2 00

A, B, C, D, RATCHET DRILL

Can be changed from right to left at pleasure.

PRICES

No.		
A	10 inch Handle	$7 00
B	12 " "	9 00
C	15 " "	11 00
D	18 " "	14 00

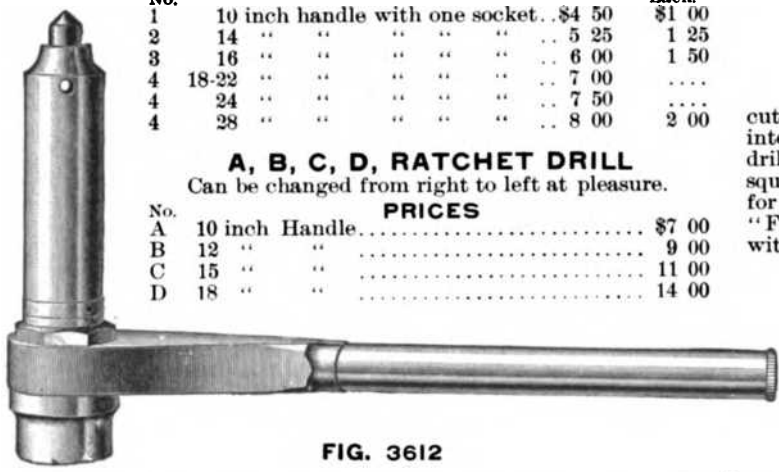


FIG. 3612

SLEEVE BOILER AND RATCHET DRILLS

This drill may be converted into a wrench by removing the cap and changing the drill socket for a wrench gear of corresponding number.

See list of Gears, Fig. 3599, page 505.



FIG. 3613

PRICES

No.					Boiler Ratchets.
1	10 inch	handle		$6 00	$6 00
2	12 "	"		8 00	8 00
3	15 "	"		10 00	10 00
4	18 "	"		12 00	....

REVERSIBLE RATCHET DRILL

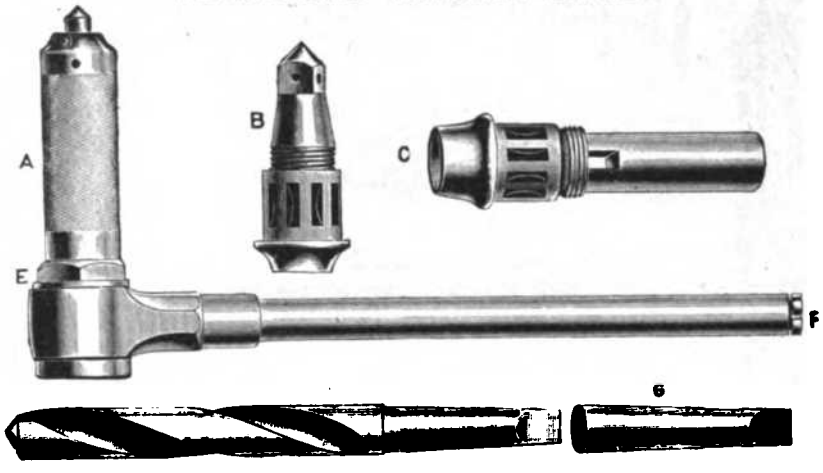


FIG. 3611

The illustration shows Ratchet Drill, adjusted, for square shank drills, cut "A," Fig. 3611, also other parts for drilling purposes, all parts being interchangeable in holder. Cut "C" represents socket for Morse taper shank drills, and cut "D" is a sleeve fitted to Morse taper socket and in which square shank drills may be used. Cut "B" represents boilermakers' drill for square shank; the feed screw is made from the best tool steel, hardened. "F" indicates the knob for reversing the movement of ratchet (as described with socket wrench, Fig. 3610).

SLEEVE RATCHETS

PRICES, FIG. 3611

No.	Handle.	For Square Shanks.	For Morse Taper.
1	10 inch	$5 00	$5 25
2	14 "	5 75	6 00
3	16 "	6 50	6 75
4	18-22 "	7 25	7 50
4	24 "	7 75	8 00
4	28 "	8 25	8 50

BOILERMAKERS' RATCHET

SHORT FEED, FIG. 3611

No.				
1	10 inch	handle		$5 00
2	14 "	"		5 70
3	16 "	"		6 50
4	18-22 "	"		7 25
4	24 "	"		7 75
4	28 "	"		8 25

THE "S T D" RATCHET

Square Shank Twist Drill Ratchet

The taper hole is an exact fit for the Morse Twist Drill Co., The Cleveland Twist Drill Co., and the Standard Tool Co.'s ⅜ x ⅝ x 1½ inch Taper Square Shank Drill.

Price, 12 inch handle, $4.00.

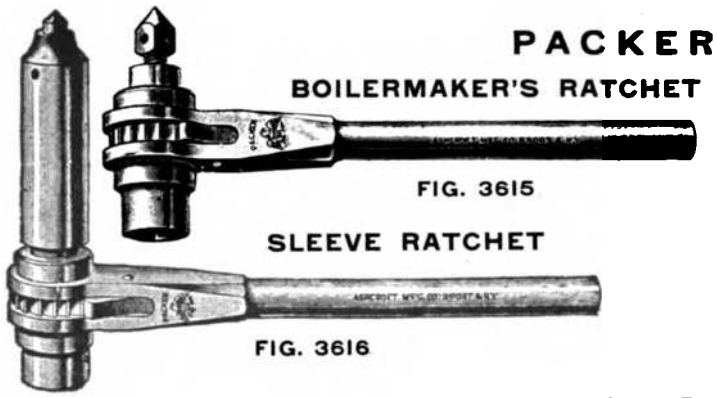


FIG. 3614

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RATCHET DRILLS

PACKER RATCHETS



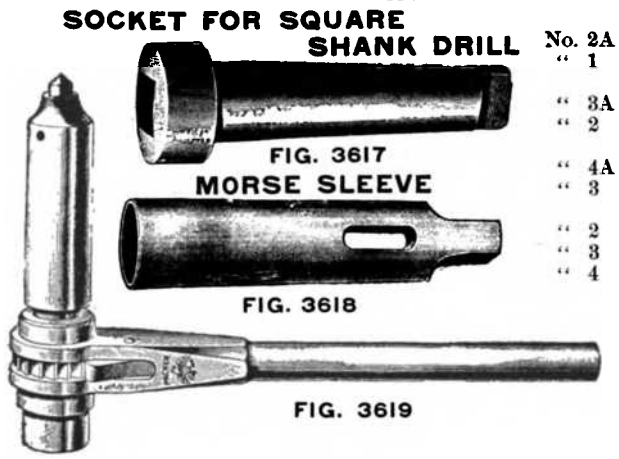
These ratchets are adapted for square shank drills only.

PRICES

No. 1	Boiler ratchet,	10	inch	handle,	each	$9 00
" 2	" "	12	"	"	"	10 50
" 1	Sleeve ratchet,	10	"	"	"	10 50
" 2	" "	12	"	"	"	13 50
" 3	" "	16	"	"	"	16 00
" 4	" "	18	"	"	"	19 00
" 5	" "	24	"	"	"	23 00

PACKER RATCHETS, A

WITH MORSE TAPER SHANK HOLES IN SOCKETS



PRICES

No. 2A	Ratchet 12 in. handle taking Morse taper shank drills 5/8 in. to 29/32 in.; each	$16 00
" 1	Morse Sleeve taking taper shank drills 1/4 in. to 19/32 in. and fitting No. 2A ratchet; each	1 80
" 3A	Ratchet 16 in. handle taking Morse taper shank drills 15/16 in. to 1 1/4 in.; each	20 00
" 2	Morse Sleeve taking taper shank drills 5/8 in. to 29/32 in. and fitting No. 3A ratchet; each	2 40
" 4A	Ratchet 18 in. handle taking Morse taper shank drills 19/32 in. to 2 in.; each	25 00
" 3	Morse Sleeve taking taper shank drills 15/16 in. to 1 1/4 in. and fitting No. 4A ratchet; each	3 00
" 2	Square socket, fitting No. 2A ratchet; each	1 75
" 3	" " " " 3A " "	1 75
" 4	" " " " 4A " "	2 25

NOTE.

No. 2A. Packer Ratchet with No. 1 Morse Sleeve will take taper shank drills from 1/4 to 29/32, inclusive.

No. 3A. Packer Ratchet with No. 1 and No. 2 Morse Sleeve will take taper shank drills from 1/4 to 1 1/4, inclusive.

No. 4A. Packer Ratchet with Nos. 1, 2, and 3 Morse Sleeve will take taper shank drills from 1/4 to 2 inches, inclusive.

RENSHAW'S RATCHET DRILLS



The handle is drop forged of tough wrought iron. The spindle of steel has substantial ratchet teeth cut in its periphery, engaging with a pawl lodged in the handle, which covers both pawl and ratchet and protects them from dirt. The feed screw is of steel, and hollow, giving the drill a large capacity in small compass. By transferring the collet and feed screw as arranged for right hand drilling to opposite ends of the spindle, the ratchet may be used for left hand drilling.

No. 1 has one collet for drills with shank 11/32 inch square at shoulder, and one collet for drills fitting No. 1 Morse's standard taper socket.

WEIGHT, 16 OUNCES. PRICE, $11.00

Deduct for either collet, if not wanted, $1.60. Weight, 1 ounce each.

No. 3 has one collet, No. 5, for drills, with shank 11/16 square at shoulder, of 1/2 to 1 1/2 inches diameter, which are the extreme sizes that this ratchet is adapted to carry, and collets Nos. 1, 2 and 3, for Morse's standard taper shanks. Nos. 3 and 5 collets are held in the spindle by screw thread. Nos. 1 and 2 collets are tapered externally to fit No. 3 socket. Deductions will be made for collets, when not wanted, as follows: No. 1, weight 8 ounces, and No. 2, weight 6 ounces, $1.10 each; Nos. 3 and 5, weight 8 ounces each, $1.75 each.

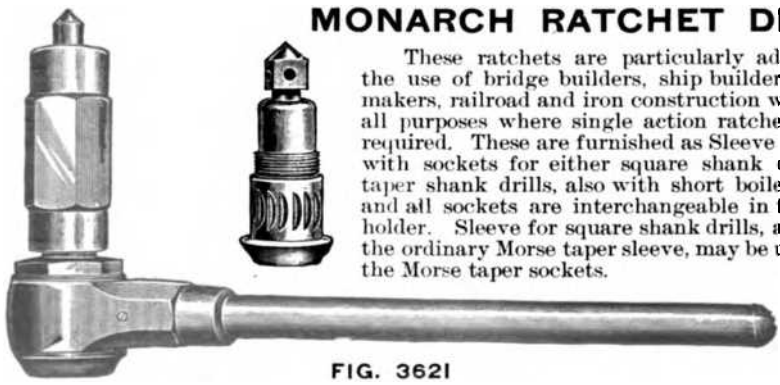
WEIGHT, 8 POUNDS 14 OUNCES. PRICE, with 4 collets, **$15.00**

The No. 3 ratchet, for the use of boilermakers, for whose use it is especially adapted, is provided with an extended feed screw, having a knurled shank 3 1/2 inches long, by which the ratchet may be held by hand in starting the drill, and fed by hand also. When this extended screw is substituted for the regular one, the price is not changed; if it is taken as an extra attachment, it is furnished at $3.50.

An adjustable friction feed attachment can be furnished for $4.00.

	No. 1.	No. 3.
Length of handles over all	9 1/2 inches	18 inches
" from top of spindle to bottom of feed collet	3 "	5 "
" of feed	1 1/2 "	2 3/4 "

MONARCH RATCHET DRILLS, SINGLE ACTION



These ratchets are particularly adapted to the use of bridge builders, ship builders, boilermakers, railroad and iron construction work, and all purposes where single action ratchet drill is required. These are furnished as Sleeve Ratchets with sockets for either square shank or Morse taper shank drills, also with short boiler socket, and all sockets are interchangeable in the same holder. Sleeve for square shank drills, as well as the ordinary Morse taper sleeve, may be used with the Morse taper sockets.

PRICES

						Square Sleeve.	Morse Taper.
No. 10	Sleeve Ratchet,	10	inch	handle		$5 00	$5 25
" 20	" "	12	"	"		5 50	5 75
" 30	" "	15	"	"		6 00	6 25
" 40	" "	18	"	"		7 50	7 75
" 50	" "	22	"	"		8 50	8 75
" 60	" "	24	"	"		9 00	9 25
" 70	" "	28	"	"		10 00	10 25

Boilermaker's Ratchets, with short screw feed, same prices as Square Sleeve Ratchets.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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DOUBLE ACTING RATCHET DRILL

	Each.
No. 1. 10¾ inch handle, with one socket taking Morse taper shank drills from ¼ inch to 29/32 inch, inclusive, and one socket taking flat drills	$14 00
No. 1. Without the two sockets as above	11 00
No. 2. 13¾ inch handle, with one socket taking Morse taper shank drills from ⅝ to 1¼ inch, inclusive, and one socket for flat drills	17 00
No. 2. Without the two sockets as above	14 00
Taper socket, No. 1, for taper shank drills from ¼ to 19/32 inch, inclusive, will fit taper in the No. 1 D. A. ratchet, and is also fitted to Nos. 2 and 3 taper sockets	1 50
Taper socket No. 2, for taper shank drills from ⅝ to 29/32 inch, inclusive, will fit taper in the No. 2 D. A. ratchet, and is also fitted to Nos. 3 and 4 taper sockets	2 00
Socket No. 3, for flat drill, for No. 1 ratchet	1 75
" " 4, " " " 2 "	1 75

Socket No. 1 is fitted with taper shank to slide into No. 2 socket, and purchasers procuring the No. 2 ratchet, with the two sockets, can use the whole list of drills. The sockets used in these drills can be used for lathe work, being of correct taper for the Morse taper shank drills.

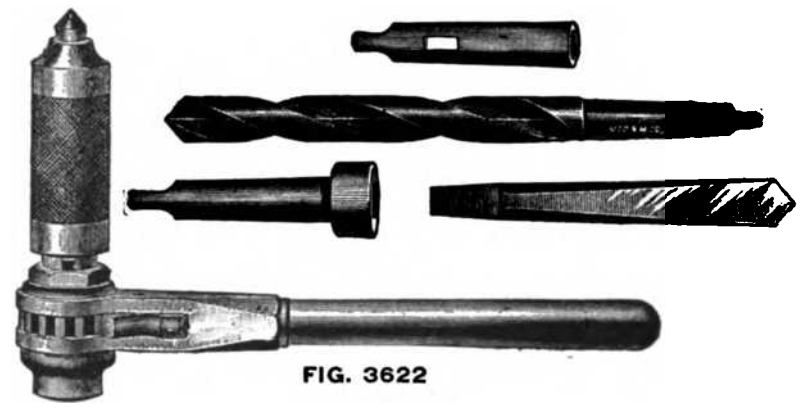


FIG. 3622

WHITNEY'S DOUBLE ACTING RATCHET DRILL

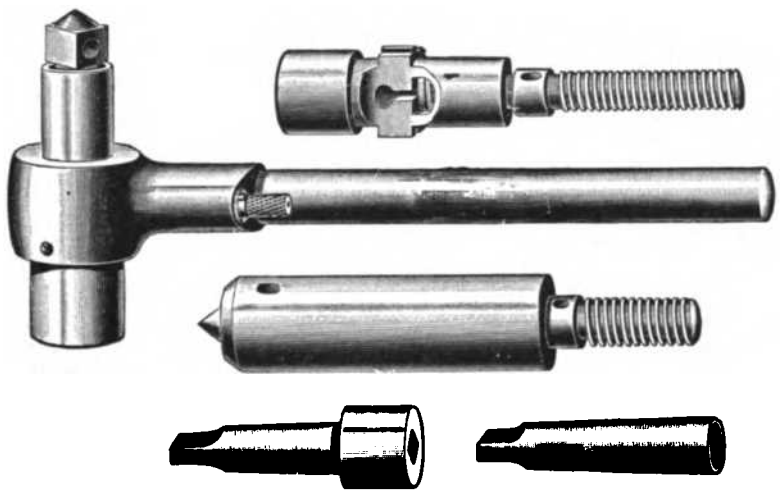


FIG. 3623

For Either Taper Square or Taper Round Shank Drills.

Nos.		Each.
101	11 in. takes taper shank drills ⅝ to 29/32 in.	$11 00
101	11 " with No. 1 socket, takes taper shank drills ¼ to 29/32 in.	12 50
101	11 " " 3 " takes taper square shank drills, shanks ⅝ x ⅜ x 1½ in	12 50
101	11 in. with Nos. 1 and 3 sockets	14 00
102	14 in. takes taper shank drills 29/32 to 1¼ in.	14 00
102	14 in. with No. 2 socket, takes taper shank drills ⅝ to 1¼ in.	16 00
102	14 in. with Nos. 1 and 2 sockets, takes taper shank drills ¼ to 1¼ in.	17 00
102	14 in. with No. 4 socket, takes taper square shank drills, shanks ⅝ x ⅜ x 1½ in.	15 50
102	14 in. with Nos. 2 and 4 sockets	17 50
102	14 in. with Nos. 1, 2 and 4 sockets	19 00

No. 1 socket is fitted with correct taper to slide into No. 2.

For Taper Square Shank Drills.

Nos.		Each.
00	8 in. for bit stock drills	$8 00
01	10 in. for taper square shank drills, shanks ⅝ x ⅜ x 1½ in.	10 00
02	12 " " " " " " ⅝ x ⅜ x 1½ "	12 00
03	16 " " " " " " ⅝ x ⅜ x 1½ "	15 00
04	18 " " " " " " ¾ x ½ x 1¾ "	18 00
05	24 " " " " " " ¾ x ½ x 1¾ "	22 00

Whitney's Sockets, Having the Correct Taper, Can be Used for Lathe Work.

		Each.
Socket No. 1	For taper shank drills ¼ to 19/32 in., adapted to Nos. 101 and 102 drills.	$1 50
" 2	" " " ⅝ to 29/32 " " 102 drill	2 00
" 3	For taper square shank drills, with shanks ⅝ x ⅜ x 1½ in., adapted to No. 101 drill.	1 75
" 4	" " " " " ⅝ x ⅜ x 1½ " " 102 "	1 75

SMITH'S RATCHET

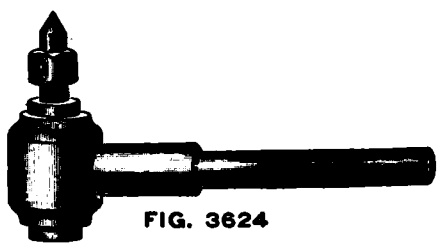


FIG. 3624

The stock and gear wheel are in one solid piece and made from cast steel, the teeth in said wheel having ⅞ inch bearing surface for pawl to work on, adding to its power and durability. By removing the cap, the stock may be instantly removed and the entire tool taken apart. The working parts being entirely inclosed, no dirt or chips can enter gears, and the tool can be kept thoroughly oiled at all times without fear of clogging up.

Each ratchet is fitted with two socket bushings, one for square shank drills and one round to fit shank of a No. 2 Morse twist drill.

PRICES

No. 1	12 inch lever	$13 50
" 2	15 " "	16 00
" 3	18 " "	19 00

FLETCHER'S SELF-LUBRICATING RATCHET DRILL

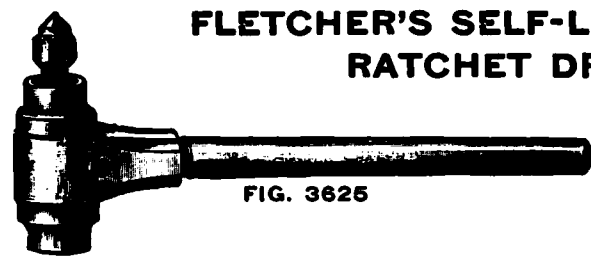


FIG. 3625

The handle, being tubular and detachable, requires filling with grease about once in six months when in constant use, or may be oiled as required.

The Boiler or B Ratchet Drill measures only 2½ inches over all.

PRICES

Sleeve Ratchet: No. 10, $5.00; No. 12, $6.00. Boiler Ratchet: No. B, $5.00.

PATENT RATCHET

PRICES, FIG. 3628, SLEEVE RATCHET

		Polished.	Nickeled.
No. 4	10 inch lever	$5 75	$7 50
" 5	12 " "	6 00	8 00
" 6	15 " "	7 00	9 50
" 6½	17 " "	7 50	....
" 7	20 " "	8 00	12 00

PRICES, BOILER RATCHET

No. 8	10 inch lever	$5 50
" 9	12 " "	6 00

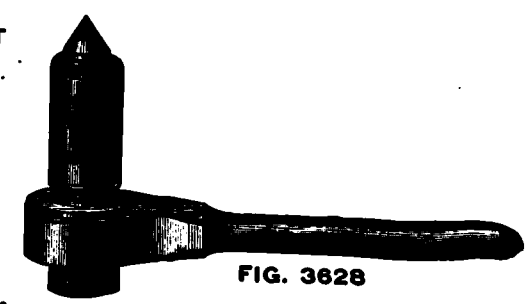


FIG. 3628

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RATCHET DRILL



FIG. 3629

PRICES

Polished and nickel plated throughout.

Nos.	1	2	3
Lever, inches	10	12	14
Each	$4 00	$4 50	$5 00

EXCELSIOR RATCHET DRILL

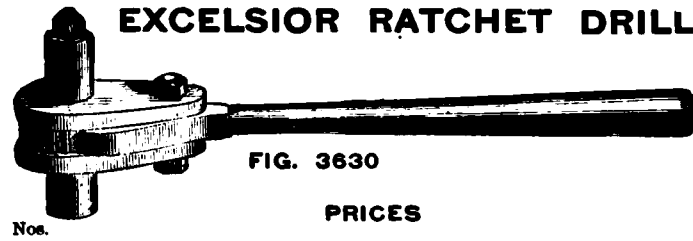


FIG. 3630

PRICES

Nos.								Each.
1	Ratchet drill stock, 12 inches over all							$6 00
2	"	"	"	16	"	"	"	7 75
3	"	"	"	20	"	"	"	9 50
Boiler	"	"	"	12	"	"	"	6 00

WESTON'S RATCHET DRILLS

STYLE A. FOR GENERAL PURPOSES

Made with double pawl and ratchet. Made with sleeve covering to feed screw of Style A, protecting it from dirt and grit. Machine cut, square thread screws.

PRICES

Length of lever, inches	12	14	16	18	20	22
Each	$7 60	$8 00	$8 75	$10 00	$10 50	$12 00



FIG. 3632

STYLE B. BOILER RATCHET FOR CONFINED PLACES

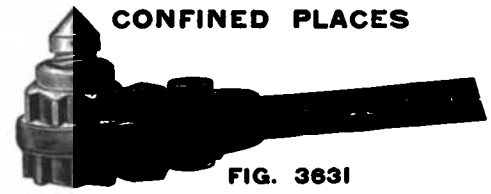


FIG. 3631

Length of lever, 14 inches; space required, 3½ inches; will feed 5/8 inch.

PRICE, $8.00

STYLE C. FOR LOCOMOTIVE WORK

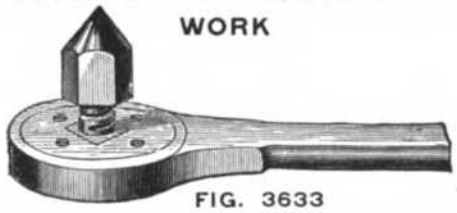


FIG. 3633

Length of lever, 14 inches; space required, 2¾ inches; will feed 5/8 inch.

PRICE, $12.00

STYLE D SWIVEL HANDLE

PRICE, $10.00

Lever, 12 inches long.



FIG. 3634

STYLE F. FOR ANGLE IRON

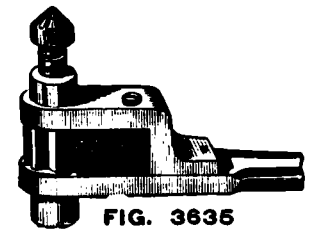


FIG. 3635

Length of lever, 12 inches; will drill within ½ inch of the inner angle.

PRICE

Each.....$22 00

FRICTION DRILL

PRICES

Nos.	Handles, Inches.	Each.
1	10	$10 00
2	12	12 00
3	15	15 00
5	20	23 00



FIG. 3636

FRICTION BOILER DRILL

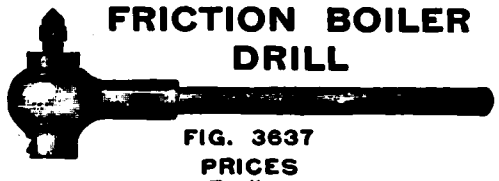


FIG. 3637

PRICES

Nos.	Handles. Inches.	Each.
1	10	$9 00
2	12	10 50
3	15	13 50

OLD MAN OR DRILLING POST

For Use With Ratchet Drills.

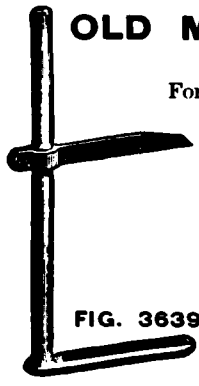


FIG. 3639

This is a very handy and useful article to use in connection with ratchet drills. It is made of wrought iron, the post is turned for the swinging arm, and the foot is planed square, and has a slot in its full length for bolting down.

	No. 1.	No. 2.
Height of post	20 in.	26 in.
Radius of arms	10 "	12 "
Each	$8 00	$10 00

CONTINUOUS MOTION RATCHET AND CRANK DRILL

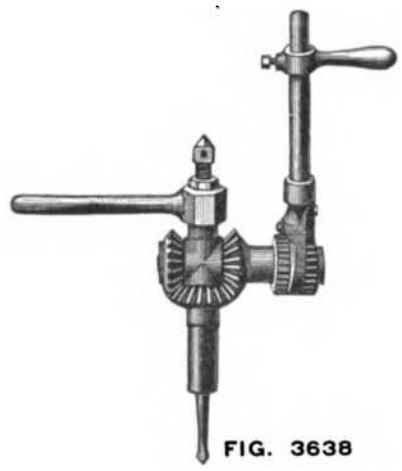


FIG. 3638

In this drill are combined the following movements:

1—The continuous forward movement of the drill spindle, caused by the reciprocating movement of the operating lever.

2—The single acting movement as found in the ordinary ratchet drill.

It can also be used as a crank drill by slipping the handle on the lever; making it very convenient for drilling small holes where there is room for a complete revolution of the crank.

PRICES

No. 1, 10 inch handle, each.....$13 00
" 2, 12 " " " 16 00

WILLIAMS UNIVERSAL RATCHET

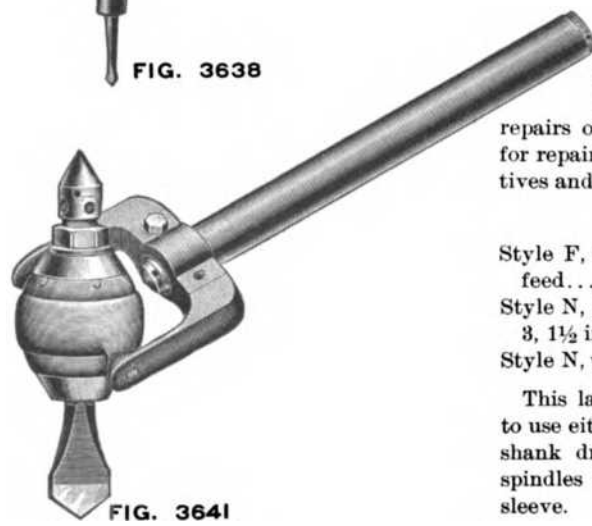


FIG. 3641

This ratchet is used for confined places in setting up new work, for drilling, reaming, or tapping pipes, for screwing up bolts and nuts, for repairs on steamships and steam yachts, for repairing boilers, steam pumps, locomotives and heavy machinery in general.

PRICES

	Each.
Style F, square taper hole, 1½ inch feed	$15 00
Style N, Morse round taper hole, No. 3, 1½ inch feed	15 00
Style N, with extra spindle of style F.	18 00

This last combination makes it possible to use either a round taper or a square taper shank drill, or a socket wrench, for the spindles are interchangeable in the same sleeve.

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BORING TOOLS AND DRILLS

JOHNSON'S AUTOMATIC BORING TOOL

PRICES, 3642

No. 0—All metal, per dozen.....$12 00
" 1—Wood handle, per dozen..... 12 00
" 2—Handle, with cells, per dozen..... 15 60

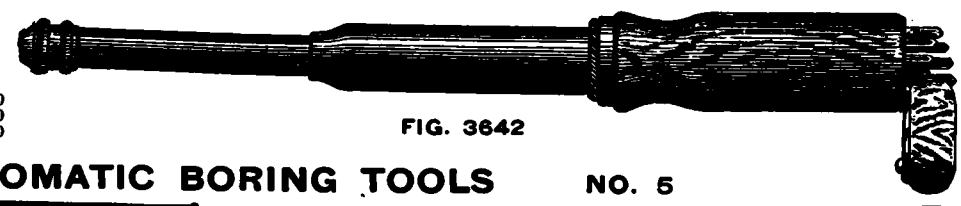


FIG. 3642

NO. 3 AUTOMATIC BORING TOOLS NO. 5

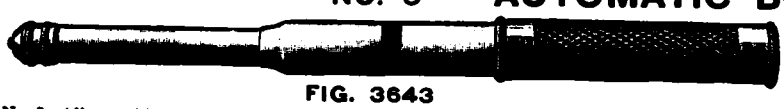


FIG. 3643

No. 3—All metal handle, with 8 points, per dozen.....$14 00

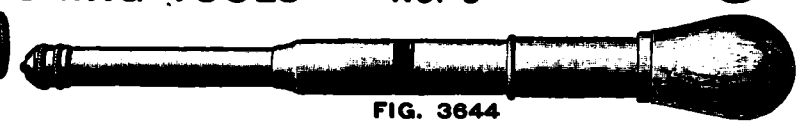


FIG. 3644

No. 5—Solid cocobola handle and 8 points, per dozen.....$14 00

NO. 4

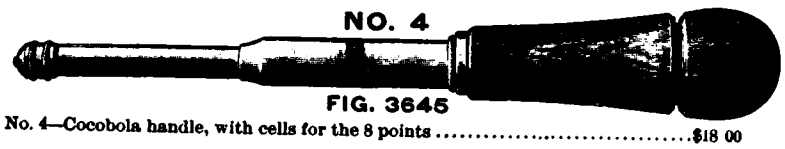


FIG. 3645

No. 4—Cocobola handle, with cells for the 8 points.....$18 00

NOS. 6 AND 7

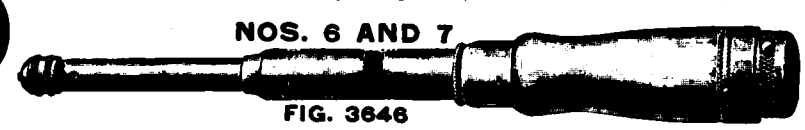


FIG. 3646

BORING TOOL POINTS

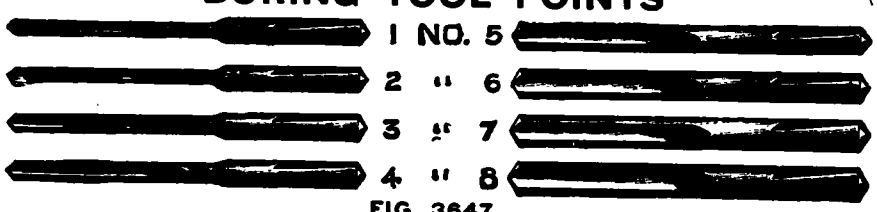


FIG. 3647

Price per set (8 points).....48 cents
" " dozen.....72 "

PRICES, FIG. 3646

No. 6—Cocobola handle, with separate cells for points, and device for releasing any one of the 8 points from handle without disturbing the other numbers; per dozen.....$20 00

No. 7—Same as No. 6, excepting that it has stained handle instead of cocobola; per dozen.....$18 00

GOODELL AUTOMATIC DRILL

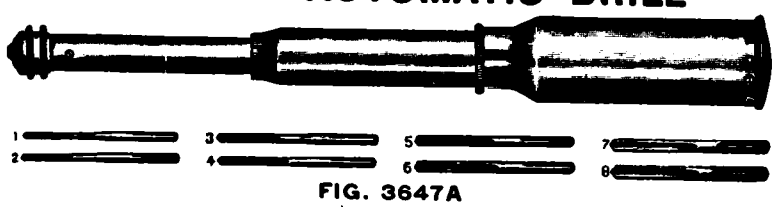


FIG. 3647A

The use of this drill will save the operator much valuable time, both in hunting for drill points which may have been lost and in selecting the exact size which he may desire to use. The tools are made of hollow brass, nickel plated.

PRICE

No. 3—Nickel plated, per dozen.....$26 00

GRAVES AUTOMATIC DRILL NO. 2

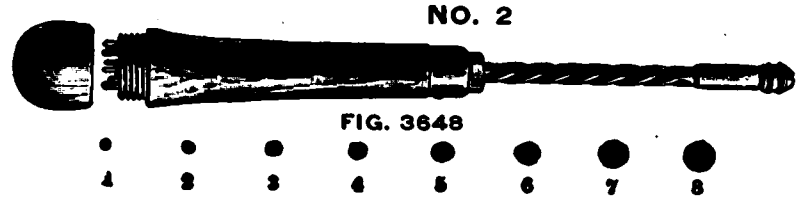


FIG. 3648

No. 2 is a larger size, with hollow handle, and includes a set of 8 drill points, the same size as shown in Fig. 3647.

Price, with 8 drill points, per dozen.....$18 00

AUTOMATIC DRILL STOCK

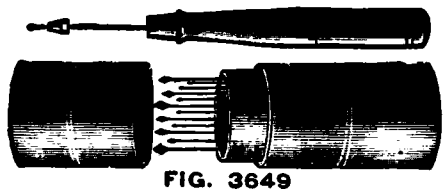


FIG. 3649

This is a most complete tool for bracket saw work. The stock is made of cocobola wood with steel spindle. The drill points are fastened by means of a steel thimble, which screws on the end of the spindle. It is easily worked with one hand, and will drill the most delicate wood without danger of splitting.

Price with 12 drill points, assorted, per dozen, $9.00.

DIAMOND DRILL POINTS

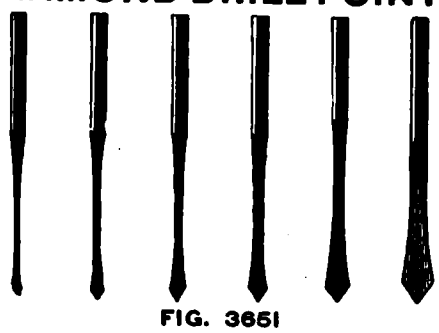


FIG. 3651

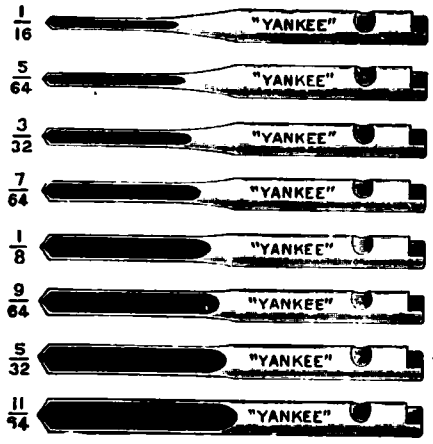
The cut represents the exact size of the drill points.

Price for set of 6 drills.....25 cents.

YANKEE AUTOMATIC DRILL



FIG. 3650



For carpenters, cabinetmakers, etc., for boring wood for various purposes, as setting screws, brads, nails, etc. Bores holes in hard or soft woods without splitting. Pushing handle down revolves the drill, and a spring pushes handle back to its place. During the return movement the drill point revolves backward to clear chips, etc. The chuck is of new and improved design, and will hold drill points tight and absolutely rigid. The tool is nickel plated and finely finished.

PRICE

No. 41—With 8 drill points, one each 1/16, 5/64, 3/32, 7/64, 1/8, 9/64, 5/32, 11/64 inch, shown full size in cut; per dozen.....$22 00

The entire length of tool, inclusive of drill, as in illustration, is 11¾ inches.

YANKEE RECIPROCATING DRILL

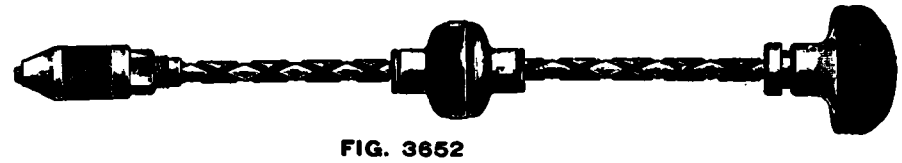


FIG. 3652

This drill is designed for use in drilling in steel, iron, brass and other metals, as well as all varieties of woods. It is so constructed that the drill runs continuously to the right during both the forward and backward movement of the driver; hence drills continuously. The pressure to feed the drill is supplied by the pressure against the head of the tool, which is provided with ball bearing to reduce the friction. The chuck has three jaws.

No drill points are furnished with this tool—the user furnishing such quality, style and size best suited for work required in wood, iron, steel, brass, etc. The chuck will hold any drill with shanks 5/16 inch diameter or less. To open or close chuck move the driver up to chuck, push down the catch in lower end of driver, which holds fast the driver on spindle. After drill is put in chuck and tightened, push up the catch, releasing driver from spindle so it can be moved backward and forward to operate drill. The movement or traverse of the driver is 8½ inches. The entire length of tool without drill is 16 inches.

No. 50—Price, without drill points, per dozen.....$35 00

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HAND AND BREAST DRILLS

HAND DRILL, NO. 1

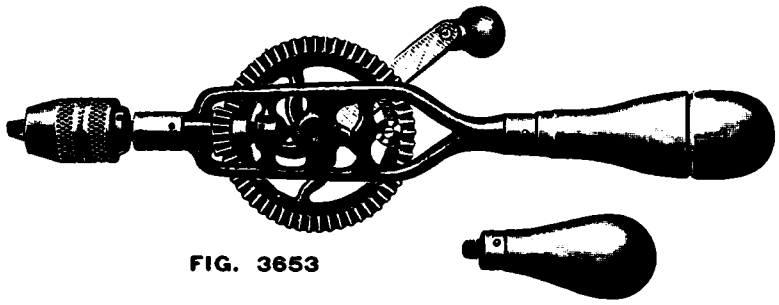


FIG. 3653

These drills are made with three jaws, resting in solid sockets, and there are no springs to get out of place or out of order. The chucks are nickeled and the handles cocobola. They hold drills from 0 to 3/16.

A side handle, as shown in cut, is furnished with this drill.

Price, including 8 fluted points in hollow handle, per dozen, $15 00.

HAND DRILL, NO. 5



FIG. 3654

This drill has same chuck as No. 1, Fig. 3653, but is double geared, and is provided with a wide rim gear, to be grasped between thumb and fingers when the drill is used for delicate work. In this manner it can be run without liability of breaking points.

Length over all, 11½ inches; weight, 20 ounces.

Price, including 8 fluted points, per dozen, $18 00.

HAND DRILL, NO. 2, BALL BEARING

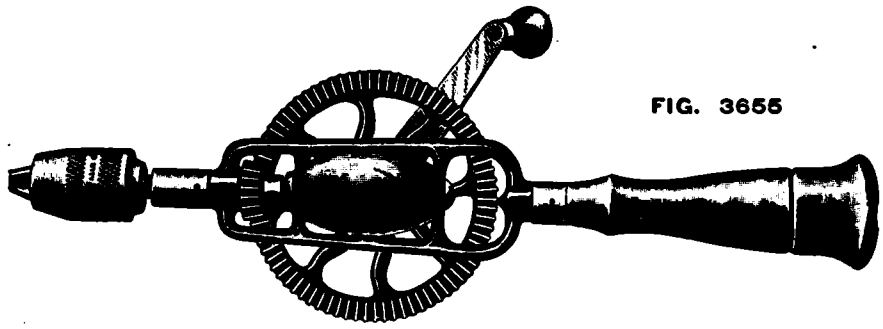


FIG. 3655

This drill is same in general finish as No. 1, Fig. 3653. It has cut gears and an adjustable friction roll to prevent gears from springing out of engagement. The chuck holds from 0 to 17/64.

Price, with 8 fluted points, per dozen, $30 00.

HAND DRILL, NO. 4

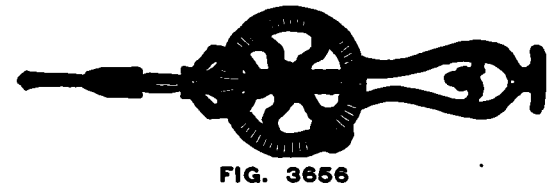


FIG. 3656

This drill stock is 8 inches in length, and weighs 8 ounces. It is made of iron, with rosewood handle, and has chuck for holding the drill points. This chuck is made on a new plan, and it centers and holds the drill perfectly. With each drill stock we send a box containing six superior drill points, of various sizes.

Price of stock and drills, per dozen, $6 00.

HAND DRILL

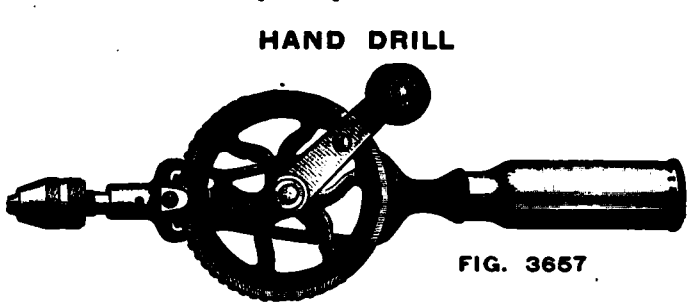


FIG. 3657

The handle is of hollow brass, nickel plated, used as a receptacle for the drill points, each contained in a separate numbered compartment.

The frame is of malleable iron, strong and light. The large and small gears are both cut, and run smoothly without hitching. The steel chuck, with knurled nut, is well finished, has three hardened steel jaws which will hold equally well the fluted drills in the handle, or any twist drill from 5/32 inch down to No. 80.

Price, No. 4, capacity 0 to 5/32 inch, with 8 fluted drill points, per dozen, $26 00.

HAND DRILL



FIG. 3658

Has polished hard wood handle, with patent drill receptacle; also, polished hard wood extra side handle; can be removed at will. Malleable iron frame, well japanned; cut teeth gears, nickel plated; both gears are held together by a steel guard, having every advantage of a double geared drill; three jawed chuck, capacity 0 to ¼ inch. It has knurled nut, nickel plated; will hold any twist drill from ¼ inch to No. 80. Price, No. 5, capacity 0 to ¼ inch, with 8 fluted drill points, per dozen, $36 00.

HAND DRILL

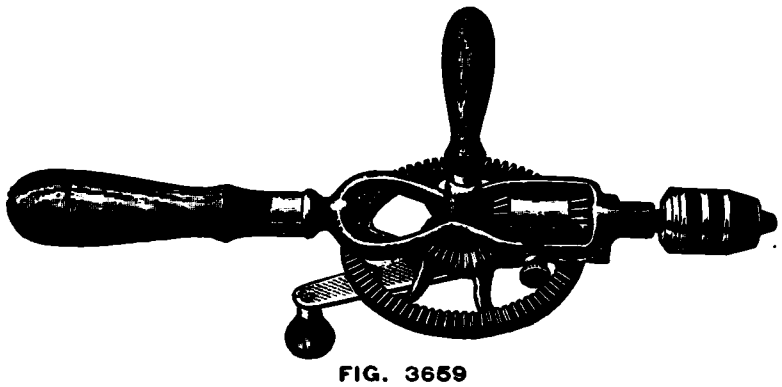


FIG. 3659

Has malleable iron frame, japanned; polished cocobola handle, screw cap; cut teeth, double gears. It has two speeds, changed by turning the nut on the frame marked F and S; three jawed chuck; capacity 0 to ⅜ inch; it has knurled nut, nickel plated; spindle runs in a hardened steel cone bearing.

Price, No. 5½, capacity 0 to ⅜ inch, no drill points, per dozen, $42 00.

Each drill packed in a box. Shipping weight, per dozen, 60 pounds.

BREAST DRILL, NO 10

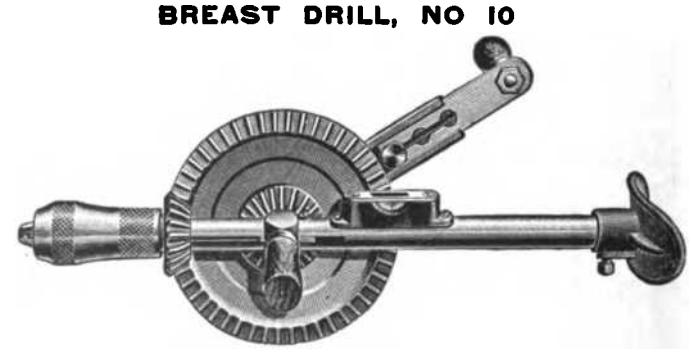


FIG. 3660

With ball bearings, nickel plated stock and chuck, cocobola handles, extension crank, alligator jaws, which hold both round and square shanks, and a patent level attachment to enable the operator to see when the tool is held true. The gears are cut and are changeable from even to speeded 3 to 1.

Price, per dozen, $36 00.

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BREAST DRILLS

BREAST DRILL NO. 11

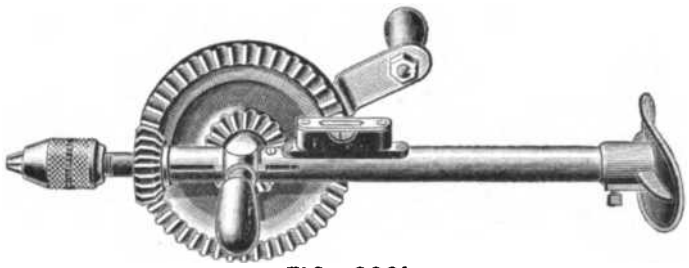


FIG. 3661

No. 11 Drill is same in finish as No. 10, Fig. 3660, but the chuck is arranged with three jaws for round shanks and will center quite accurately. It holds from 0 to 17/64.

Price, per dozen.....$36 00

BREAST DRILL NO. 16
WITH RATCHET ATTACHMENT

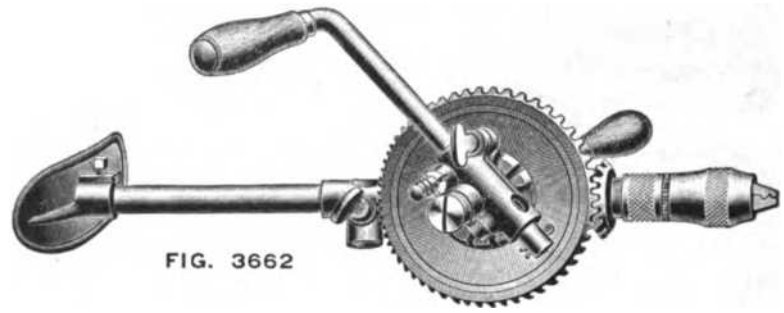


FIG. 3662

The frame is made in two lengths, the end section of which can be detached if the drill is to be worked in a narrow space—as between joists, for instance—or it can be attached to the main frame at right angles if desired. The ratchet attachment enables the operator to work in close quarters and in corners. This attachment also gives greater power. The sectional frames can be detached to reduce the length of the tool when required, and the whole construction is such that the drill can be taken apart and packed in small compass for carrying in the grip. This will be found an especially valuable drill for the use of electricians, plumbers, etc. Extreme diameter of driving wheel, 7 inches. Extreme diameter of pinion, 2 inches. Arranged with two speeds.

Price, per dozen.....$48 00

BREAST DRILL NO. 12

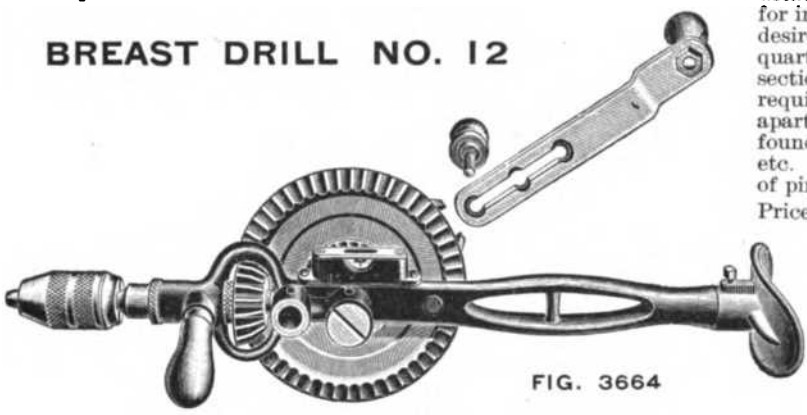


FIG. 3664

BALL BEARING

Changeable gear from even to speeded about 3 to 1. The drive wheel is 5 inches in diameter. The gears are cut from solid metal. A roller is placed at back of drive gear, which makes it equally as firm and substantial as a double geared drill. The crank is adjustable to three different lengths, and is held in place by a round head thumb screw with milled edges. The drive gear is held by a similar screw. The chuck is nickeled and has alligator jaws suitable for both round and square shanks. They hold from 5/64 up. The handles are cocobola. Has a level attachment which enables the operator to see when the drill is being held true, and will be appreciated by good mechanics.

Price, per dozen.....$30 00

BALL BEARING BREAST DRILL NO. 15



FIG. 3665

This drill is same in pattern and finish as No. 12, Fig. 3664, with exception that it has a D handle instead of breast plate. They are used largely in car shops.

Price, per dozen.....$30 00

BALL BEARING BREAST DRILL NO. 18

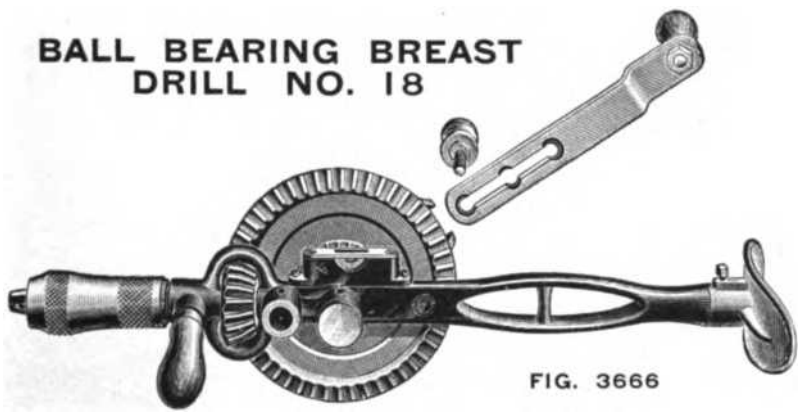


FIG. 3666

Excepting in the chuck No. 18 Breast Drill is same in pattern and finish as No. 12, Fig. 3664. The chuck is arranged with three jaws for round shanked points only from 1/16 to 1/2 inch inclusive. It will center them accurately.

Price, per dozen.....$42 00

BALL BEARING BREAST DRILL NO. 13

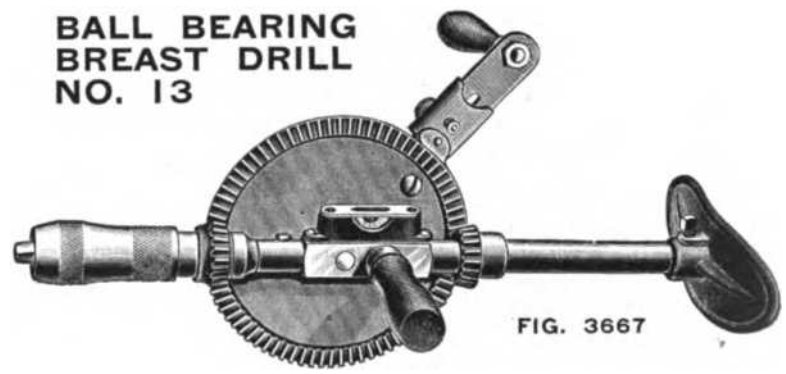


FIG. 3667

This drill is double geared and has a 6 inch drive wheel giving speed at 4½ to 1. The gears are cut, the handles cocobola and the stock and chuck nickel plated. Note the level attachment to show when the tool is being held true, also the extension crank.

Price, per dozen.....$48 00

DOUBLE CRANK BREAST DRILL NO. 14

DESCRIPTION, FIG. 3668

No. 14 Drill is made strong and powerful for heavy work. The cranks are adjustable to different lengths, the breast plate is 12 inches long and curved to fit the body. The spindle is bored to take drills with ½ inch shanks. For drills with shanks 7/16 or smaller we furnish a chuck as noted below. This chuck also holds square shanked drills.

PRICES

Double Crank Breast Drill, No. 14, each.....$5 00
Adjustable Chuck to fit same, specify if wanted..... 1 00

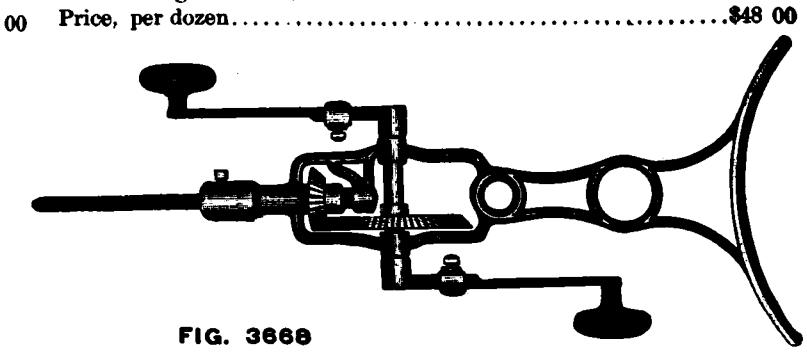


FIG. 3668

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BREAST DRILLS

BALL BEARING BREAST DRILL

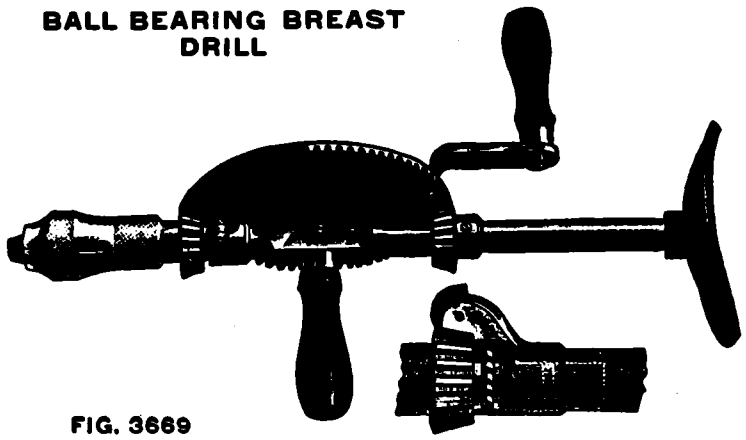


FIG. 3669

These No. 1 breast drills are double geared, all gears cut, frame wrought iron, with two sets of forged steel jaws, hardened. It will be seen they have a ball bearing shoulder to take up the end thrust, and also a special locking device by which the socket is securely held from turning by a latch instantly thrown in or out by the thumb of the left hand whilst holding the breast drill in position for use, thus materially assisting in tightening or releasing drills. When so ordered, D or Decagonal sleeves will be furnished in place of above jaws.

PRICE

No. 1 Full nickel plated.....per dozen, $48 00

BALL BEARING BREAST DRILL

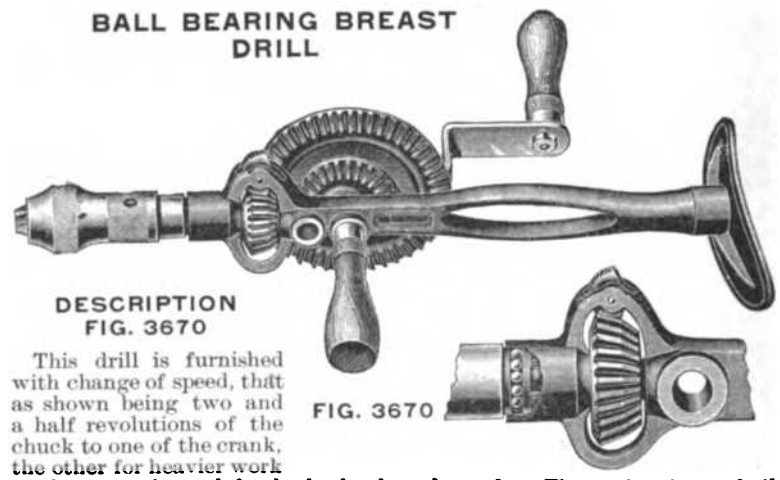


FIG. 3670

DESCRIPTION FIG. 3670

This drill is furnished with change of speed, that as shown being two and a half revolutions of the chuck to one of the crank, the other for heavier work at about equal speed for both chuck and crank. The socket has a ball bearing shoulder to take up the end thrust, and a special locking device by which the socket is securely held in place when needed to tighten or change drills. We furnish with this drill two sets of forged steel jaws, one set for square shank bits, the other for small drills; or, if preferred, one set of alligator jaws. Gears are cut. Frames malleable iron. Decagonal shaped sleeves furnished if wanted.

PRICES

No. 2 Full nickel plated.....per dozen, $30 00

When specially ordered we furnish these breast drills with three jaw chucks to take from ⅜ inch down.

No. 2 Breast drill with three jaw chuck.....per dozen, $38 00

BREAST DRILL

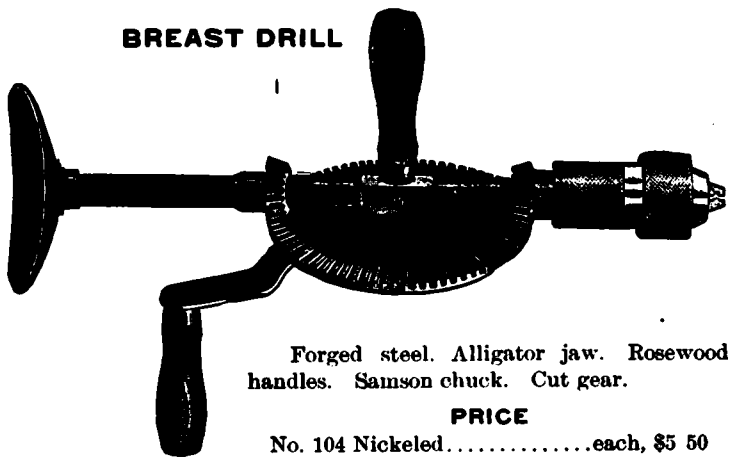


FIG. 3671

Forged steel. Alligator jaw. Rosewood handles. Samson chuck. Cut gear.

PRICE

No. 104 Nickeled.....each, $5 50

BREAST DRILL



FIG. 3672

Forged steel, one piece, spring tempered jaw. Rosewood handles. Finely finished.

PRICES

No. 4 Nickeled, cut gear.....each, $4 50
" 5 Enameled..... " 3 50

BREAST DRILL NO. 6

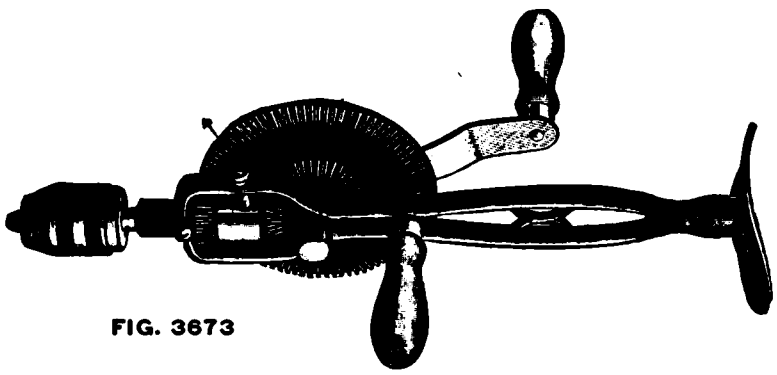


FIG. 3673

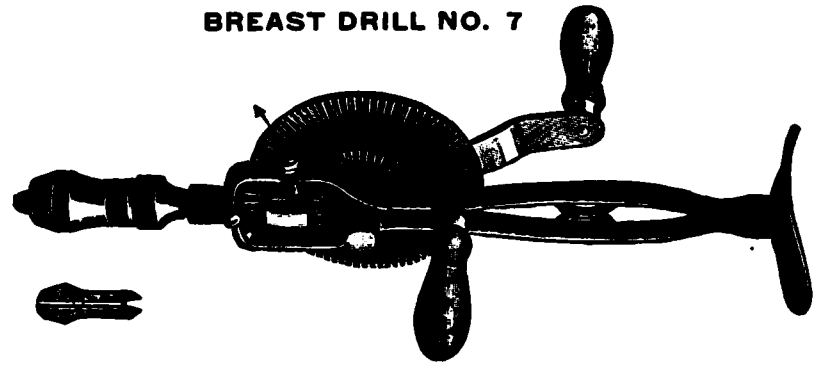
It has a three jawed chuck, capacity 0 to ½ inch. It is double geared, one gear remaining idle and acting as an anti-friction bearing when the other is at work.

All gears have cut teeth. It has two speeds and can be changed from fast to slow by turning the thumb nut at A until the letter representing desired speed is nearest the chuck. The breastplate is adjustable and its position can be changed if desired. The spindle runs in a hardened steel cone bearing.

PRICE

Per dozen.....$48 00

BREAST DRILL NO. 7



DESCRIPTION, FIG. 3674

This drill is the same in every particular as the No. 6, Fig. 3673, except that it has an improved brace chuck and two sets of jaws, one for holding square and one round shanks. Has malleable iron frame, japanned. All cut teeth gears. It has two speeds, changed by turning the nut at A. Adjustable breastplate; its position can be changed if desired. Nickel plated chuck; runs on a thread so fine that no stop catch or other similar device is necessary. Polished hard wood handle. The spindle runs in a hardened steel cone bearing.

PRICE

Per dozen.....$42 00

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COMBINATION HAND AND BREAST DRILL

Its capacity is to ⅜ inch, and it has two speeds, facilitating the use of large size drills. Malleable iron frame, japanned; polished hardwood handle, large head; cut teeth, double gears. It has two speeds, changed by turning the nut on the frame marked F and S. Three jawed chuck, capacity 0 to ⅜ inch. It has knurled nut, nickel plated; spindle runs in a hardened steel cone bearing.

PRICE

No. 5½ B. No drill points, capacity 0 to ⅜ inch. Per dozen, $42 00

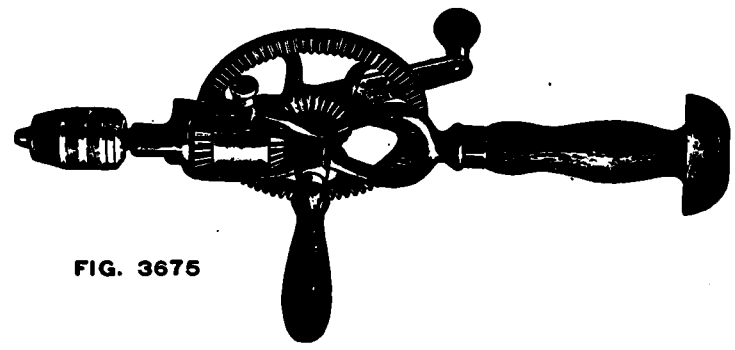


FIG. 3675

BREAST DRILL

FOR SQUARE SHANKS



FIG. 3675A

This drill has a grip handle and will at once be appreciated by those desiring to use auger bits.

PRICE

No. 7½, with 2 sets of jaws, per dozen.....$42 00

COMBINED BREAST AND UP-RIGHT DRILL

Weight of drill, 8 pounds. Weight of drill and stand, 14 pounds. Hole in spindle for ¼ inch straight shank drills.

PRICES

Without stand.....$4 00
With stand..... 8 00

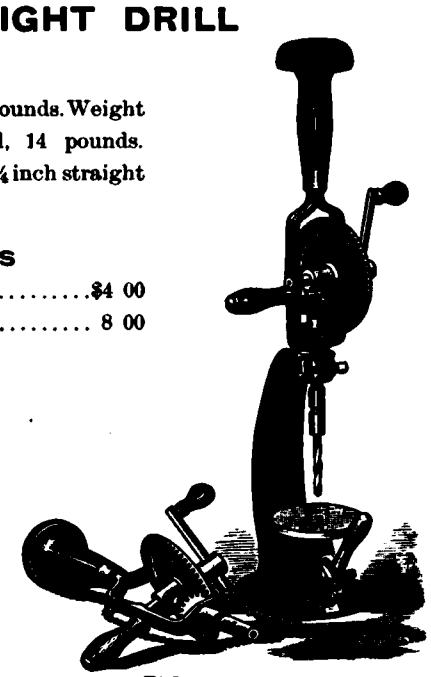


FIG. 3676

UNIVERSAL HAND DRILL PRESSES

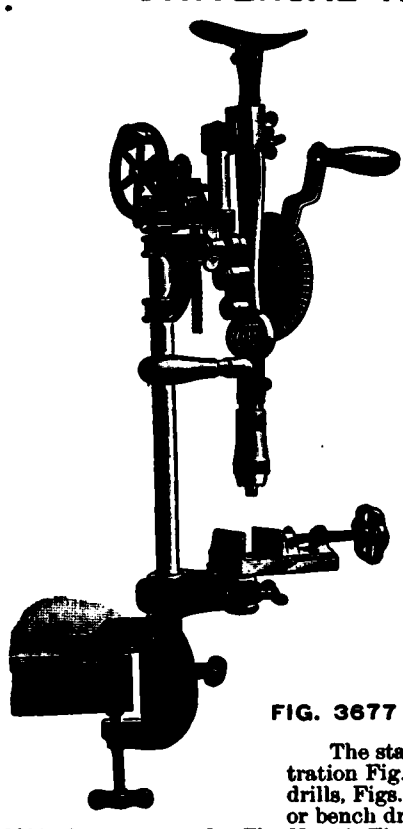


FIG. 3677

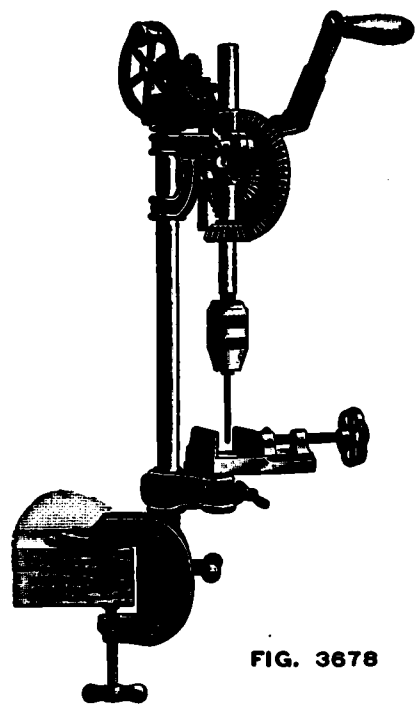


FIG. 3678

The standard and frame in drill press, as exhibited in illustration Fig. 3677, was designed to apply to No. 10, 12 or 18 breast drills, Figs. 3660, 3664 and 3666, so as to convert into a drill press or bench drill. The illustration shows No. 12 breast drill, Fig. 3664, thus converted. The No. 10, Fig. 3660, breast drill can be converted with equal ease. The bench clamp, vise rest and frame are all clamped to the main standard, and so can be moved up or down, or swung to the right or left, and, by means of the thumb screws provided, clamped or secured at any desired point. The vise is hung on a pin, which is off center, so as to give the operator the advantage of a variety of positions. The operator may, if desirable, work below the bench by dropping the frame and fixtures down on the standard, and securing the upper end of the same in the bench clamp. This is very convenient in bicycle repairing. In short, the number of positions, heights and adjustments that will suggest themselves, as necessity demands, with this tool is astonishing. Fig. 3678 represents the universal hand drill press with special drilling attachment provided for it. This drilling attachment has double gears, large 5 inches, small 2 inches in diameter, extension handle, three jawed chuck, taking straight shank drills from 0 to ½ inch.

PRICES

For attachment only, Fig. 3677, without breast drill, each.....$4 00
Standard and drilling attachment complete, Fig. 3678, each..... 7 00

UPRIGHT BENCH DRILLS

NO. 8

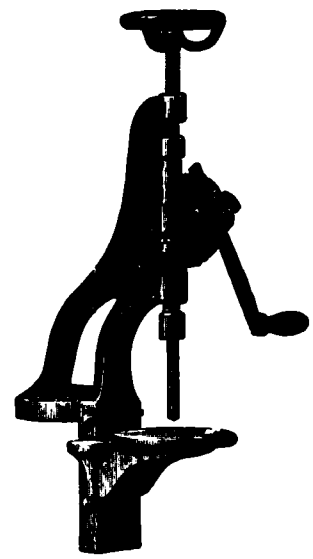


FIG. 3679

Drills ⅛ to ¾ inch hole, and to center of a 10 inch circle. Length, 33 inches. Weight, 55 pounds. Hole in spindle for ½ inch straight shank drills.

Price.....$12 00

NO. 9



FIG. 3680

Drills ⅛ to 1 inch hole, and to center of a 10 inch circle. Length, 33 inches. Weight, 75 pounds. Hole in spindle for ½ inch straight shank drills.

Price.....$15 00

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UPRIGHT BENCH DRILLS

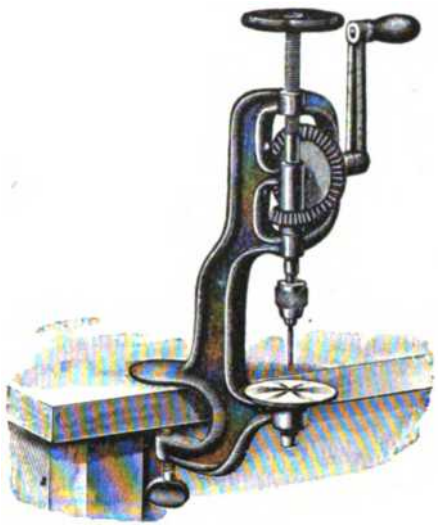


FIG. 3681

This drill has solid iron frame, cut gears, steel feed screw, and adjustable table. It is furnished complete with a three jawed chuck, capacity 0 to ¼ inch, and 8 fluted drills. The height from the table to the feed wheel is 13 inches.

PRICE

No. 8, Capacity 0 to ¼ inch, complete with 8 fluted drills, each.....$5 00

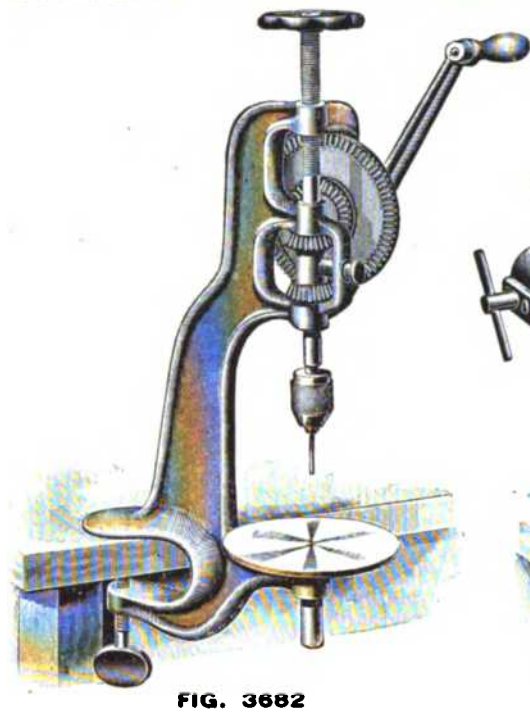


FIG. 3682

It has a solid iron frame, cut gears and two different speeds quickly changed by a shifter conveniently located; an adjustable table and steel feed screws. It is furnished complete with a three jawed chuck, capacity 0 to ⅝ inch, and 8 fluted drills. The height from the table to the feed wheel is 18 inches.

PRICE

No. 9, Capacity 0 to ⅝ inch, complete with 8 fluted drills, each.....$8 00

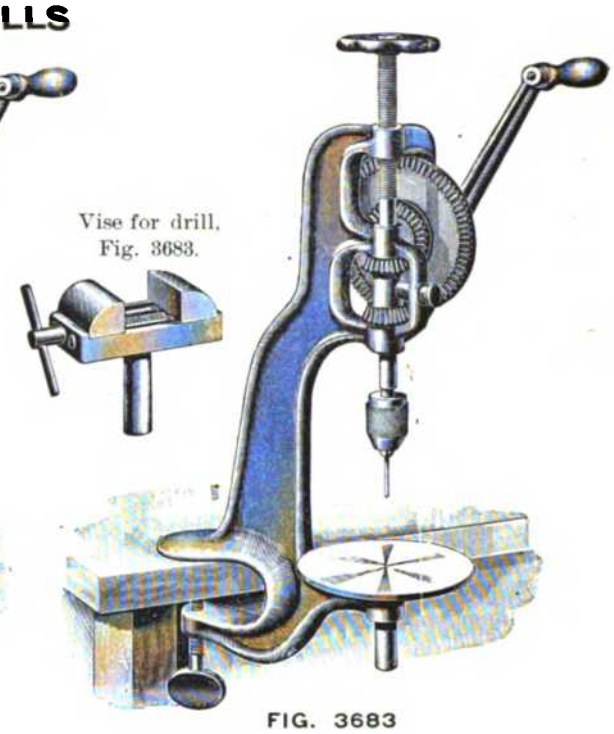


FIG. 3683

This machine is identical with No. 9, Fig. 3682, but is furnished with a special vise which can be used in place of the table for holding the work.

The jaws open 2 inches and operate on a right and left hand screw.

PRICES

No. 9½. Machine and vise, complete. Capacity 0 to ⅝ inch with 8 fluted drills, each.....$10 00

Separate vises, each..... 2 00

BENCH DRILL



FIG. 3684

Height, 28 inches; weight, 55 pounds. Drills from ⅛ to ⅞ inch hole, and to center of 19 inch circle. The feed has a run of 3½ inches. All shafts and screws are best steel. Chuck is made for ½-inch drill shank.

Price, each.....$15 00

BENCH DRILL

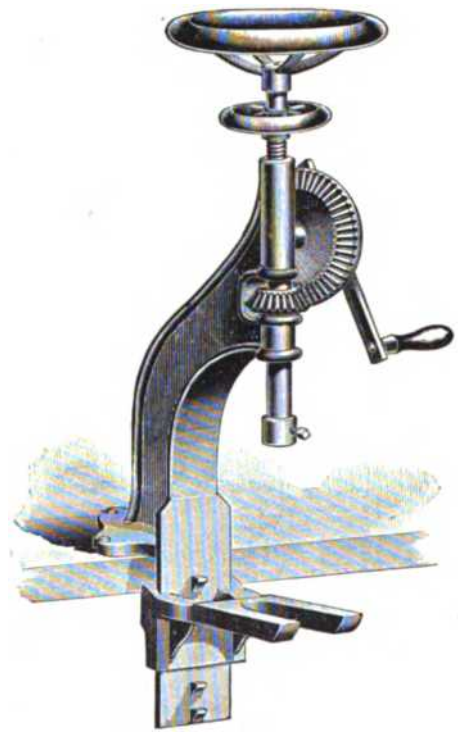


FIG. 3685

This bench drill has an adjustable bed plate, is 26½ inches high, weighs 34 pounds, drills up to ½ inch, feed has an up and down run of 3½ inches. The crank can be lengthened or shortened. The feed is easily operated. It takes ⅜ round or square shank drill bits. Two chucks are furnished with the drill, when specially ordered. When not specially mentioned the drill is supplied with a round chuck only. Either round or square chuck can be had with the drill regularly.

Price, each.....$6 00

COLUMN AND FORCE FEED DRILL

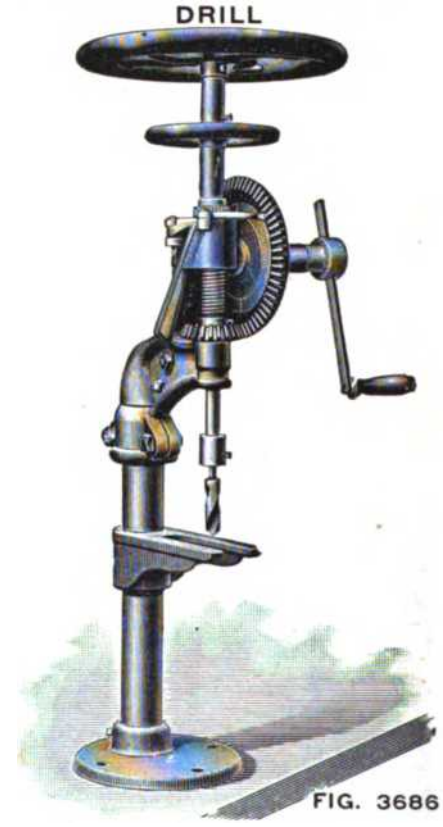


FIG. 3686

This drill has all the late improvements, including self feed which is adjustable and can be used or not at the option of the operator. It will drill a hole 1 inch in diameter with perfect ease and safety.

Length of column, 19½ inches. Swings, 16 inches. Diameter, 3 inches. Weight, 150 pounds. Table has vertical motion, 8 inches.

Price, each.....$50 00

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BENCH AND UPRIGHT OR POST DRILLS

NO. 0 BENCH DRILL

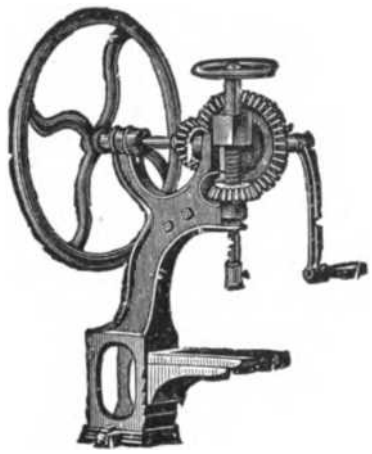


FIG. 3687

DESCRIPTION, FIG. 3687

The No. 0 is suitable for carriage and blacksmith work and ordinary drilling. It is not a self feeding machine.

Swings.....14 inches
Weight.....80 lbs.
Price.....$25 00
Vise, extra..... 2 50

NO. 1 DOUBLE GEARED DRILL

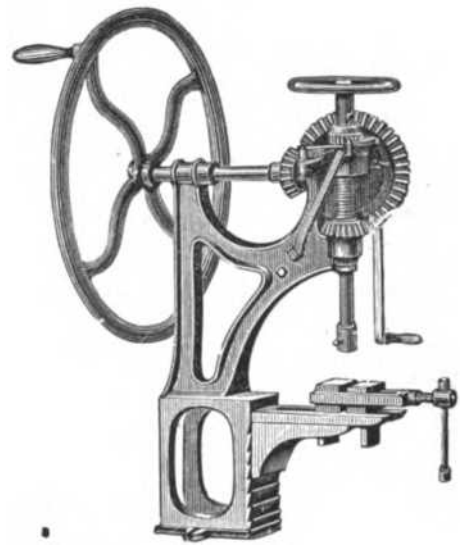


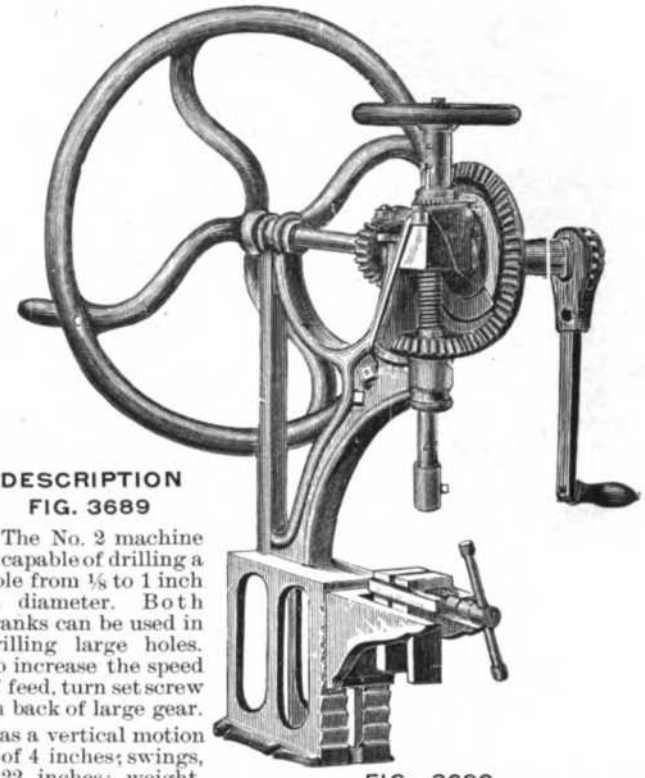
FIG. 3688

DESCRIPTION, FIG. 3688

It will drill a hole one inch in diameter with perfect safety. It is so constructed that power and speed are combined in one machine. By using the side crank, speed is obtained for drilling small holes. By using the fly wheel crank gives power, and one inch holes can be drilled with same strength as one-half inch holes can be drilled with side crank.

Weight.....125 lbs.
Swings.....18 inches
Price $37 50
Extra for vise... .....2 50

NO. 2 SELF FEED DRILL PRESS



DESCRIPTION FIG. 3689

The No. 2 machine is capable of drilling a hole from ⅛ to 1 inch in diameter. Both cranks can be used in drilling large holes. To increase the speed of feed, turn set screw on back of large gear. Has a vertical motion of 4 inches; swings, 22 inches; weight, over 200 lbs. Price.....$50 00
Price with cone pulleys, countershaft, hangers and shipper, complete..... 80 00

FIG. 3689

IMPROVED FORCE FEED POST DRILL

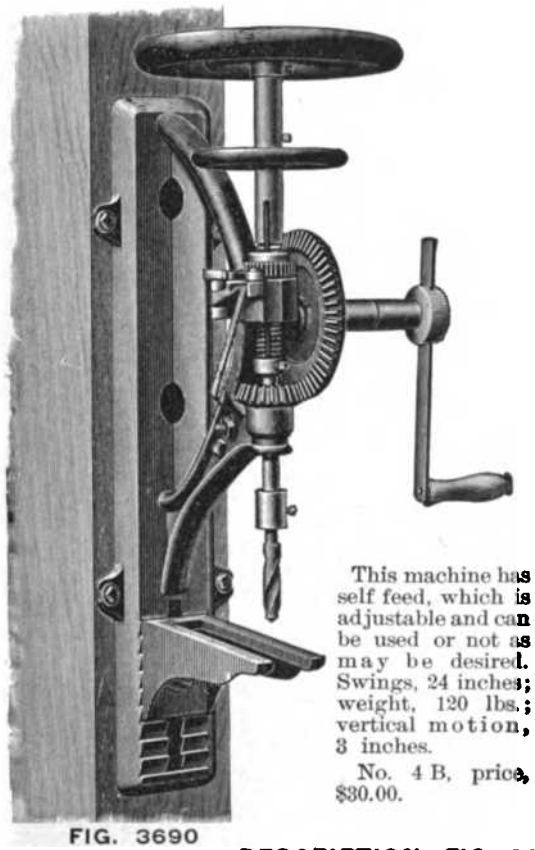


FIG. 3690

This machine has self feed, which is adjustable and can be used or not as may be desired. Swings, 24 inches; weight, 120 lbs.; vertical motion, 3 inches.

No. 4 B, price, $30.00.

COLUMBIA DRILL

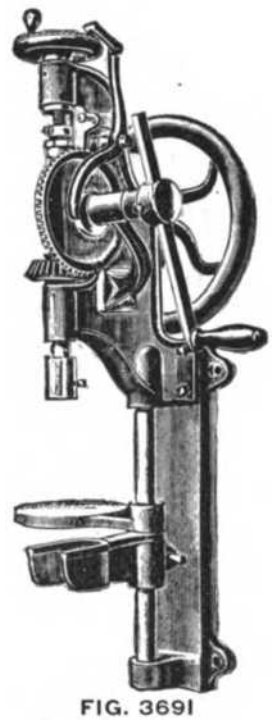


FIG. 3691

DESCRIPTION, FIG. 3691

This is a thoroughly built machine, designed for light and medium work. It can be used as a bench drill, if desired, as well as for a post drill. Balance wheel is placed in the rear, out of the way, and the gearing is so arranged as to drive it at a high rate of speed, relative to its work, thus insuring a steady motion. The feed is automatic and adjustable to three changes. The spindle and all shafts are steel, which run in anti-friction ball bearings. Has swing table and extension crank. Capacity from ⅛ to ¾ inch hole, 2½ inches deep, and to the center of a 13 inch circle. Takes drill bits with ½ inch round shank, unless otherwise ordered. Length, 42 inches; weight, 120 lbs.

Price, each.....$10 00
Arranged with tight and loose pulleys for power, extra..... 2 50

NO. 3 UPRIGHT DRILL

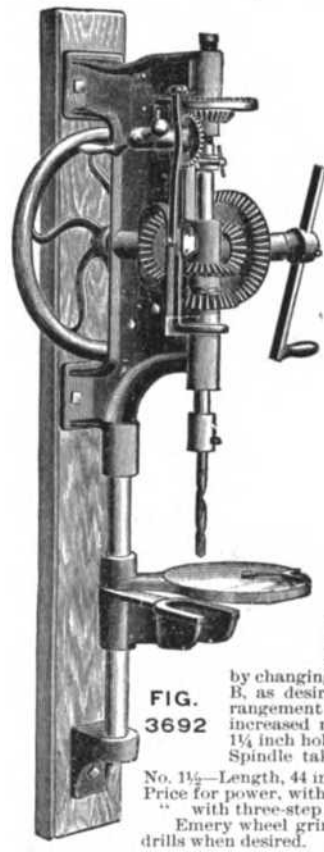


FIG. 3692

UPRIGHT SELF FEEDING DRILL



FIG. 3693

This machine has nearly a continuous feed, which may be quickly adjusted by a thumb screw to three rates of speed. A fast or slow motion may be given the drill by changing the handle from shaft A to shaft B, as desired by the operator. By this arrangement the capacity of the drill has been increased nearly one-third. Drills from 0 to 1¼ inch hole, and to center of 11 inch circle. Spindle takes ½ inch straight shank drills.

No. 1½—Length, 44 inches; weight, 120 lbs.; price.....$34 00
Price for power, with tight and loose pulleys..... 57 00
" with three-step cone and countershaft..... 59 00
Emery wheel grinders and wheel holders furnished for these drills when desired.

DESCRIPTION, FIG. 3692

It is made extra heavy, and all parts subject to strain are strongly braced with heavy ribs. It is capable of very heavy work, yet with its improved system of gearing it is equally commendable for light work. Fly wheel is on the back side, out of the way, and so connected that it obtains its highest speed, relative to its work, while large holes are being drilled. Feed is automatic, with four changes. It can be thrown off and the hand feed used if desired. It has the automatic, self-releasing, quick return; has anti-friction ball bearings. Capacity from ⅛ to 1½ inch hole, 5 inches deep, and to the center of a 16 inch circle. Takes drills with 4⅛₄ inch round shank, unless otherwise ordered. Length, 60 inches; weight, 235 lbs.

Price, not mounted.....$45 00
" mounted same as cut..... 47 00
" arranged with pulleys for power, extra..... 4 00

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UPRIGHT OR POST DRILLS

NO. 2



FIG. 3694

The swing table as applied to these machines will be found useful in many ways. It is out of the way when not in use, and may be quickly swung into position when wanted. This machine is particularly adapted for power by attaching tight and loose pulleys or cone pulley to shaft A outside of balance wheel. Spindle takes ½ inch straight shank drill. Drills from 0 to 1½ inch hole, and to center of 15 inch circle. Length, 54 inches; weight, 160 pounds. Price, $48 00; for power, with tight and loose pulleys, $52 00; for power, with three step cone and countershaft, $78 00.

UPRIGHT SELF FEEDING DRILLS

NO. 5

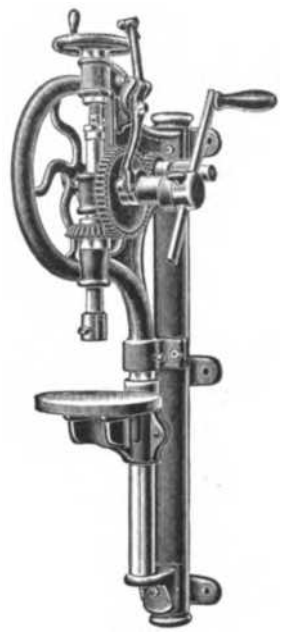


FIG. 3695

The above has a patent tubular iron column by the use of which it is easily bolted in position to post or wall. Drills from 0 to 1¼ inch hole, and to center of 11 inch circle. Spindle takes ½ inch straight shank drills.

No. 5, length, 46 inches; weight, 135 pounds. Price, $36 00; with pulleys, $39 00.

NO. 7, HAND AND POWER

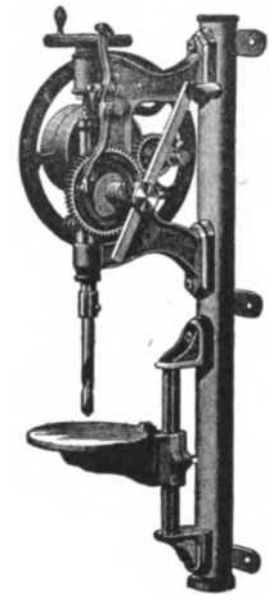


FIG. 3696

The drill here shown has a tubular iron column and is especially recommended for use in factories, agricultural works, machine shops, or other places where an upright drill is required. Spindle fitted for ½ inch straight shank drills. Drills from 0 to 1½ inch hole, and to center of 15 inch circle. Pulleys, 5 inch diameter, 2½ inch face; weight, 200 pounds.

No. 7, as arranged above, for both hand and power, price, $56 00; for hand only, $52 00.

NO. 4, HAND AND POWER

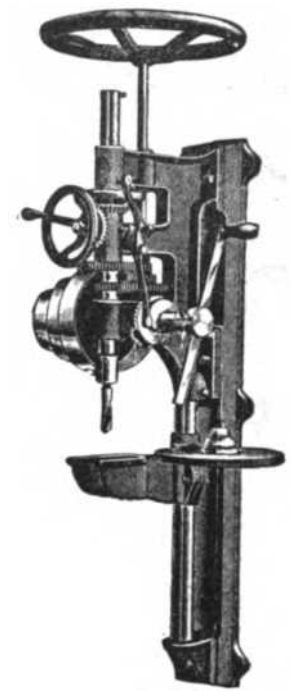


FIG. 3697

No. 4 has cut gears arranged for fast or slow motion. The spindle, not being burdened with the weight of the balance wheel, is quickly operated by the hand wheel in front. When used with three step cone pulley, has six changes of speed. Drills to center of 17½ inch circle. Weight, 250 pounds. Spindle for 41-64 inch straight shank drill. Size of driving pulley, 10 x 2½ inch. Cone pulley, three step, 10, 8, 6 and 2¼ inch face. Price, for hand only, $70 00; with tight and loose pulleys, $74.00; with cone and countershaft to match, $100.00.

HANDY SELF FEEDING DRILLS

NO. 0

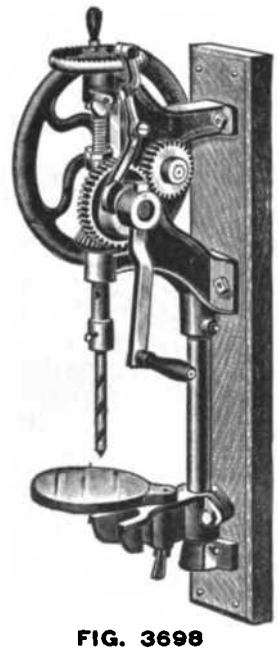


FIG. 3698

The spindle in No. 0 Handy Drill is made of steel and to receive ½ inch straight shank bits. The self feed may be used or not, as desired, by simply moving the dog, and can easily be changed to feed slow or fast. The table can be fastened at any height on the column in a moment, and can be put out of the way entirely by turning to the side. The crank or handle can readily be made long or short, to suit the operator. This machine will drill holes from 0 to 1 inch, and to the center of a 14 inch circle. The spindle travels 3 inches. Every drill is set in perfect line and tested before shipping. Weight of drill, 125 pounds.

Price, each.....$9 00

NO. 1

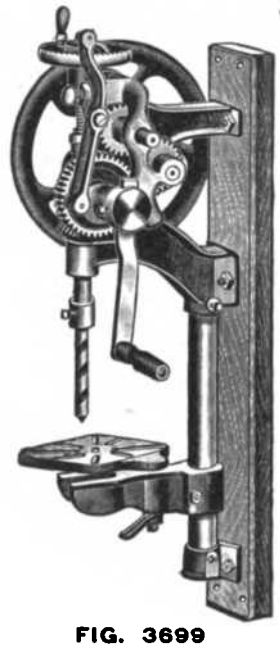


FIG. 3699

The spindle in No. 1 Handy Drill is made of steel and to receive ½ inch straight shank bits. The self feed may be used or not, as desired, by simply moving the dog, and can easily be changed to feed slow or fast. The speed may be varied by changing the crank from one shaft to another, which is quickly done. The table is provided with slots, for clamping down any article to be drilled, and can be fastened at any height on the column in a moment or put out of the way entirely by turning to the side. The crank or handle can be readily made long or short, to suit the operator. This machine will drill holes from 0 to 1¼ inch, and to the center of a 15 inch circle. The spindle travels 3½ inches. Weight of drill, 150 pounds.

Price, each.....$11 00

UPRIGHT SELF FEEDING DRILLS

NO. 2 DRILL

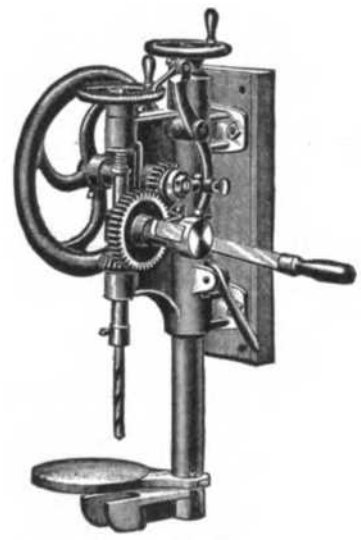


FIG. 3700

By turning the hand wheel at the top of drill the table may be raised or lowered. It is firmly held in place by an eccentric. The self feed may be used or not. The feed attachment can be easily changed to feed slow or fast, as desired. The spindle of this drill is made to receive ½ inch straight shank drill bits, unless otherwise ordered. This machine will drill from 0 to ¾ inch hole, and to the center of a 10 inch circle. The spindle will travel 3 inches.

Price, each.....$16 00

NO. 3 DRILL

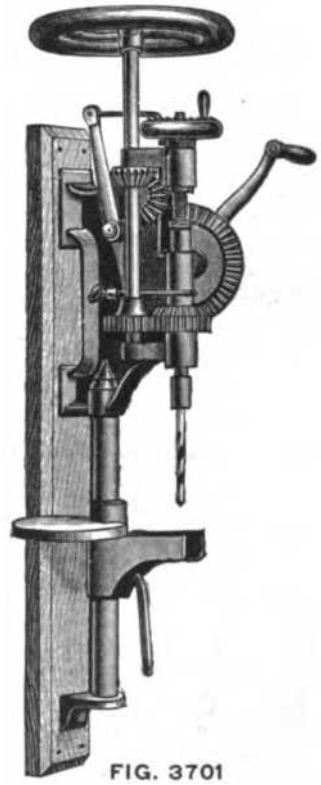


FIG. 3701

The balance wheel shaft runs on a vertical bearing, causing this drill to run easily. Different speeds may be obtained by changing the crank to different shafts. The spindle is made to receive ½ inch straight shank drill bits, unless otherwise ordered. This machine will drill from 0 to 1 inch hole, and to the center of a 10 inch circle. The spindle will travel 3½ inches.

Price, each.....$22 00

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UPRIGHT OR POST DRILLS

UPRIGHT SELF FEEDING DRILL

NO. 4 DRILL

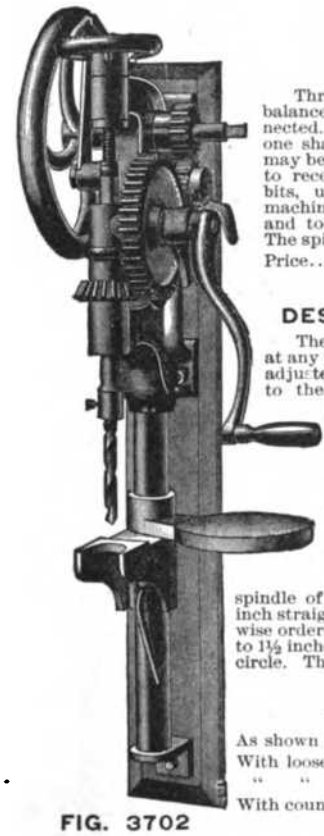


FIG. 3702

DESCRIPTION
FIG. 3702

Through an intermediate gear the balance wheel may be easily disconnected. By changing the crank from one shaft to another, different speeds may be obtained. The spindle is made to receive ½ inch straight shank drill bits, unless otherwise ordered. This machine will drill from 0 to 1 inch hole, and to the center of a 10 inch circle. The spindle will travel 3½ inches.

Price.....$24 00

DESCRIPTION, FIG. 3703

The table of this drill may be fastened at any point on the column, and can be adjusted to any desired angle convenient to the operator. The work can be clamped to the table. Fast or slow speed may be obtained by sliding the large spur gear backward or forward. The spindle runs in a sleeve bearing 9 inches long, which gives it great steadiness and prevents the spindle from being worn and becoming loose. The spindle is fed up or down by a worm working in a rack upon the spindle sleeve, and is easily operated by the feed wheel. The spindle of this drill is made to receive 41/64 inch straight shank drill bits, unless otherwise ordered. This machine will drill from 0 to 1½ inches, and to the center of a 16 inch circle. The spindle travels 4 inches.

PRICES

As shown in cut.....$35 00
With loose and tight pulleys, for power only..... 40 00
" " " " " " hand or power.... 42 00
With countershaft and cone pulleys, for power only.. 60 00

NO. 5 HAND OR POWER DRILL

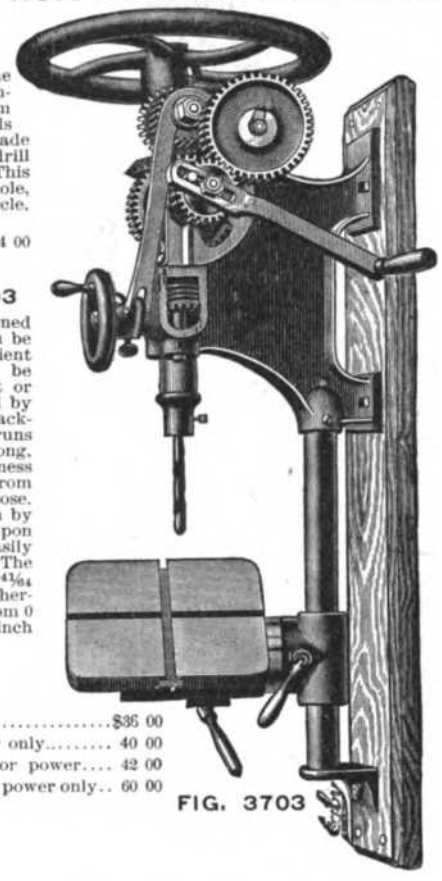
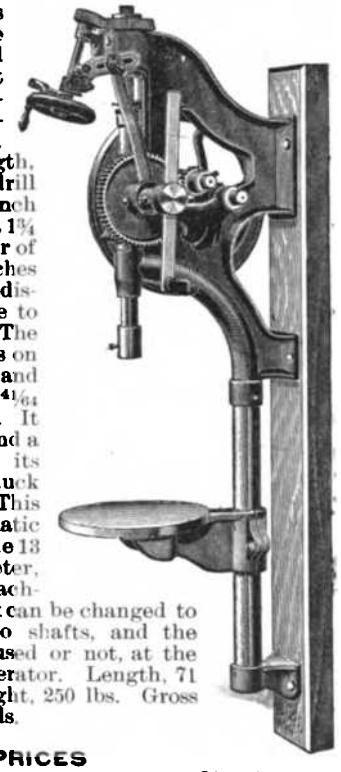


FIG. 3703

NO. 4 TRIPLE GEARED



This machine is designed for the heaviest of hand drilling. It is built heavy and is powerfully geared. Diameter of spindle, 1½ inches. Length, 18½ inches. Will drill from ⅛ to 1¾ inch hole. Will drill a 1¾ inch hole to center of 20 inch circle, 6 inches deep. Greatest distance from spindle to table, 25 inches. The drill socket screws on to the spindle, and takes drill with 41/64 inch round shank. It can be removed and a chuck put on in its place. The chuck would be extra. This drill has the automatic feed, a swing table 13 inches in diameter, and grinding attachment. The crank can be changed to either of the two shafts, and the gearing can be used or not, at the option of the operator. Length, 71 inches. Net weight, 250 lbs. Gross weight, 350 pounds.

PRICES

Without grinder.....$62 00
With tight and loose pulleys..... 67 00
With countershaft and cone pulleys, 79 00
Grinder, see Fig. 3708, extra..... 3 00
State on order if grinder is wanted.

FIG. 3704

NO. 1 SINGLE GEARED

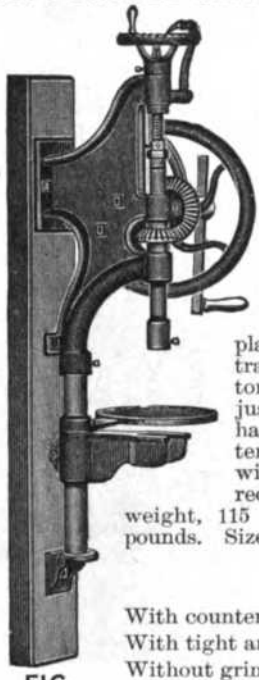


FIG. 3705

DESCRIPTION
FIG. 3705

Diameter of spindle, 1⅛ inches; length, 12 inches. Will drill from ⅛ to 1 inch hole. Will drill 1 inch hole to center of 11 inch circle 2½ inches deep. Greatest distance from spindle to table, 12 inches. The drill socket screws on to the spindle, and takes drill with ½ inch round shank. It can be removed and a chuck put on in its place. The chuck would be extra. This drill has a positive automatic feed, which can be adjusted to four rates of speed. It has swing table 8 inches diameter, also a grinding attachment, with rest for grinding bit correctly. Length, 47 inches. Net weight, 115 pounds. Gross weight, 150 pounds. Size of box, 47 x 19 x 11 inches.

PRICES

With countershaft.....$42 00
With tight and loose pulleys..... 30 00
Without grinder..... 25 00
Grinder, see Fig. 3708, each..... 3 00
State on order if grinder is wanted.

NO. 3 TRIPLE GEARED

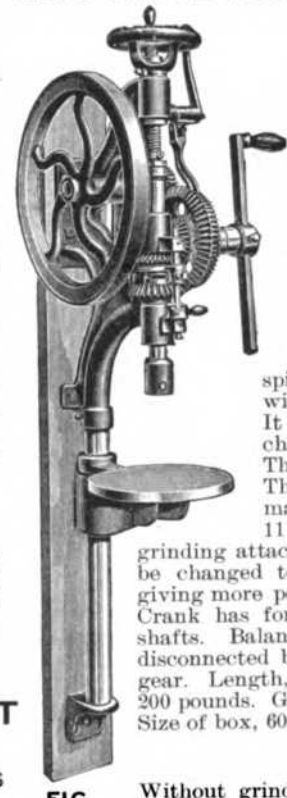


FIG. 3706

DESCRIPTION
FIG. 3706

This drill is designed for carriage makers' and heavier blacksmiths' work. Diameter of spindle, 1 5/16 inches. Length 15 inches. Will drill from ⅛ to 1½ inch hole. Will drill a 1½ inch hole to center of 16 inch circle, 4½ inches deep. Greatest distance from spindle to table, 22 inches. The drill socket screws on to the spindle, and takes drill with 41/64 in. round shank. It can be removed and a chuck put on in its place. The chuck would be extra. This drill has the automatic feed, a swing table 11 inches in diameter, and grinding attachment. The crank can be changed to balance wheel shaft, giving more power for heavy drilling. Crank has forward motion on both shafts. Balance wheel shaft can be disconnected by slipping intermediate gear. Length, 66 inches. Net weight, 200 pounds. Gross weight, 262 pounds. Size of box, 60 x 20 x 13 inches.

PRICES

Without grinder.....$45 00
Grinder, see Fig. 3708, extra.... 3 00
State on order if grinder is wanted.

GRINDING ATTACHMENT

FOR UPRIGHT DRILLS
FIGS. 3704, 3705
AND 3706

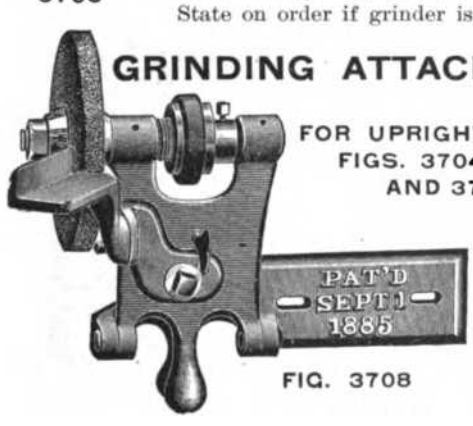


FIG. 3708

DESCRIPTION, FIG. 3708

The grinding attachment is a solid emery wheel 5 inches diameter, ½ inch face, driven by friction from balance wheel; is brought into use by tightening of a thumb screw; it also provides an angular rest for grinding the drill bit correctly.

Price, each.....$3 00

LITTLE GIANT DRILLING MACHINE

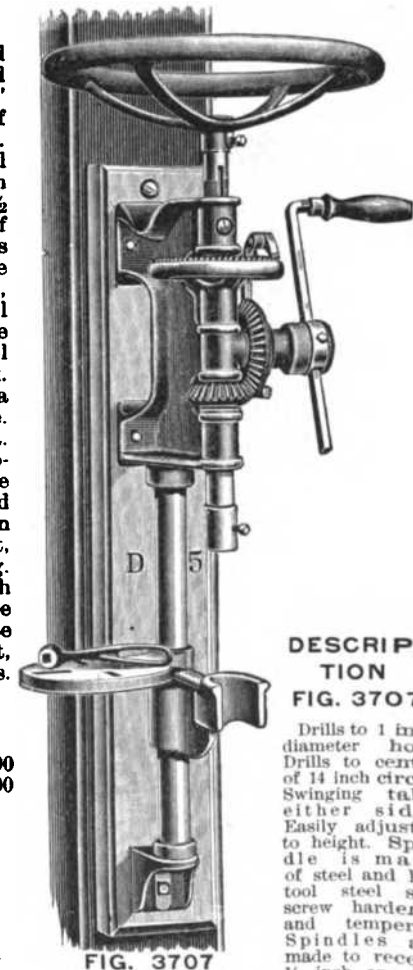


FIG. 3707

DESCRIPTION
FIG. 3707

Drills to 1 inch diameter hole. Drills to center of 14 inch circle. Swinging table either side. Easily adjusted to height. Spindle is made of steel and has tool steel set screw hardened and tempered. Spindles are made to receive ½ inch or 41/64 shanked twist drills. Unless otherwise ordered, spindles with ½ inch hole will be sent.

No. D 5.....Price, $8 50

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UPRIGHT OR POST DRILLS

NO. 5 DRILL

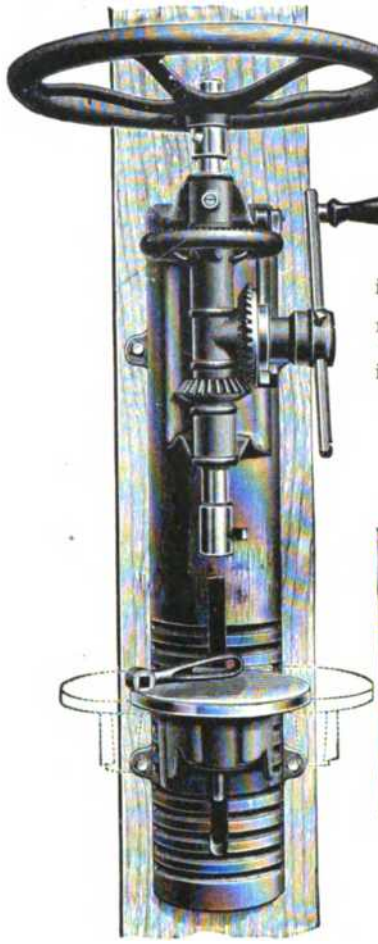


FIG. 3709

Drills to 1 inch diameter hole.

Drills to center of 15 inch circle.

Table is removable for drilling tire, or can be swung to side. Adjustable to height.

Bed is of iron cast in one piece.

Feed has a run of 4 inches.

Table has an adjustment of 11 inches.

Spindles are made to receive ½ or 41/64 shanked drills.

Unless otherwise ordered, ½ inch hole will be sent.

PRICE

No. 5.....$10 00

VISE ATTACHMENT
FIG. 3710

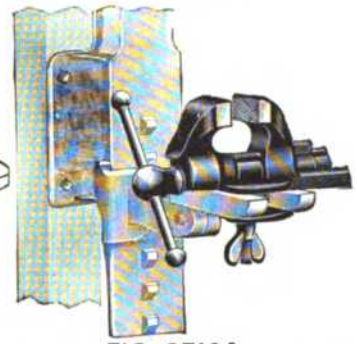


FIG. 3710A

SELF FEED, QUICK RETURN POST DRILL
WITH VISE ATTACHMENT

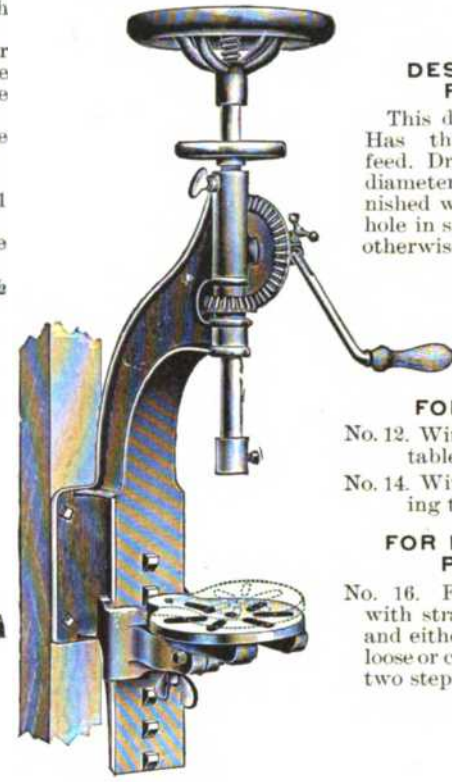


FIG. 3710

DESCRIPTION AND PRICES, FIGS. 3710 AND 3710A

This drill is fed automatically. A friction feed carries the spindle down to the work by simply turning the crank, and as quickly returns it by reversing the movement. It drills from the smallest to a half inch hole, square with the bed plate. Run of screw, 3½ inches; drill stock, 1 3/16 inches in diameter; height, 36 inches; weight, 41 pounds. The chuck takes standard half inch round shank straight drills.

Post drill.....Each, $12 00
Vise..... " 2 50
Adjustable swing table and fork..... " 2 00

HAND, SINGLE GEARED SWINGING TABLE

DESCRIPTION
FIG. 3711

This drill has iron bed. Has three changes of feed. Drills to 1 inch diameter hole. Furnished with ½ inch hole in spindle, unless otherwise ordered. 41/64 inch hole furnished at same price if desired.

PRICES

FOR HAND

No. 12. With straight table.....$15 00
No. 14. With swinging table..... 16 00

FOR HAND OR POWER

No. 16. For power, with straight table, and either tight and loose or cone pulleys, two step.....$18 00

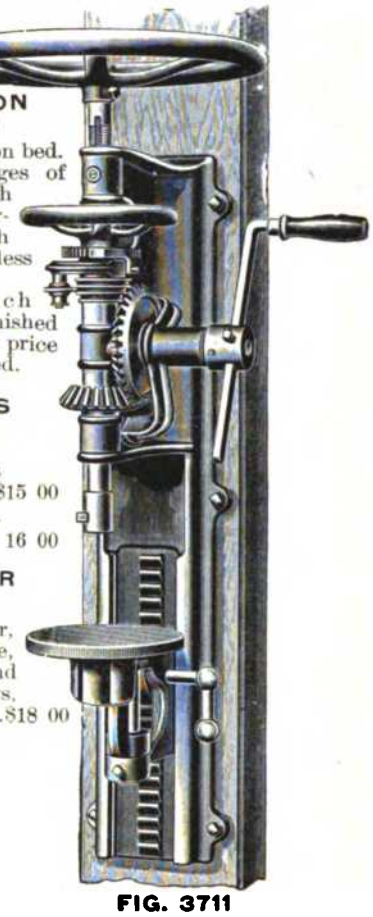


FIG. 3711

HAND OR POWER STRAIGHT TABLE

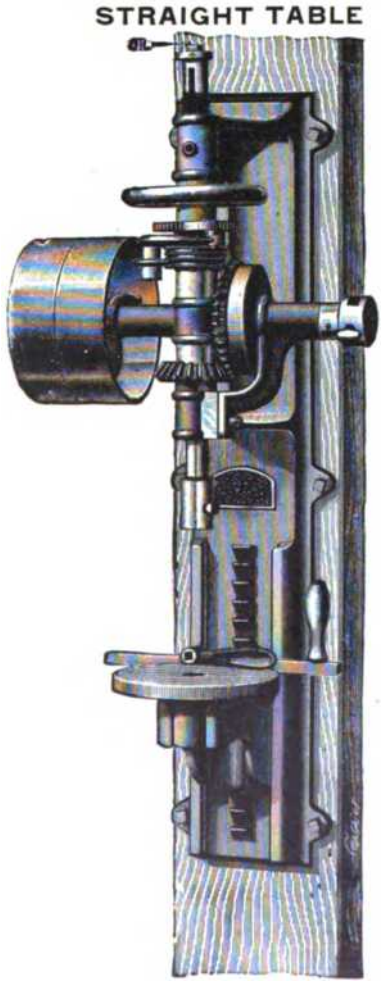


FIG. 3712

DESCRIPTION, FIG. 3712

Drills to center of 14 inch circle. Table is removable for drilling tire, and instantly adjustable to height. Spindle is steel, with steel set screw hardened and tempered. The feed has a run of four inches. The table has an adjustment of 16 inches. On power machines pulleys will not interfere with use of hand crank. Spindles are made to receive ½ inch or 41/64 shanked drills, as ordered. Unless ordered otherwise, ½ inch holes will be sent.

PRICES

FOR HAND

Drills to 1¼ inch diameter hole.

No. 2. With straight table.....$18 00
No. 4. With swinging table..... 20 00

Use left hand crank for large drills. Use the right hand crank for small drills.

FOR HAND OR POWER

Drills to ¾ inch diameter hole.

No. 6. With straight table.....$21 00
No. 6. With swinging table..... 23 00

We send swinging table unless otherwise ordered. We furnish machines with cone pulley, if desired, at same price.

BALL BEARING SELF FEED DRILL

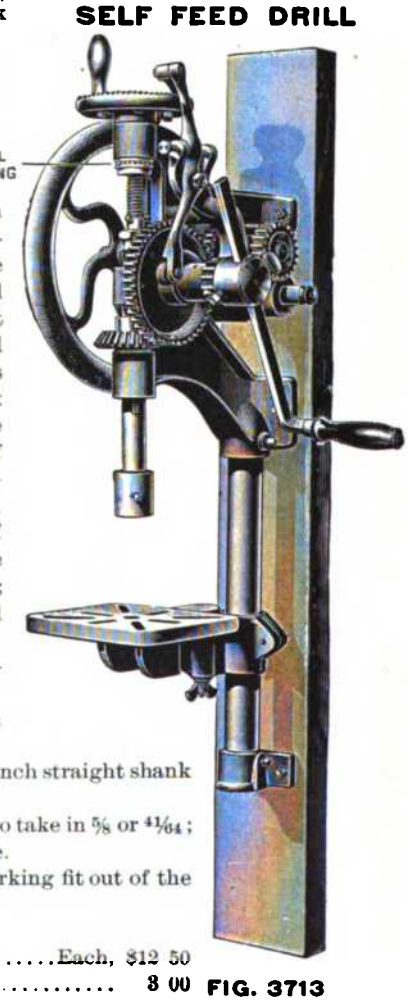


FIG. 3713

DESCRIPTION
FIG. 3713

Drills to center of a 16 inch circle. The ball bearing is strictly first class. The cup and cone are both made from die steel which is warranted first class. It is back geared with an improved third gear principle, which gives the second speed the same crank motion as on the first speed. The improved third gear being part of the handle hub, it is therefore disengaged when using first speed, saving the continuous labor of pulling along an intermediate gear while using the first speed; has double journal bearings to all working parts.

Has spindle 1¼ inches in diameter.

The screw has an up and down run of 3½ inches.

The spindle bored to take in ½ inch straight shank drills.

When specially ordered bored to take in ⅝ or 41/64; will drill from 1/64 to 1¼ inch hole.

All bearings are ground to a working fit out of the solid metal.

PRICES

Weight, 130 lbs.....Each, $12 50
Extra, for power..... 3 00

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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UPRIGHT OR POST DRILLS

BALL BEARING BLACK DIAMOND SELF FEED DRILL

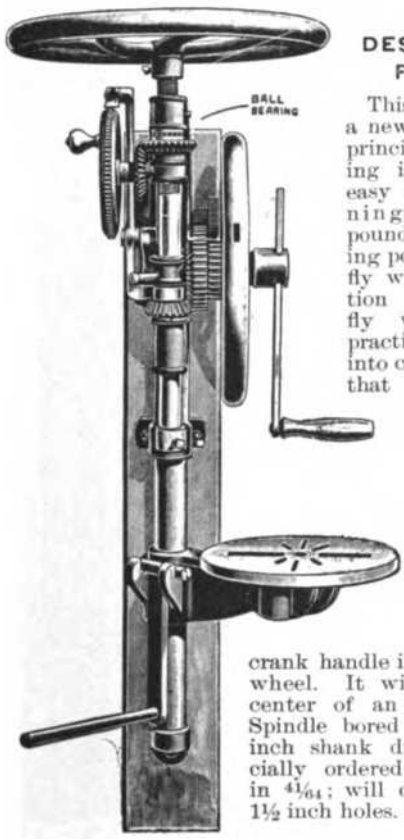


FIG. 3714

DESCRIPTION FIG. 3714

This drill is built on a new and scientific principle. The gearing is designed for easy and quick running, being compounded for increasing power. The side fly wheel in connection with the top fly wheel is very practical, when taken into consideration that both the fly wheels make 2 revolutions to 1 of the crank. All bearings are ground out of solid metal. The second speed, for heavy drilling, is changed in an instant, simply a change of crank handle into the side fly wheel. It will drill to the center of an 18 inch circle. Spindle bored to take in ½ inch shank drills, when specially ordered bored to take in $^{41}/_{64}$; will drill from 0 to 1½ inch holes.

PRICES

With wheel holder and ball bearing; weight, 215 lbs. $24 00
Without ball bearing or wheel holder; weight, 200 lbs. 20 00
Extra, for power 4 00

QUICK RETURN SELF FEED DRILL

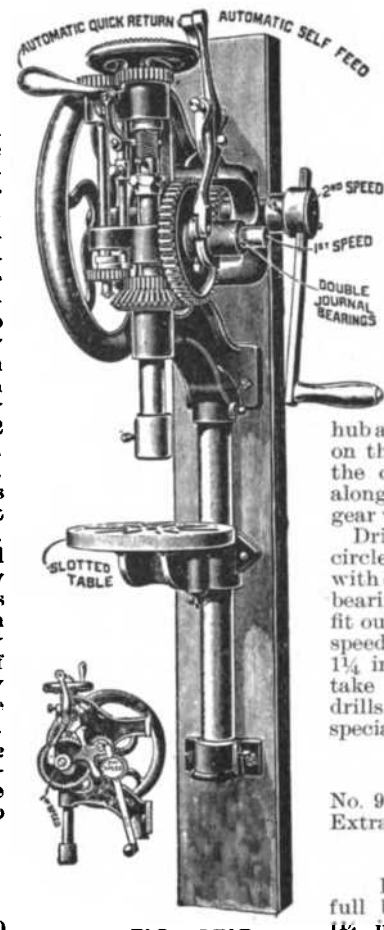


FIG. 3715

DESCRIPTION FIG. 3715

The quick return lever is thrown into place while the drill continues in motion, where it remains until the bit is raised out of the work, when it automatically stops, requiring no attention whatever from the operator, and is again ready to start the next hole.

It is back geared with an improved third gear principle. The crank has a forward motion on both first and second speed, the third gear being part of the handle hub and only in use as a gear when on the second speed, thus saving the continuous labor of pulling along an intermediate or third gear while working the first speed.

Drills to the center of 15½ inch circle. All gears are protected with double journal bearings. All bearings are ground to a working fit out of solid metal. It has two speeds. Will drill from $^{1}/_{64}$ to 1¼ inch hole. Spindle bored to take in ½ inch straight shank drills, $^{41}/_{64}$ will be furnished if specially ordered.

PRICES

No. 96. Weight, 135 lbs. $12 50
Extra, for power 3 00

SELF FEED DRILL

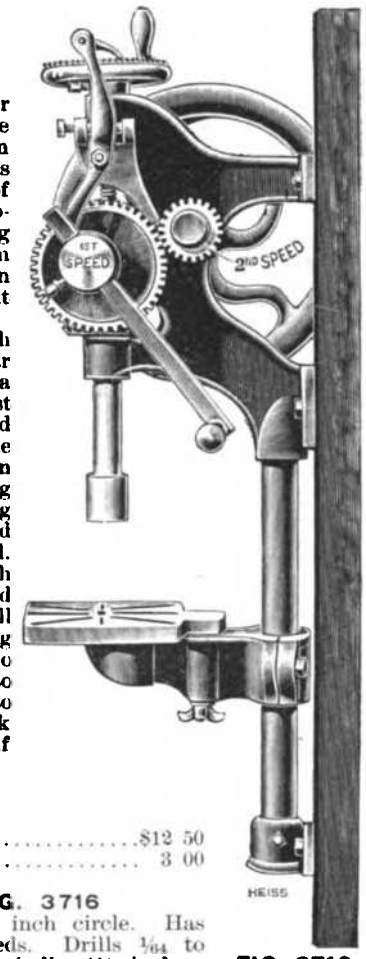


FIG. 3716

DESCRIPTION, FIG. 3716

Drills to center of a 15 inch circle. Has full back gear. Has two speeds. Drills $^{1}/_{64}$ to 1¼ inch hole. Diameter of spindle, 1⅛ inches; has up and down run of 3 inches. The bearings are all ground out of the solid metal to a working fit. The spindle is bored to take in ½ inch straight shank drills, and if specially ordered bored to take in ⅝ or $^{41}/_{64}$.

PRICES

No. 93½. Weight, 115 lbs. $9 50
Extra, for power 3 00

HAND FEED DRILL



FIG. 3717

DESCRIPTION, FIG. 3717

It will drill to center of a 14 inch circle and hole $^{1}/_{64}$ to ¾ inch. Diameter of spindle, 1 inch.

It has a slotted table planed off on its top side. The shaft is made of 1 inch steel and has an up and down run of 3 inches. It is made all through of the best material; bearings all ground out of solid metal

Spindle is bored for ½ inch straight shank drills; when specially ordered, ⅝ or $^{41}/_{64}$ inches.

PRICE

No. 92. Weight, 65 lbs. .. $6 00

DESCRIPTION, FIG. 3718

This drill has slotted table planed off on its top side, also automatic self feed. Its bearings are all ground to a working fit from the solid metal.

Has back gear. Has one speed. Will drill a hole from $^{1}/_{64}$ to 1 inch. Drills to center of 14½ inch circle. Has spindle 1⅛ inches in diameter, and up and down run of 3 inches. Is bored to take in ½ inch straight shank drills. If specially ordered, bored to take in ⅝ or $^{41}/_{64}$.

PRICES

No. 90. Weight, 100 lbs. $8 50
Extra, for power 3 00

SELF FEED DRILL

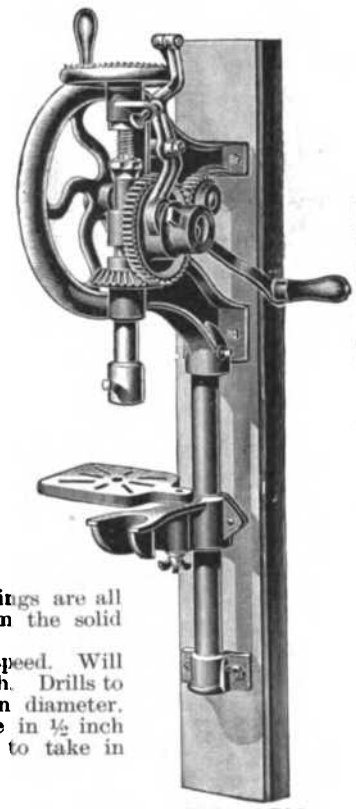


FIG. 3718

LEVER FEED DRILL

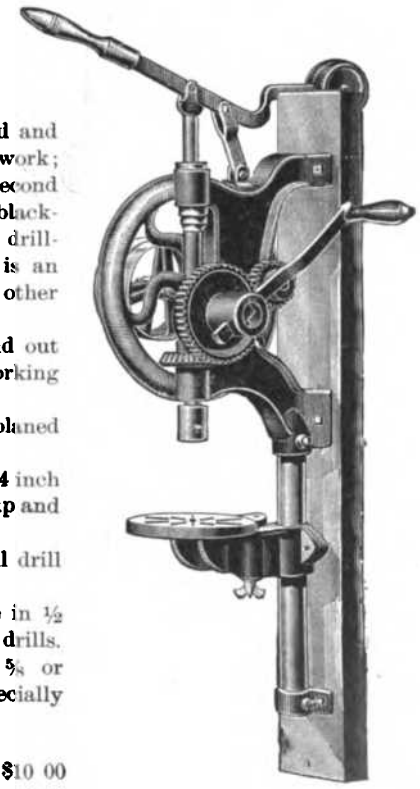


FIG. 3719

DESCRIPTION FIG. 3719

This is a tool designed and built for light and quick work; intended to be used as a second drill in all up to date blacksmith shops where tire drilling and countersinking is an object, as well as any other light drilling.

All bearings are ground out of the solid metal to a working fit.

It has a slotted table planed off on its top side.

Drills to center of a 14 inch circle. Spindle has an up and down run of 5 inches.

Has back gear and will drill from 0 to ¾ inch hole.

Spindle bored to take in ½ inch straight shank drills. Will be furnished for ⅝ or $^{41}/_{64}$ inch when specially ordered.

PRICES

No. 100. Weight, 100 lbs. $10 00
Extra, for power 3 00

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UPRIGHT OR POST DRILLS

CUT GEARED BALL BEARING SELF FEED DRILL

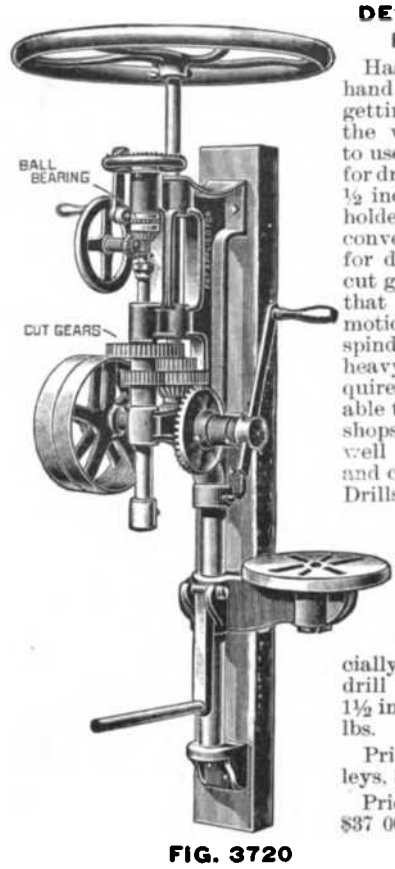


FIG. 3720

DESCRIPTION
FIG. 3720

Has quick return or hand feed wheel for getting the bit out of the work quickly or to use as a hand feed for drilling holes up to ½ inch. Has a wheel holder which is a very convenient addition for drilling tire; has cut gears so arranged that quick or slow motion is given to spindle, as light or heavy work may require, and is a desirable tool for machine shops or factories, as well as blacksmiths and carriage makers. Drills to center of a 16 inch circle. Spindle takes drills with ½ inch shank. Will be bored for 41/64 inch shank if specially ordered; will drill holes from 0 to 1½ inch. Weight, 250 lbs.

Price, without pulleys, $33 00.

Price, with pulleys, $37 00.

CUT GEARED UPRIGHT SELF FEED DRILL

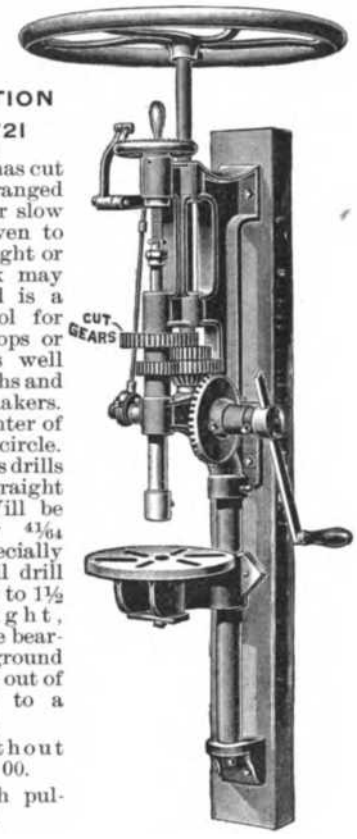


FIG. 3721

DESCRIPTION
FIG. 3721

This drill has cut gears so arranged that quick or slow motion is given to spindle, as light or heavy work may require, and is a desirable tool for machine shops or factories, as well as blacksmiths and carriage makers. Drills to center of a 16 inch circle. Spindle takes drills with ½ in. straight shank. Will be made for 41/64 shanks if specially ordered; will drill holes from 0 to 1½ inch. Weight, 225 lbs. The bearings are ground and polished out of solid metal to a working fit.

Price, without pulleys, $28 00.

Price, with pulleys, $32 00.

SINGLE GEARED UPRIGHT SELF FEED DRILL

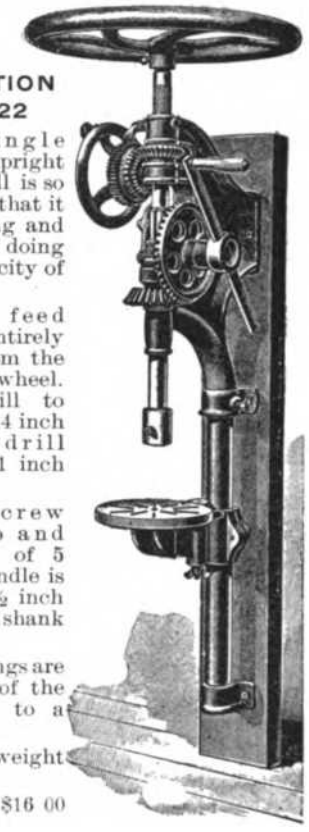


FIG. 3722

DESCRIPTION
FIG. 3722

This single geared upright self feed drill is so constructed that it is very strong and is capable of doing a large capacity of work.

The self feed wheel is entirely separate from the hand feed wheel. It will drill to center of a 14 inch circle; will drill from ⅛ to 1 inch hole.

Spindle screw has an up and down run of 5 inches. Spindle is bored for ½ inch straight shank drill.

The bearings are ground out of the solid metal to a working fit.

No. 2½, weight 130 lbs.

Price.....$16 00

UPRIGHT SELF FEED DRILL

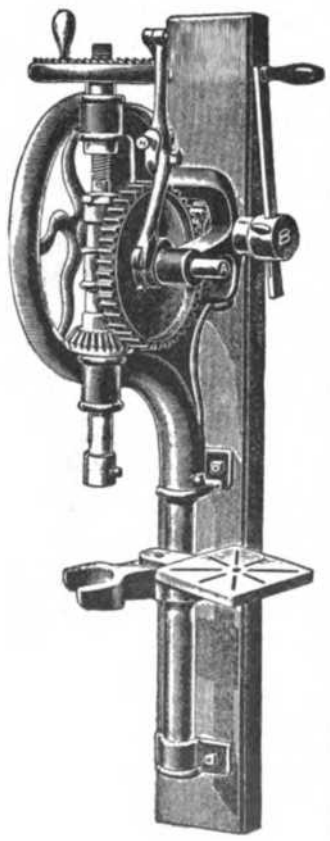


FIG. 3723

DESCRIPTION
FIG. 3723

This drill is a very large, well made and practical tool, designed for large and heavy work. The main driving gear is 10 inches in diameter and double back geared, with two speeds and double journal bearings to all working parts. To change from fast to slow speed shift from A shaft to shaft B, or balance wheel shaft, thus increasing the power two-and-one-half times for heavy work. Shaft A for lighter work and faster speed. The bearings are all ground to a working fit out of the solid metal. The table is slotted and planed off on its top side. It will drill to the center of an 18 inch circle. Diameter of spindle, 1¼ inches, with an up and down run of 3½ inches. Spindle bored to take in ½ inch straight shank drills. If specially ordered, bored to take in ⅝ or 41/64. Drills ⅛ to 1½ inch hole. No. 4, weight 200 lbs.

Price.....$17 50

Extra price for power..... 3 00

HAND POWER DRILL, WITH AUTOMATIC FEED

NO. 66

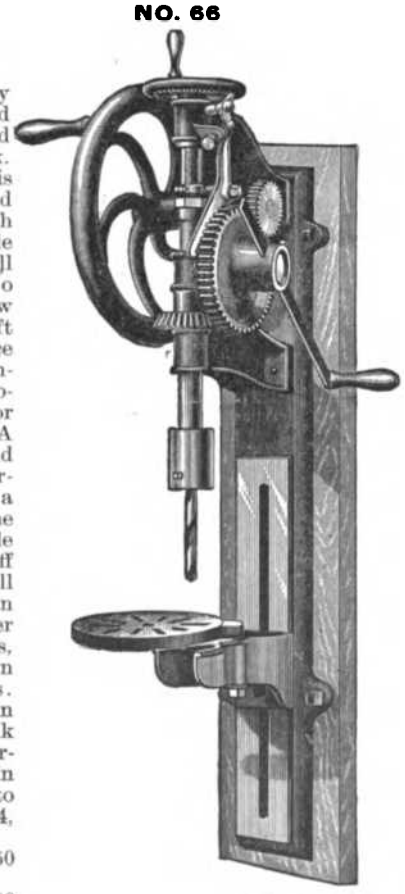


FIG. 3724

DESCRIPTION
FIGS. 3724 AND 3725

Capacity, 1 inch hole center, 15 inch circle; run of feed, 3¼ inches; countershaft pulleys, 5½ in. diam., 2 in. face.

PRICES

Nos.	Description.	Length, Inches.	Weight, Lbs.	Each.
66	Hand drill	37	100	$22 00
66A.	Hand and power drill	37	93	26 00
66B.	Hand drill with emery wheel.....	37	95	24 00
66C.	Hand and power drill with emery wheel.....	37	103	28 00
68	Hand drill, same as No. 66, but with wood back	44	97	22 00
68A.	Hand and power drill	44	105	26 00
68B.	Hand drill with emery wheel.....	44	107	24 00
68C.	Hand and power drill with emery wheel.....	44	115	28 00

NO. 68

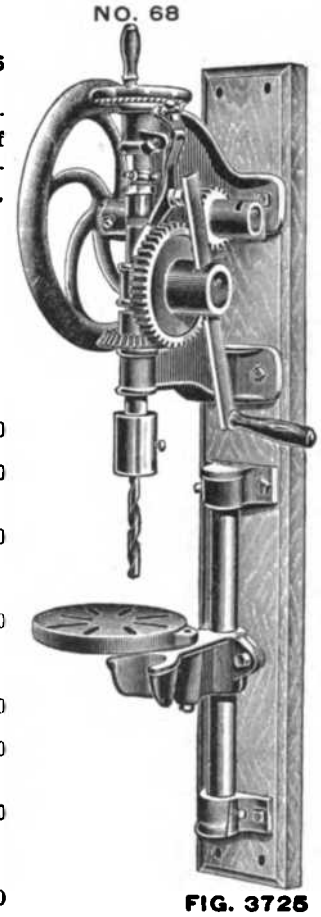


FIG. 3725

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UPRIGHT OR POST DRILLS

HAND AND POWER DRILLS

NO. 61 HAND DRILL

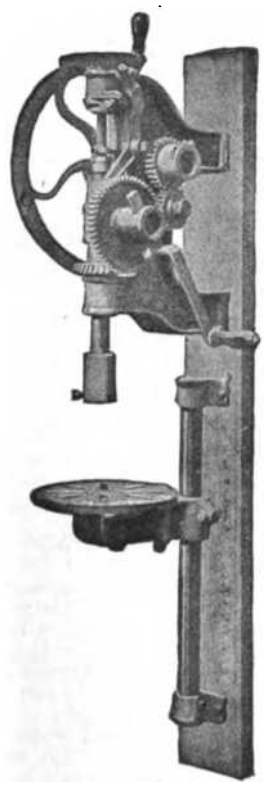


FIG. 3726

NO. 61B WITH EMERY WHEEL

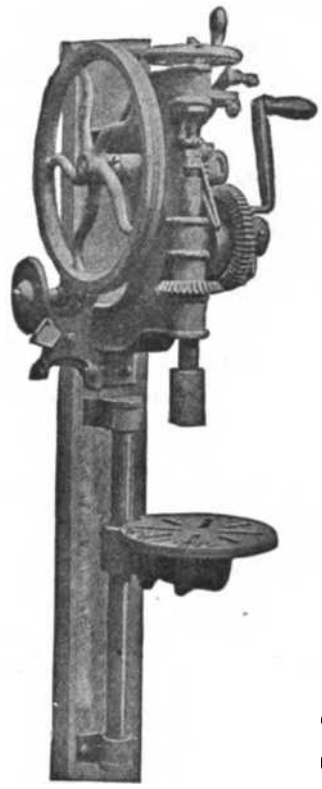


FIG. 3727

COUNTERSHAFT FOR FIG. 3729

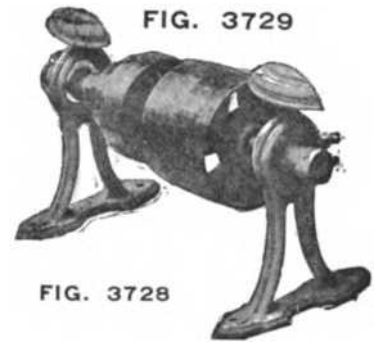


FIG. 3728

DESCRIPTION, FIGS. 3726, 3727 AND 3729

Capacity, 1½ inch hole, center 16½ inch circle.
Run of feed, 4 inches.
Countershaft pulleys, 8 inches diameter, 3 inches face.

PRICES, FIGS. 3726, 3727 AND 3729

Nos.	Description.	Length, Inches.	Weight, Pounds.	Each.
61	Hand drill	42	117	$32 00
61A	Hand and power drill	54	135	36 00
61B	Hand drill with emery wheel	54	127	34 00
61C	Hand and power drill with emery wheel	54	147	38 00
61D	Hand and power drill with tight and loose pulley and countershaft	54	191	50 00
61E	Hand and power drill with tight and loose pulley, countershaft and emery wheel	54	203	52 00
61F	Hand and power drill with cone pulley and countershaft	54	130	50 00
61G	Hand and power drill with cone pulley, countershaft and emery wheel	54	213	52 00

NO. 61G WITH CONE PULLEY AND COUNTERSHAFT

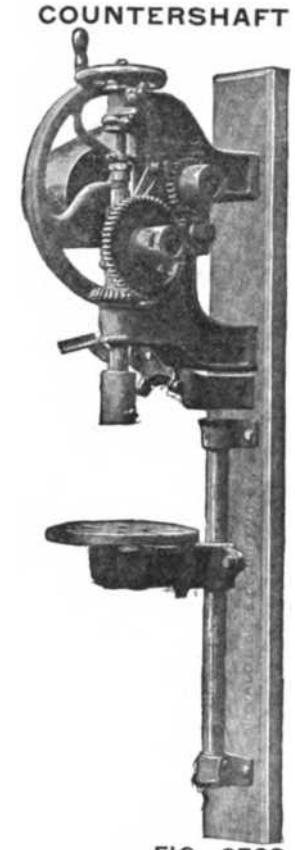


FIG. 3729

FAST OR SLOW SPEED, SELF FEED

For hand power.

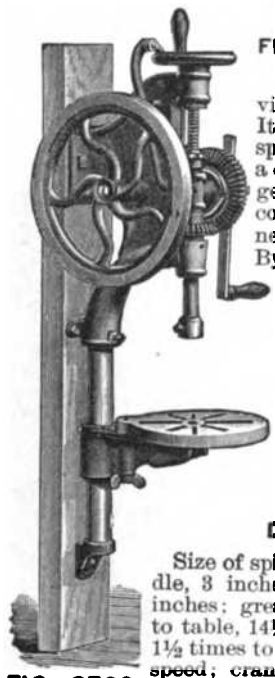


FIG. 3730

DESCRIPTION FIGS. 3730 AND 3731

The automatic feeding device is efficient and positive. It is located back of the spindle, and is worked by a cam on inside of main gear wheel. This cam is constructed so as to give nearly a continuous feed. By this arrangement the drill does not jam into the work. The lower column is in nice alignment with the drill spindle and the table is at right angles with it. These points tend to lessen friction in the use of the drill and assure light draft. They also lessen the breakage of drill bits.

DIMENSIONS

Size of spindle, 1 inch; run of spindle, 3 inches; size of column, 1⅞ inches; greatest distance of spindle to table, 14¼ inches; spindle turns 1½ times to one turn of crank on fast speed; crank turns 1½ times to 1 turn of spindle on slow speed; drills to center of 15 inch circle and up to 1¼ inch holes; spindle bored for ½ inch round shank drills, unless otherwise ordered.

CHANGEABLE SELF FEED

For belt or hand power.

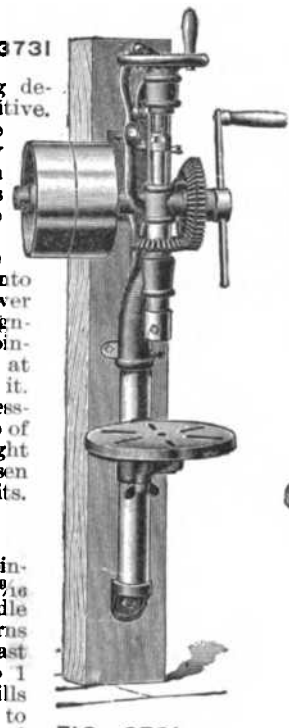


FIG. 3731

FAST OR SLOW SPEED, SELF FEED

For hand power.

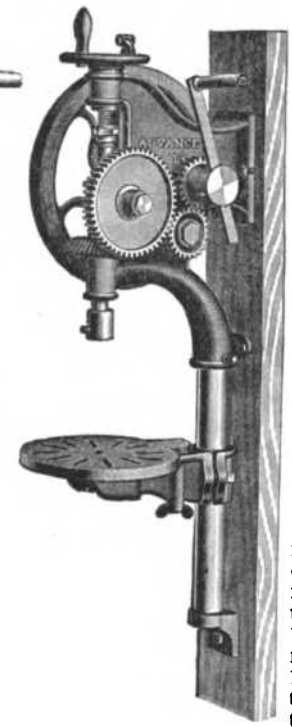


FIG. 3732

DESCRIPTION FIGS. 3732 AND 3733

The general design of these drills is same as Fig. 3730 with exception of the intermediate gear wheel introduced to change the direction of the drive gear wheel on the slow speed. This allows the crank to turn the right direction, from the operator, on both speeds. The drill is also somewhat heavier, which adapts it for larger work.

DIMENSIONS

Size of spindle, 1⅛ inches; run of spindle, 3 inches; size of column, 2 inches; greatest distance of spindle to table, 16½ inches; spindle turns 1½ times to 1 turn of crank on fast speed; crank turns 1½ times to 1 turn of spindle on slow speed; drills to center of 18 inch circle and up to 1¼ inch holes. Spindle bored for ½ inch shank drills, unless otherwise ordered.

VARIABLE SELF FEED

For belt or hand power, light and medium work.

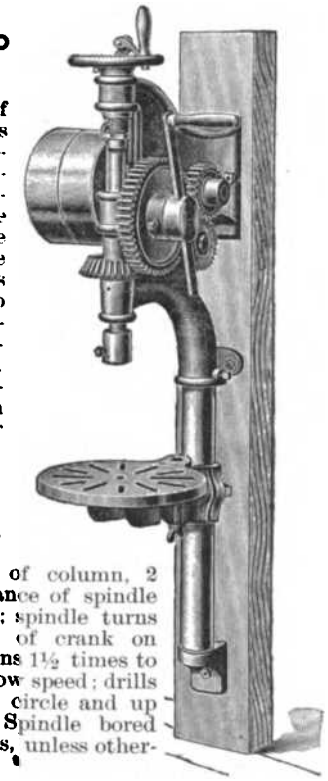


FIG. 3733

PRICES

Fig. 3730, No. 12.	Weight, 125 pounds	$10 00
" 3731, " 12.	" 125 " tight and loose pulleys, no fly wheel	13 00
" 3731, " 12.	Weight 140 pounds, tight and loose pulleys and fly wheel	15 50
	Chuck for bit stock drills	1 00

PRICES

Fig. 3732, No. 13.	Weight, 175 pounds	$16 00
Fig. 3733, No. 13.	Weight, 175 pounds, tight and loose pulleys, no fly wheel	19 00
" 3733, " 13.	Weight, 190 pounds, tight and loose pulleys and fly wheel	22 00
	Chuck for bit stock drills	1 00

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UPRIGHT OR POST DRILLS

SELF-FEED DRILL
FOR HAND POWER

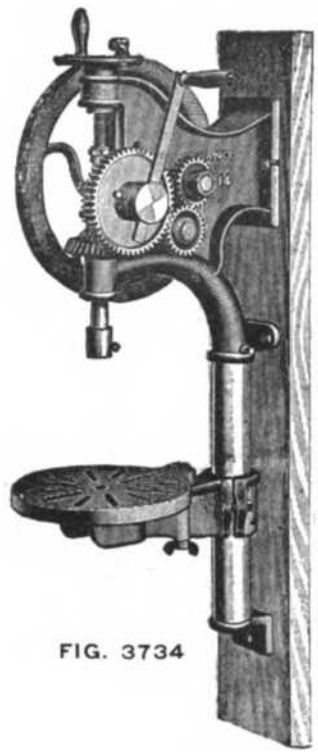


FIG. 3734

This drill is strong enough for heaviest hand drilling. Used in smith shops, repair shops and iron furnaces. Has two speeds, self-feed, adjustable feed table, is well built and is durable. It is symmetrical in design, and is recommended for all kinds of drilling.

Dimensions: Size of spindle, 1⅛ inches; run of spindle, 3 inches; size of column, 2¾ inches; greatest distance of spindle to table, 18½ inches; spindle turns 1½ times to 1 turn of crank on fast speed; crank turns 1½ times to 1 turn of spindle on slow speed; drills to center of 22 inch circle and up to 1½ inch holes; spindle bored for ½ inch shank drills unless otherwise ordered.

PRICES

No. 14. Weight, 240 lbs. $25 00
Chuck for bit stock drills..... 1 00

SELF-FEED DRILL
FOR BELT OR HAND POWER

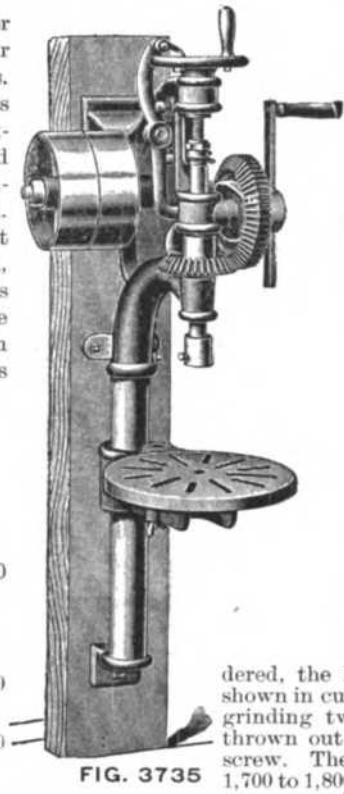


FIG. 3735

This drill is adapted for use in small shops, repair shops and iron furnaces. This is the same drill as Fig. 3734, with the exception that it is fitted with tight and loose pulleys instead of flywheel. The pulleys convert it into a light power drill, and the handle, which is included, puts it in shape to turn by hand when the power is off. Has changeable self-feed.

PRICES

No. 14. Weight, 240 lbs., tight and loose pulleys, no flywheel $28 00
No. 14. Weight, 255 lbs., tight and loose pulleys and flywheel 31 50
Chuck for bit stock drills..... 1 00

HAND DRILL
WITH EMERY GRINDING ATTACHMENT



FIG. 3736

This drill will easily drill holes of 1½ inches diameter by the use of the back gears. When so ordered, the Emery Grinding Attachment, as shown in cut, is furnished, including gauge for grinding twist drills. This attachment is thrown out of gear by a quarter turn of set screw. The emery wheel is geared to make 1,700 to 1,800 revolutions per minute. The back gears are all machine cut. Drills from ⅛ to 1½ inch holes. Drills to center of 19 inch circle. Length of feed, 5½ inches. Length of drill, 54 inches. Weight, 150 pounds.

Price **$55 00**
Complete, with Emery Attachment **60 00**
No. 3 Universal Chuck..... 5 00

HAND OR POWER DRILL

Showing pulley and countershaft and regular straight table.



FIG. 3737

This machine will drill as large as 1 inch. Drill bits should have ½ in. shank. Drills to center of 15 inch circle. Run of feed, 3 inches. Table can be raised or lowered 14 inches. We supply it with a swinging table, swinging to either side. Weight, boxed, 180 pounds.

PRICES

No. 2. With swinging table..... **$28 00**
Fitted with pulley for belt, extra.... **5 00**
Countershaft, extra, speed 90..... **12 00**
Wheel holding attachment, extra... **7 50**
Vise, with right or left screw, extra. **10 00**

HAND DRILL FOR TIRES

Has upright hand feed wheel. A set of anti-friction ball bearings. The whole, including the bed piece, is made of iron and steel so as to be uncommonly solid, stiff and durable. The shafts and gears are thoroughly keyed on and everything carefully made and fitted. The automatic feed is capable of three changes, so easily made that machines need not be stopped for the purpose.

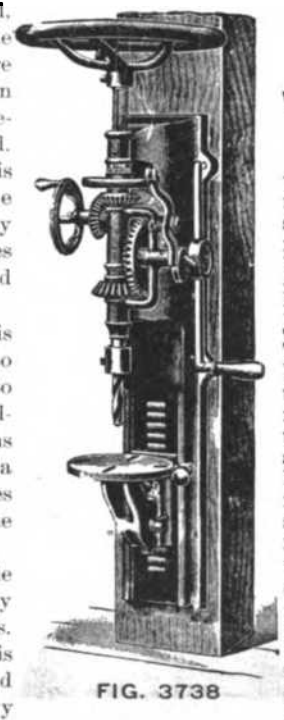


FIG. 3738

The table, which is removable, is fitted to a forked arm suited to take wheels for drilling tires, the arms standing out from a carriage which slides in ways planed in the solid iron bed piece.

The arm and table may be swung to any position sideways. The whole carriage is readily raised and lowered, a heavy latch managed with a handle supporting it at at any point. Drills as large as 1 inch in diameter and to center of 15 inch circle. Hole in spindle, ½ inch; run of feed, 3¾ inches. Table can be raised or lowered 14 inches.

Weight, boxed, 185 pounds.

PRICES

Each..... **$20 00**
Wheel holding attachment, extra..... **7 50**
Vise, with right and left screw, extra. **10 00**

BALL BEARING DRILL
WITH SWINGING TABLE AND SCREW ATTACHMENTS

This drill is capable of doing a large range of work with ease. The bed piece is of iron and all parts carefully fitted up. It has great solidity and steadiness, and is supplied with complete ball bearings, which will be found valuable, particularly for heavy work, giving ease of motion with a strong feed. The speed is readily altered by changing the position of the crank, and the automatic feed adjusted without trouble. The table is raised and lowered by a heavy latch and handle, and is arranged to be swung from side to side as required. It is speeded for small work when crank is applied, as shown in the cut. For heavy work and for screw cutting the crank is placed in the wheel at the side of the machine, which multiplies the power nearly three times. It will drill as large as 1½ inches diameter and to center of 19 inch circle. Hole in spindle, 41/64 inch; run of feed, 4¾ inches. Table can be raised or lowered 19 inches. Weight, boxed, 400 pounds.



FIG. 3739

PRICES

Each $52 00
Wheel holding attachment, extra... 7 50

Screw cutting attachments supplied with this machine, consisting of tap chuck and vise, and taps, dies and collets. ¼, 5/16, ⅜, 7/16, ½, 5/8, ¾ inch, for bolts and nuts, for $40.00 extra.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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BLACKSMITHS' HORIZONTAL DRILLS

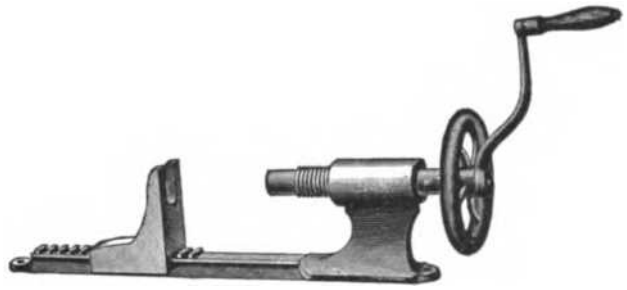


FIG. 3740

No. 1. Solid standard. Price.....$2 40

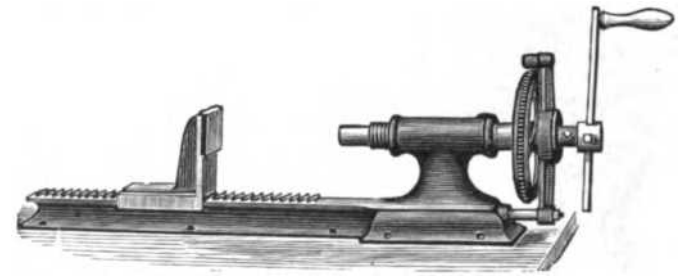


FIG. 3741

No. 2. Length, 33 inches; weight, 45 pounds; hole in spindle, ½ inch. Price.....$10 00
With balance wheel..... 13 00

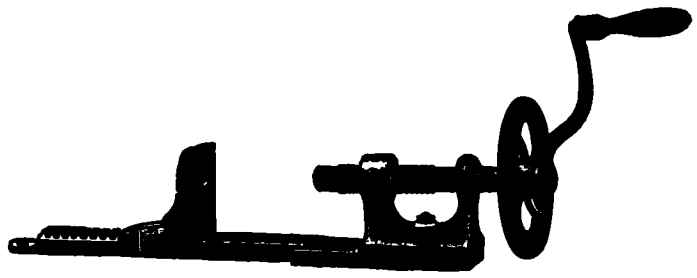


FIG. 3742

No. 2. Price..... $2 50
No. 3. Heavy pattern..... 2 70

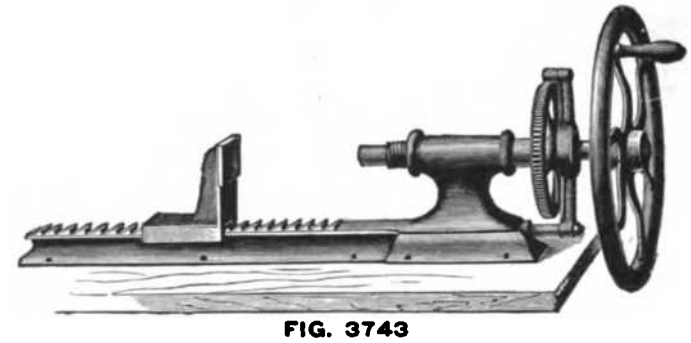


FIG. 3743

No. 5. Length, 44 inches; weight, 115 pounds; hole in spindle, 4 1/64 inch. Price, with balance wheel.....$20 00

HORIZONTAL DRILL

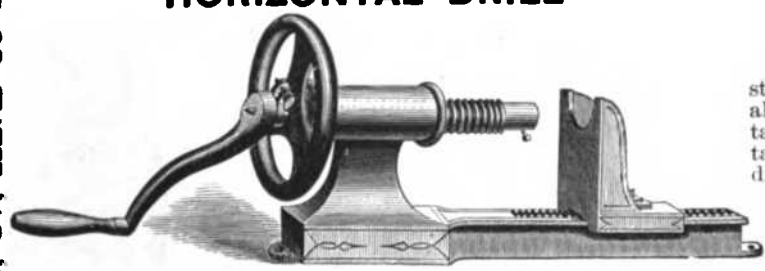


FIG. 3744

No. 4. Length, 26 inches; weight, 33 pounds; hole in spindle, ½ inch. Price, with feed.....$6 75
Without feed..... 6 00

UNIVERSAL ANGULAR BREAST DRILL

FOR IRONWORKERS AND GENERAL USE

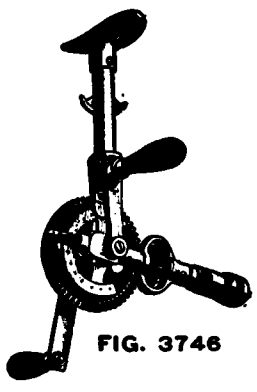


FIG. 3746

This drill has a chain feed attachment which is operated by the supporting handle, allowing pipes and similar articles to be handled with perfect ease.

It can be adjusted to any angle, making it indispensable for working between girders and ceiling joints, and for such work has a screw feed. When limited space does not allow a full turn of the handle, the ratchet can be used.

It has two speed gears which can be readily changed. The sweep of the handle is also adjustable.



FIG. 3746A

PRICE

Per dozen.....$68 00

UNIVERSAL ANGULAR AND RATCHET DRILLING MACHINE

These drilling machines are made of steel. For repair work in mills they are almost indispensable, as they can be attached to a broken machine without taking it apart, and swung around to drill at any angle.

By placing the crank on the drill spindle it will work with a ratchet or without. We send a chuck with each machine, which will hold 1/16 to ¼ inch drills.

One twist drill, ¼ inch, with ½ inch shank, is sent with each machine. For ¼ inch drills, and all larger sizes, the ½ inch shanks are recommended.

PRICES, FIG. 3745

Nos.	Weight, Lbs.	Drills Up To.	Each.
1	34	⅝ inch hole	$20 00
2	64	1 "	25 00
3	108	1½ "	40 00

No. 2 drill has two sets of gears, making either speeded or geared back machine.

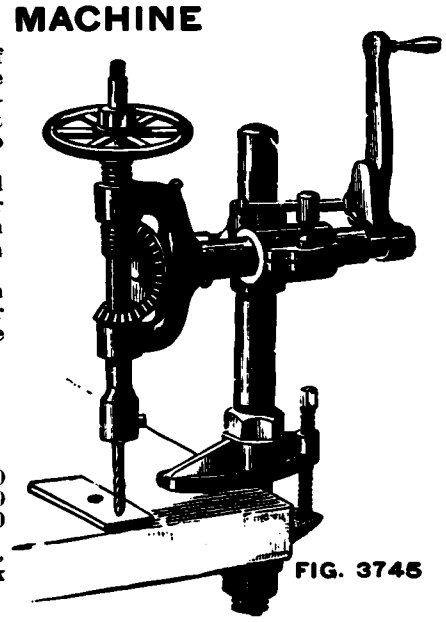


FIG. 3745

UNIVERSAL AUTOMATIC FEED ANGULAR HAND DRILL

This drill is so constructed that it can be worked by a crank or as a ratchet, and, being universal, can be set at any conceivable angle. The feeding of the drill spindle is automatically regulated, according to the nature of the metal being operated on and the size of feed desired. The feed motion consists of a friction disk in connection with a worm gear, which operates in the thread on the drill spindle and advances the tool with a greater or less rapidity. The speed of the feed is changed by tightening or loosening the friction wheel. The drill is readily attached to any kind of work, and is made throughout of the best of materials, the working parts being made of machinery steel and case hardened. All parts are interchangeable.

PRICES

Nos.	Capacity.	Taper Socket.	Straight Socket.
1	19/32	$28 00	$26 00
2	29/32	34 00	32 00
3	1¼	42 00	40 00
4	1½	52 00	50 00

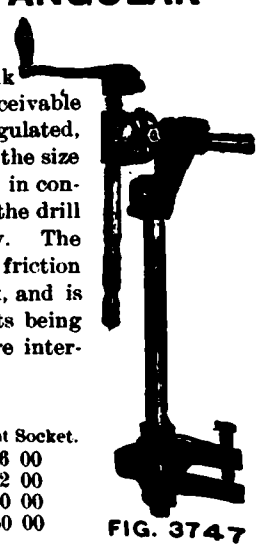


FIG. 3747

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RATCHET ANGULAR DRILLS

NO. 1, ANGULAR DRILL

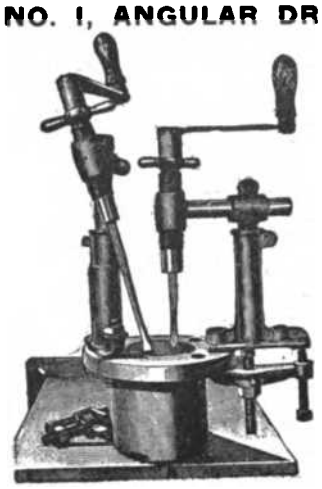


FIG. 3748

PRICES FIGS. 3748 AND 3749

Numbers	1	2	3
Will drill up to a diameter of	½"	⅞"	1¼"
Greatest distance from spindle to center of post	6½"	9½"	12"
Vertical adjustment of post	4"	5"	5"
Spindle traverse	2½"	3½"	4"
Socket in spindle	Square	No. 2 Morse	No. 3 Morse
Weight, pounds	11	33	50
Weight, boxed, pounds	25	55	95
Each	$16 00	$32 00	$50 00

NOS. 2 AND 3, ANGULAR DRILLS

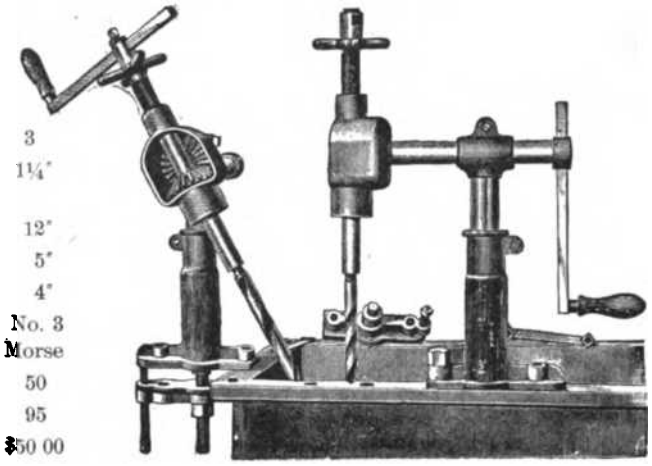


FIG. 3749

ANGULAR HAND DRILLS

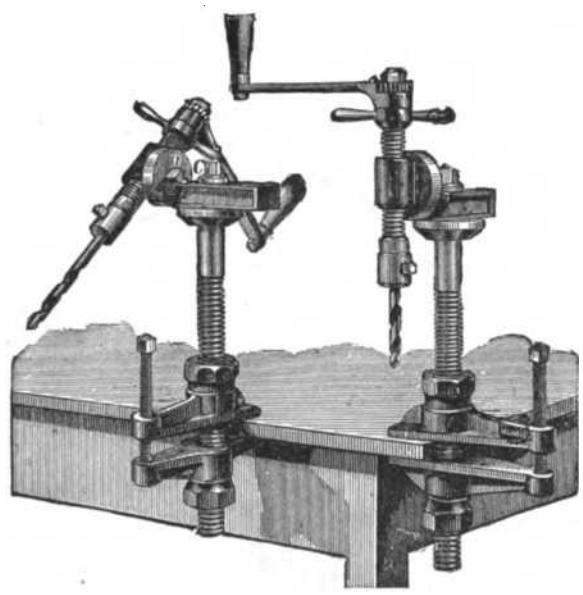


FIG. 3750

DESCRIPTION

These drills are so constructed that they can be worked by crank or ratchet and will drill at any angle desired; are readily attached to any kind of work.

PRICES

Nos.	Drills to.	Straight Socket.	Morse Taper Socket.
1	19/32 incl.	$20 00	$21 00
2	29/32 "	25 00	27 00
3	1¼ "	35 00	37 50
4	1½ "	....	53 00

SWIVEL CLAMP DRILL

GEARED. SELF FEEDING

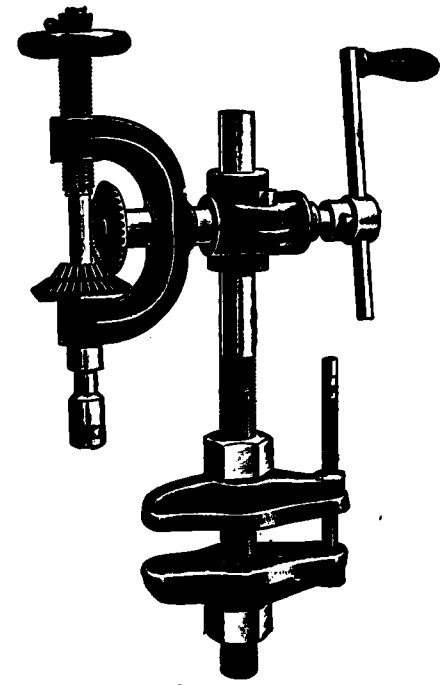


FIG. 3751

DESCRIPTION FIG. 3751

This clamp drill is furnished with a patent self feeding attachment not shown in illustration. By reversing the motion of handle, a quick return of the drill bit is secured, and leaves one hand almost free to handle the work. These machines can also be used as a ratchet drill by adjustment of handle. Are indispensable to iron bridge builders, architectural iron workers, boiler makers, railroad contractors, miners, etc.

Spindle and post are of steel; clamps and swivel joints of malleable iron. Drill chucks can be fitted to machine when desired.

Will drill 1 inch hole. Traverse of spindle, 4½ inches. Greatest distance between clamps, 7 inches. Diameters of post, 2 inches. Full length of post, 26 inches. Greatest distance between post and spindle, 10 inches. Hole in spindle, ½ inch. Weight, 65 pounds. Price, $25 00. With single gear, $23 00.

SWIVEL CLAMP DRILLS

PLAIN, NOS. 11 AND 12

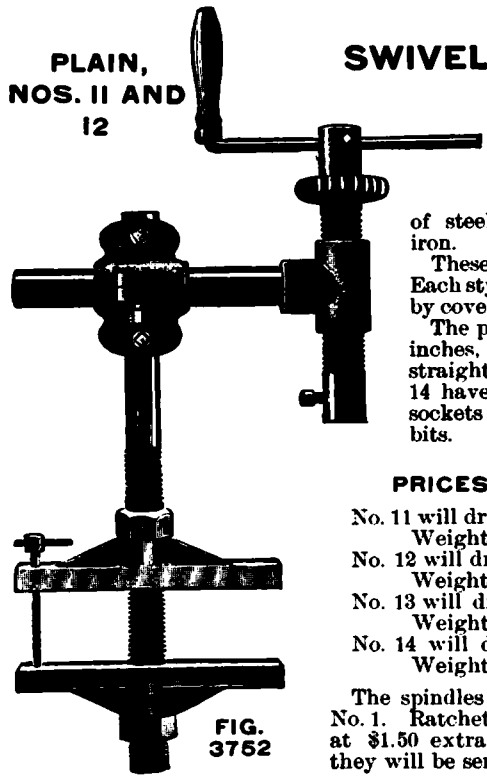


FIG. 3752

DESCRIPTION

The posts, spindles and shafts are made of steel. The swivels are malleable iron.

These drills can be set at any angle. Each style is made in two sizes, thereby covering a wide range of work.

The posts of Nos. 11 and 13 are 1¼ inches, and the drill sockets take ½ straight shank drill bits. Nos. 12 and 14 have 1½ inch posts, and the drill sockets take 41/64 straight shank drill bits.

PRICES, FIGS. 3752 AND 3753

No. 11 will drill a ⅝ inch hole, 2¼ inches deep. Weight, 30 pounds. Each, $15.00.
No. 12 will drill a 1 inch hole, 2½ inches deep. Weight, 40 pounds. Each, $20.00.
No. 13 will drill a ⅝ inch hole, 4 inches deep. Weight, 40 pounds. Each, $20.00.
No. 14 will drill a 1 inch hole, 4 inches deep. Weight, 50 pounds. Each, $25.00.

The spindles can be made to fit Morse Taper No. 1. Ratchet can be furnished when so ordered at $1.50 extra. But unless otherwise ordered, they will be sent as described above.

GEARED, NOS. 13 AND 14

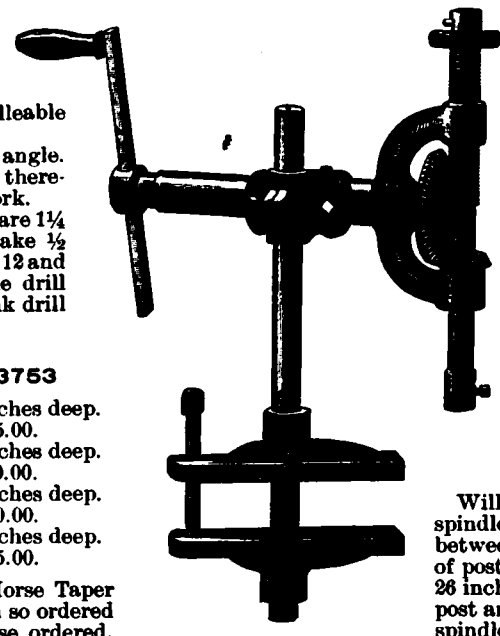


FIG. 3753

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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ANVILS

AMERICAN HORSESHOER

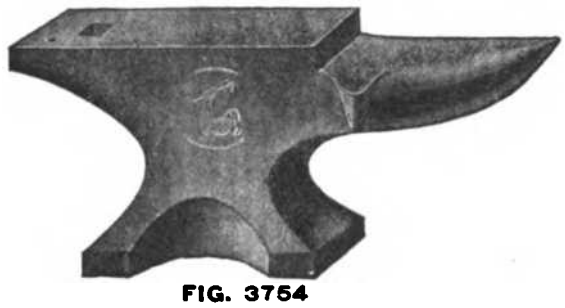


FIG. 3754

PRICE,.....CTS. PER LB.

All Horseshoers' anvils are warranted to be sound, to be free from flaws, and to have faces hard and true.

PETER WRIGHT & SONS'

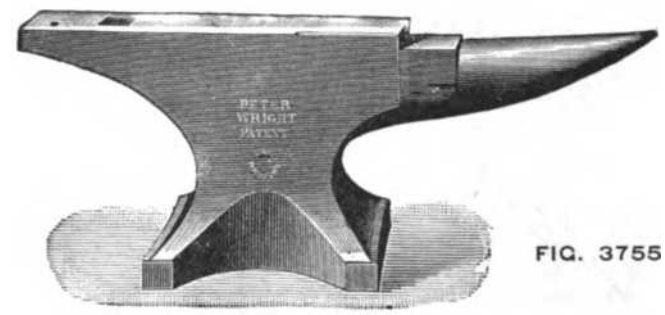


FIG. 3755

Weights from 84 to 500 lbs..... cts. per lb., base
" " 70 " 84 " advance....1 " " "
" " 60 " 70 " " ....1½ " " "
" " 50 " 60 " " ....2 " " "
" " under 50 " " ....3 " " "

Peter Wright's Horseshoers' Anvils, with clip horn, for importation only, advance over regular anvils....cts. per lb.

EAGLE HORSESHOER

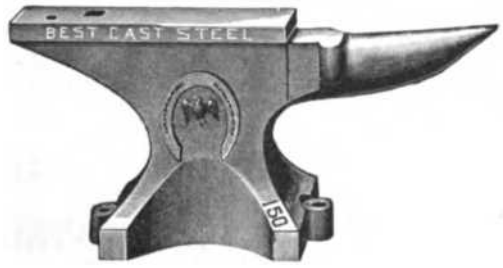


FIG. 3756

WEIGHT, 150 LBS.

Face, 14½ inches long and 4 inches wide.
Solid steel horn, 10 inches long, with steel side clip 1¼ inch projection.
Cutter hole, ⅞ of an inch square.
Tail, ⅞ of an inch thick.

The above cut is an exact copy of a photograph taken directly from the anvil itself; it is therefore a correct representation of its actual shape, showing the relative proportions of all parts, face, horn, etc.

STANDARD DIMENSIONS EAGLE BLACKSMITHS' ANVILS

FIG. 3757

	Weight, Pounds.	Face—Length, Inches.	Face—Width, Inches.	Cutter Hole, Square, Inches.	Horn, Length, Inches.
	100	12	3½	¾	8½
	110	12¾	3½	¾	8½
	120	12¾	3½	¾	8½
Horseshoers' Special.	130	13½	3¾	¾	8½
	140	14	4	⅞	8½
	150	14½	4	⅞	10
	150	15	4	⅞	10
	160	15	4¼	1	10
	170	15	4¼	1	10
	180	15½	4¼	1	10
	200	16½	4¾	1⅛	11½
	225	16½	4¾	1⅛	11½
	250	17¼	5¼	1¼	11½
	275	17¾	5¼	1¼	11½
	300	19	5¼	1¼	11½
	350	20	6	1⅜	13
	400	21	6	1⅜	13
	500	23	6½	1½	14½
	600	23	6½	1½	14½

Prices, per pound.....

EAGLE ANVILS AND MINIMS

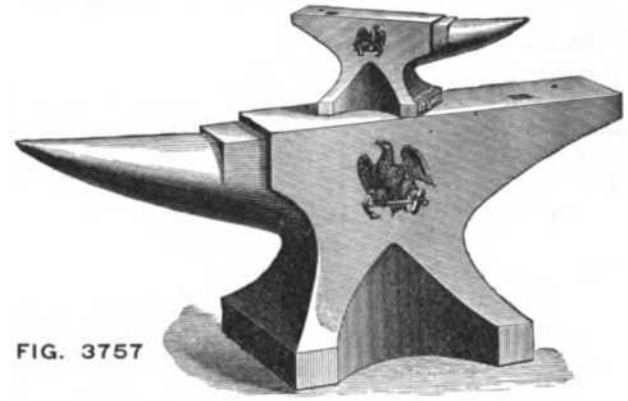


FIG. 3757

PRICES, 100 TO 800 LBS., PER LB.... CTS.

STANDARD DIMENSIONS AND PRICES EAGLE SMALL ANVILS, MINIMS

Size, No.	Weight, About, Lbs.	Face—Length, Inches.	Face—Width, Inches.	Cutter Hole, Square, Inches.	Horn, Length, Inches.
000	½	2¼	½	..	1½
1	8	5¾	1¾	⅜	3½
2	20	6¼	2¼	½	4
3	30	7¼	2¼	½	4
4	40	8¾	3	⅝	5¼
5	50	9¼	3	⅝	6½
6	60	10	3	⅝	6½
7	70	10½	3¼	⅝	6½
8	80	10½	3¼	⅝	7½
9	90	11	3¼	⅝	7½

Per pound.....

FARRIERS' CLIP HORN ANVIL

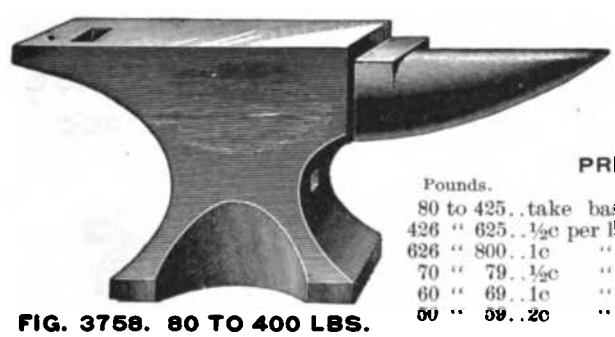


FIG. 3758. 80 TO 400 LBS.

SOLID WROUGHT ANVILS

PRICES, PER POUND

Pounds.		Pounds.	
80 to 425	take base price	40 to 49	3c per lb. extra
426 " 625	½c per lb. extra	30 " 39	5c " "
626 " 800	1c " "	20 " 29	8c " "
70 " 79	½c " "	10 " 19	15c " "
60 " 69	1c " "	Farrier Clip Horn, 1c per pound extra.	
50 " 59	2c " "		

GENERAL BLACKSMITHS' ANVIL

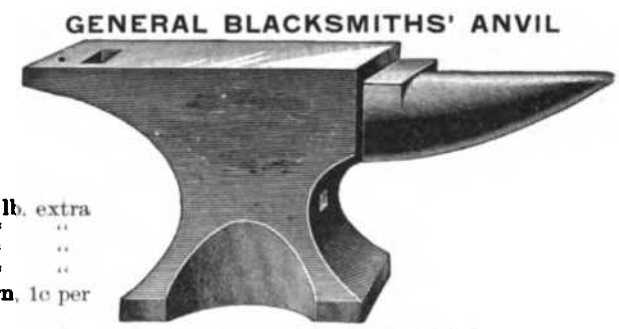


FIG. 3759. 10 TO 800 LBS.

COLUMBUS SOLID WROUGHT ANVILS

HORSESHOERS' CLIP HORN



FIG. 3760. 120 TO 200 LBS.

PRICES, FIGS. 3760 AND 3761

Fig. 3761, base size 80 to 440 lbs.
....cents per pound.

450 lbs. and over	½c per lb. extra
70 " to 80 lbs.	½c " "
60 " " 70 "	1c " "
50 " " 60 "	2c " "
40 " " 50 "	3c " "
35 " and less	4c " "
Fig. 3760, with Clip Horn	1c " "
Without " "	½c " "
Tool Dressers' Anvils, 80 to 400 lbs., beveled edge	½c " "

GENERAL BLACKSMITH

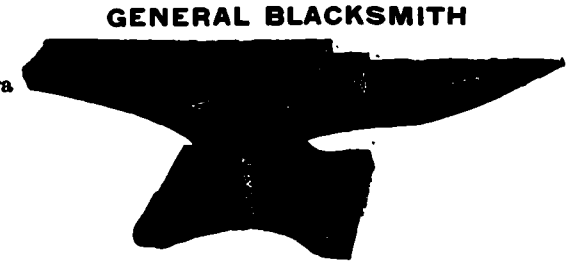


FIG. 3761. 25 TO 650 LBS.

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HILL'S SOLID STEEL ANVILS

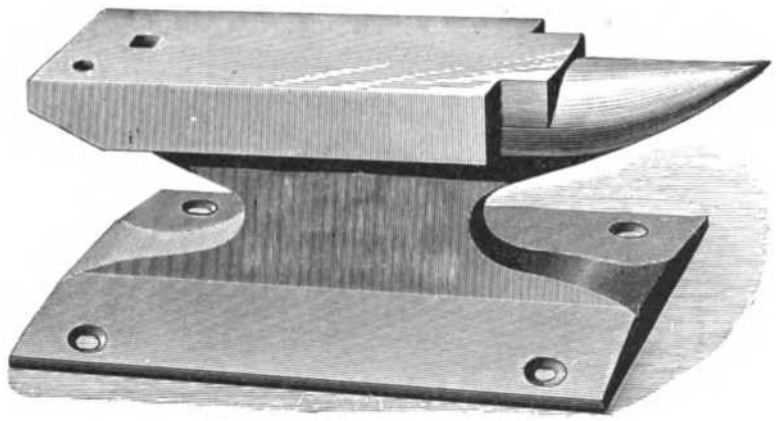


FIG. 3762

PRICES

No. 1.	5 inches long;	1½	inches wide;	weight,	5	lbs.,	each	$2 00
" 2.	6 "	2	"	"	7	"	"	2 50
" 3.	7 "	2	"	"	9	"	"	3 00

These anvils are not cast into this shape, but are forged from solid steel, and have a suitable anvil temper throughout.

The horn is two inches long, in addition to the length of face given above. The face, sides and horns are nicely polished. The bottom part is japanned.

COMBINED ANVIL AND VISE

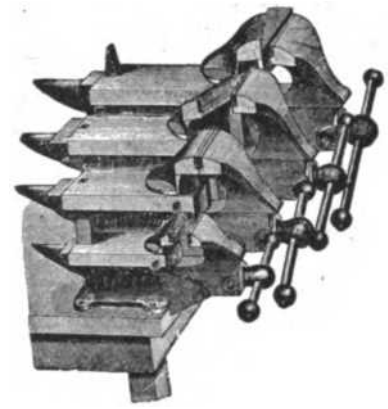


FIG. 3763

PRICES

No. 10, weight about 9 pounds, jaws about 2½ inches wide, opens 3 inches $3 50
No. 20, weight about 25 pounds, jaws about 3½ inches wide, opens 4 inches 4 50
No. 30, weight about 35 pounds, jaws about 4 inches wide, opens 5 inches 5 50
No. 40, weight about 50 pounds, jaws about 4½ inches wide, opens 6 inches 6 50

VISE AND DRILL

INSERTED STEEL VISE JAWS

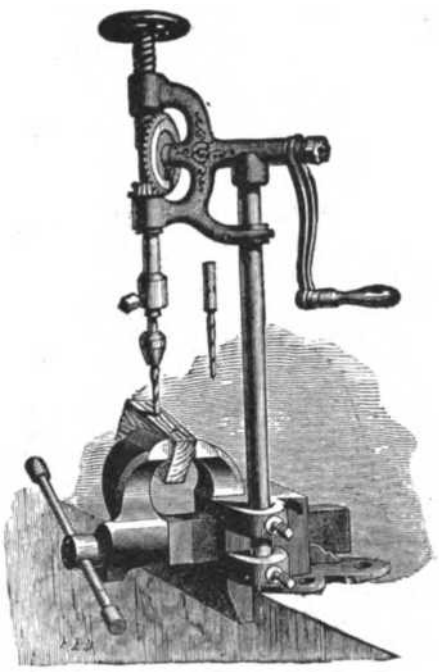


FIG. 3765

The article to be drilled can be held firmly in the vise, so as to be drilled at an angle. A bolt of iron or soft steel can be drilled accurately down through the center. When the drill is sold without the anvil it is attached to an offset vise, as cut above. This vise has steel faced jaws 3½ inches wide which entirely overhang the screw and the box which covers it. For many purposes this is a most convenient vise.

PRICES

Weight of offset vise and drill, 61 pounds, each $15 00
Weight of offset vise alone, 41 pounds, each 7 00
Weight of drill press, 20 lbs., each, 8 00

ANVIL, VISE AND DRILL

INSERTED STEEL VISE JAWS

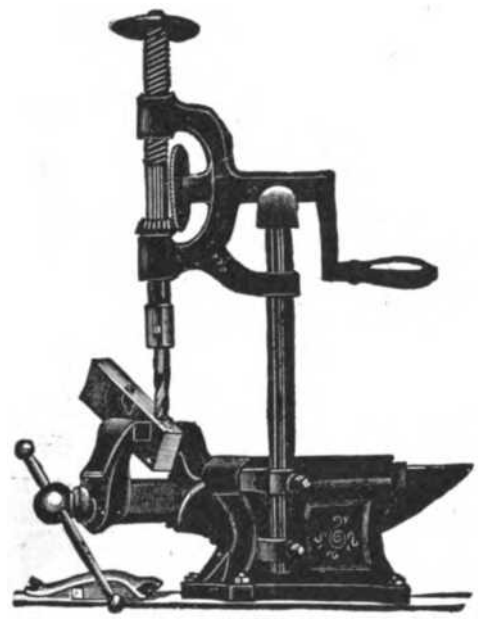


FIG. 3766

The anvil has a steel face 4 x 8 inches, the vise jaws are 3½ inches wide, and are steel faced. The drill standard and spindle are steel. The spindle is bored for drills with ½ inch shank. With each drill press we furnish chuck to hold drills smaller than ¼ inch. One ¼ drill with ½ inch shank is furnished with every complete vise and drill.

PRICES

Weight of anvil, vise and drill, 80 pounds, each $18 00
Weight of anvil and vise, 60 pounds, each 10 00
Weight of drill press, 20 pounds, each .. 8 00

COMBINATION ANVIL, VISE AND DRILLING MACHINE

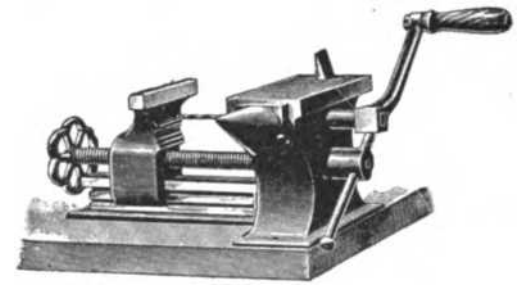


FIG. 3764

Fig. 3764 combines four different tools: Anvil, straight vise, pipe vise and drill press. Weighs 55 pounds.

The anvil is 7 inches high, 12 inches long, and 4 inches face; vise jaw 5½ inches wide and opens out 8 inches. The drill spindle is made for square shank drills. The spindle can be slipped out of its bearings and laid by when not using the drill.

Price, each $10 00

DRILLING MACHINE VISE

FOR HOLDING ALL SHAPES OF IRON

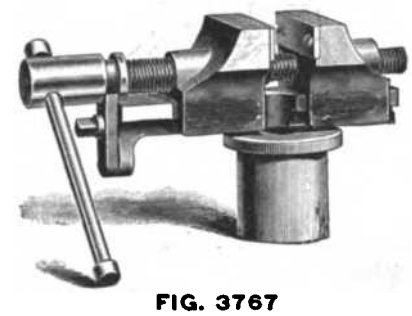


FIG. 3767

This vise will hold all shapes and sizes of articles for drilling in drilling machines. Has steel jaws; hole through shank to take any length. Arranged so as to be in center with spindle, or, if desired, can be thrown to one side. Jaws are operated by right and left hand screw.

Price, each, complete $8 00

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SOLID BOX WROUGHT IRON LEG VISES

HORSESHOER'S VISE

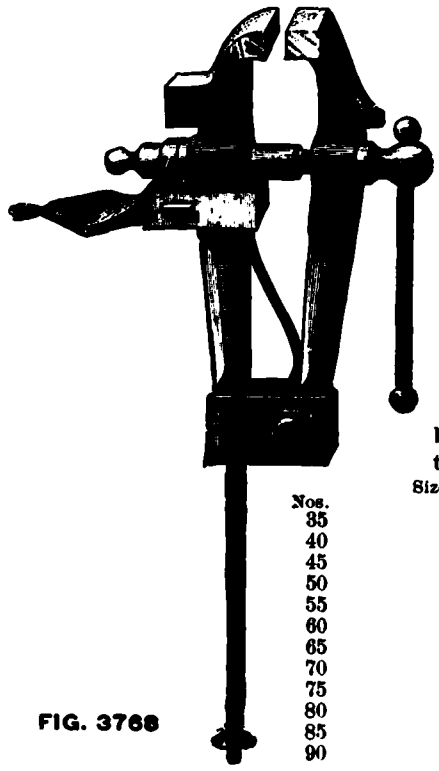


FIG. 3768

DESCRIPTION, FIG. 3768

Width of jaw, 6 inches. Distance from top of box to under the jaw, 5 inches, to allow room for turning both calks at one heat on the flat front jaw (1¼ x 6 inches), especially made for that purpose. These vises are made in three different sizes only, with or without anvil.

They are fitted with solid wrought steel screws and concave and convex ball bearing washers, removing all liability of stripping the thread or breaking the screws.

PRICES, FIG. 3768

Numbers	60	65	70
Each	$18 00	$19 50	$21 00

With anvil, $1.00 extra.

BLACKSMITH'S VISE

REGULAR PATTERN

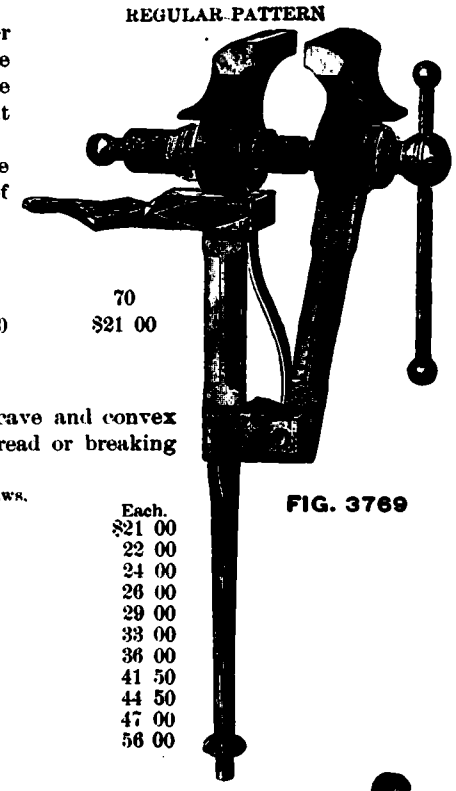


FIG. 3769

DESCRIPTION AND PRICES, FIG. 3769

These vises are fitted with solid wrought steel screws and concave and convex ball bearing washers, removing all liability of stripping the thread or breaking the screws.

Nos.	Size of Jaws, Inches.	Each.	Nos.	Size of Jaws, Inches.	Each.
35	3¾	$10 00	95	5¾	$21 00
40	4	10 50	100	6	22 00
45	4¼	11 00	110	6	24 00
50	4½	11 50	120	6½	26 00
55	4¾	12 00	130	6½	29 00
60	5	13 00	140	7	33 00
65	5	14 00	150	7	36 00
70	5¼	15 00	160	7¼	41 50
75	5¼	16 00	170	7¼	44 50
80	5½	17 50	180	7½	47 00
85	5½	18 50	200	8	56 00
90	5¾	20 00			

With anvil, $1.00 extra.

QUICK ADJUSTING BLACK SMITH'S LEG VISE

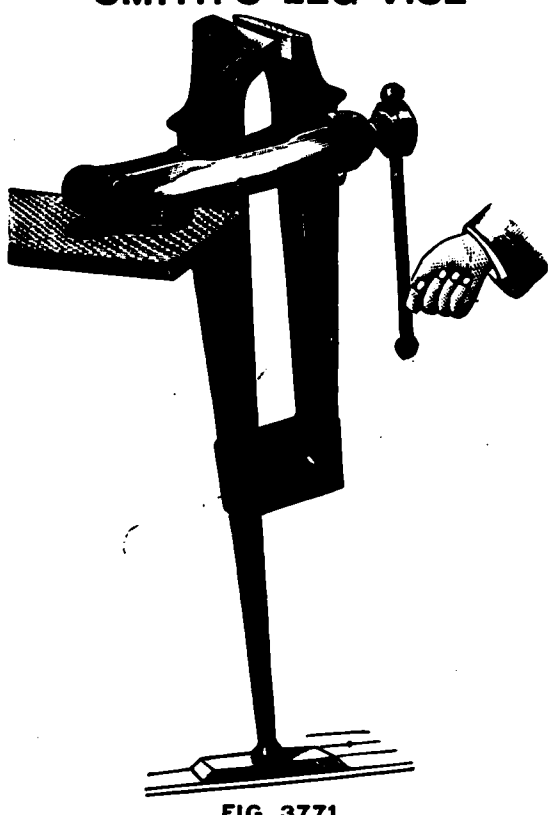


FIG. 3771

Nos.	Sizes.	Prices, Each.
35	3¾	$10 00
40	4	10 50
45	4¼	11 00
50	4½	11 50
55	4¾	12 00
60	5	13 00
65	5	14 00
70	5¼	15 00
75	5¼	16 00
80	5½	17 50
85	5½	18 50
90	5¾	20 00
95	5¾	21 00
100	6	22 00

BOXES AND SCREWS FOR SOLID BOX VISES



FIG. 3770

DESCRIPTION AND PRICES, FIG. 3770

Fitted with solid wrought steel screws, concave and convex ball bearing washers, removing all liability of stripping the thread or breaking the screw.

Nos.	Vise Nos.	Diameters of Screw, Inches.	Diameters of Box, Inches.	Each.
1	35–40	1	1½	$3 50
1½	45–55	1⅛	1⅝	4 00
2	60–75	1¼	1¾	4 00
3	80–95	1⅜	1⅞	4 50
4	100–150	1¾	2⅜	6 50
5	160–200	2	2⅝	8 00

DOUBLE SCREW PARALLEL JAW LEVER

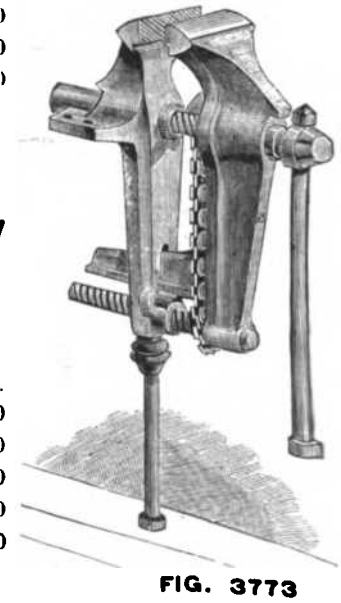


FIG. 3773

PRICES, FIG. 3773

Nos.	Weight, About, Lbs.	Jaws, Inches.	Diameters of Screw, Inches.	Lengths of Lever, Inches.	Opens, Inches.	Each.
*2	65	4½ x 1	1⅛	13	5½	$10 50
3	90	5¼ x 1⅛	1¼	16	6½	16 00
4	120	6¼ x 1¼	1½	19	7½	20 50
5	160	7 x 1½	1¾	24	9	27 00
6	210	8 x 1½	1⅞	26	12	32 00

*Note—Leg for No. 2 is unnecessary, therefore omitted.

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BENCH VISES

SMITH'S HEAVY CHILLED BEAM VISE

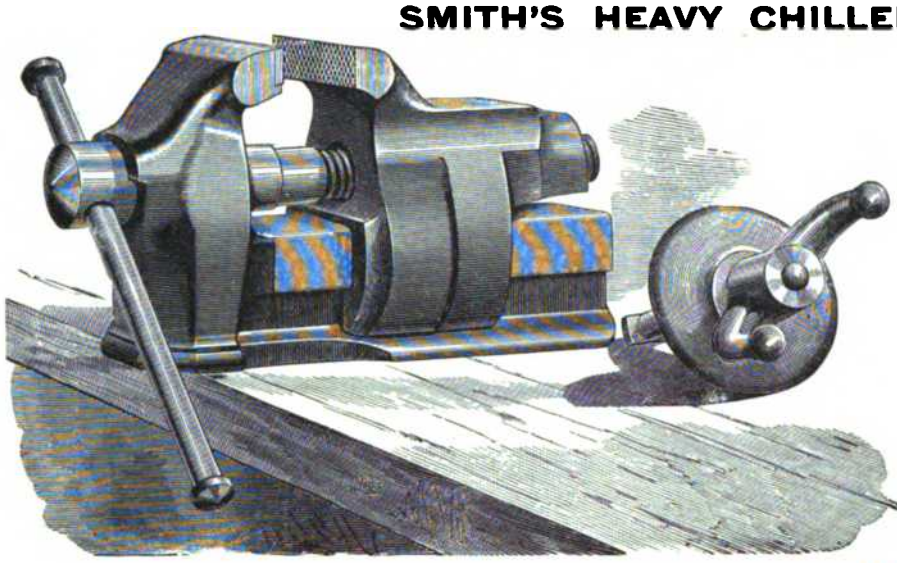


FIG. 3774

PRICES

No. Vise.	Dimensions of Jaw, Inches.	Weight, Lbs.	Each.
2	2 x 5/8	15	$3 50
3	3 x 3/4	30	6 00
4	4 x 7/8	45	8 00
5	5 x 1	80	12 50
6	6 x 1¼	125	17 00

RAPID TRANSIT MACHINISTS' VISE

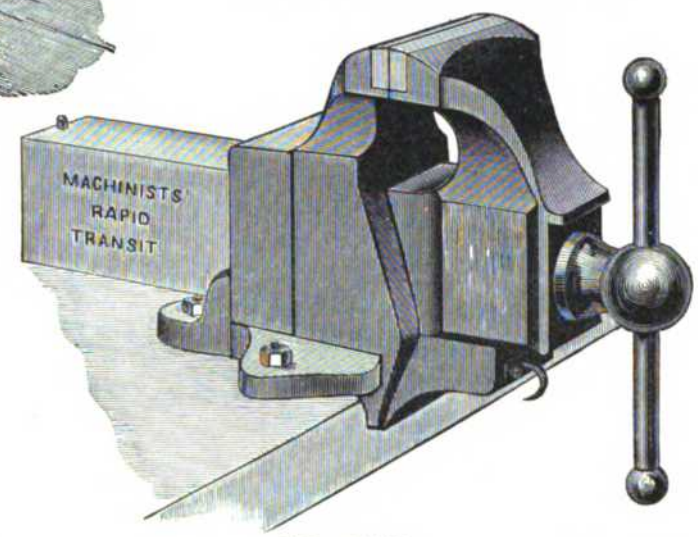


FIG. 3777

Nos.		Weight.	Prices.
70	Stationary bottom; 3 inch jaws; opens 3½ inches.....	22 lbs.	$6 50
71	Stationary bottom; 3¾ inch jaws; opens 4½ inches...	33 "	8 00
72	Stationary bottom; 4¼ inch jaws; opens 5½ inches...	54 "	11 00
73	Stationary bottom; 4¾ inch jaws; opens 6½ inches...	65 "	13 50
74	Stationary bottom; 5½ inch jaws; opens 8 inches....	98 "	19 00
75	Stationary bottom; 6½ inch jaws; opens 9½ inches...	150 "	28 00

MACHINISTS' BULL DOG VISE

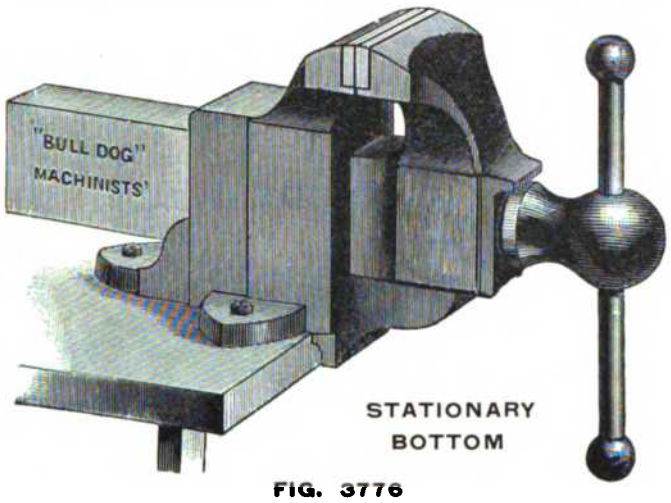


FIG. 3776

Nos.		Weight.	Prices.
50	Stationary bottom; 3¼ inch jaws; opens 4 inch....	22 lbs.	$6 00
51	Stationary bottom; 3⅝ inch jaws; opens 5 inch....	28 "	7 00
52	Stationary bottom; 4⅛ inch jaws; opens 5½ inch...	42 "	8 50
53	Stationary bottom; 4⅝ inch jaws; opens 6¼ inch...	52 "	10 00
54	Stationary bottom; 5 inch jaws; opens 7 inches....	72 "	13 00
55	Stationary bottom; 5½ inch jaws; opens 8½ inches	100 "	18 50
56	Stationary bottom; 6 inch jaws; opens 9 inches....	135 "	25 00

PARALLEL BENCH VISE

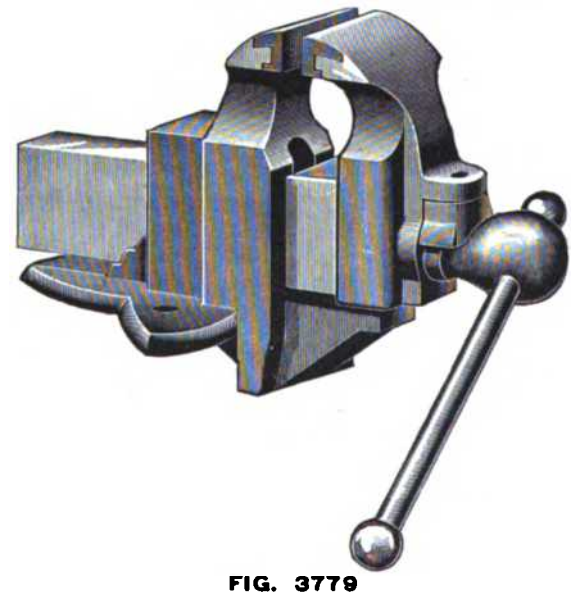


FIG. 3779

PRICES

Nos.	Length of Jaw, Inches.	Weight, Lbs.	Each.
0	3	26¾	$6 00
1	3½	32	7 00
2	4	44	8 50
3	4½	54	10 00
4	5	105	13 00
5	6	123½	25 00
6	7	189	28 50

HEAVY CHIPPING VISE

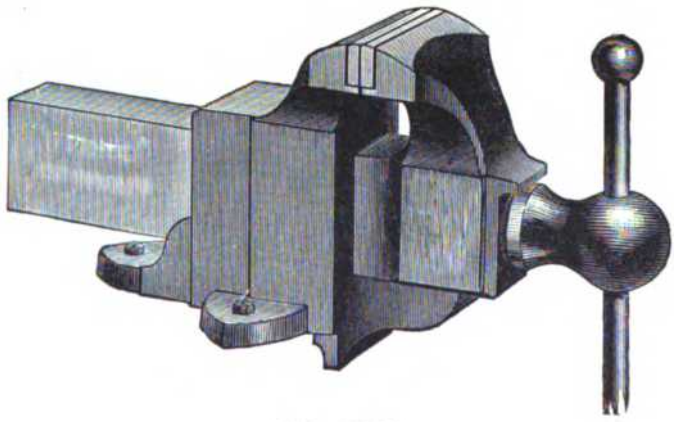


FIG. 3778

No. 58. 8½ inch jaws; opens 12 inches; weight, 275 lbs., each $50 00

Swivel bottom attachment for above, $5 00.

MANNING, MAXWELL, & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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STATIONARY BENCH VISES

VULCAN PARALLEL STATIONARY VISE

Stationary bottom.

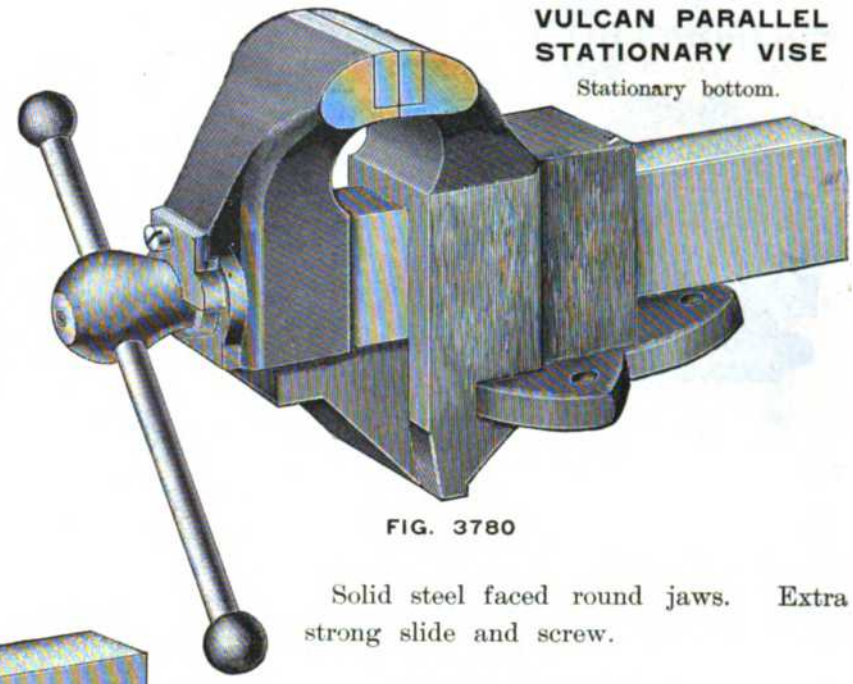


FIG. 3780

PRICES, FIG. 3780

Nos.	Weight, Pounds.	Length of Jaws, Inches.	Opens, Inches.	Each.
A	25	3¼	4½	$6 00
B	28	3⅝	5	7 00
C	46	4⅛	5½	8 50
D	60	4⅝	6½	10 00
E	74	5	7	13 00
F	100	5½	8½	18 50
G	135	6	9½	25 00

Solid steel faced round jaws. Extra strong slide and screw.

PATENT PARALLEL VISE

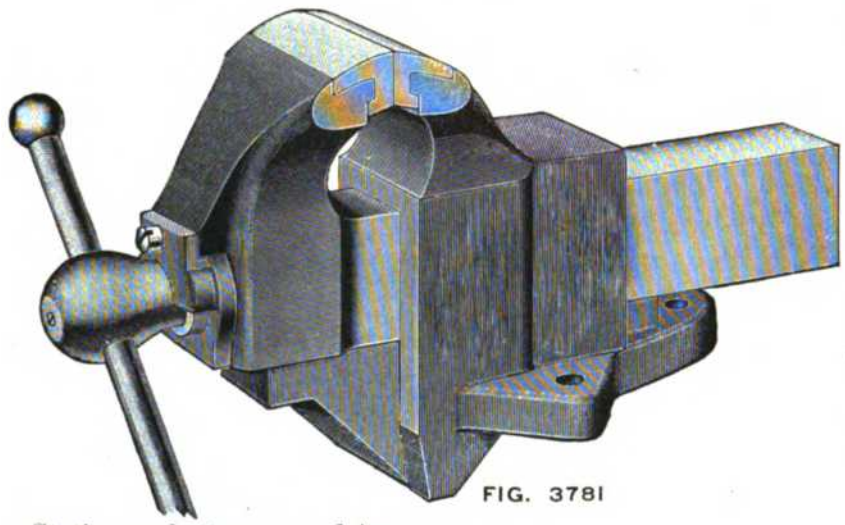


FIG. 3781

PRICES, FIG. 3781

Nos.	Weight, Pounds.	Length of Jaws, Inches.	Opens, Inches.	Each.
3/0 x	28	3¼	4¼	$6 25
1 x	45	3¾	5½	7 00
2 x	58	4¼	6½	9 00
3 x	74	4¾	8¼	11 75
4 x	104	5½	9½	16 25
5 x	134	6¼	10½	24 00

Stationary bottom, round jaws.

The steel faces of these vises are milled and fitted to the jaws and are renewable at a trifling cost.

BARRETT'S MACHINISTS' SOLID JAW PARALLEL VISE

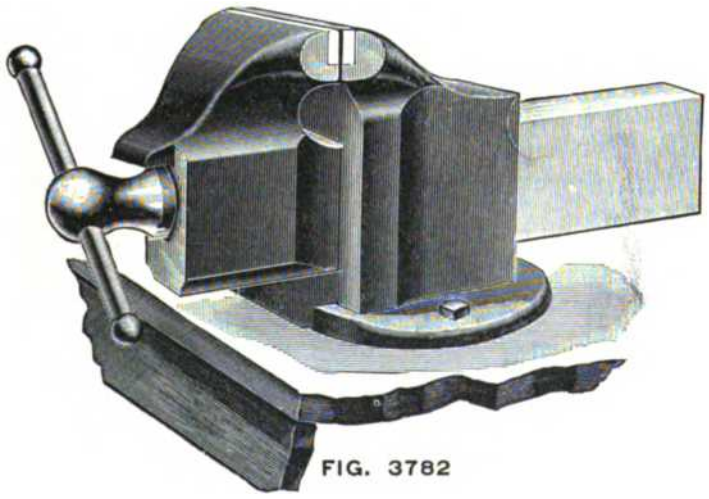


FIG. 3782

Nos.	Width of Jaws, Inches.	Jaw Opens, Inches.	Weight, Pounds.	Prices, Each.
31	3¾	4½	35	$7 00
32	4¼	4½	44	9 00
33	4¾	5	56	10 50
34	5	6¼	72½	15 50
36	5¼	7	78	17 00
37	6	8½	135	24 00
38	6¼	9	140	27 00

MECHANICS' VISE

Inserted steel jaws.

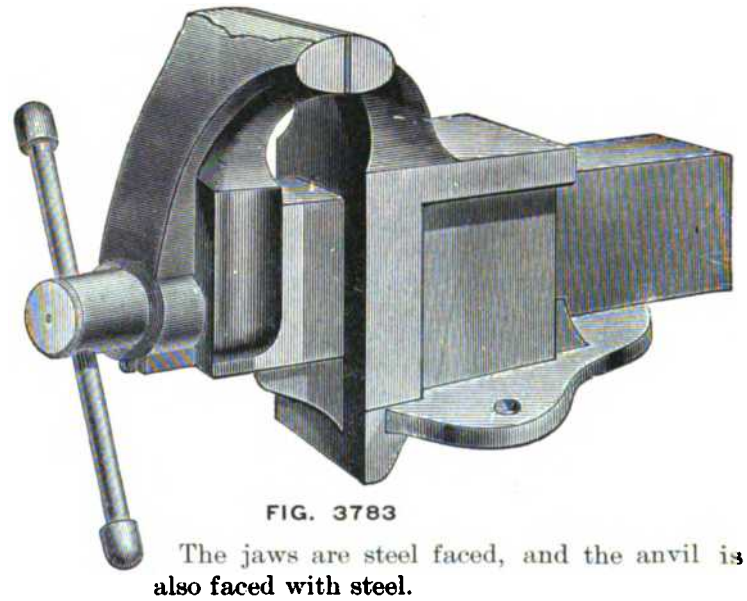


FIG. 3783

The jaws are steel faced, and the anvil is also faced with steel.

Width of Jaw, Inches.	Opens, Inches.	Weight, Pounds.	Prices, Each.
1½	2½	3	$3 00
2	3½	11	4 00
2½	3½	22	5 50
3	4½	40	7 00
3½	4½	42	9 00
4	5	55	10 00
4½	5	55	12 50
5	6	80	17 00

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STATIONARY BENCH VISES

X. L. QUICK ADJUSTING SCREW VISE

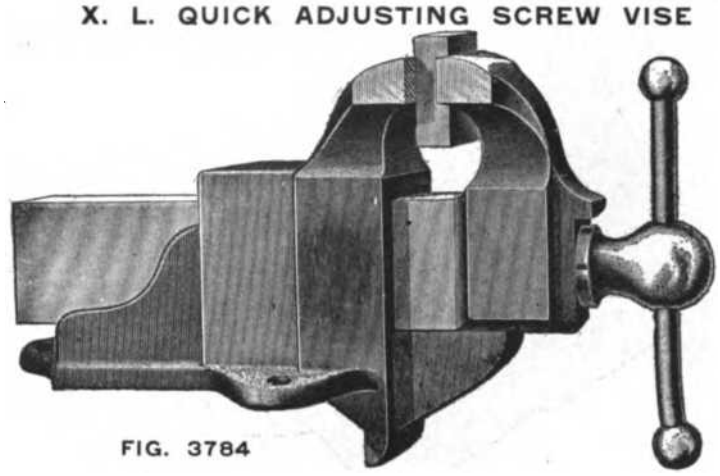


FIG. 3784

FLAT BASE WITH SOLID JAW

Nos	Sizes, Inches.	Prices, Each.	Weight, Pounds.	Nos.	Sizes, Inches.	Prices, Each.	Weight, Pounds.
30	3	$7 75	35	60	4½	$12 00	64
40	3½	9 00	41	70	5	21 00	77
50	4	10 50	54	80	6	28 00	133

FLAT BASE WITH SWIVEL JAW

Nos.	Sizes, Inches.	Prices, Each.	Weight, Pounds.	Nos.	Sizes, Inches.	Prices, Each.	Weight, Pounds.
32	3	$9 25	37	62	4½	$15 25	66
42	3½	10 75	44	72	5	25 25	79
52	4	13 00	59	82	6	34 00	135

SIMPSON BENCH VISE WITH QUICK ADJUSTMENT

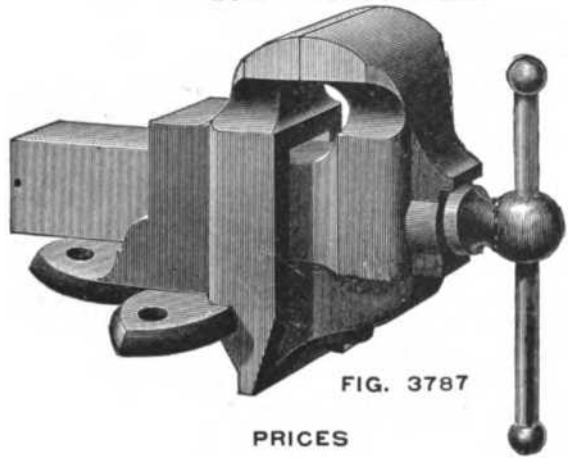


FIG. 3787

PRICES

Nos.	Width of Jaws, Inches.	Jaws Open, Inches.	Weight, Pounds.	Each.	Nos.	Width of Jaws, Inches.	Jaws Open, Inches.	Weight, Pounds.	Each.
27	2⅛	2	5½	$3 25	31	4	5	37	$8 50
28	2½	2¾	9	4 25	32	4½	5¾	49	10 00
29	3	3¼	15½	5 50	33	5	6½	64	13 00
30	3½	4	26	7 00					

IRON WORKERS' STEEL BAR VISE

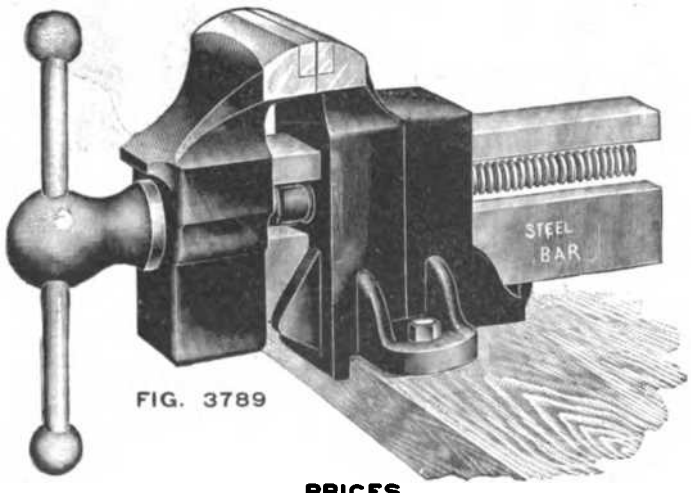


FIG. 3789

PRICES

Nos.	Width of Jaws, Inches.	Jaws Open, Inches.	Weight, Pounds.	Each.	Nos.	Width of Jaws, Inches.	Jaws Open, Inches.	Weight, Pounds.	Each.
35	3	4	22	$6 00	43	5	8	82	$13 50
37	3½	5	28	7 00	45	5½	9	103	18 50
39	4	6	48	8 50	47	6½	10	135	25 00
41	4½	7	60	10 00	49	7½	12	188	35 00

PERFECT QUICK ADJUSTING SCREW VISE

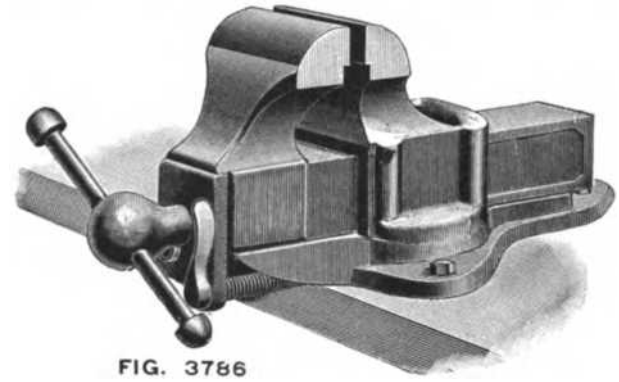


FIG. 3786

PRICES

STATIONARY BASE

Nos.	Width of Jaws, Inches.	Jaws Open. Inches.	Weight, Pounds.	Each.	Nos.	Width of Jaws, Inches.	Jaws Open. Inches.	Weight, Pounds.	Each.
0	3½	4½	32	$7 75	3	5½	8	109	$17 50
1	4	5½	42	9 50	4	6¼	9	140	23 00
2	4¾	6	70	11 50					

SWIVEL BASE

Nos.	Width of Jaws, Inches.	Jaws Open, Inches.	Weight, Pounds.	Each.	Nos.	Width of Jaws, Inches.	Jaws Open, Inches.	Weight, Pounds.	Each.
0	3½	4	40	$8 75	3	5½	8	118	$19 50
1	4	5½	50	10 50	4	6¼	9	150	25 00
2	4¾	6	78	12 50					

IRON WORKERS' QUICK ACTING VISE

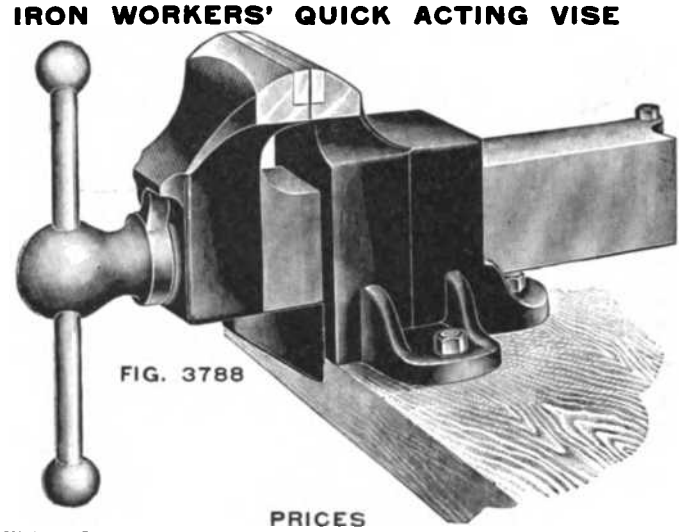


FIG. 3788

PRICES

Nos.	Width of Jaw, Inches.	Jaws Open, Inches.	Weight, Pounds.	Each.	Nos.	Width of Jaw, Inches.	Jaws Open, Inches.	Weight, Pounds.	Each.
121	3½	5	32	$8 50	127	5	8	75	$18 00
123	4	6	44	10 50	129	5½	9	100	22 00
125	4½	7	60	12 50	131	6½	10	130	30 00

BARRETT'S SOLID JAW STEEL BAR VISE

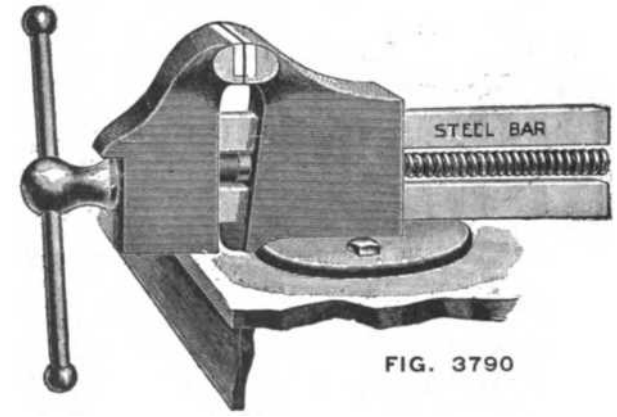


FIG. 3790

PRICES

Nos.	Width of Jaws, Inches.	Jaws Open. Inches.	Weight, Pounds.	Each.	Nos.	Width of Jaws, Inches.	Jaws Open, Inches..	Weight, Pounds.	Each.
41	3¾	5¼	37	$7 00	46	5¼	8	92	$17 00
42	4¼	6	47	9 00	47	6	9½	110	24 00
43	4¾	7	71	10 50	48	6¼	9½	115	27 00
44	5	8	83	15 50	52	8	....	....	50 00

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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STATIONARY BENCH VISES

PATENT FILER'S VISE

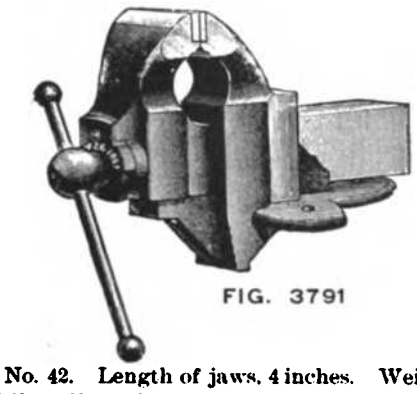


FIG. 3791

No. 42. Length of jaws, 4 inches. Weight, 33 lbs. Each, $7.25.

No. 42½. Length of jaws, 3¼ inches. Weight, 30 lbs. Each, $6.75.

FILER'S VISE

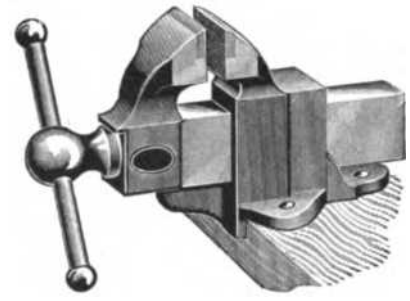


FIG. 3792

STATIONARY BASE

No. 215. Width of jaws, 3½ inches. Opens 5 inches. Weight, 30 lbs. Each, $7.00.

No. 235. Width of jaws, 4½ inches. Opens 7 inches. Weight, 60 lbs. Each, $10.00.

SWIVEL BASE

No. 220. Width of jaws, 3½ inches. Opens 5 inches. Weight, 35 lbs. Each, $8.75.

No. 240. Width of jaws, 4½ inches. Opens 7 inches. Weight, 65 lbs. Each, $12.50.

OVAL SLIDE OR FARMER'S VISE

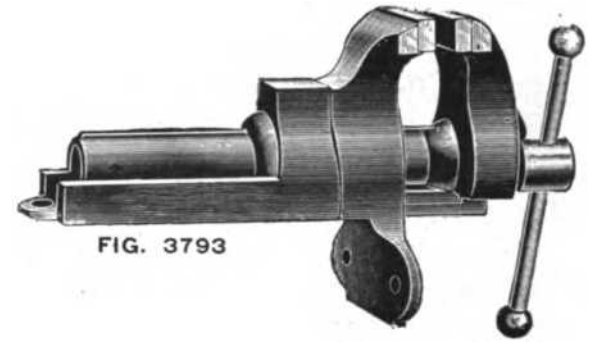


FIG. 3793

PRICES, FIG. 3793

Nos.	Jaws, Inches.	Weight.	Each.
70	2	7½	$1 75
71	2½	10	2 00
72	3	17	2 40
73	3½	26	3 00
74	4	38	4 40
75	4½	49	6 25

Each vise has steel jaws, checked and tempered, and steel screws and levers.

FILER'S OR FINISHER'S STEEL BAR VISE

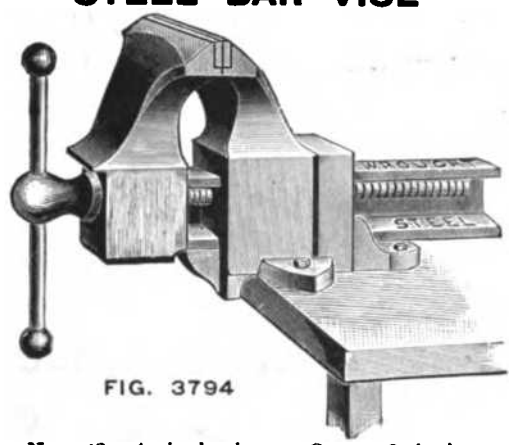


FIG. 3794

No. 43. 4 inch jaws. Opens 6 inches. Weight, 37 lbs. Price, $7.00.

OVAL SLIDE VISE

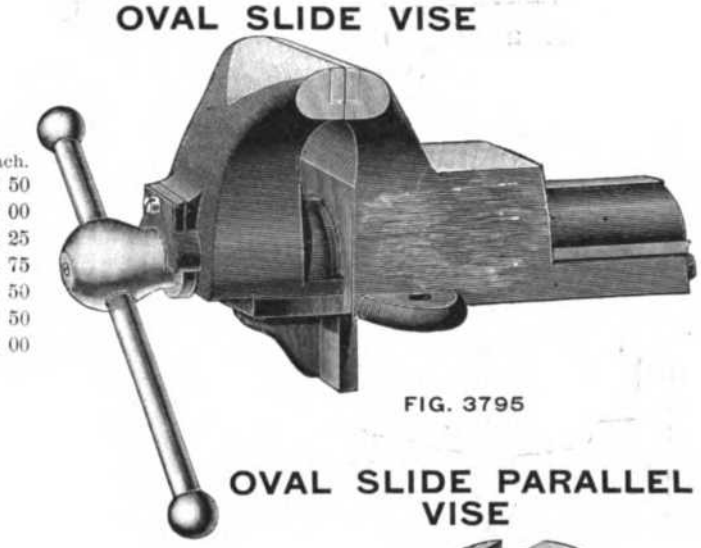


FIG. 3795

PRICES, FIG. 3795

Nos.	Weight, Lbs.	Length of Jaws, Inches.	Each.
30	8½	2⅝	$2 50
31	13	3	3 00
32	19	3¼	4 25
33	22	3½	4 75
34	28	4	6 50
35	35	4¾	9 50
36	62	5¼	12 00

OVAL SLIDE PARALLEL VISE

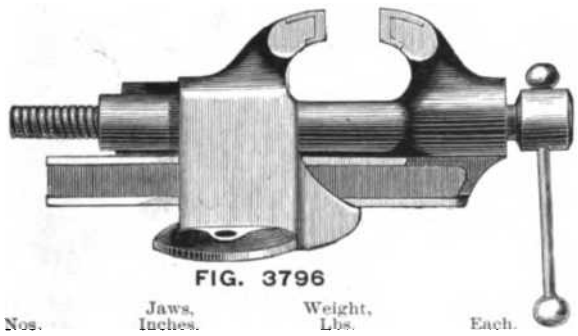


FIG. 3796

Nos.	Jaws, Inches.	Weight, Lbs.	Each.
20	2	7	$4 00
25	2½	12	5 00
30	3	21½	6 25
35	3½	30½	7 00
40	4	46½	9 00
45	4½	58	11 75
50	5	88	16 25
55	5½	110½	20 00

PRICES, FIG. 3797

Jaws, Inches.	Weight, Lbs.	Each.
2	7¾	$2 50
2½	11	2 70
3	18	3 60
3½	29	4 65
4	36½	6 70
4½	54	9 65

OVAL SLIDE PARALLEL VISE



A nut at rear end of the screw fastens the latter in place. It provides for taking up all wear and in this way prevents any lost motion.

FIG. 3797

PLAIN BASE MECHANIC'S VISE

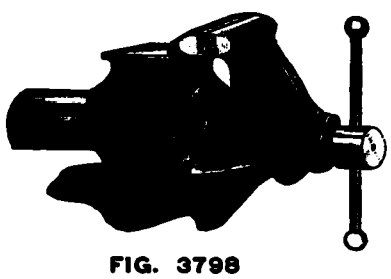


FIG. 3798

PRICES, FIG. 3798

Nos.	Jaws, Inches.	Weight, Lbs.	Each.
24	3	18	$3 50
29	3½	25	5 00
34	4	35	7 00
39	4½	52	9 50

OVAL SLIDE VISE

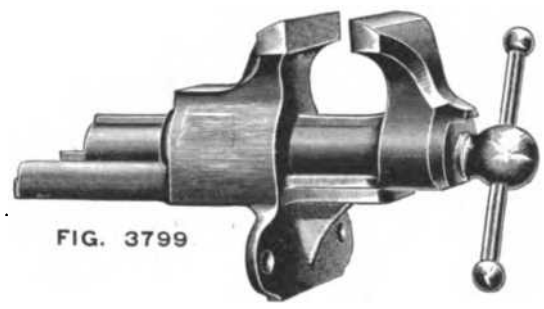


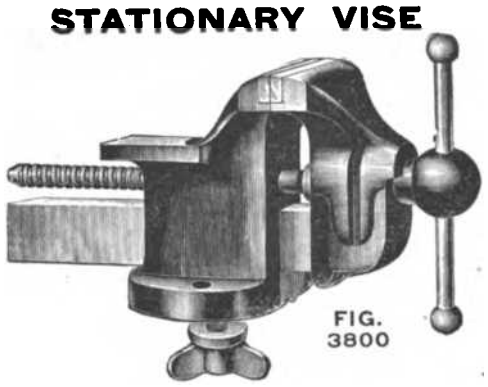
FIG. 3799

PRICES, FIG. 3799

Nos.	Width of Jaws, Inches.	Jaws, Open.	Each.
63	2	3	$1 30
64	2½	3¼	2 20
65	3	4½	3 00
66	3½	5¾	3 80
67	4	6¼	5 00

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SHEPARD'S STATIONARY VISE



STATIONARY BENCH VISES

DESCRIPTION AND PRICES, FIG. 3800

Can be used as either stationary or swivel bottom vise. Each vise is equipped with central bolt, nut and washer for fastening to bench. Is also provided with bolt holes for permanently securing to bench.

Nos.	Jaws, In.	Open, In.	Weight, lbs.	Each.
158	2	2	2½	$0 75
160	2	2	4	1 50
161	2½	3	10	2 00
161½	3	3½	12	2 40

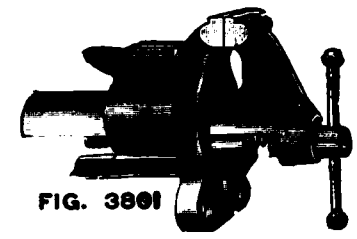
Nos.	Jaws, In.	Open, In.	Weight, lbs.	Each.
162	3½	4	16	$2 75
163	4	6	30	4 00
164	4½	7½	44	6 00

PRICES, FIG. 3801

Nos.	Jaws, In.	Open, In.	Weight, lbs.	Per Dozen.
2	1½	1¾	1¼	$3 00
2¼	1¾	2	2½	5 50
3	2	2¼	4	8 00

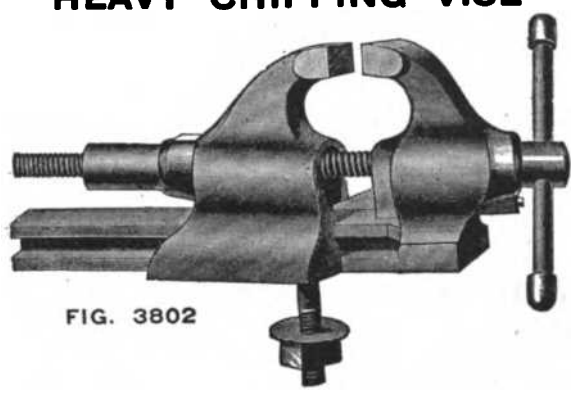
Nos.	Jaws, In.	Open, In.	Weight, lbs.	Per Dozen.
4	2½	2¾	9	13 50
5	2½	2¾	9	17 50

ANVIL VISE



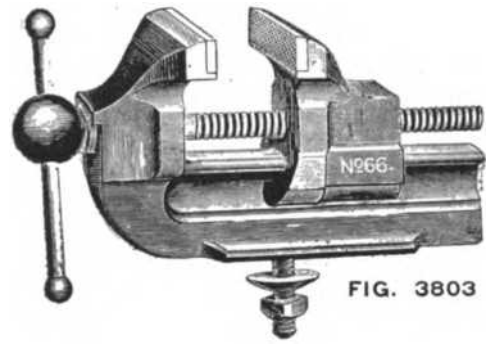
The No. 5 has checked and tempered steel jaws. Jaws and anvils in the other numbers, excepting No. 2, are chill hardened.

HEAVY CHIPPING VISE



Width of jaw, 7 in.; weight, 169 lbs.; each, $30 00

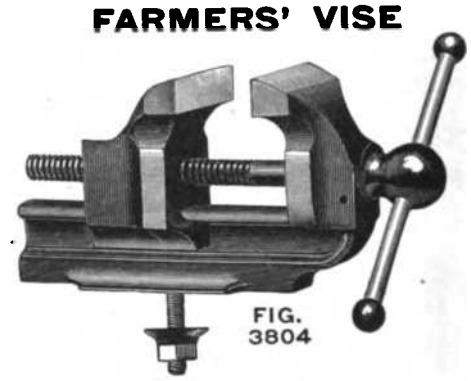
GIPSY VISE



PRICES

Nos.	Jaws, In.	Open, In.	Weight, lbs.	Each.
65	2½	3	8	$1 75
66	3½	4	14	2 50
67	4	6	28	4 00

FARMERS' VISE

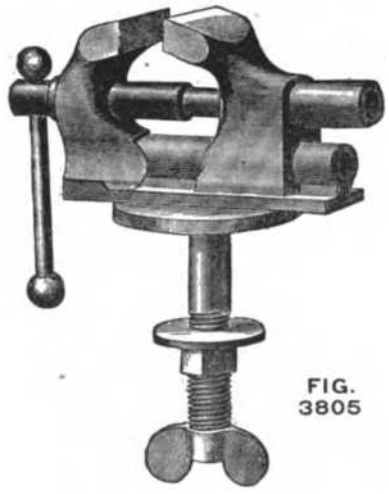


PRICES

Nos.	Jaws, In.	Open, In.	Each.
69	3	3	$1 75
70	3½	4	2 25
71	4	5	3 50
72	4½	6	5 00

HEAVY OR CHIPPING VISE

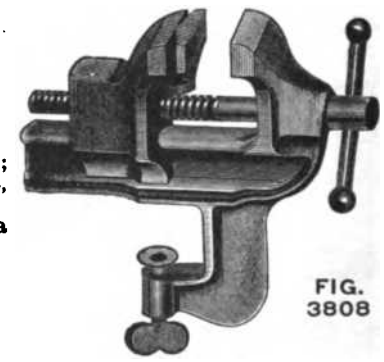
COVERED SCREW



PRICES, FIG. 3805

Width of Jaws, In.	Without Iron Seats.	With Iron Seats, Extra.	Weight, lbs.
1½	$3 00	$0 50	3½
1¾	3 50	50	5
2	4 00	50	9
2½	5 50	75	22
3	7 00	1 00	39
3½	9 00	1 00	47
4	$10 00	$1 25	56
4½	12 50	1 50	66
5	17 00	1 75	75
6	25 00	2 00	116
7	30 00	no seat	160

AMATEURS' VISE



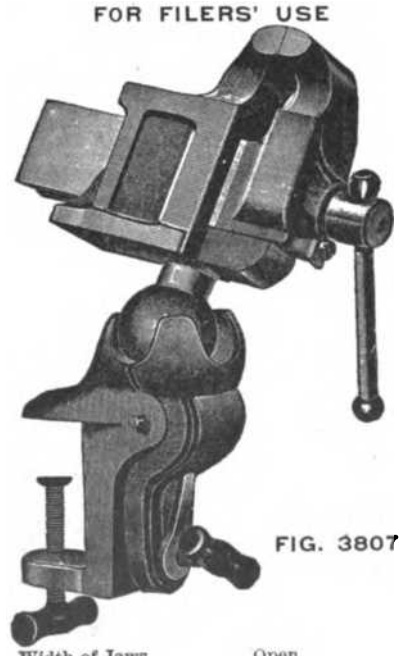
PRICES, FIG. 3808

No. 60—Width of jaws, 1½ in.; jaws open, 1¾ in.; weight, 1¾ lbs.; each, 50 cents. No. 62—Width of jaws, 2 in.; jaws open, 2¼ in.; weight, 3¼ lbs.; each, $1 00.

These vises have steel jaws and wrought iron screws, and No. 62 has a steel swivel jaw attachment, as shown in cut.

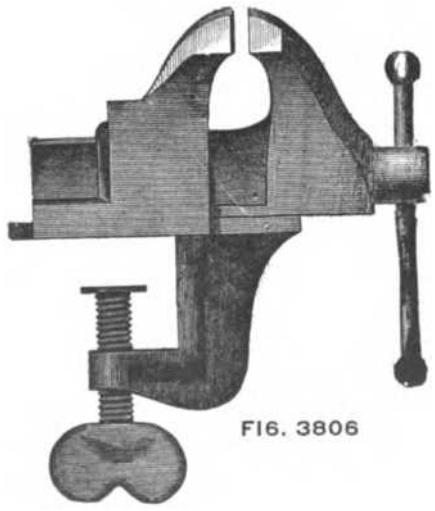
BALL CLAMP VISE

FOR FILERS' USE



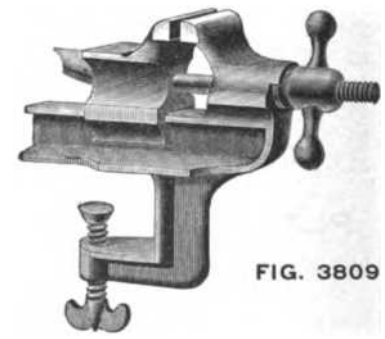
Width of Jaws, Inches.	Open, Inches.	Prices.
1½	2½	$4 00
2	3½	6 00
2½	3½	7 50

SLIDE VISE



Width of jaws, 1¼ in.; price, $1 25
" " 1¾ " " 1 50

LITTLE GEM VISE



No. 50—Width of jaws, 1½ in.; jaws open, 1½ in.; weight, 1½ lbs.; price, 25 cents.

No. 51—Width of jaws, 2 in.; jaws open, 1¾ in.; weight, 2¼ lbs.; price, 35 cents.

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STATIONARY BENCH VISES

CHAMPION CLAMP VISE

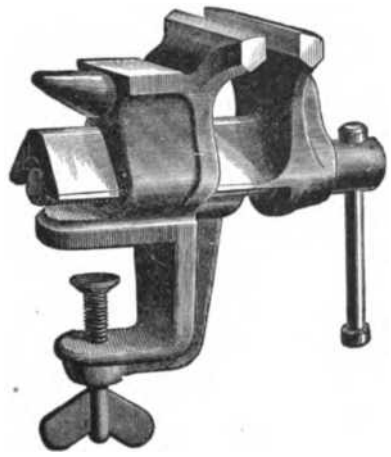


FIG. 3810

PRICES, FIG. 3810

Nos.	Size of Jaws, Inches.	Weight, Each, Pounds.	Per Dozen.
112	1½	1¼	$4 50
113	1¾	1¾	6 50
114	2	2½	9 00
115	2¼	3	12 00
116	2 steel jaw	2½	15 00
117	2 steel and swivel jaw	2¾	21 00
118	2½	3¾	18 00
119	2½ steel jaws	3¾	24 00
120	2½ " " and swivel jaw	4	30 00
121	3	7½	24 00
122	3 steel jaws	7½	30 00
123	3 " " and swivel jaw	8	36 00

SHEPARD CLAMP VISE

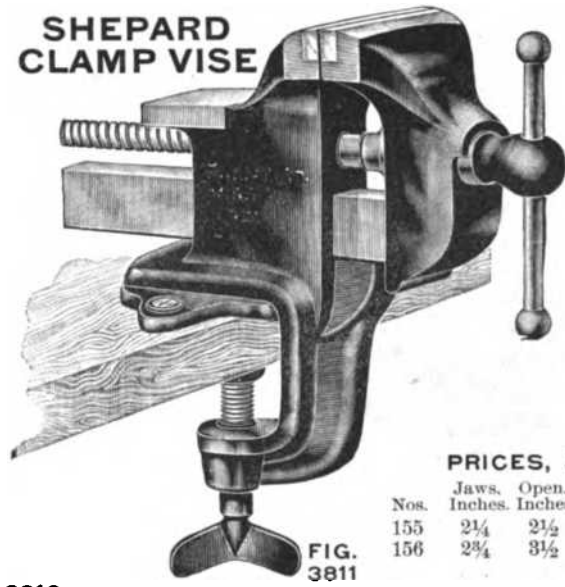


FIG. 3811

PRICES, FIG. 3811

Nos.	Jaws, Inches.	Open, Inches.	Weight, Lbs.	Each.
155	2¼	2½	5½	$1 20
156	2¾	3½	9	1 75

CLAMP VISE WITH ANVIL

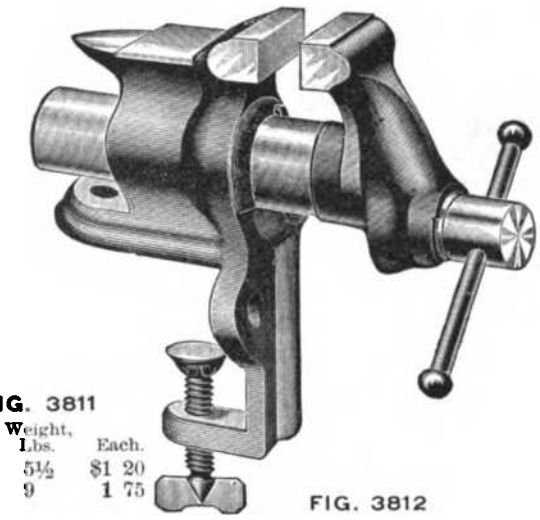


FIG. 3812

PRICES, FIG. 3812

Nos.	Jaws, Inches.	Open, Inches.	Weight, Pounds.	Per Dozen.
1½	1	1¼		$2 50
2½	1½	1¾	1 15/16	3 50
2¾	1¾	2	2¾	6 50
3½	2	2¼	4½	10 00
4½	2½	2¾	9½	16 00
5½	2½	2¾	9½	20 00

The No. 1½ Clamp Vise is made without anvil, and the thumb screw is not provided with the cap.

The thumb screws in Nos. 2½, 2¾, 3½, 4½ and 5½ are provided with ball and socket jointed cap. The jaws and anvils of Nos. 3½, 4½ and 5½ are chil'ed hard. No. 5½ inch has checked and tempered steel jaws, otherwise the same as No. 4½.

BENCH VISES

BLACK, BRIGHT JAWS

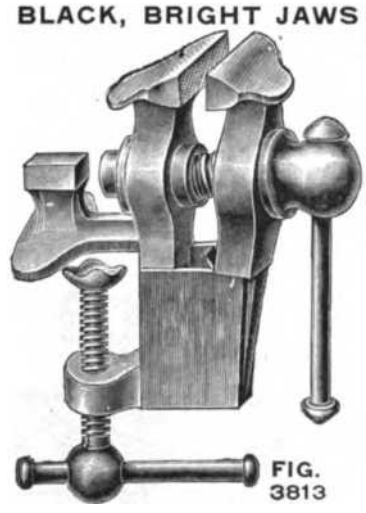


FIG. 3813

PRICES FIG. 3813

No.	Lbs.	Per Doz.
740	1	$5 00
"	1½	6 70
"	2	8 60
"	2½	11 60
"	3	13 00
"	3½	15 00
"	4	16 40
"	5	21 00
"	6	26 00

BLACK, PARALLEL, INTERCHANGEABLE STEEL JAWS

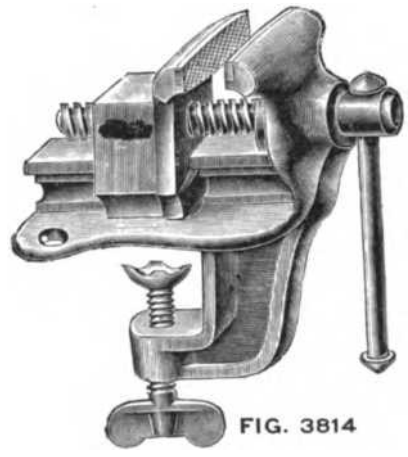


FIG. 3814

PRICES FIG. 3814

No.	Lbs.	Per Doz.
745	1¾	$18 00
"	2½	23 50
"	5	43 00

PRICES FIG. 3815

No.	Lbs.	Per Doz.
171	2	$23 00
"	2½	23 00
"	3	23 00
"	3½	23 00
"	4	23 00
"	5	27 50
"	6	33 00

BEST QUALITY, STEEL FACED

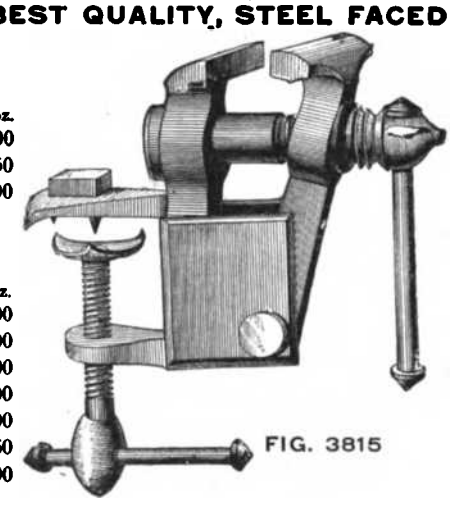


FIG. 3815

LIGHTNING GRIP VISE

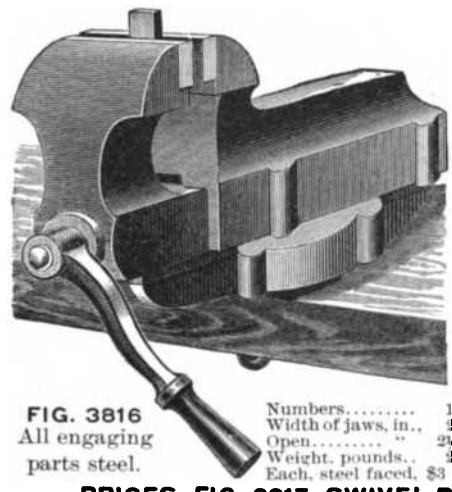


FIG. 3816
All engaging parts steel.

DESCRIPTION, FIG. 3816

The loose jaw can be instantly adjusted and the work firmly fastened with a quarter turn of the handle. The handle is always out of the way of the workman, as shown in cut, when vise is in use.

STATIONARY OR SWIVEL BASE
PRICES, FIG. 3816

Nos.	Jaws, Inches.	Open, Inches.	Each.
10	2½	4	$6 25
11	3½	5	8 50
12	4½	6	11 50
14	5½	8	17 50
16	7	11	30 00

PRICES, FIG. 3817, STATIONARY BASE, ROUGH OR SMOOTH JAW

Numbers	1	2	3	4	5	6	7	8
Width of jaws, in.,	2	2 spring	2¾	2¾ spring	3½	4½	5½ ex. handle	6½ ex. handle
Open "	2¼	2¼	3	3	5	6½	9	11
Weight, pounds	3	3	12	12	35	60	110	160
Each, steel faced,	$3 75	$4 50	$5 50	$6 00	$9 00	$12 50	$22 00	$33 00

PRICES, FIG. 3817, SWIVEL BASE, ROUGH OR SMOOTH JAW

Numbers	20	21	22	23	24	25	26	27
Width of jaws, in.,	2	2 spring	2¾	2¾ spring	3½	4½	5½ ex. handle	6½ ex. handle
Open "	2¼	2¼	3	3	5	6½	9	11
Weight, pounds	3	3	14	14	42	65	120	175
Each, steel faced,	$4 50	$5 25	$6 50	$7 00	$10 50	$14 50	$26 00	$39 00

STEPHENS' VISE

QUICK ACTION, LEVER AND CAM AND TOGGLE JOINT

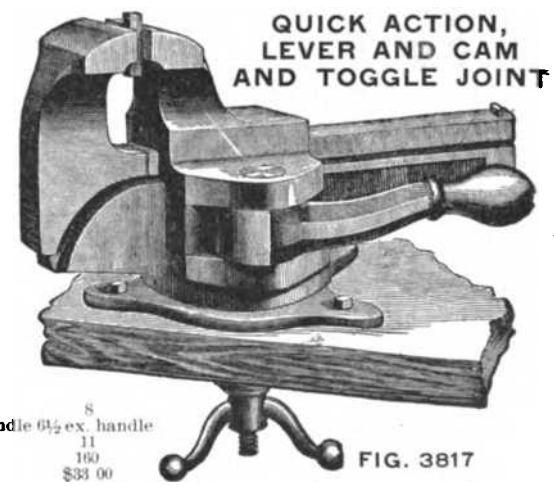


FIG. 3817

Filers' vises, same sizes and prices.
All parts of these vises are interchangeable.

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BENCH VISES

MECHANIC'S GRAVITY VISE

WITH QUICK WORKING ATTACHMENT

DESCRIPTION, FIG. 3818

Raise the ball and the nut opens to release the screw, Drop the ball and the nut closes. If the threads strike, so as not to fall into engagement, a slight movement of the lever will let the ball drop and shut and lock the nut. As shown in the cut, there is a nut on the back end of the vise screw which takes up all the wear, so that the jaws move instantly when the lever is turned. To release the work being held all that is necessary is simply to raise the ball. The vise has a steel faced anvil and interchangeable jaws.

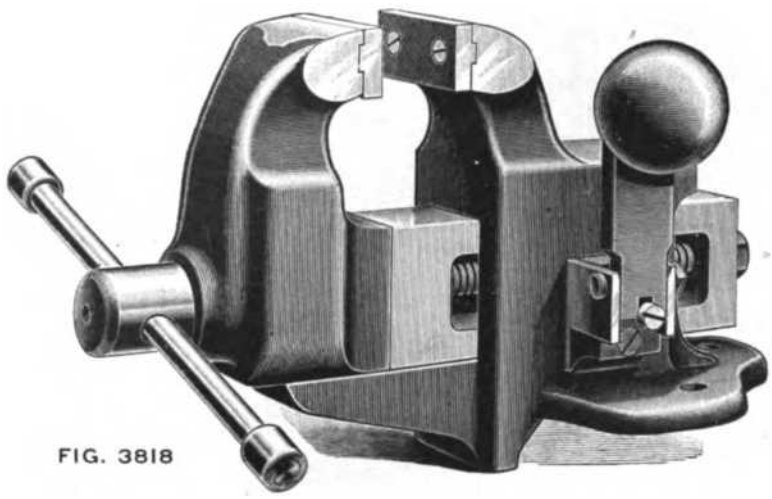


FIG. 3818

PRICES

3 inch jaws, each.....$9 00
3½ " " 10 50

PARALLEL SWIVEL VISE

ROUND JAWS WITH PATENT CAST STEEL ANVIL

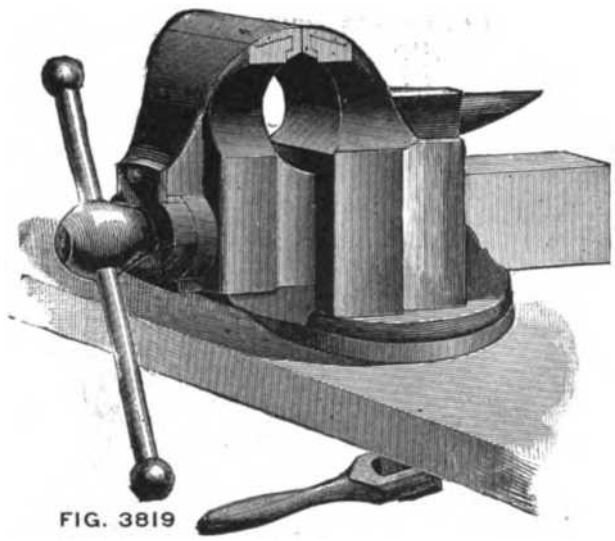


FIG. 3819

PRICES, FIG. 3819

Nos.	Weight, Pounds.	Lengths of Jaws, Inches.	Each.
19	8	2	$4 00
20	8½	2¼	5 00
21	23	3⅛	7 00
22	35	3⅝	8 75

SWIVEL FILER'S VISE

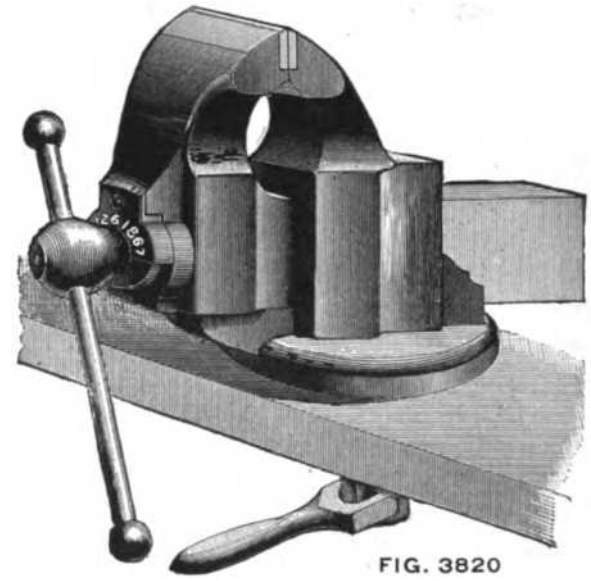


FIG. 3820

PRICES, FIG. 3820

No. 44, length of jaws, 4 in.; weight, 37 lbs., each.....$8 75

ALL STEEL FILER'S VISE

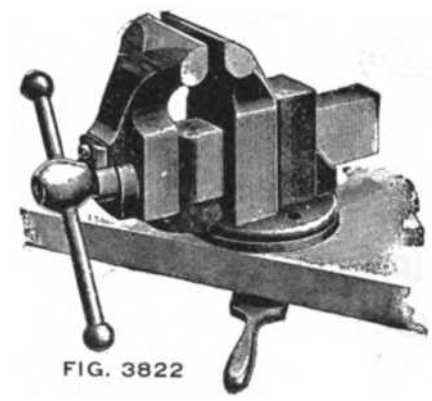


FIG. 3822

PRICES, FIG. 3822

Combined swivel and stationary base. Swivel jaws for gripping tapering pieces. No. 95, length of jaws, 4 inches; weight, 38 lbs; each $10.00.

SWIVEL HEAVY CHIPPING OR FILING VISE

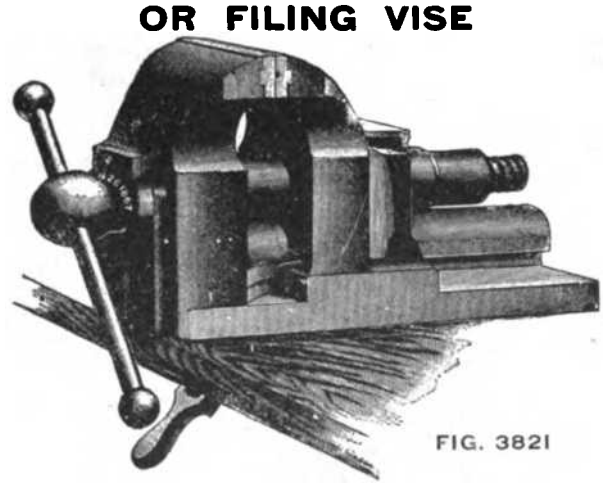


FIG. 3821

These vises are made exceedingly strong to allow chipping or filing without danger of breaking the vise. The steel jaws are closely fitted and held by screws. The screw is encased and thoroughly protected, and so located that the operator may obtain its full power. The back jaw is the movable one, which allows the work to rest upon the bench while the vise is being operated.

SWIVELS ON THE BENCH

PRICES

Nos.	Lengths of Jaws, Inches.	Weight, Pounds.	Each.
65	5	80	$16 00
66	6	110	24 00

The steel faces of these vises are milled and fitted to the jaws, and are renewable at a trifling cost.

STEEL BAR FILER'S VISE

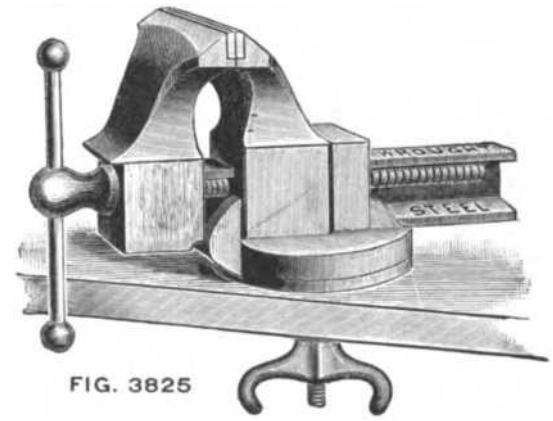


FIG. 3825

Rough cut or smooth jaws, as ordered. No. 48, 4 inch jaws, open 6 inches; each.....$8 00

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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SWIVEL BENCH VISES

MACHINISTS' VISES
WITH HARDENED STEEL JAWS

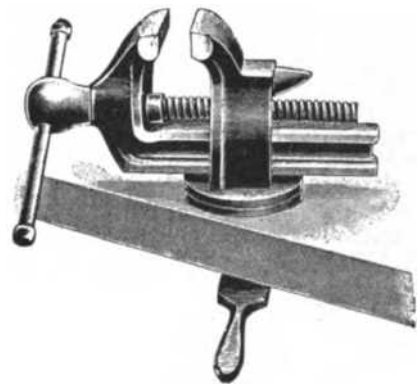


FIG. 3826

Nos.	Length of Jaw, Inches.	Weight, Lbs.	Each.
250A	2½	8½	$2 25
300	3	14½	3 50
350	3½	21½	4 75
400	4	26½	6 00

CHAMPION SWIVEL VISE

COVERED SCREW

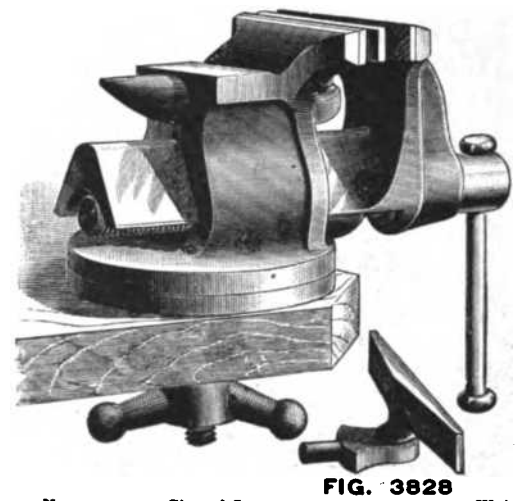


FIG. 3828

Nos.	Size of Jaw.	Weight, Each.	Per Dozen.
125	2 inch steel jaws	2¾ lbs.	$15 00
126	2 inch steel jaws and swivel jaw	3 "	21 00
127	2½ inch steel jaws	4 "	24 00
128	2½ inch steel jaws and swivel jaw	4¼ "	30 00
129	3 inch steel jaws	8 "	36 00
130	3 inch steel jaws and swivel jaw	8½ "	42 00

MACHINISTS' VISE
WITH SWIVEL JAW FOR GRIPPING TAPERING PIECES

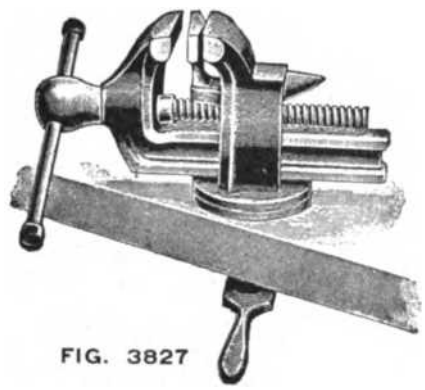


FIG. 3827

Nos.	Length of Jaw, Inches.	Weight, Lbs.	Each.
450	2½	9	$3 25
500	3	15	5 00
550	3½	22	6 25
600	4	27	7 50

MECHANICS' SWIVEL VISE

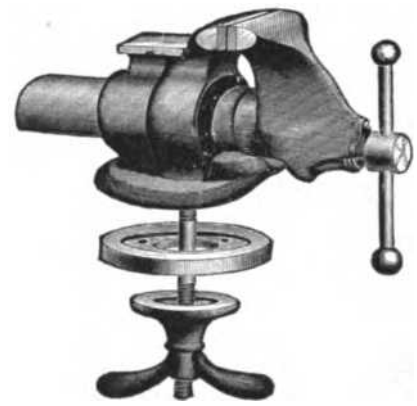


FIG. 3829

PRICES

Nos.	Jaws, Inches.	Weight, Lbs.	Each.
25	3	20	$4 00
30	3½	30	6 00
35	4	42	8 50
40	4½	62	11 00

SHEPARD SWIVEL VISE

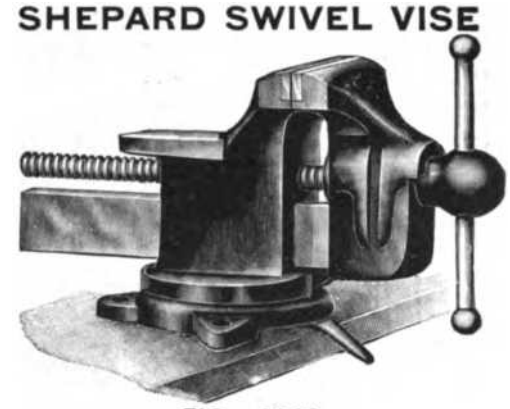


FIG. 3830

PRICES

Nos.	Jaws, Inches.	Opens, Inches.	Weight, Lbs.	Each.
159	2	2	3	$1 00
60	2	2	5½	1 65
61	2½	3	12	2 25
61½	3	3½	14	2 65
62	3½	4	18	3 00
63	4	6	32	4 50
64	4½	7½	48	6 75

IRON WORKERS' SOLID JAW SWIVEL VISE

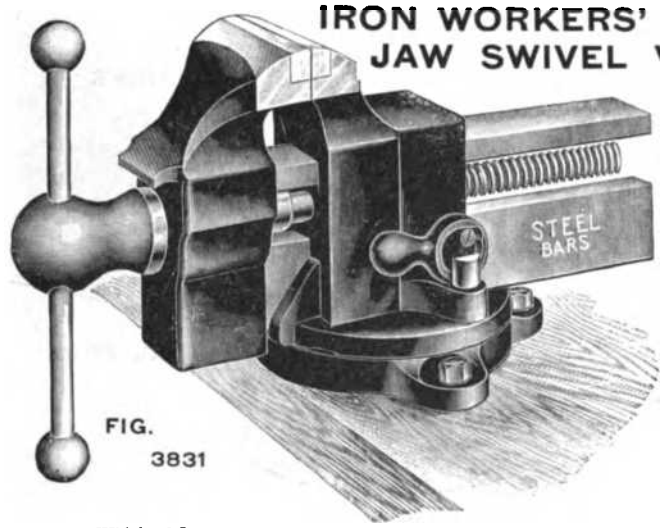


FIG. 3831

Nos.	Width of Jaw, Inches.	Opens, Inches.	Weight, Lbs.	Each.
34	3	4	26	$7 50
36	3½	5	36	9 00
38	4	6	56	11 50
40	4½	7	68	13 50
42	5	8	93	17 50
44	5½	9	120	24 00
46	6½	10	150	32 00
48	7½	12	214	40 00

IRON WORKERS' QUICK ACTING VISE

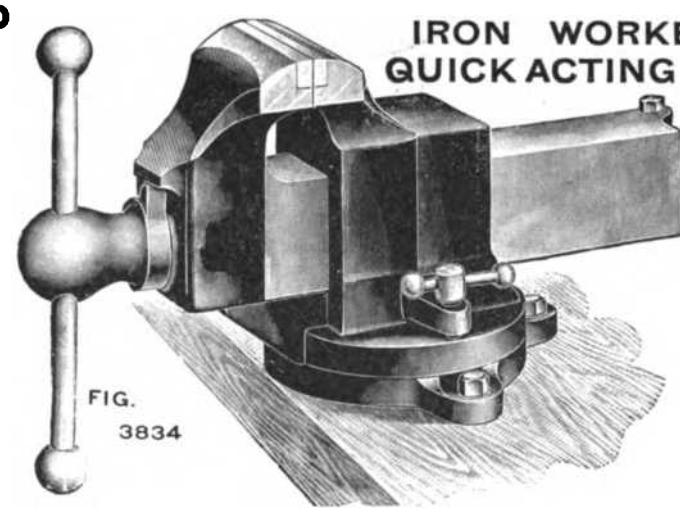


FIG. 3834

SWIVEL BOTTOM

Nos.	Width of Jaw, Inches.	Opens. Inches.	Weight, Lbs.	Each.
120	3½	5	36	$10 00
122	4	6	53	12 50
124	4½	7	68	15 00
126	5	8	87	21 00
128	5½	9	122	26 00
130	6½	10	150	34 00

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SWIVEL BENCH VISES

SIMPSON QUICK ADJUSTING SWIVEL VISE

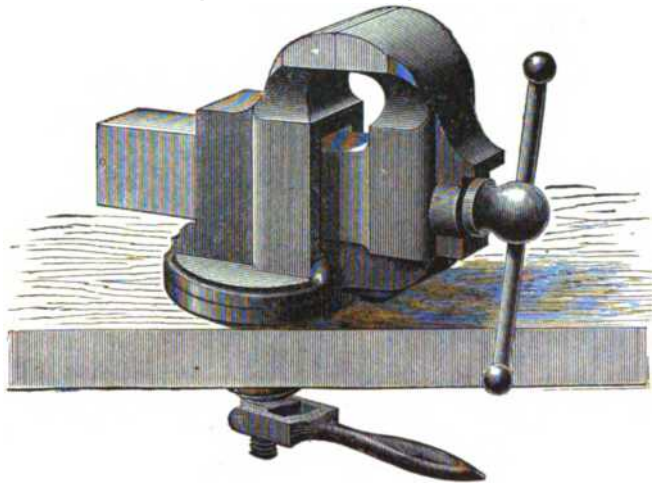


FIG. 3836

PRICES

Nos.	Width of Jaws, Inches.	Jaws open, Inches.	Weight, Pounds.	Each.
11	2½	2¾	9½	$5 00
12	3	3¼	17½	7 00
13	3½	4	28	8 75
14	4	5	44	10 50
15	4½	5¾	59	12 50
16	5	6¼	78	16 00

HEAVY RAILWAY SWIVEL VISE

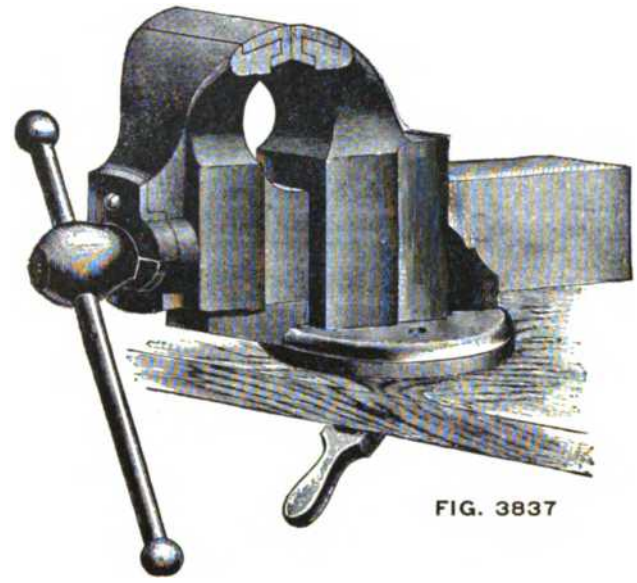


FIG. 3837

PRICE

No. 260. Length of jaws, 8⅛ inches; weight, 250 pounds; opens, 12½ inches. Each, $55 00.

The steel faces of these vises are milled and fitted to the jaws and are renewable at a trifling cost.

PARALLEL SWIVEL VISE

ROUND JAWS

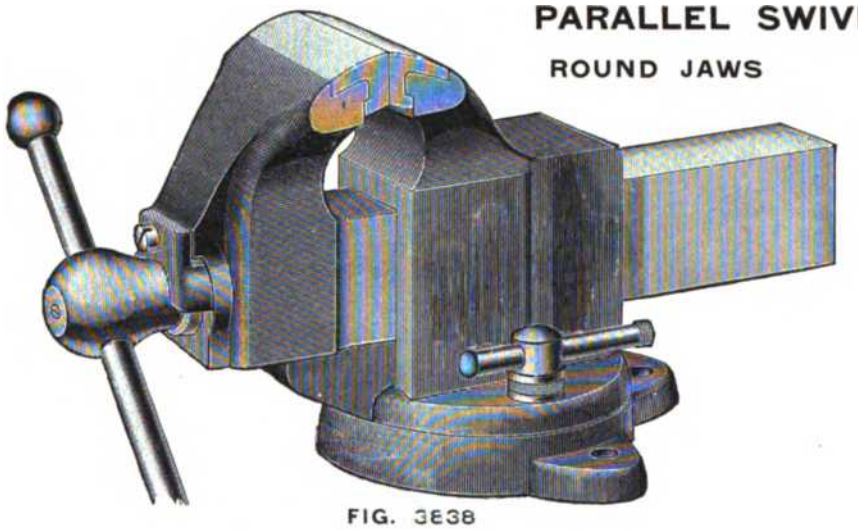


FIG. 3838

This vise can be set up with tightening stud for swivel either right or left hand.

The steel faces of these vises are milled and fitted to the jaws and are renewable at a trifling cost.

PRICES

Nos.	Length of Jaws, Inches.	Jaws Open, Inches.	Weight, Pounds.	Each.
21x	3¼	4¼	32	$7 00
22x	3¾	5½	50	8 75
23x	4¼	6½	65	11 00
24x	4¾	8¼	87	14 50
25x	5½	9½	130	20 50
26x	6¼	10½	160	30 00

VULCAN PARALLEL SWIVEL VISE

Solid steel faced jaws. Extra strong slide and screw.

PRICES, FIG. 3839

Nos.	Length of Jaws, Inches.	Jaws Open, Inches.	Weight, Pounds.	Each.
AA	3¼	4½	28	$7 50
BB	3⅝	5	37	8 75
CC	4⅛	5½	52½	10 50
DD	4⅝	6½	66	12 50
EE	5	7	86	16 00
FF	5½	8½	115	22 00
GG	6	9½	156	30 00

ROUND JAWS

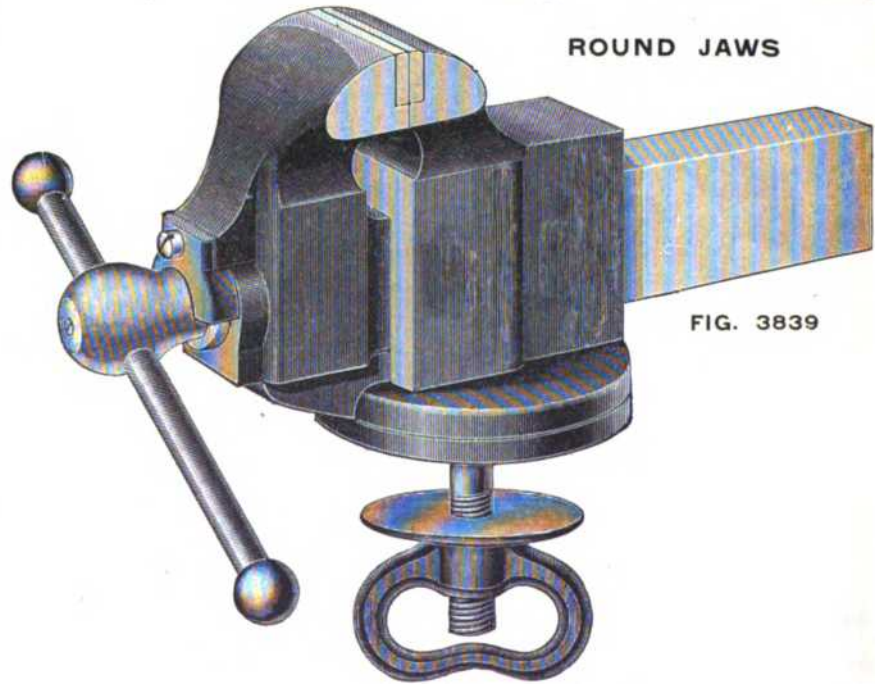


FIG. 3839

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SWIVEL BENCH VISES

MACHINISTS' BULL DOG SOLID JAW VISE

PRICES, FIG. 3840

No. 90	3¼	inch	jaws.	Opens	4	inches.	Weight	28	pounds,	each,	$7 50
" 91	3⅝	"	"	"	5	"	"	36	"	"	8 75
" 92	4⅛	"	"	"	5½	"	"	52	"	"	10 50
" 93	4⅝	"	"	"	6¼	"	"	64	"	"	12 50
" 94	5	"	"	"	7	"	"	85	"	"	16 00
" 95	5½	"	"	"	8½	"	"	115	"	"	22 00
" 96	6	"	"	"	9	"	"	155	"	"	30 00

BARRETT'S STEEL BAR SWIVEL VISE

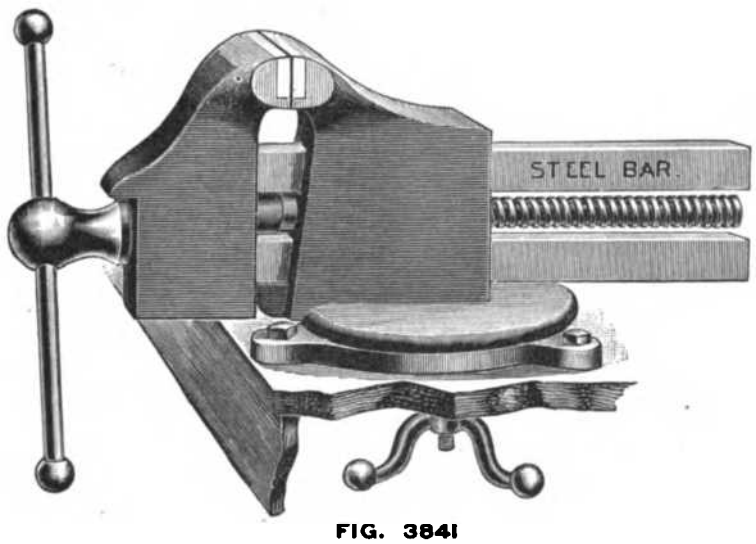


FIG. 3841

PRICES

Nos	Width of Jaws, Inches.	Jaws Open, Inches.	Weight, Pounds.	Each.
53	3¾	5¼	44½	$8 50
54	4¼	6	54½	11 00
56	4¾	7	81	12 50
57	5	8	95	17 75
58	5¼	8	100	19 00
59	6	9½	118½	27 00
62	6¼	9½	120	30 00
66	8			55 00

MECHANICS' SWIVEL BASE VISE

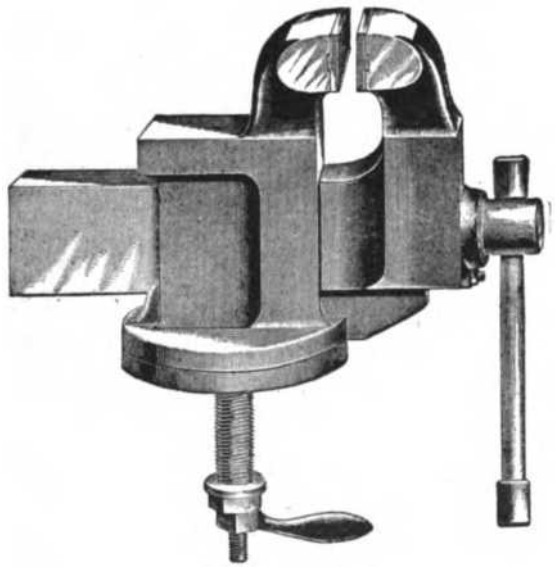


FIG. 3843

PRICES

Width of Jaws, Inches.	Opens, Inches.	Weight, Pounds.	Each.	Width of Jaws, Inches.	Opens, Inches.	Weight, Pounds.	Each.
3	4½	48	$8 00	4	7	62	$12 00
3½	4½	56	10 00	4½	7	63	14 00

SWIVEL BOTTOM

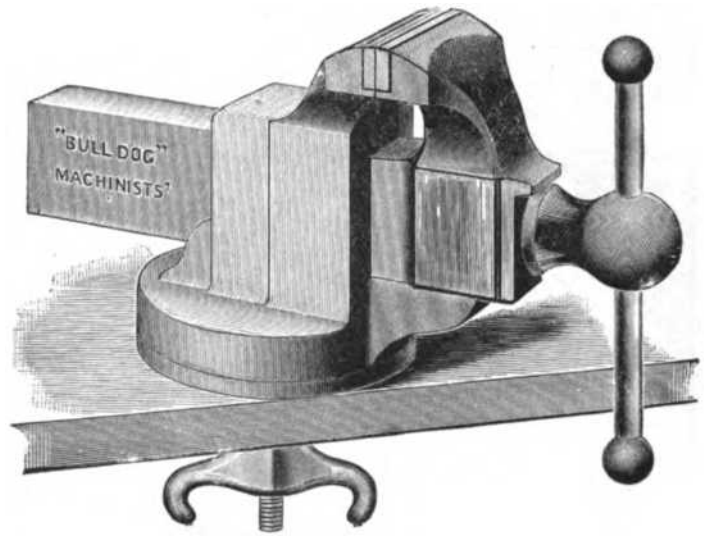


FIG. 3840

BARRETT'S SOLID JAW SWIVEL VISE

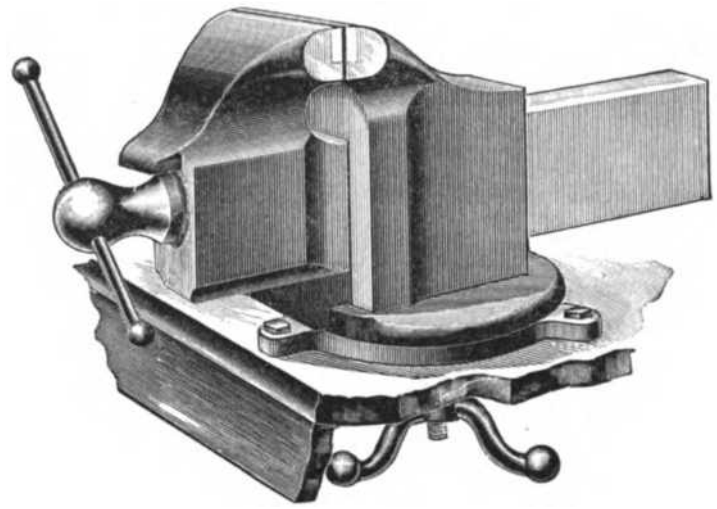


FIG. 3842

PRICES

Nos.	Width Jaws, Inches.	Jaws Open, Inches.	Weight, Pounds.	Each.
31½	3¾	4½	40	$8 50
32½	4¼	4½	53	11 00
33½	4¾	5	66	12 50
34½	5	6¼	85	17 75
36½	5¼	8½	90	19 00
37½	6	8½	145	27 00
38½	6¼	9½	150	30 00

PARALLEL SWIVEL BENCH VISE

PRICES, FIG. 3844

Nos.	Length of Jaws, Inches.	Weight, Pounds.	Each.
00	2	7¾	$5 25
0	3	31½	7 50
1	3½	38½	8 75
2	4	49¼	10 50
3	4½	61	12 50
4	5	115½	16 00
5	6	137	30 00
6	7	200	33 00

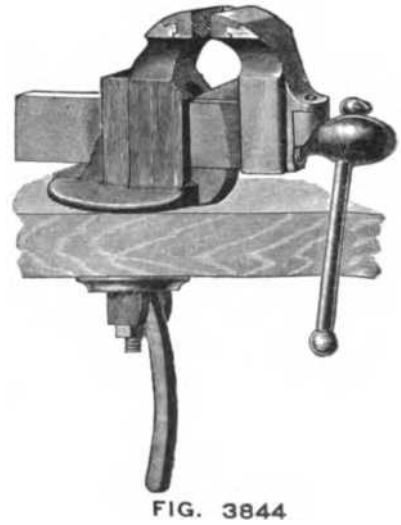


FIG. 3844

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SWIVEL BENCH VISES

WROUGHT BAR PARALLEL SWIVEL VISE

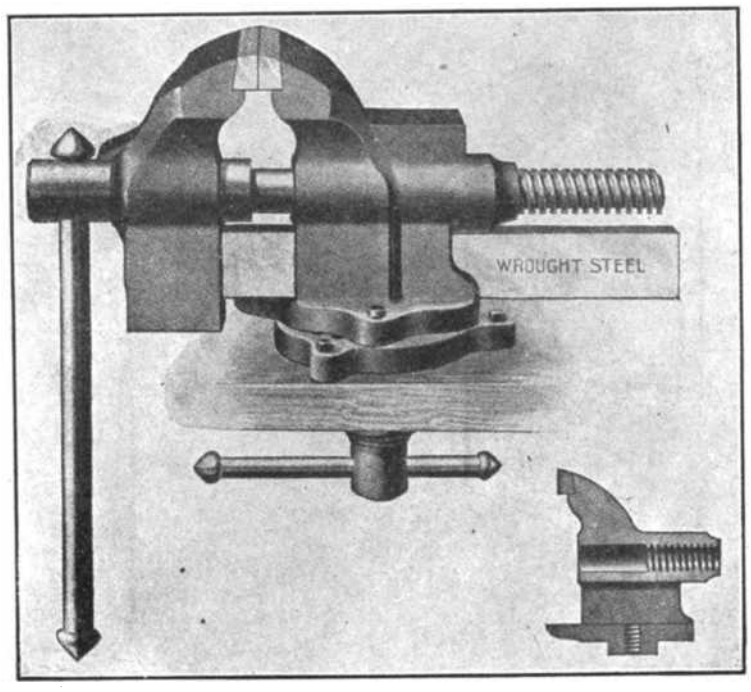


FIG. 3845

PRICES, FIG. 3845

Width of Jaw, Inches.	Opens, Inches.	Weight, Pounds.	Sizes of Wrought Bar, Inches.	Diam. Screw, In.	Each.
4	8	65	1⅛x2¾	1⅛	$11
5	9	80	1⅛x2⅛	1⅛	13
6½	10	125	1⅝x2⅝	1⅜	17
8	12	165	1½x3	1⅝	22

PARALLEL SWIVEL BENCH VISE

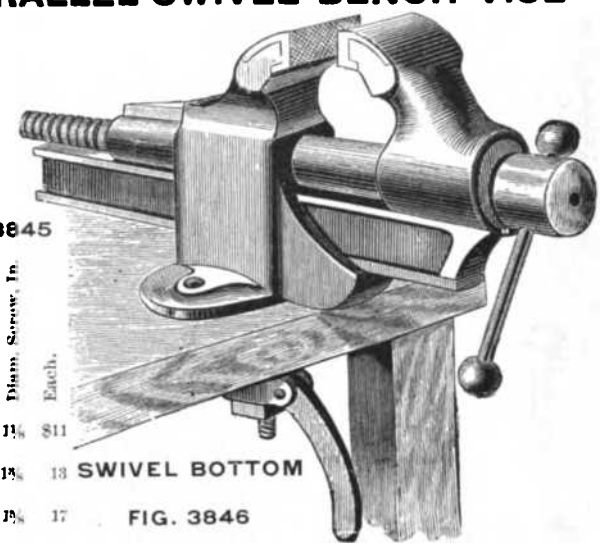


FIG. 3846

PRICES

Nos.	Jaw, Inches.	Weight, Pounds.	Each.
20	2	8	$4 50
25	2½	13	5 75
30	3	24	7 00
35	3½	34	8 25
40	4	50	10 75
45	4½	63	14 00
50	5	96	19 25
55	5½	118½	23 50

OFFSET JAW SWIVEL VISE

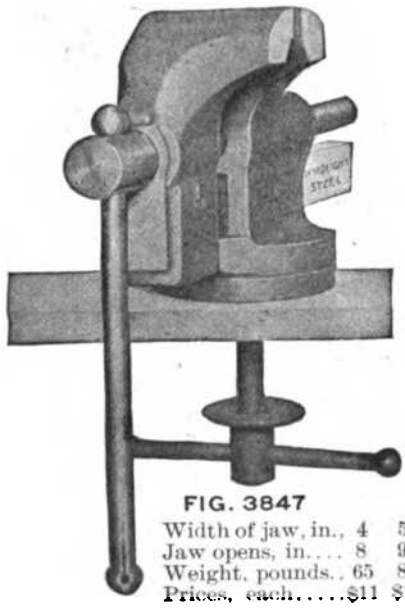


FIG. 3847

Width of jaw, in.,	4	5	6½	8
Jaw opens, in....	8	9	10	12
Weight, pounds..	65	80	125	165
Prices, each.....	$11	$13	$17	$22

OFFSET JAW VISE

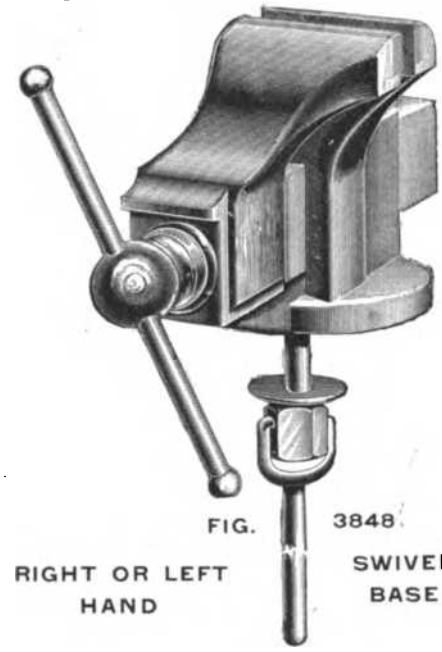


FIG. 3848

RIGHT OR LEFT HAND

SWIVEL BASE

Left H'd Nos.	Right H'd Nos.	Width Jaw.	Opens.	Weight.	Prices.
..	72	2 in.	3 in.	6 lbs.	$4 30
73	76	4½ "	7 "	65 "	12 50
75	78	6 "	10 "	145 "	28 00

OFFSET JAW VISE

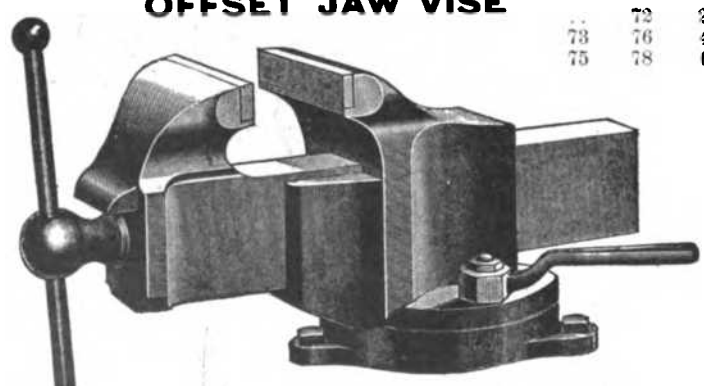


FIG. 3850, SIDE VIEW

When ordering, specify right or left hand offset. Cut represents the right hand. Specially adapted for drill press work, and equally good for special or regular bench work.

This vise has an improved swivel bottom and side brace to bar, which makes it strong and rigid when strain is put to vise.

OFFSET JAW VISE

SWIVEL BOTTOM

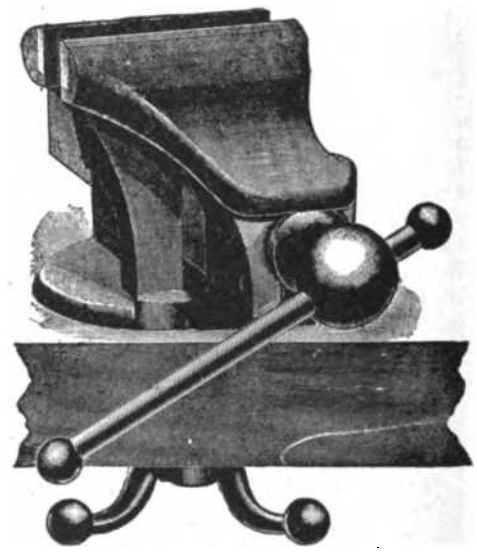


FIG. 3849

Specially adapted for drill press and planer work. Also equally good for special or regular bench work.

Nos.	Width Jaw, Inches.	Jaw Offsets, Inches.	Jaw Opens, Inches.	Prices.
81	6	3¾	7	$24 00
82	6½	4¼	7½	31 00
83	7½	5	10½	42 00

PRICES, FIG. 3850

Nos.	Width Jaw, Inches.	Jaw Offsets, Inches.	Jaw Opens, Inches.	Each.
84	6	3¾	7	$28 00
85	6½	4¼	7½	35 00
86	7½	5	10½	45 00

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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SWIVEL AND SELF ADJUSTING JAW VISES

VICTOR SWIVEL FILERS' VISE

With swivel jaw giving instant adjustment to wedge shaped pieces.

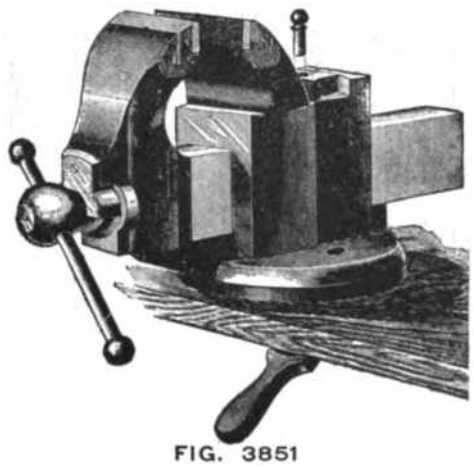


FIG. 3851

No. 278—Length of jaws, 4¼ in.; open, 5½ in.; weight, 48 lbs.; each, $10 00.

VICTOR STATIONARY FILERS' VISE

With swivel jaw giving instant adjustment to wedge shaped pieces.

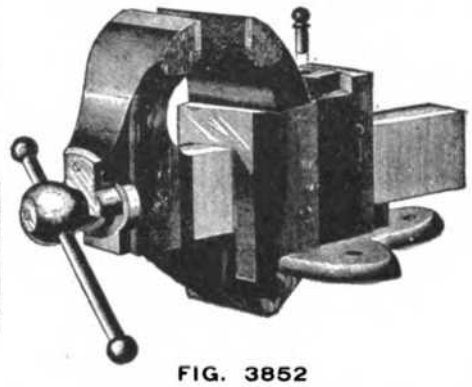


FIG. 3852

No. 378—Length of jaws, 4¼ in.; open, 5½ in.; weight, 42 lbs.; each, $8 00.

FILERS' OR FINISHERS' VISES

SELF ADJUSTING JAW, STATIONARY BOTTOM

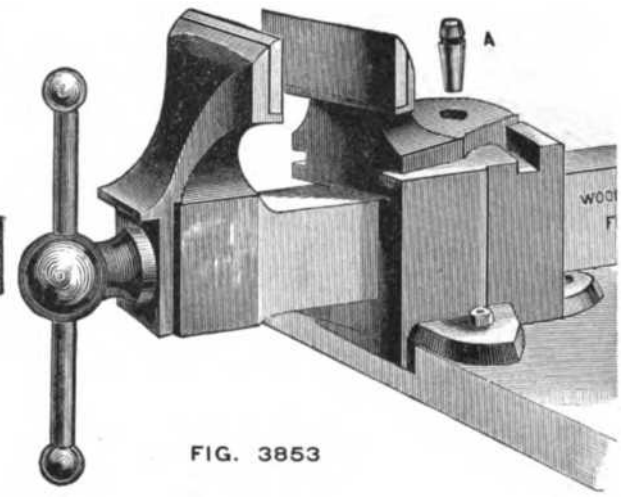


FIG. 3853

No. 42—Length of jaws, 4¼ in.; open, 5¼ in.; weight, 42 lbs.; each, $8 00.

SWIVEL VISE

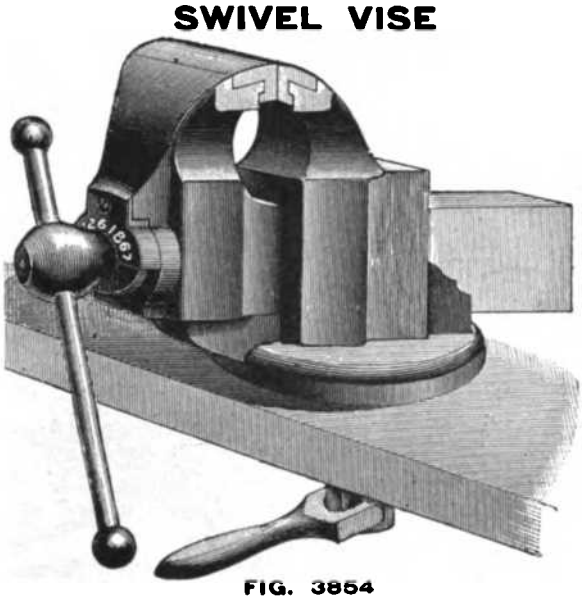


FIG. 3854

PRICES, FIG. 3854

Nos.	Length of Jaws, In.	Weight, Lbs.	Each.
2000	2¼	8½	$4 00
2100	3⅛	23	6 25
2200	3⅝	35	8 00
2300	4⅛	48	10 00
2400	4¾	63½	13 25

The steel faces of these vises are milled and fitted to the jaws and are renewable at a trifling cost.

SELF ADJUSTING JAW, SWIVEL BOTTOM

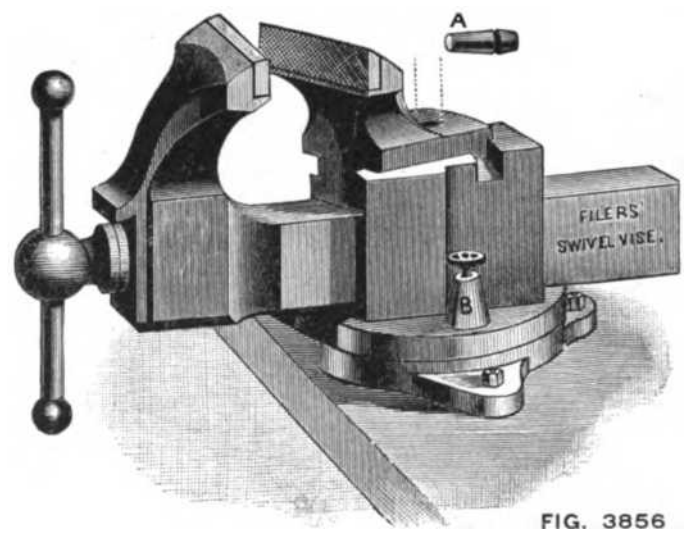


FIG. 3856

No. 47—Length of jaws, 4¼ in.; open, 5¼ in.; weight, 47 lbs.; each, $10 00

MACHINISTS' SELF ADJUSTING JAW VISES

STATIONARY BOTTOM

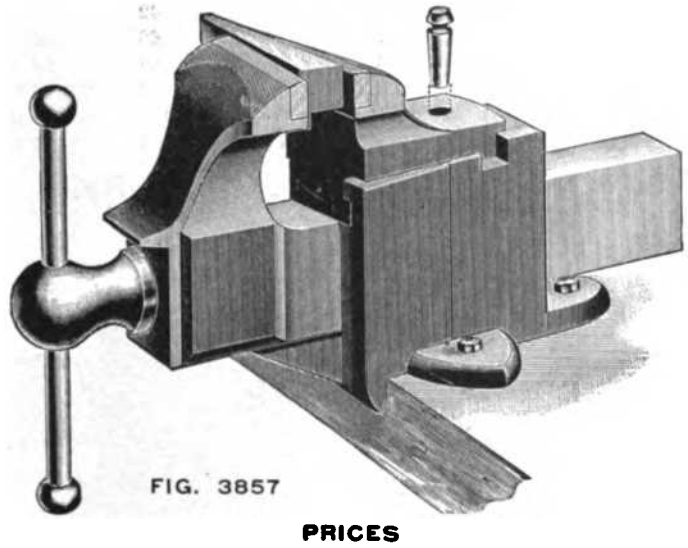


FIG. 3857

PRICES

Nos.	Length of Jaws, Inches.	Open, Inches.	Weight, Lbs.	Each.
1	2⅝	3½	13½	$5 50
2	3½	4¾	28	7 00
2½	4	5¼	41	9 00
3	4½	6	54	10 50
4	5¼	8	96	17 00
5	6	9	146	24 00
6	7	11	184	30 00

SWIVEL BOTTOM

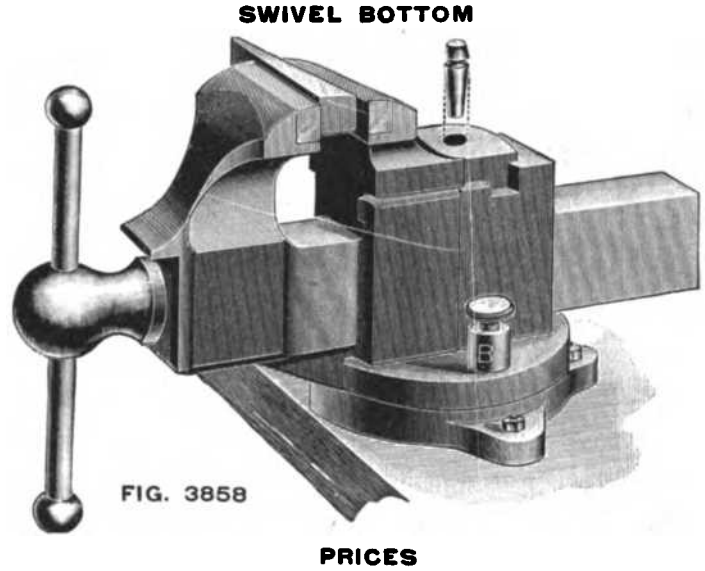


FIG. 3858

PRICES

Nos.	Length of Jaws, Inches.	Open, Inches.	Weight, Lbs.	Each.
18	2⅝	3½	17	$6 75
19	3½	4¾	32	8 50
19½	4	5¼	46	10 50
20	4½	6	65	12 50
21	5¼	8	109	19 00
22	6	9	168	27 00
23	7	11	207	35 00

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SWIVEL AND SELF ADJUSTING JAW VISES
ADJUSTABLE JAW MACHINISTS' VISES

STATIONARY BOTTOM

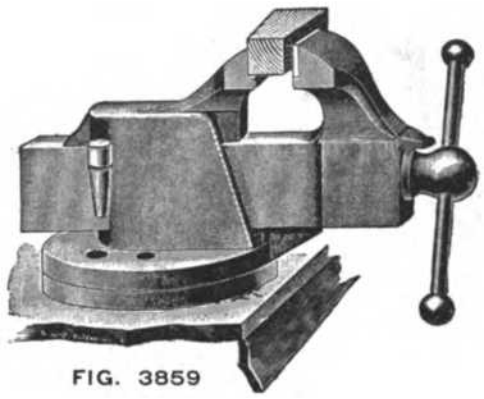


FIG. 3859

Nos.	Width of Jaws, Inches.	Weight, Pounds.	Jaws Open, Inches.	Each.
5	3	20	4	$6 25
15	3½	35	5	7 00
25	4⅛	55	6	9 00
35	4⅝	65	7	10 50
45	5	94	8	15 50
55	5¼	97	8½	17 00
65	6	150	9	24 00
75	6¼	160	9½	27 00

STATIONARY BOTTOM

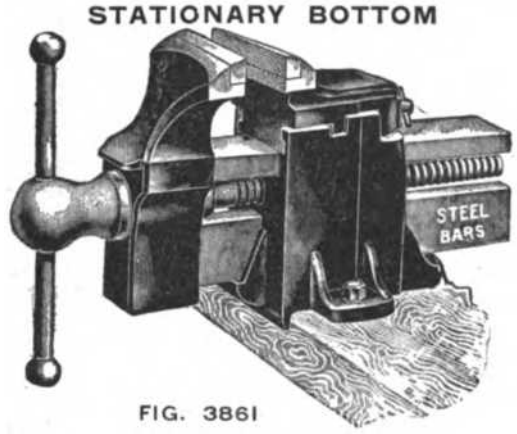


FIG. 3861

Nos.	Width of Jaws, Inches.	Jaws Open, Inches.	Weight, Pounds.	Each.
3	2½	3½	18	$5 50
5	3	4	25	6 25
7	3½	5	33	7 00
9	4	6	54	9 00
11	4½	7	70	10 50
13	5	8	105	16 00
15	5½	9	125	18 00
17	6½	10	165	24 00
19	7½	12	198	30 00

SWIVEL BOTTOM

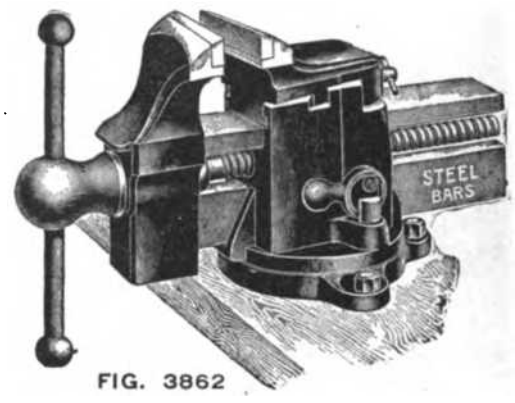


FIG. 3862

Nos.	Width of Jaws, Inches.	Jaws Open, Inches.	Weight, Pounds.	Each.
4	2½	3½	22	$6 75
6	3	4	29	7 50
8	3½	5	38	8 50
10	4	6	60	10 50
12	4½	7	78	12 50
14	5	8	120	18 00
16	5½	9	142	21 00
18	6½	10	185	27 00
20	7½	12	222	35 00

SWIVEL BOTTOM

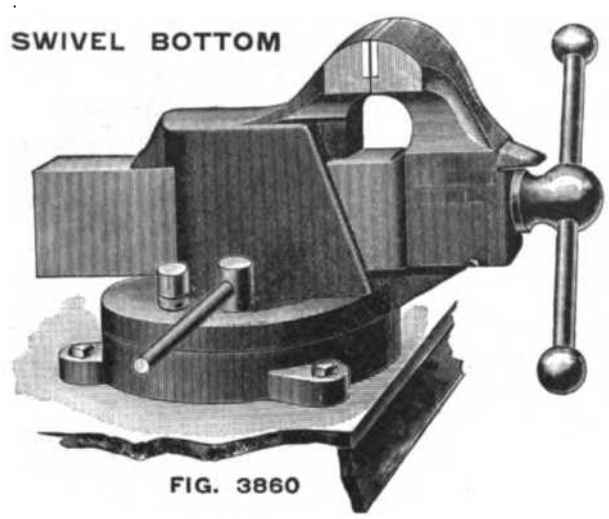


FIG. 3860

Nos.	Width of Jaws, Inches.	Weight, Pounds.	Jaws Open, Inches.	Each.
10	3	24	4	$7 75
20	3½	37½	5	8 50
30	4⅛	58½	6	11 00
40	4⅝	72	7	12 50
50	5	105	8	17 75
60	5¼	110	8½	19 00
70	6	165	9	27 00
80	6¼	175	9½	30 00

VICTOR SELF ADJUSTING JAW VISES
STATIONARY BOTTOM

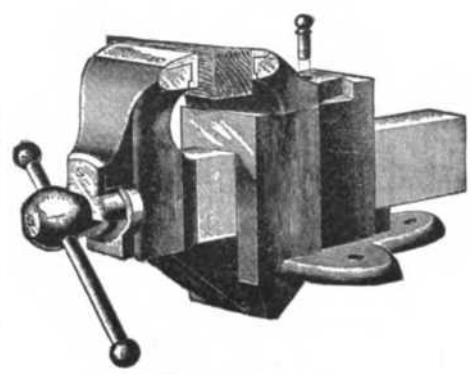


FIG. 3863

SWIVEL BOTTOM

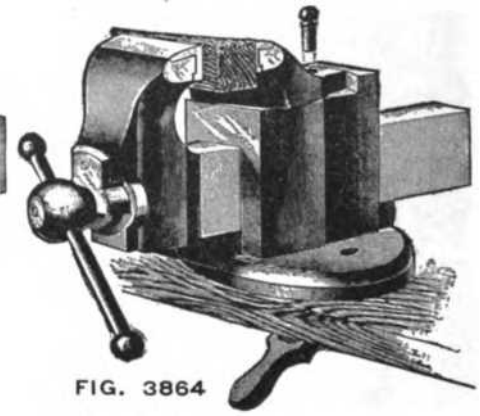


FIG. 3864

The steel faces of these vises are milled and fitted to the jaws and are renewable at a trifling cost.

Nos.	Length of Jaws, Inches.	Weight, Pounds.	Each.
370	3¼	25	$6 50
371	3⅝	39	7 00
372	4½	57	10 00
373	5	73	14 00
374	5½	98	17 00
375	6¼	150	24 00

Nos.	Length of Jaws, Inches.	Weight, Pounds.	Each.
270	3¼	30	$7 00
271	3⅝	42	8 50
272	4½	60	12 50
273	5	78	16 00
274	5½	110	19 00
275	6¼	165	27 00

VICTOR SELF ADJUSTING JAW VISES FOR EXTRA HEAVY WORK

STATIONARY BOTTOM

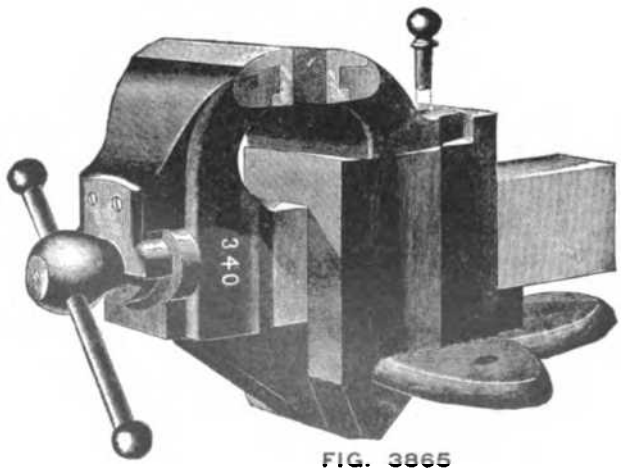


FIG. 3865

PRICES, FIG. 3865

No. 340. Length of jaws, 7½ inches; weight, 185 lbs.; jaws open, 12 inches; each... $30 00

The steel faces of these vises are milled and fitted to the jaws, and are renewable at a trifling cost.

PRICES, FIG. 3866

No. 240. Jaws, 7½ inches; weight, 200 lbs.; jaws open, 12 inches; each.....$35 00

The steel faces of these vises are milled and fitted to the jaws, and are renewable at a trifling cost.

SWIVEL BOTTOM

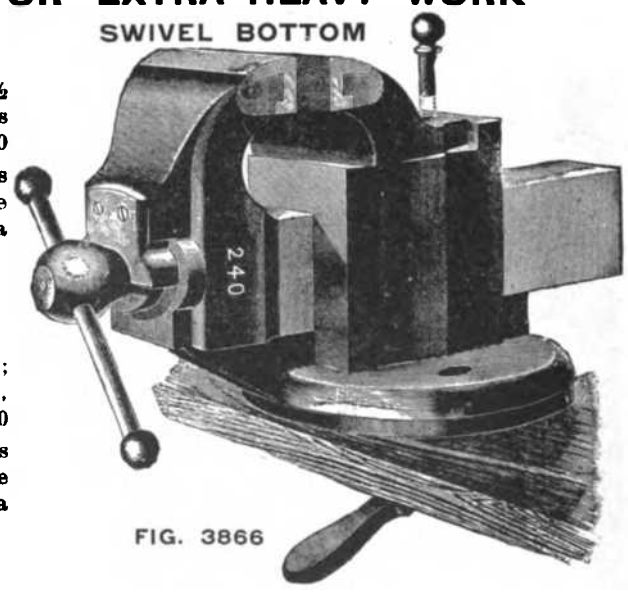


FIG. 3866

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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SWIVEL JAW COACHMAKERS' VISES

X. L. RAPID SOLID AND SWIVEL JAW VISES

SWIVEL BOTTOM



PRICES
FIG. 3868

Numbers	11½	12½
Width of jaw, inches	3½	4½
Jaw opens, in.	7	9½
Weight, lbs.	30	59
Each	$8	$11

COACHMAKER'S VISE



FIG. 3868

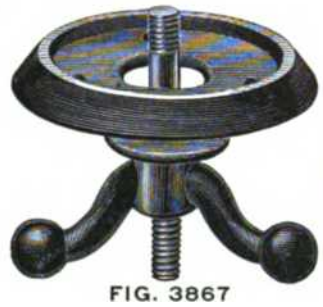


FIG. 3867

SWIVEL BASE, WITH SOLID JAW

PRICES, FIG. 3867

Nos.	Sizes, In.	Each.	Weight, Pounds.	Nos.	Sizes, In.	Each.	Weight, Pounds.
35	3	$8 75	41	65	4½	$14 00	73
45	3½	10 50	47	75	5	24 00	81
55	4	12 50	59	85	6	32 00	145

SWIVEL JAW AND BOTTOM COACHMAKER'S VISE



FIG. 3869

PRICES

Nos.	Width of Jaw, In.	Jaw Opens, In.	Weight, Lbs.	Each.
11	3½	7	34	$9 50
12	4½	9½	67	13 00

SWIVEL BASE, WITH SWIVEL JAW

PRICES, FIG. 3867—CONTINUED

Nos	Sizes, Inches.	Each.	Weight, Pounds.	Nos.	Sizes, Inches.	Each.	Weight, Pounds.
37	3	$10 25	43	67	4½	$17 25	75
47	3½	12 25	50	77	5	28 25	83
57	4	15 00	62	87	6	38 00	150

SIMPSON COACHMAKERS' QUICK ACTING VISES

SWIVEL JAW STATIONARY BOTTOM

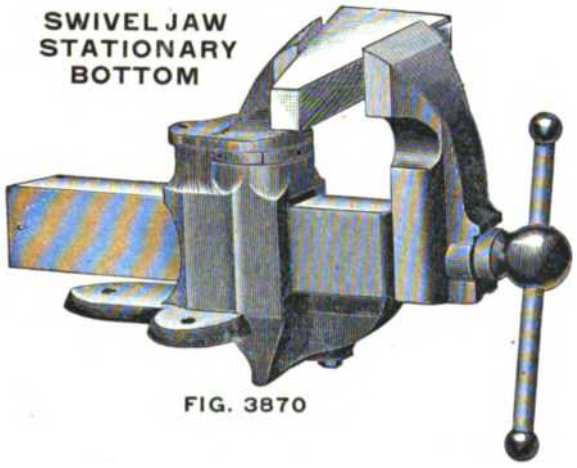


FIG. 3870

PRICE, FIG. 3870

No.	Width of Jaw, In.	Jaw Opens, In.	Weight, Lbs.	Each.
44	4	8½	43	$11.50

PRICE, FIG. 3871

No.	Width of Jaw, In.	Jaw Opens, In.	Weight, Lbs.	Each.
46	4	8½	52	$13.00

SWIVEL JAW SWIVEL BOTTOM

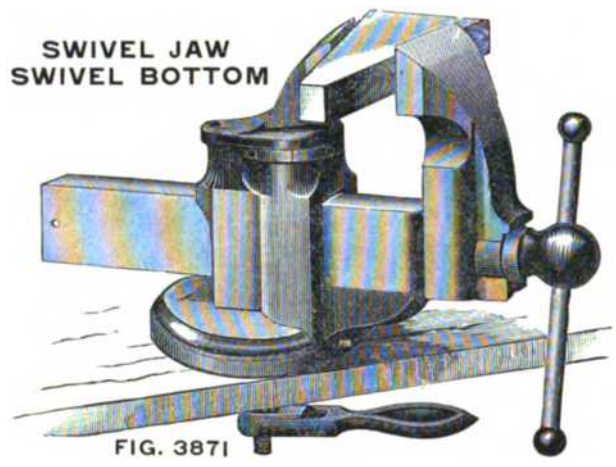


FIG. 3871

SWIVEL COACHMAKER'S VISE WITH SWIVEL JAW

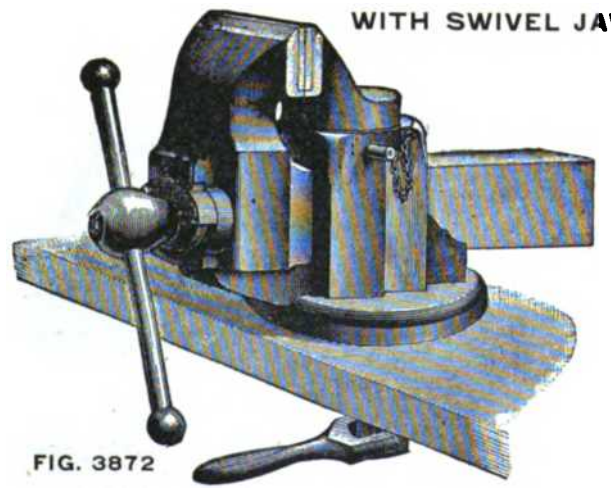


FIG. 3872

No. 41. 4½ inch jaw, opens 9 inches. Each.....$14 00

ADJUSTABLE JAW COACHMAKER'S VISE WITH STATIONARY BOTTOM

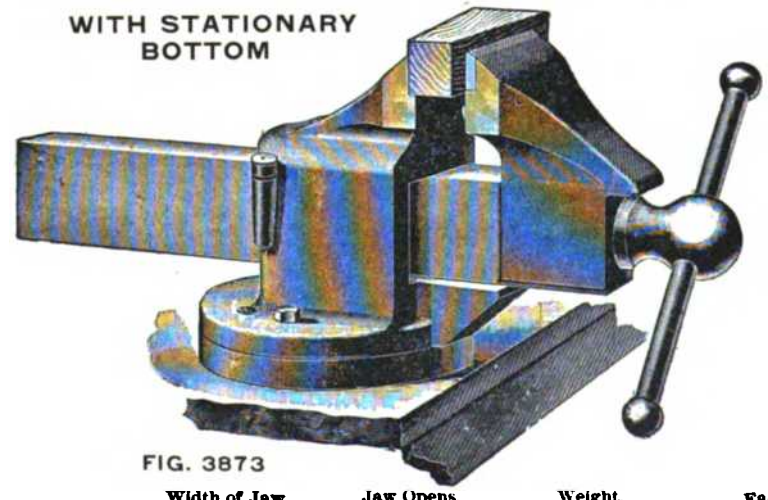


FIG. 3873

No.	Width of Jaw.	Jaw Opens.	Weight.	Each.
114.	4⅝ inches.	9½ inches.	65 pounds.	$11 00

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COACHMAKERS' VISES
STATIONARY BOTTOM

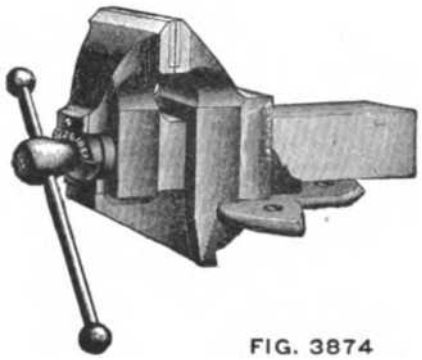


FIG. 3874

No.	Length of jaw.	Opens.	Each.
40½	4½ inches	9½ inches	$10 25

SWIVEL BOTTOM

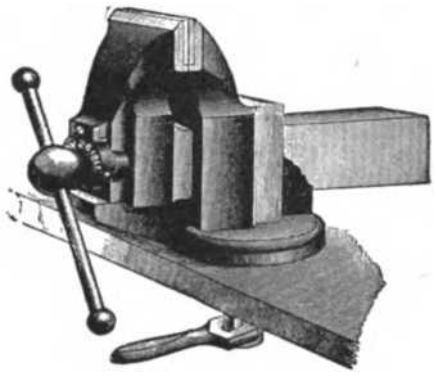


FIG. 3875

No.	Length of jaw.	Opens.	Each.
46½	4½ inches	9½ inches	$12 50

ALL STEEL COACHMAKERS' VISES
WITH COMBINED SWIVEL AND STATIONARY BASE. FIXED JAW

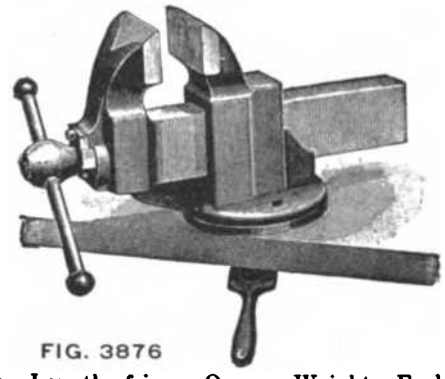


FIG. 3876

No.	Length of jaw.	Opens.	Weight.	Each.
80	4½ inches	9 inches	58 lbs.	$12 50

SWIVEL JAW FOR GRIPPING TAPERING PIECES

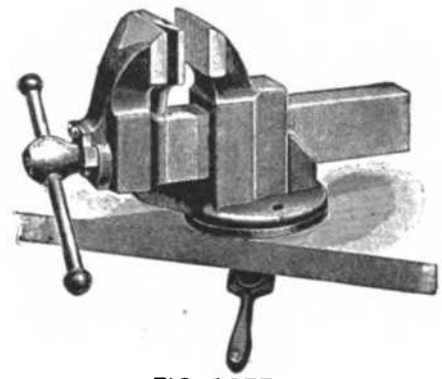


FIG. 3877

No.	Length of jaw.	Opens.	Weight.	Each.
85	4½ inches	9 inches	60 lbs.	$14 00

SWIVEL BASE COACHMAKERS' VISES

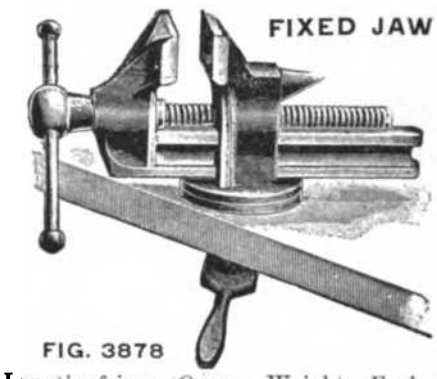


FIG. 3878

No.	Length of jaw.	Opens.	Weight.	Each.
650	4 inches	8 inches	30 lbs.	$7 00

SWIVEL JAW FOR GRIPPING TAPERING PIECES

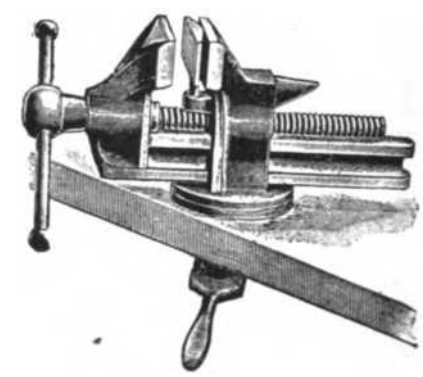


FIG. 3879

No.	Length of jaw.	Opens.	Weight.	Each.
700	4 inches	8 inches	31 lbs.	$8 00

SIMPSON QUICK ACTING COACHMAKERS' VISES

STATIONARY BOTTOM

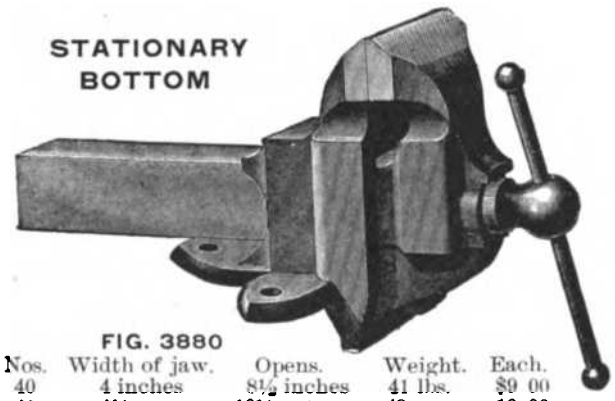


FIG. 3880

Nos.	Width of jaw.	Opens.	Weight.	Each.
40	4 inches	8½ inches	41 lbs.	$9 00
41	4½ "	10½ "	49 "	10 00

SWIVEL BOTTOM

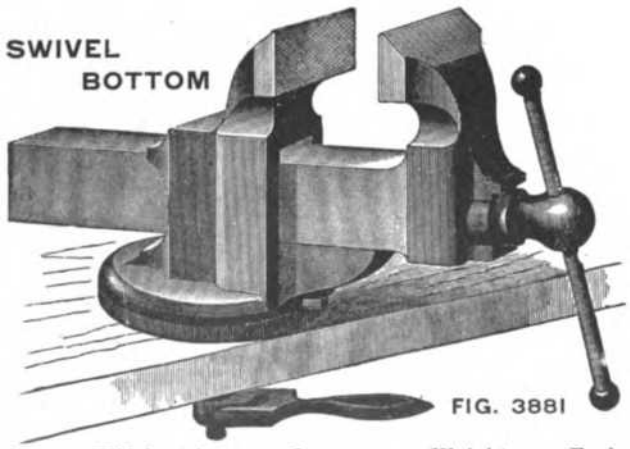


FIG. 3881

Nos.	Width of jaw.	Opens.	Weight.	Each.
42	4 inches	8½ inches	48 lbs.	$11 00
43	4½ "	10½ "	58 "	12 00

LIGHTNING GRIP COACHMAKERS' VISES

STEEL JAWS, SWIVEL OR STATIONARY BASE

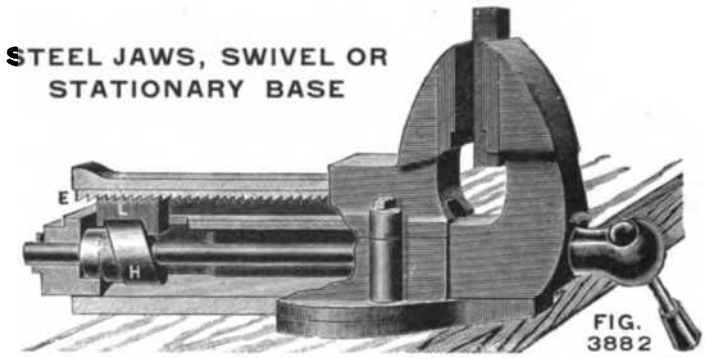


FIG. 3882

No. 18. 4½ inch jaw, opens 10 inches, each.....$10 00

RAPID TRANSIT QUICK ACTING COACHMAKERS' VISES

SWIVEL BOTTOM

No. 70. 4 inch jaws.
Opens 9 inches.
Each, $10 00.

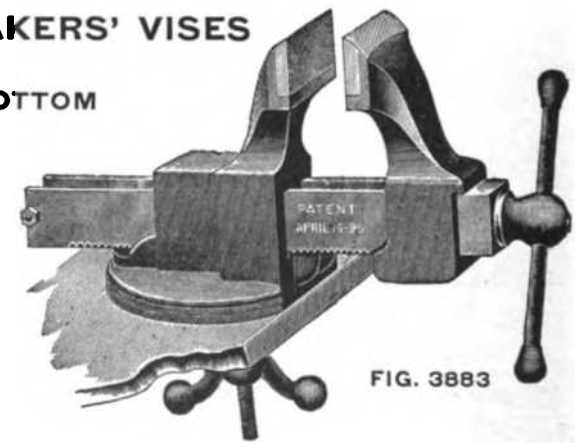


FIG. 3883

MANNING, MAXWELL & MOORE, 85, 87 AND 89 LIBERTY STREET, NEW YORK

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COACHMAKERS' VISES

COACHMAKERS' RAPID TRANSIT VISE

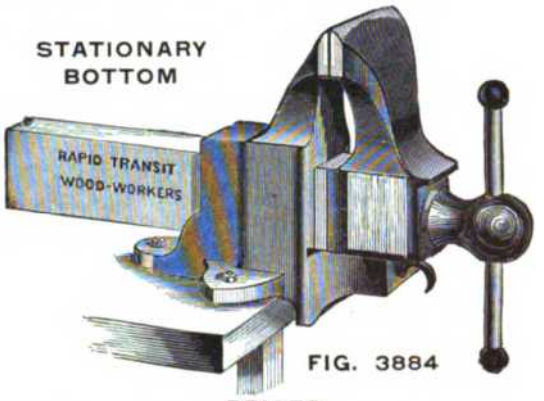


FIG. 3884

PRICES

No. 76. 4¼ inch jaws. Opens 9 inches. Weight, 55 pounds.... $11 50
Swivel bottom attachment for above..... 1 75

SHEPARD COACHMAKERS' SOLID JAW VISE

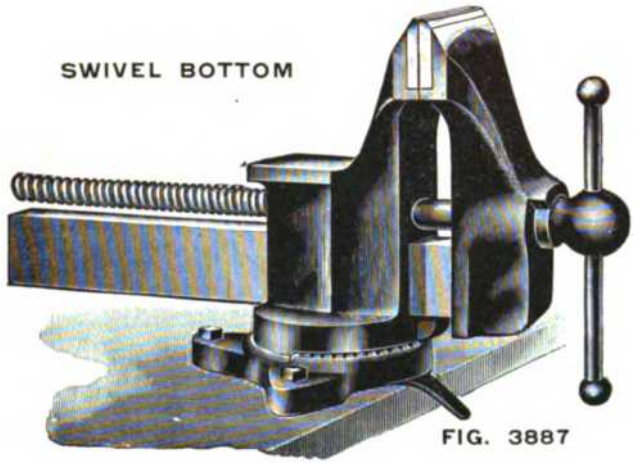
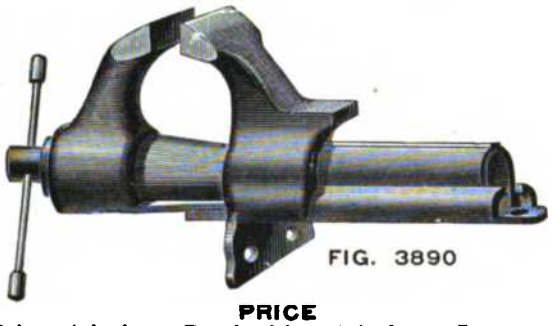


FIG. 3887

PRICES

No. 169. 3½ inch jaws. Opens 7 inches. Weight, 38 pounds.... $6 00
No. 69. 4½ inch jaws. Opens 9 inches. Weight, 46 pounds.... 7 25

OVAL SLIDE COACH VISE


FIG. 3890

PRICE

Width of jaw, 4 inches. Depth of jaw, 2 inches. Jaws open, 9 inches. Depth from screw cover to top of jaw, 5½ inches. Weight, 43 pounds..... $8 00

SHEPARD COACHMAKERS' SOLID JAW VISE

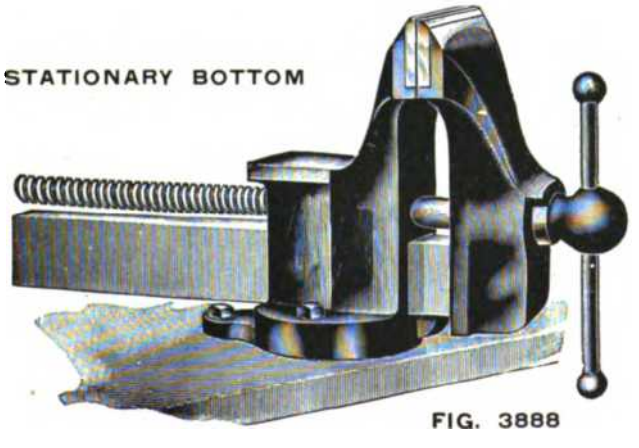


FIG. 3888

PRICES, FIG. 3888

No. 168. 3½ inch jaws. Opens 7 inches. Weight, 33 pounds. $5 25
No. 68. 4½ inch jaws. Opens 9 inches. Weight, 42 pounds 6 25

PRICE, FIG. 3889

No. 1. Length of jaw, 4 inches. Weight, 45½ pounds..... $12 50

BULL DOG COACHMAKERS' SOLID JAW VISE

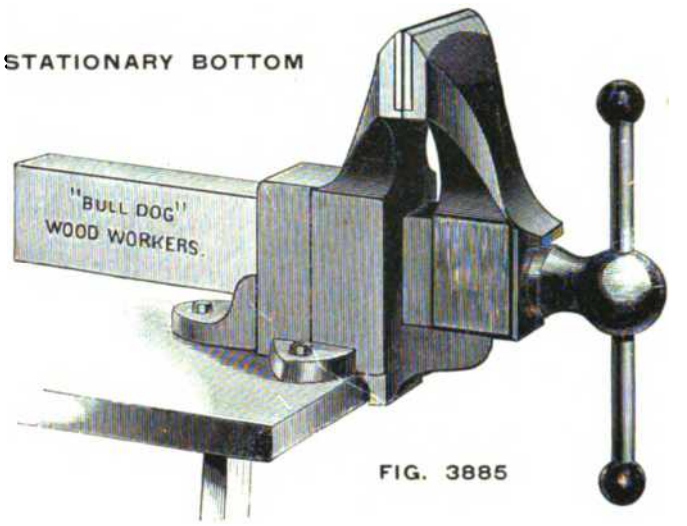


FIG. 3885

PRICE

No. 59. 4¼ inch jaws. Opens 9 inches. Weight, 48 pounds... $9 50

BULL DOG COACHMAKERS' SOLID JAW VISE

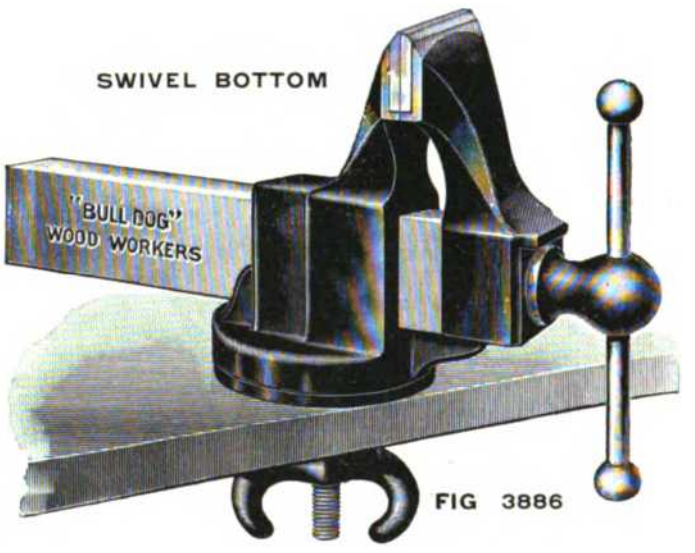
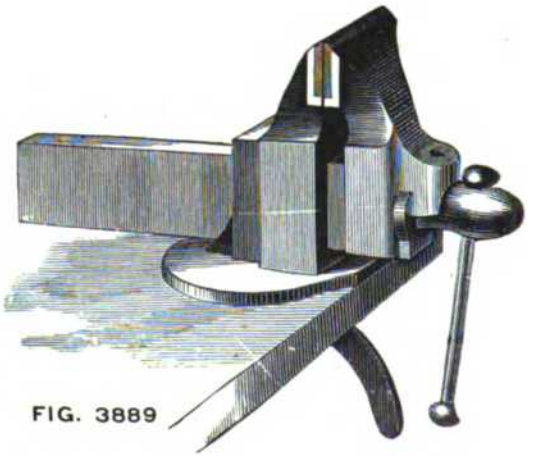


FIG 3886

PRICE

No. 99. 4¼ inch jaws. Opens 9 inches. Weight, 58 pounds.. $11 50

COACHMAKERS' SWIVEL VISE


FIG. 3889

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COACH MAKERS' AND WOOD WORKERS' VISES

OFF SET JAW COACH MAKER'S VISE

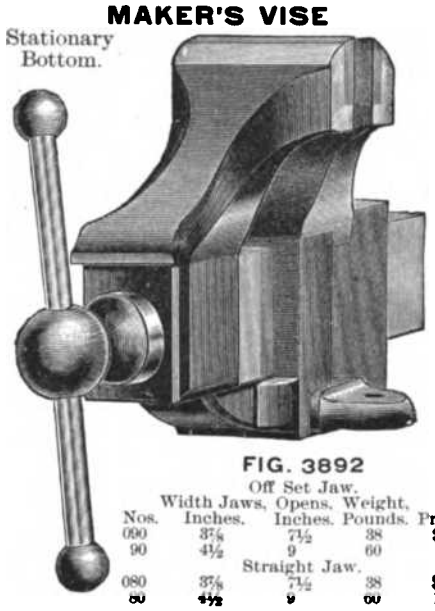


FIG. 3892

Nos.	Width Jaws, Inches.	Opens, Inches.	Weight, Pounds.	Prices.
Off Set Jaw.				
090	3⅞	7½	38	$9 50
90	4½	9	60	10 50
Straight Jaw.				
080	3⅞	7½	38	$9 00
80	4½	9	60	10 00

OFF SET JAW WOOD WORKER'S VISE

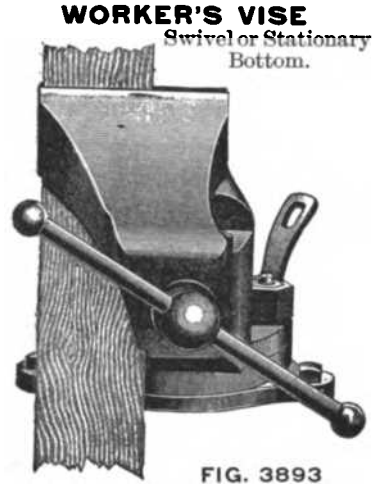


FIG. 3893

Nos.	Width Jaws. Inches.	Jaws Open, Inches.	Jaws Off Set, Inches.	Prices.
Swivel Bottom.				
87	5⅝	9¼	3⅝	$26 00
Stationary Bottom.				
88	5⅝	9¼	3⅝	23 00

ADJUSTABLE JAW WOOD WORKER'S VISE

With Swivel Bottom.

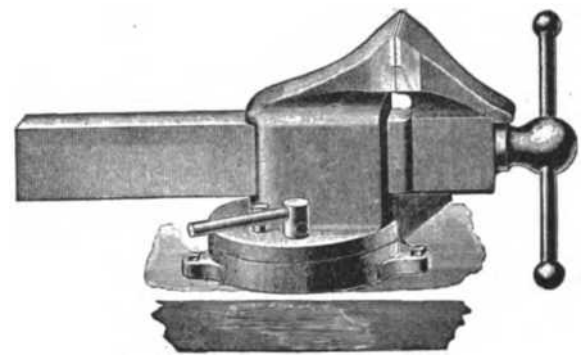


FIG. 3894

No.	Width Jaws, Inches.	Jaws Open, Inches.	Weight, Pounds.	Price.
118	4⅝	9½	70	$13 00

VICTOR WOOD WORKERS' VISES WITH SWIVEL BACK JAWS

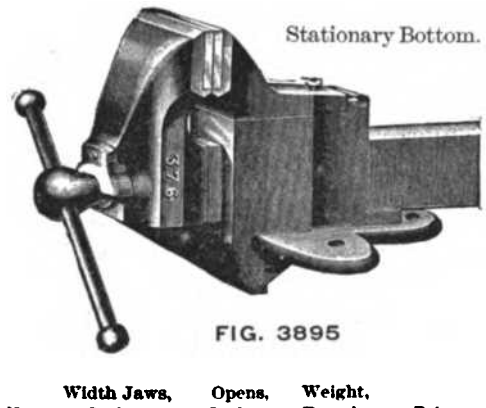


FIG. 3895

Nos.	Width Jaws, Inches.	Opens, Inches.	Weight, Pounds.	Prices.
376	4	7½	35	$8 00
377	4½	9½	59	11 00

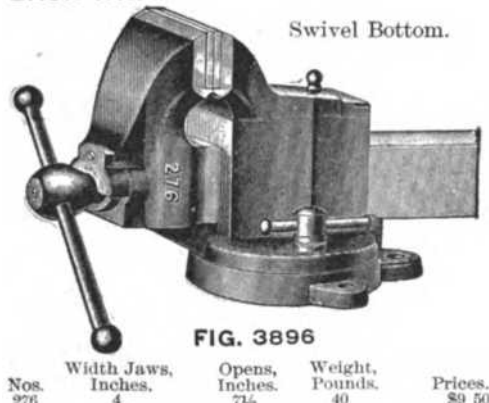


FIG. 3896

Nos.	Width Jaws, Inches.	Opens, Inches.	Weight, Pounds.	Prices.
276	4	7½	40	$9 50
277	4½	9½	65	13 00

These vises have self adjusting back jaws which adapt themselves automatically to hold irregularly shaped articles.

WOOD WORKERS' SELF ADJUSTING JAW VISES

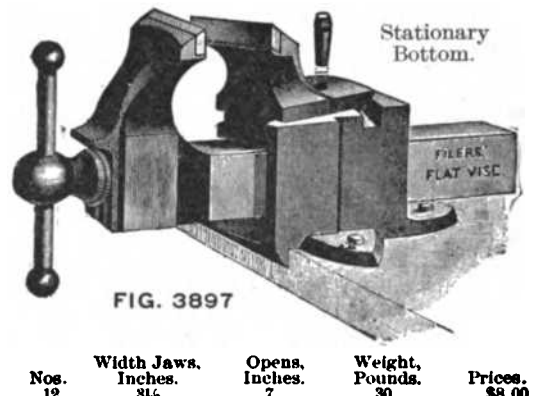


FIG. 3897

Nos.	Width Jaws, Inches.	Opens, Inches.	Weight, Pounds.	Prices.
12	3½	7	30	$8 00
10	4½	9½	59	11 00

SELF ADJUSTING JAW WOOD WORKERS' VISES

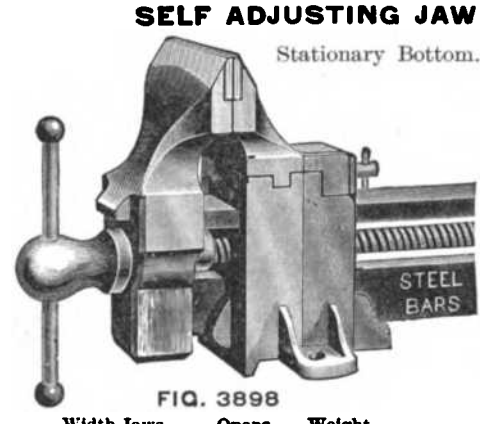


FIG. 3898

No.	Width Jaws, Inches.	Opens, Inches.	Weight, Pounds.	Price.
26	4½	9	62	$10 00

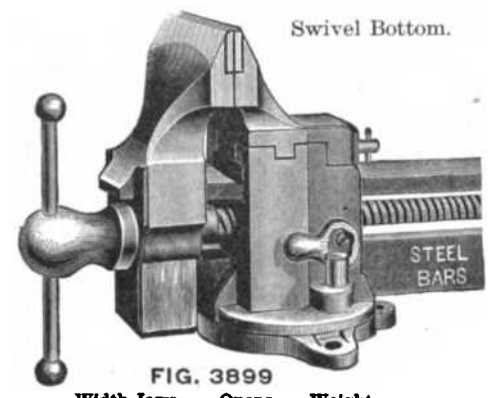


FIG. 3899

No.	Width Jaws, Inches.	Opens, Inches.	Weight, Pounds.	Price.
26	4½	9	67	$12 00

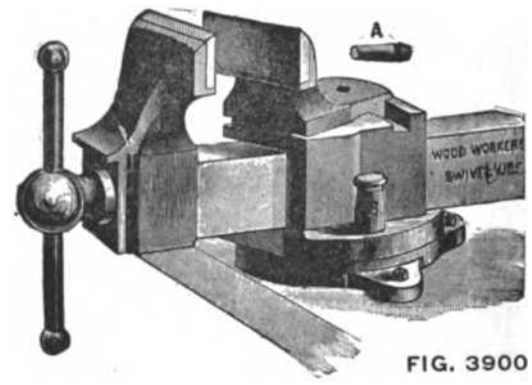


FIG. 3900

Nos.	Width Jaws, Inches.	Opens, Inches.	Weight, Pounds.	Prices.
27	3½	7	34	$9 50
26	4½	9½	67	13 00

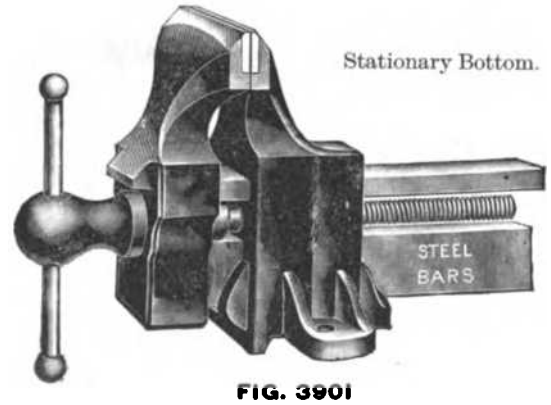


FIG. 3901

SOLID JAW WOOD WORKERS' VISES

FIG. 3901

No.	Width Jaws, Inches.	Opens, Inches.	Weight, Pounds.	Price.
55	4½	9	55	$9 50

FIG. 3902

No.	Width Jaws, Inches.	Opens, Inches.	Weight, Inches.	Price.
56	4½	9	64	$12 50

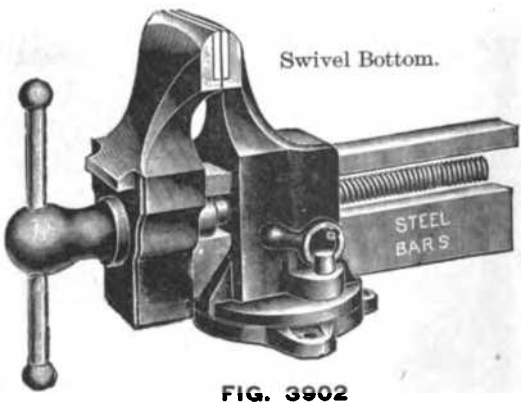


FIG. 3902

MANNING, MAXWELL & MOORE, 85, 87 AND 89 LIBERTY STREET, NEW YORK

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WOODWORKERS, CABINET, PATTERN AND TOOLMAKERS' VISES

HANDY WOODWORKER'S VISE

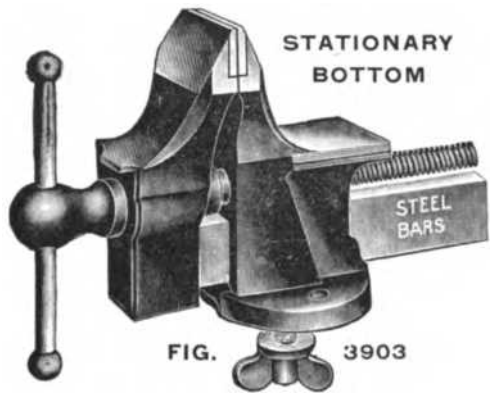


FIG. 3903

No. 93.

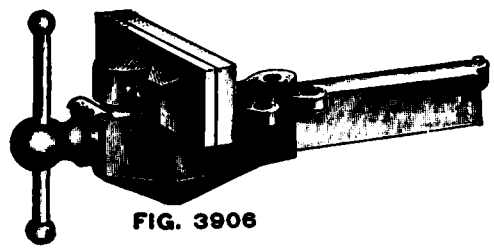
Width of jaw, 4½ inches.

Opens, 9 inches.

Weight, 44 pounds.

Price, $6.50.

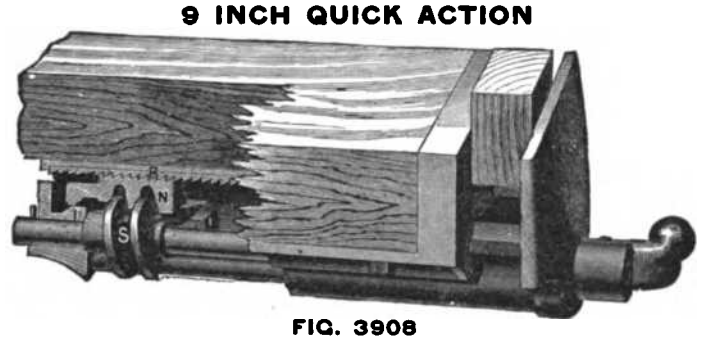
QUICK ACTION CABINETMAKER'S VISE


FIG. 3906

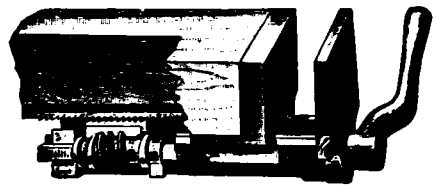
Numbers	135	137
Width of jaw, inches,	10	14
Opens, inches,	12	16
Weight, lbs.,	60	85
Prices	$14 00	$20 00

WOODWORKERS' VISES

9 INCH QUICK ACTION


FIG. 3908

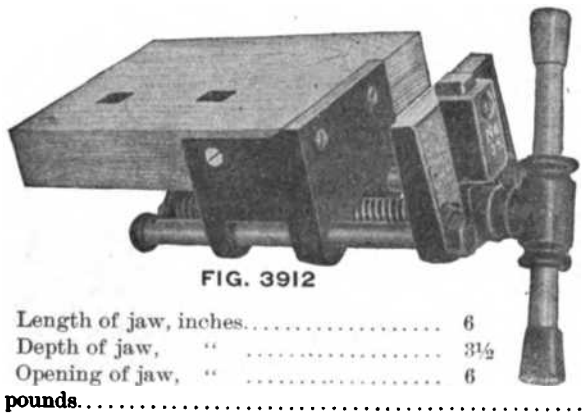
6 INCH QUICK ACTION


FIG. 3909

Width of jaw, inches	6	9	14
Weight, pounds	35	55	65
Opens, inches	9	12	12
Prices	$8 00	$9 00	$10 00

NO. 35, RAPID ACTING TAIL VISE

For Woodworkers.


FIG. 3912

Length of jaw, inches	6
Depth of jaw, "	3½
Opening of jaw, "	6
Weight, pounds	30
Edge of bench to center of dog, inches	3
Price	$6 00

PATTERN AND TOOLMAKERS' VISE

This vise can be equipped with detachable rubber, copper or lead jaws.

With the rubber jaws the lightest tubing and the finest finished work can be chipped or filed without marring.

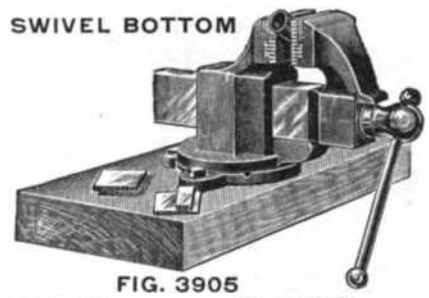


FIG. 3905

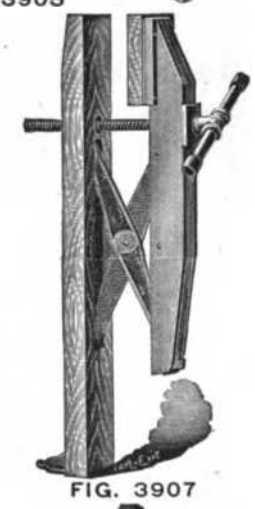
PRICES

No. 99—Vise, with set steel jaws: Width of jaw, 4½ inches; opens, 6 inches; weight, 60 pounds	$16 00
Extra rubber jaws, per set	2 00
" copper " " "	2 00
" lead " " "	1 50

PATTERNMAKER'S VISE

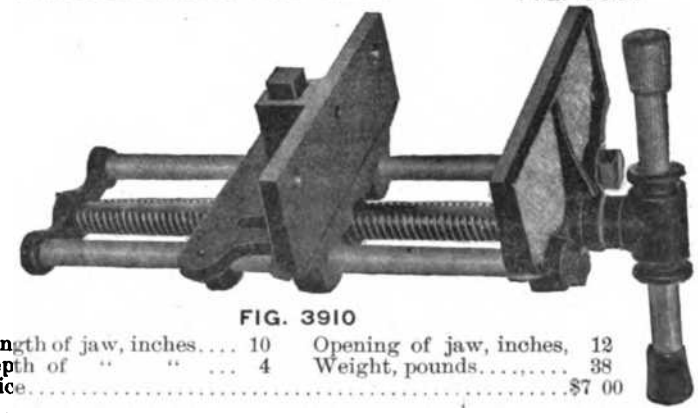
JAWS LEATHER FACED

Height, inches	42
Width of jaw, inches	6
Depth of screw, "	10
Opens, inches	18
Screw, inches	24x1¼
Price	$16 50


FIG. 3907

NO. 25, RAPID ACTING FLUSH VISE

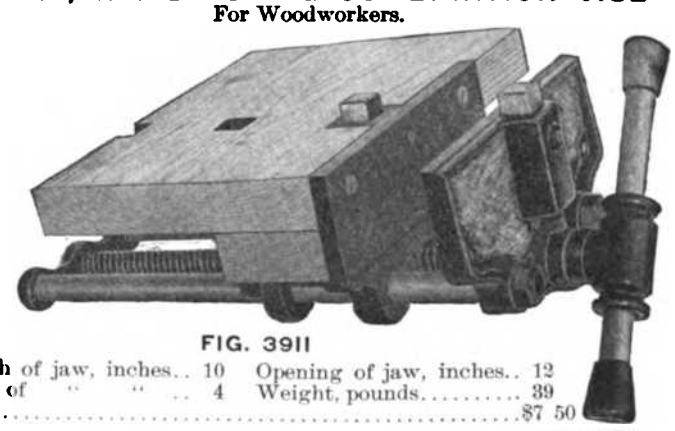
With Bench Stop, for Woodworkers.


FIG. 3910

Length of jaw, inches	10	Opening of jaw, inches,	12
Depth of " "	4	Weight, pounds	38
Price			$7 00

NO. 40, RAPID ACTING COMBINATION VISE

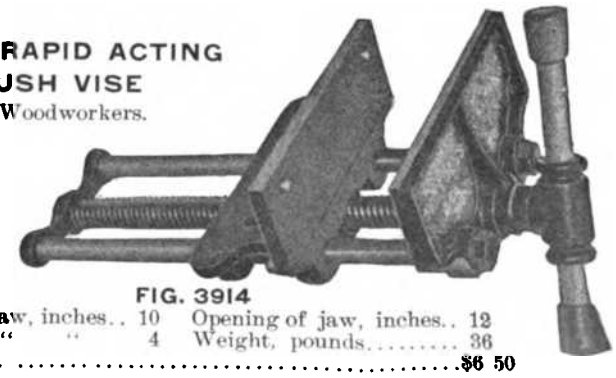
For Woodworkers.


FIG. 3911

Length of jaw, inches	10	Opening of jaw, inches	12
Depth of " "	4	Weight, pounds	39
Price			$7 50

NO. 20, RAPID ACTING FLUSH VISE

For Woodworkers.


FIG. 3914

Length of jaw, inches	10	Opening of jaw, inches	12
Depth of " "	4	Weight, pounds	36
Price			$6 50

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VISE JAWS OR CAPS AND JEWELERS' VISES

SELF-ADJUSTING SWIVEL TAPER JAW

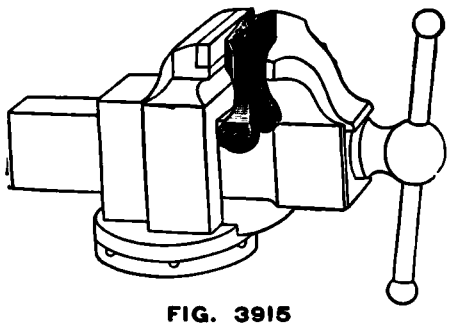


FIG. 3915

This taper jaw may be instantly adjusted to or detached from the vise. It is invaluable for holding irregular forms.

Width of Jaws, Inches.	Prices.
2	$1 25
3¼	2 00
3½	2 75
4	3 25
4½	3 75
5	4 25
6	5 75
7	7 75

CAST COPPER JAWS FOR MACHINISTS' VISES

Width of Jaws, Inches.	Prices.
3½	$1 20
4	1 35
4½	1 50
5	1 70
6	1 95
7	2 25

These jaws will fit any make of machinists' vises of sizes listed above.

DETACHABLE V JAW

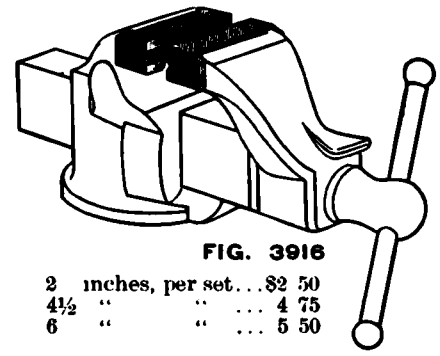


FIG. 3916

2 inches, per set...$2 50
4½ " " ... 4 75
6 " " ... 5 50

ADJUSTABLE TAPER JAW



FIG. 3917

The taper attachment is quickly adapted to the vise and does not weaken its parts.

Inches.	Each.	Inches.	Each.
2	$1 25	4½	$3 75
2¾	1 75	5½	5 00
3½	2 75	6½	6 75

BRASS CAP



FIG. 3918

Valuable for Finishing Work and Fit Any Vise.

Inches.	Each.	Inches.	Each.
2	$0 50	4½	$1 25
2¾	75	5½	2 00
3½	1 00	6½	2 50

VISE JAW CAPS

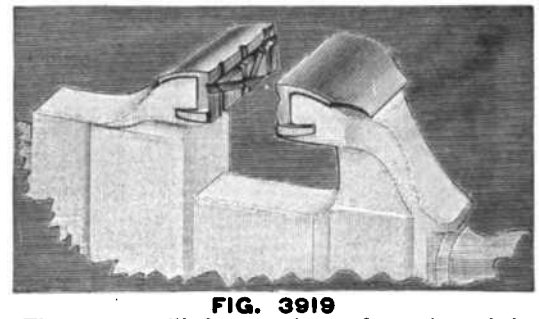


FIG. 3919

These caps will fit any vise and are intended to protect finished work when clamped in a vise, and also for holding securely, without injury, finished rods of any shape—round, oval, square or polygonal—for which latter purpose grooves of various sizes, and disposed at various angles, are provided.

3½ inches, per pair..$0 40 4 inches, per pair..$0 50
4½ inches, per pair....$0 60
1¾ and 2 inches, for jewelers, per pair..... 40
Same, nickel plated, per pair..... 60

JEWELERS' SELF-ADJUSTING JAW VISES WITH ANVIL

Stationary Bottom.

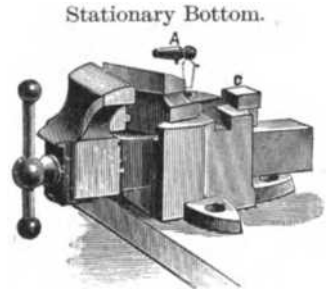


FIG. 3920

PRICES, FIG. 3920

No. 32. 2 inch jaws. Open 2 in. Weight, 3½ lbs. Each.....$4 00
No. 33. Same as the above, nickel plated. Each..... 6 50

PRICES, FIG. 3921

No. 37. 2 inch jaws. Open 2 in. Weight, 4½ lbs. Each.....$5 00
No. 38. Same as the above, nickel plated. Each..... 7 50

Swivel Bottom.

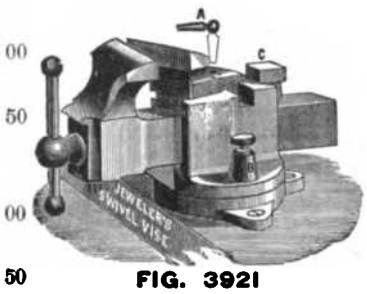


FIG. 3921

JEWELERS' SOLID JAW VISES WITH ANVIL

Stationary Bottom.

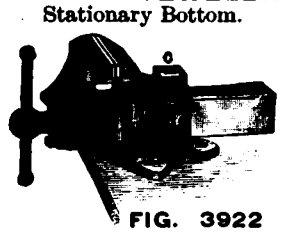


FIG. 3922

PRICES, FIG. 3922

No. 34. 2 inch jaws. Open 2 in. Weight, 2 lbs. Each.....$3 00
No. 34½. Same as the above, nickel plated. Each..... 4 75

PRICES, FIG. 3923

No. 39. 2 inch jaws. Open 2 in. Weight, 2¾ lbs. Each..... 4 00
No. 39½. Same as the above, nickel plated. Each..... 5 75

Swivel Bottom.

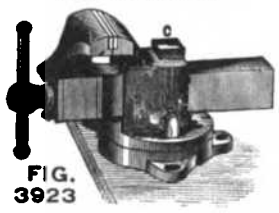


FIG. 3923

JEWELER'S AND MECHANIC'S SWIVEL VISE

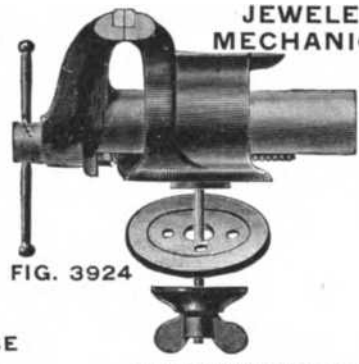


FIG. 3924

With Anvil and Steel Jaws.

No. 20. 2½ inch jaws. Weight, 10 lbs. Per dozen ...$21 00

ALL STEEL JEWELER'S VISE WITH ANVIL

Stationary Base.

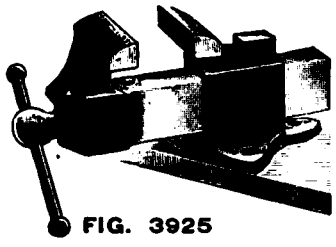


FIG. 3925

No. 100. 2 inch jaws. Open 2 inches. Each.....$3 00
No. 101. Nickel plated. 2 in. jaws. Open 2 in. Each.. 4 50

Stationary Base.

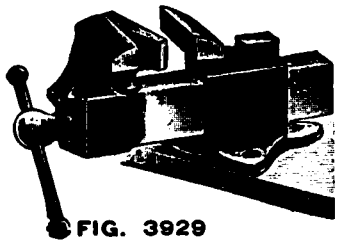


FIG. 3929

Swivel Jaw for Gripping Tapering Pieces.

No. 200. 2 inch jaws. Open 2 in. Each..... $3 50
No. 201. Nickel plated. 2 in. jaws. Open 2 in. Each... 5 00

STEPHENS' JEWELERS' VISES

FLAT BASE, PLAIN

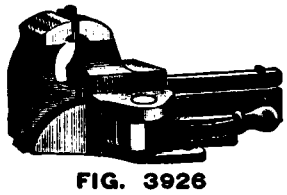


FIG. 3926

Size, 2 inches. Open 2¼ inches. Weight, flat, 2 lbs.

PRICES, FIG. 3926

Nos.		Each.
101	.....	$3 75
102	Nickel plated...	5 75
103	With anvil.....	4 25
104	" " N. P.	6 25

SWIVEL BASE

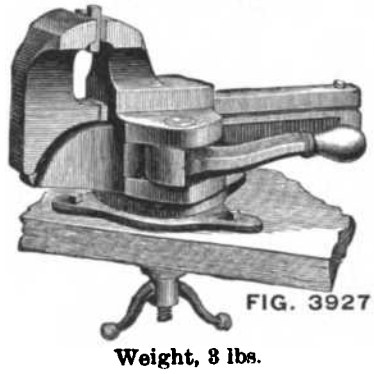


FIG. 3927

Weight, 3 lbs.

PRICES, FIG. 3927

Nos.		Each.
111	.....	$4 50
112	Nickel plated.....	6 50
113	With anvil.....	5 00
114	" " N. P.....	7 00

AUTOMATIC OR SELF-CLOSING JEWELER'S VISE

Projecting Swivel, Base and Anvil.

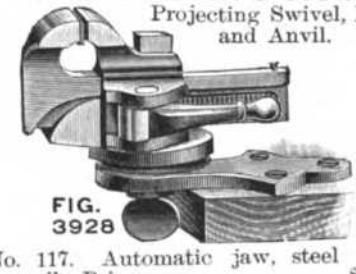


FIG. 3928

No. 117. Automatic jaw, steel anvil. Price..... $5 25
No. 118. Automatic jaw, steel anvil, nickel plated. Price.... 7 25

JEWELER'S VISE

With Anvil.

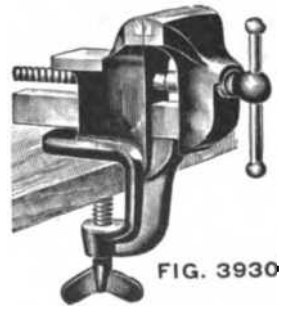


FIG. 3930

PRICES, FIG. 3930

Nos.	Jaws, Inches.	Open, Inches.	Weight, Lbs.	Each.
152	1½	1½	1½	$0 30
153	1¾	1¾	2½	60
154	2	2	3	75
155	2¼	2½	5½	1 20
156	2¾	3½	9	1 75

MANNING, MAXWELL & MOORE, 85, 87, ANT... STREET, NEW YORK

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SWIVEL BENCH AND HAND VISE COMBINED

The slide and screw are made of steel, the latter having a right and a left hand thread, moving both jaws at the same time. By removing the clamp and attaching the handle that accompanies it, it is at once converted into a hand vise. The vise can be swiveled or turned all the way round and held firmly at any point of the circle by means of the thumb screw A.

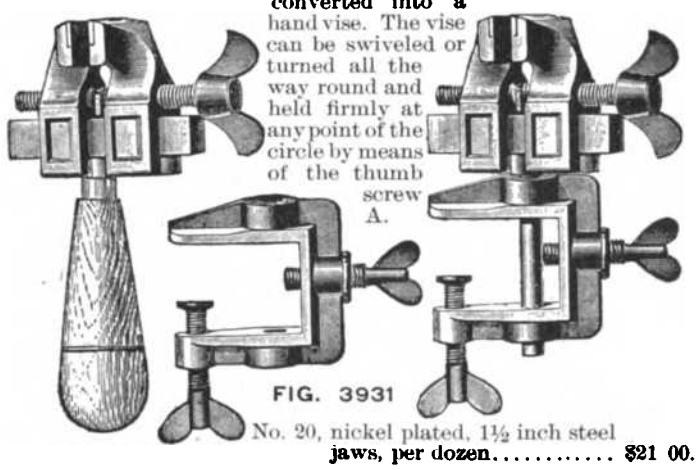


FIG. 3931

No. 20, nickel plated, 1½ inch steel jaws, per dozen..... $21 00.

ALFORD HAND VISE

The jaws are of forged and tempered steel, the screw and cross bar are also made of steel, the handle of cocobola with lignum vitae cap. It is hollow, and the bit shank and tools shown in the cut are placed inside. The blades bent at right angle are used for cutting washers.

The vise jaws are 1¼ inches wide and open 1⅛ inches. They will centre and hold tools firmly of any shape. The handle can be unscrewed from the vise and the bit shank put in its place, to be used with a bit brace for any kind of boring, drilling or cutting washers. The handle can also be screwed into the vise at right angles with its usual position, which is desirable for many kinds of work.

PRICE

Complete with all the tools, per dozen, $21 00.

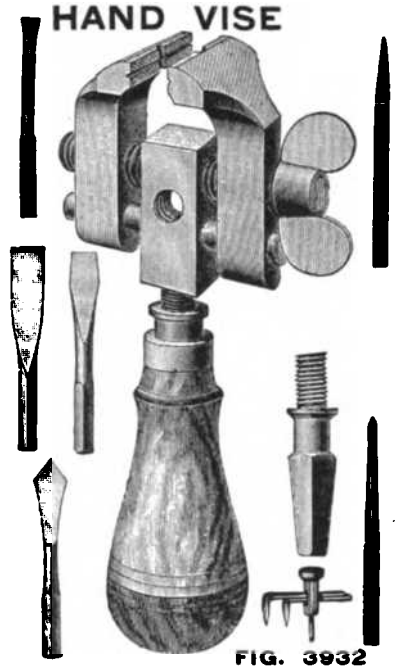


FIG. 3932

HAND VISE NO. 2

This is a forged steel vise, nickel plated and with a cocobola handle. As shown in the cut, the handle may be taken off and the shank placed in a bit brace. The jaws are creased to hold a twist drill. It may be used as a vise, wrench or drill chuck. It is a very substantial tool.

	Inches.
Width of jaws	1½
Diameter of screw	½
Length over all	6¾
Jaws open	1¼
Width of thumb nut	1¾

Weight, 17 ounces.
Price, per dozen, $18 00.



FIG. 3933

DROP FORGED HAND VISE

DESCRIPTION, FIGS. 3934 AND 3935



VISE WITH CLAMP

FIG. 3934



VISE

FIG. 3935

This vise is designed for jewelers, tool makers, and machinists' use. All parts are drop forged of best steel for the purpose. The jaws have a positive opening and closing movement in parallel lines actuated by a right and left hand screw, moving the jaws simultaneously towards or from each other. A hole is entirely through the handle, and the jaws will grasp and hold central, round wire from 1/16 inch up to and including ¼ inch in diameter. The jaws open ¾ inch. Fig. 3934 represents a clamp for holding the vise when in use as a bench vise.

PRICES

Vise, without clamp, each, $4 00.
Clamps, each, $2 00.

FRENCH PARALLEL HAND VISE

PRICES

FIG. 3936

No.	Width of Jaws. Inches.	Each.
0	¾	$1 55
1	1	1 75
2	1¼	1 85
3	1⅜	2 15
4	1½	2 30

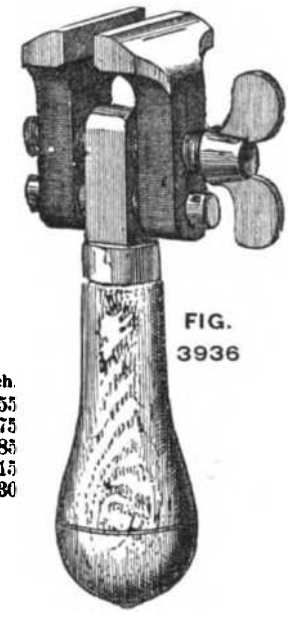


FIG. 3936

HANDLED HAND VISE



FIG. 3937

No. 735. Handled, bright jaws.

Inches.	Per Doz.
3	$3 50
3½	3 80
4	4 20
4½	5 00
5	5 50

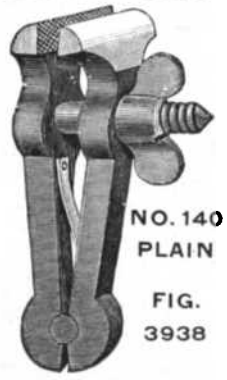
No. 662. Handled, cast steel, polished jaws.

Inches.	Per Doz.
3	$8 00
3½	8 00
4	8 00
4½	9 00
5	10 20

No. 663. Handled, extra quality cast steel.

Inches.	Per Doz.
3	$11 00
3½	11 00
4	11 00
4½	12 00
5	14 00

HAND VISE



NO. 140 PLAIN

FIG. 3938

TELEGRAPH VISE WITH LOOP



FIG. 3939

PRICES, FIG. 3938

Nos.		3½ Inch.	4 Inch.	4½ Inch.	5 Inch.	6 Inch.
140	Black, bright jaws.. per dozen	$2 60	$2 75	$3 15	$3 70	$5 30
142	C. S.. extra quality.. "	5 40	5 40	6 70	7 90	11 00
144	Handled, bright jaws, "	3 20	3 40	4 00	4 50	....
145	Handled, extra quality, "	8 75	8 75	10 00	11 80	....

PRICES, FIG. 3939

		5½ Inch.	6 Inch.
146	Black, C. S., extra quality, per dozen	15 80	18 50

STUBS' PATTERN, EXTRA HEAVY

Nos.		5½ Inches, per Dozen.	6 Inches, per Dozen.
671	With loop, extra quality cast steel..	$20 00	$25 00
671	As above, copper faced	27 00	30 00
665	With loop, best cast steel	13 50	16 00
665	As above, copper faced	18 50	21 50
670	Without loop, extra quality cast steel	18 00	23 50
670	As above, copper faced	25 00	28 00

DROP FORGED TELEGRAPH VISE WITH LOOP

PRICES, FIG. 3940

Vise, with loop,	each $2 50
Vise, with loop, for machinists	" 2 25
Vise straps, best quality	" 1 00

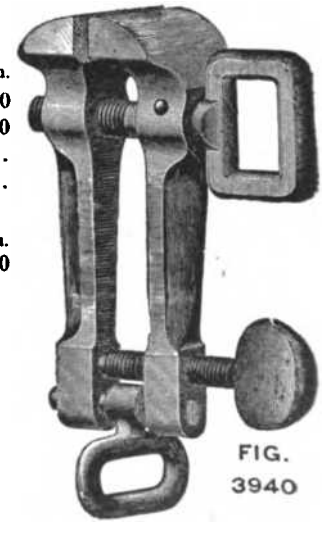


FIG. 3940

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HAND JEWELERS' SAW AND HORSESHOERS' VISES

IMPROVED HAND VISE



FIG. 3941

It is of metal throughout, the jaws being of forged steel. For holding wire there is a hole through the handle and screw. It weighs 8 ounces. Price, per dozen, $18.00

JEWELER'S PIN VISE

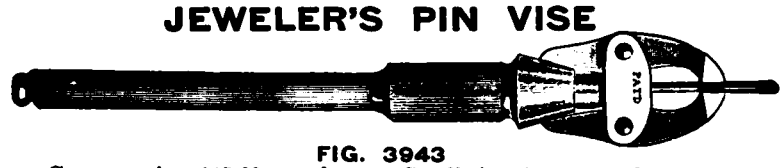


FIG. 3943

Common size, $15.00 per dozen. Small size, $12.00 per dozen.

MOSS' PIN TONGUE VISE



FIG. 3942

Price, $15.00 per dozen.

JEWELER'S PIN VISE

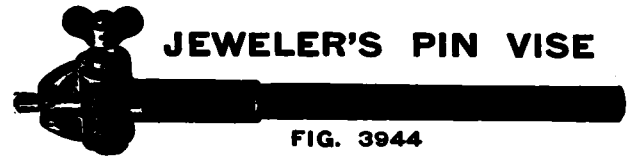


FIG. 3944

All parts are drop forged of best steel for the purpose. The jaws open parallel, a hole is entirely through the handle, and the jaws will hold central round wire from 0 to ⅛ inch in diameter. The jaws open 3/16 inch.
Each, $1.50.

CHUCK PIN VISE

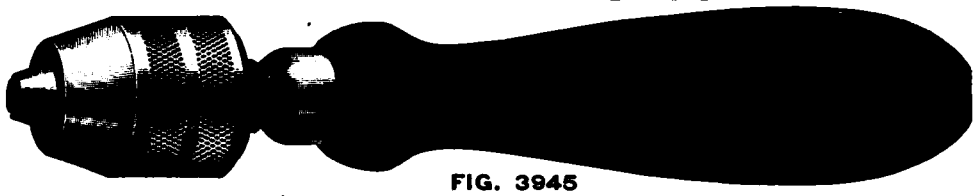


FIG. 3945

PRICE, FIG. 3945

The chuck is three jawed, and will grip the work firmly, holding from 0 to 5/32 inch. It is well finished and nickel plated. The handle is small and of polished hard wood. A hole is drilled the entire length.
No. 104. Each, $1.50.

STEARNS' SILENT SAW VISES
WITH RUBBER CUSHIONED JAWS

NO. 10

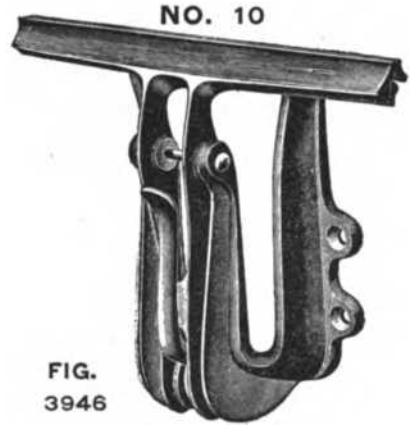


FIG. 3946

NO. 33, ADJUSTABLE

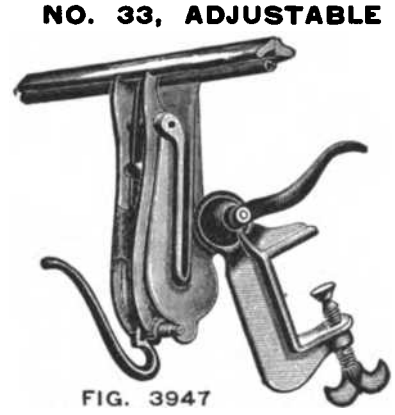


FIG. 3947

By one movement of the lever the saw is firmly clamped, after which a third jaw, faced with solid rubber, is pressed against the saw, preventing noise and vibration. No. 33 has a patent ball and socket joint, allowing favorable adjustment to light.

PRICES

No. 10, 10 inch planed jaws, per dozen	$15 00
" 33, " " " "	18 00

Packed one dozen in a box.

NO. 2, ADJUSTABLE SAW VISE



FIG. 3948

Vise may be adjusted to light while filing.
No. 2, 9½ inch planed jaws, per dozen, $80.00.

PERFECTION SAW VISE



FIG. 3951

Price, $1.00 each.

NO. 4, SAW VISE

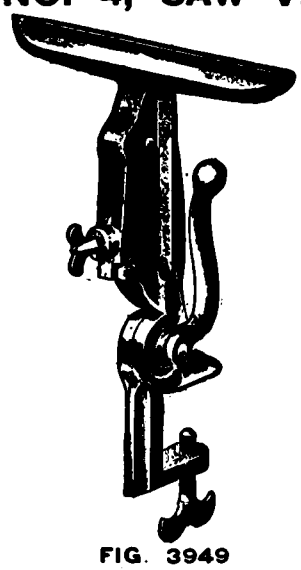


FIG. 3949

May be readily detached from bench. Heavy pattern.
No. 4, 9½ inch jaws, per dozen, $18.00.

NO. 5, SAW VISE



FIG. 3950

DESCRIPTION, FIG. 3950

Ball and socket adjustment; holds the saw at any angle for convenience in filing. May be readily detached from bench. Heavy pattern.
No. 5, 9½ inch jaws, per dozen, $25.00.

SAW FILING CLAMP OR VISE



FIG. 3952

It is especially adapted for filing band, hand and any saw from 3/16 to 7 inches in width.
Per dozen, $60.00.

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HORSESHOERS' FOOT VISES AND BOLT HEADERS

HORSESHOERS' MOVABLE FOOT VISE

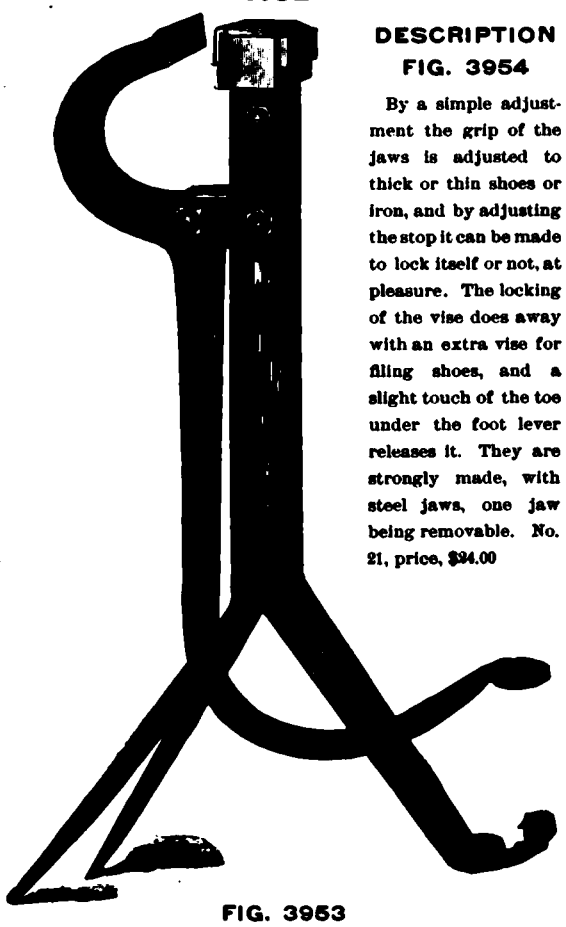


FIG. 3953

Reverse the steel block for sharpening shoes in winter. Made of wrought iron and steel. No. 1, price, $14.40.

HORSESHOERS' FOOT VISE

DESCRIPTION FIG. 3954

By a simple adjustment the grip of the jaws is adjusted to thick or thin shoes or iron, and by adjusting the stop it can be made to lock itself or not, at pleasure. The locking of the vise does away with an extra vise for filing shoes, and a slight touch of the toe under the foot lever releases it. They are strongly made, with steel jaws, one jaw being removable. No. 21, price, $24.00

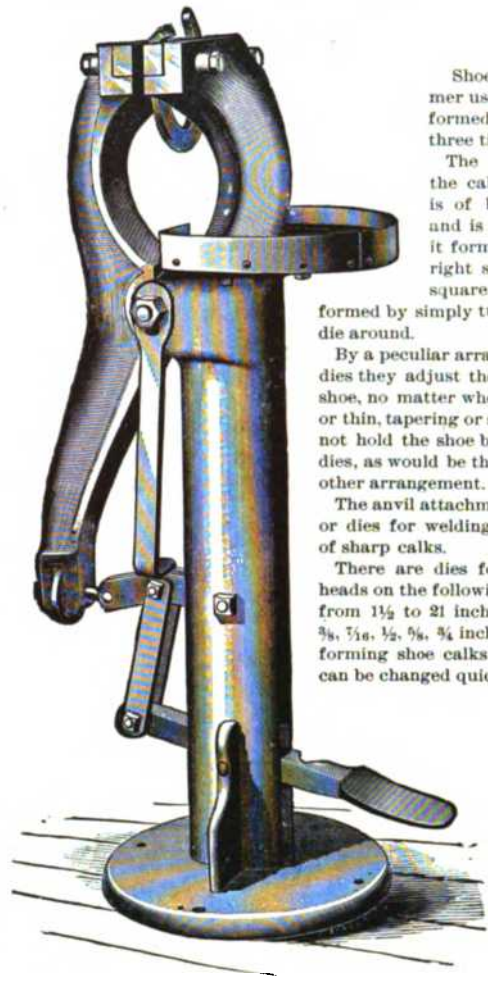


FIG. 3954

FOOT VISE AND BOLT HEADER

DESCRIPTION, FIG. 3955

Shoe calks can be made sharp or square, for winter or summer use, and the dies are so shaped that the calks are better formed than they can be in the ordinary way, and from two to three times as many.

The die on which the calks are formed is of best tool steel, and is shaped so that it forms the calk the right shape; sharp or square calks can be formed by simply turning the steel die around.

By a peculiar arrangement of the dies they adjust themselves to the shoe, no matter whether it is thick or thin, tapering or straight, and do not hold the shoe by corner of the dies, as would be the case with any other arrangement.

The anvil attachment has grooves or dies for welding different sizes of sharp calks.

There are dies for making bolt heads on the following sizes of iron from 1½ to 21 inches long: ¼, 5/16, ⅜, 7/16, ½, 9/16, ⅝, ¾ inch. The dies for forming shoe calks and other work can be changed quickly.



FIG. 3955

PRICES

No. 1—Complete, with shoeing and bolt heading dies, weight, 165 pounds..... $20 00
" 2—Without shoeing dies..... 17 00
" 3—Without bolt heading dies..... 17 00

Special forms of shoeing dies furnished, in place of regular, at no extra charge where drawings are submitted.

GREEN RIVER BOLT HEADER AND SHOEING VISE, NO. 2

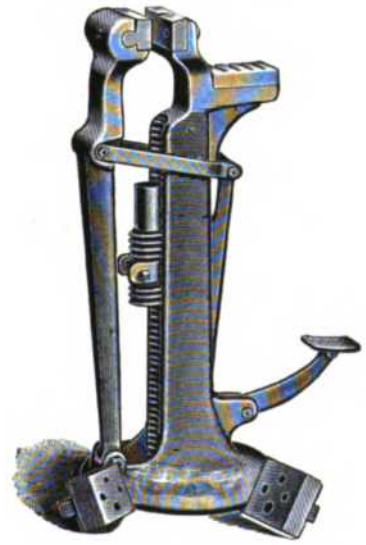


FIG. 3956

The shoe being gripped by means of the treadle, and the vise falling open when the foot is taken off, work is dispatched in half the usual time.

The dies in the jaws of the vise are so shaped as to give the right form to the calks as they are hammered.

The anvil attachment in front carries a steel die with four different sized slots for welding on calks.

The bolt heading dies are solid and made to be gripped in the jaws, so that it is possible to change from shoeing to bolt heading without the delay and bother of removing any parts, bolts, or screws.

Bolts can be headed in this machine as long as 31 inches. Sizes: ¼, 5/16, ⅜, 7/16, ½, 9/16, ⅝, ¾ inch. Weight, 175 pounds.

PRICES

With bolt heading attachment, complete.....$20 00
Without bolt heading attachment..... 16 25

GREEN RIVER SHOEING VISE AND BOLT HEADER, NO. 3



FIG. 3957

The vise, which drops open when not in use, forms both sharp and straight calks, the forming die being of tool steel of proper shape. This die may be turned over for summer work. The vise is not interfered with in any way by the bolt heading attachment.

The swaging plate for sharp calks is furnished with a full number of grooves for large and small calks. It can be placed so that the grooves run either way, as may be preferred.

The treadle is in the most convenient place—at the side.

The bolt heading dies are dropped in place or removed instantly without trouble. They are set firmly by driving a taper key which is always in place. Sizes: ¼, 5/16, ⅜, 7/16, ½, ⅝, ¾ inch. Any length up to 24 inches.

PRICES

Complete for shoeing and bolt heading..... $12 50
For shoeing only, without bolt heading attachment..... 11 50

BOLT HEADER, NO. 8

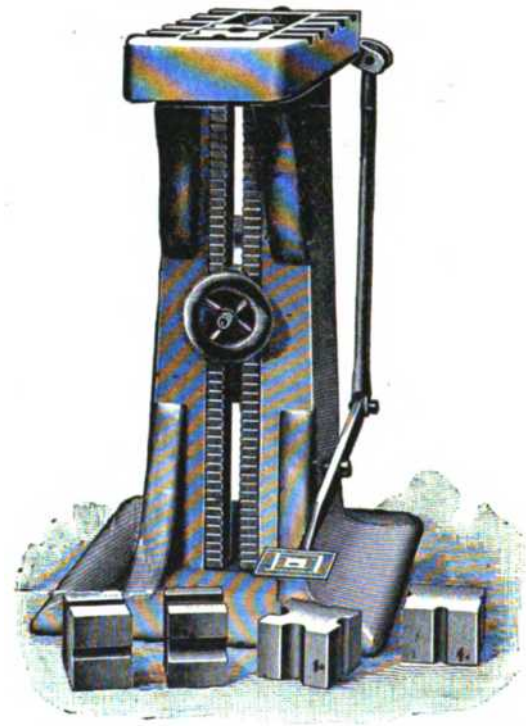


FIG. 3958

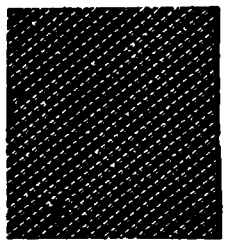
This Bolt Header is intended for heavy work, and is furnished with steel dies for heading bolts from ½ to 1½ inches, inclusive. Takes bolts to 26 inches long. A very strong machine. Especially adapted for marine use.

PRICE

Complete.....$50 00

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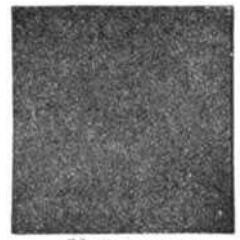
CUTS OF FILES AND RASPS


ROUGH
FIG. 3959


BASTARD
FIG. 3960


2ND CUT
FIG. 3961

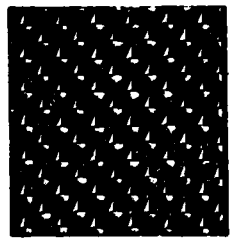

SMOOTH
FIG. 3962

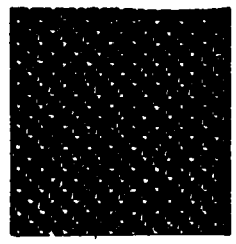

DEAD SMOOTH
FIG. 3963

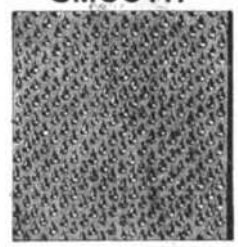

MILL BASTARD
FIG. 3964

RASPS

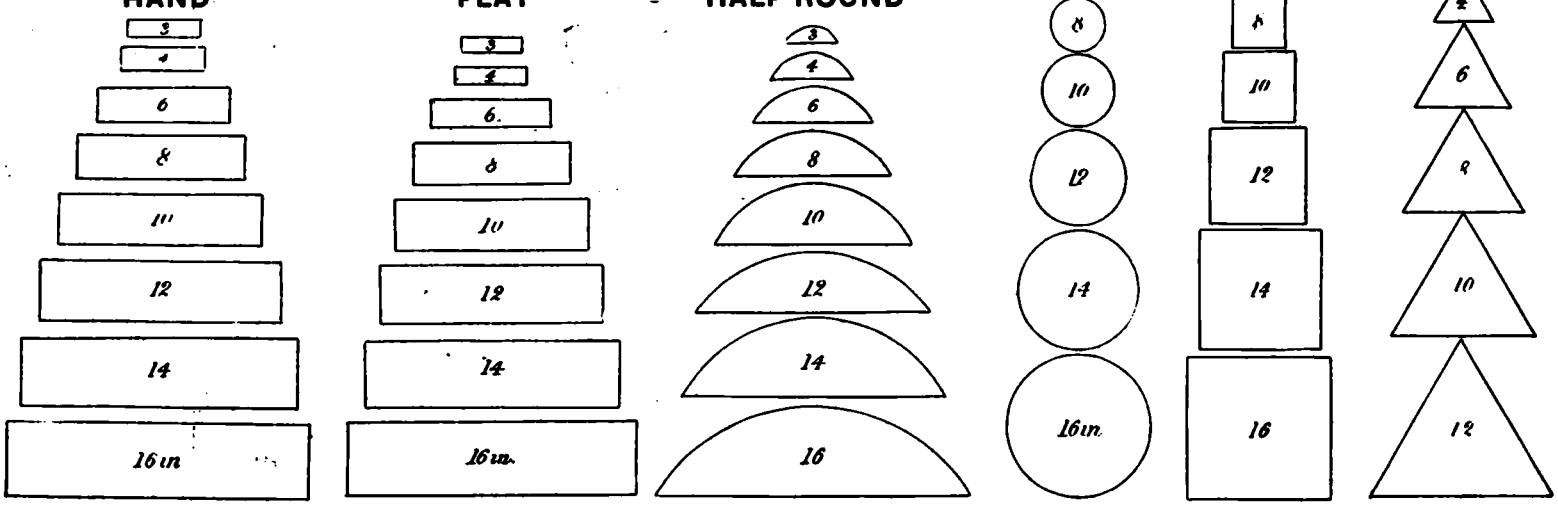

MILL 2ND CUT
FIG. 3965


BASTARD
FIG. 3966

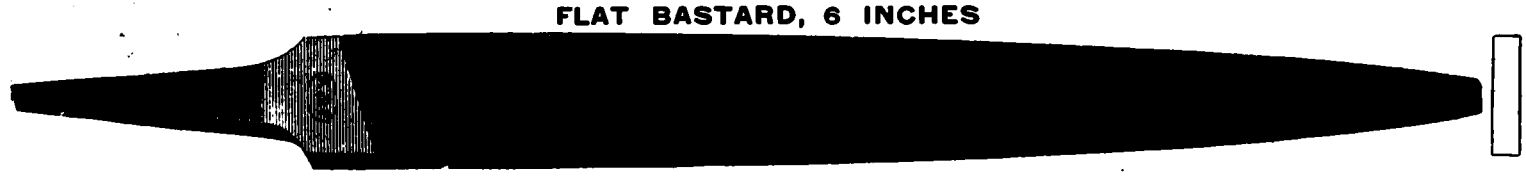

2ND CUT
FIG. 3967


SMOOTH
FIG. 3968

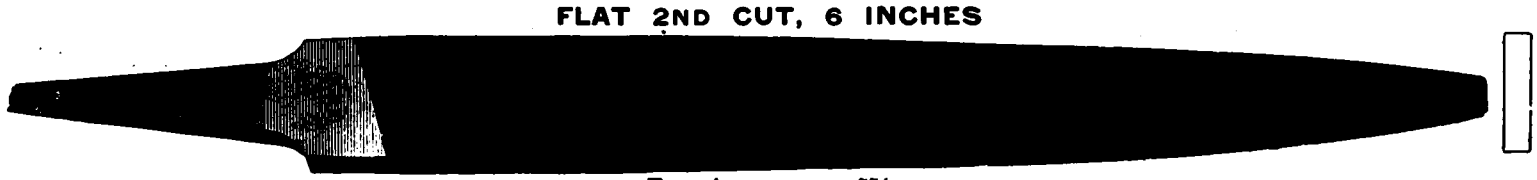
DIAGRAMS OF SECTIONS OF STANDARD SIZES OF REGULAR FILES



FLAT BASTARD, 6 INCHES



FLAT 2ND CUT, 6 INCHES



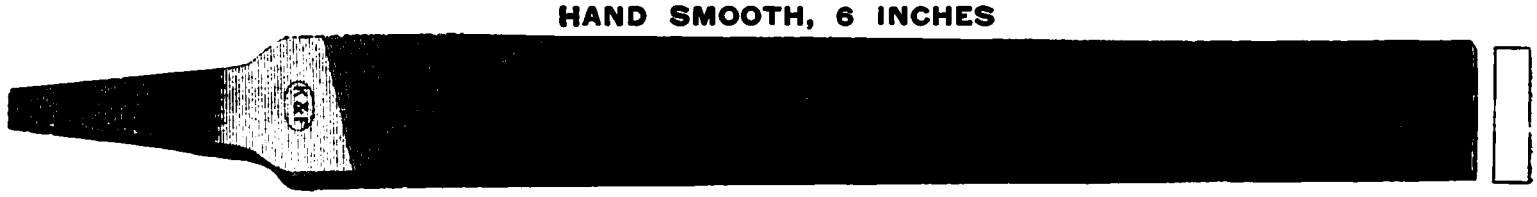
For prices, see page 554.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

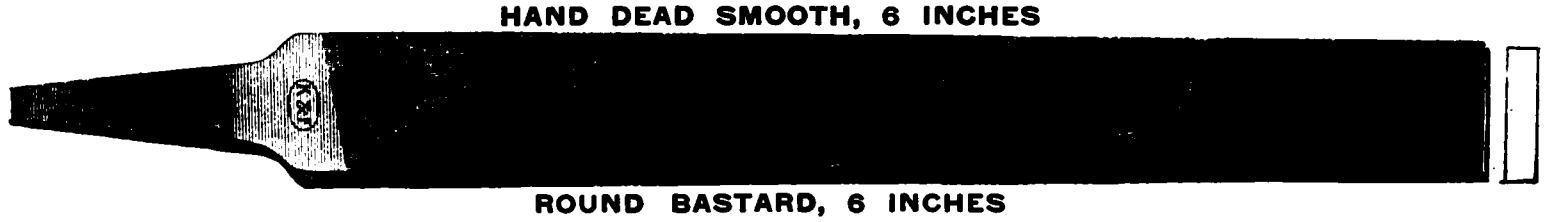
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FILES

HAND SMOOTH, 6 INCHES



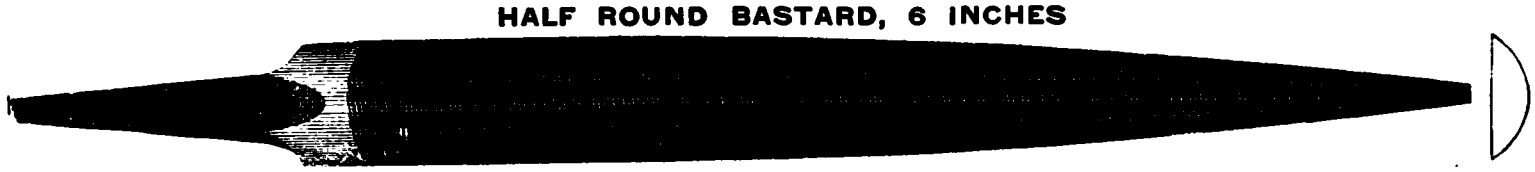
HAND DEAD SMOOTH, 6 INCHES



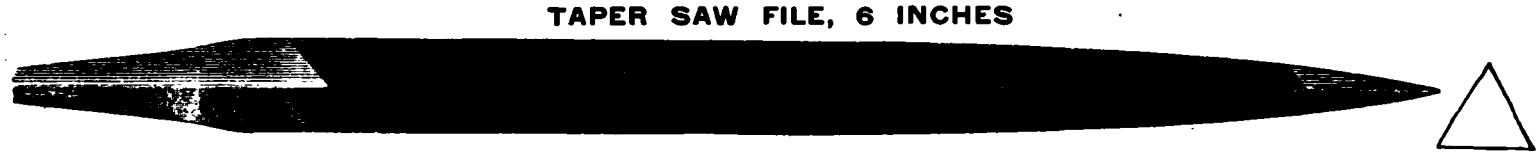
ROUND BASTARD, 6 INCHES



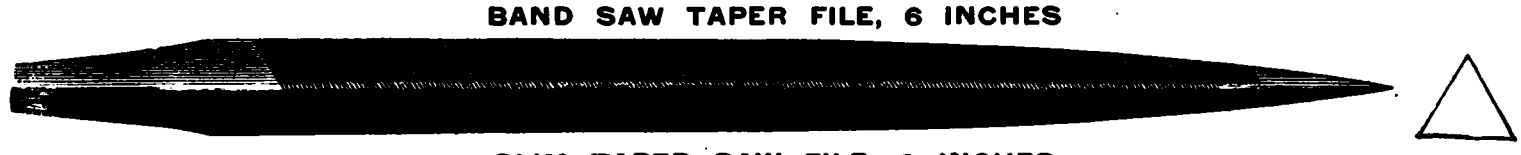
HALF ROUND BASTARD, 6 INCHES



TAPER SAW FILE, 6 INCHES



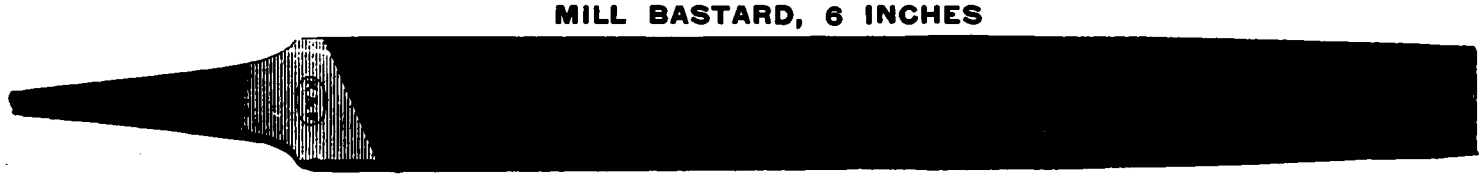
BAND SAW TAPER FILE, 6 INCHES



SLIM TAPER SAW FILE, 6 INCHES



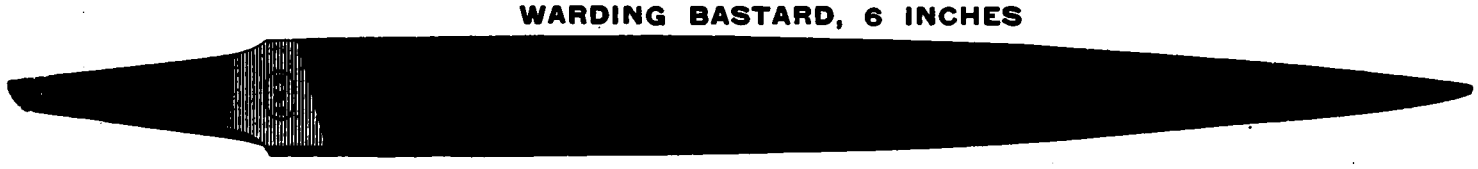
MILL BASTARD, 6 INCHES



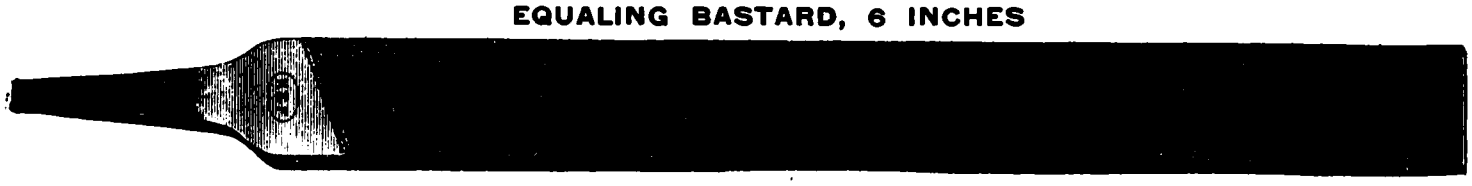
3 SQUARE BASTARD, 6 INCHES



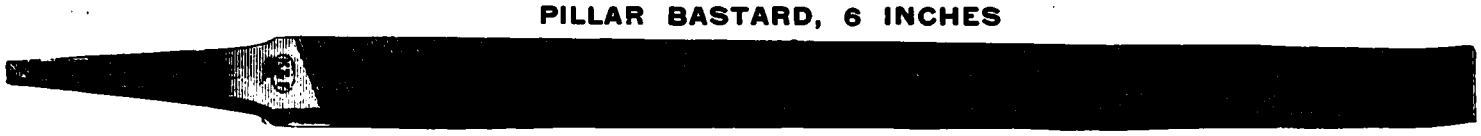
WARDING BASTARD, 6 INCHES



EQUALING BASTARD, 6 INCHES



PILLAR BASTARD, 6 INCHES



SQUARE BASTARD, 6 INCHES



For prices, see page 554.

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FILES

CROSSING BASTARD, 6 INCHES



CABINET FILE, 6 INCHES



PRICES, FILES AS ILLUSTRATED, PAGES 552 AND 553

Inches.	Mill and Round: Bastard.	2d Cut.	Smooth.	Flat: Bast'd.	2d Cut.	Smooth.
4	$3 00	$3 50	$3 90	$3 70	$4 30	$4 70
5	3 20	3 80	4 10	3 90	4 60	4 90
6	3 50	4 00	4 50	4 30	4 80	5 30
7	3 90	4 60	4 90	4 80	5 50	6 10
8	4 30	4 90	5 40	5 30	6 10	6 60
9	4 90	5 80	6 30	6 30	7 20	7 90
10	5 60	6 40	7 00	7 00	8 10	8 70
11	6 70	7 80	8 50	8 60	9 80	10 70
12	7 50	8 60	9 40	9 70	11 00	12 10
13	9 40	10 70	11 70	11 80	13 60	14 70
14	10 70	12 20	13 10	13 30	15 30	16 70
15	13 10	15 00	16 10	16 00	18 30	20 00
16	14 70	16 80	17 90	17 80	20 10	22 30
17	18 20	20 20	21 70	21 50	24 20	26 50
18	20 20	22 70	24 30	23 90	26 80	29 20
19	24 60	27 50	29 40	28 40	31 60	34 60
20	27 40	30 70	32 90	31 50	35 30	38 30

EXTRAS

Mill blunt, double cut.....advance 2 inches
" double cut..... " 1 "
" narrow point..... " 1 "
Cant (blunt) double cut..... " 2 "

Inches.	Square: Bastard.	2d Cut.	Smooth.	Hand and Pillar: Bastard.	2d Cut.	Smooth.
4	$3 80	$4 60	$4 90	$3 70	$4 30	$4 80
5	4 10	4 80	5 30	3 90	4 70	5 30
6	4 60	5 10	5 50	4 30	5 10	5 60
7	5 10	5 80	6 30	4 90	5 80	6 30
8	5 50	6 30	7 00	5 40	6 30	6 70
9	6 60	7 70	8 30	6 70	7 80	8 30
10	7 40	8 50	9 10	7 50	8 70	9 40
11	9 10	10 40	11 30	9 40	10 90	11 80
12	10 20	11 50	12 80	10 70	12 30	13 50
13	12 50	14 30	15 40	13 30	15 20	16 20
14	13 90	16 10	17 50	15 00	17 00	18 20
15	16 90	19 20	20 90	17 90	20 60	21 70
16	18 70	21 20	23 30	20 10	22 80	24 20
17	22 50	25 40	27 50	24 20	27 10	28 60
18	25 10	28 20	30 40	26 80	29 90	31 50
19	29 70	33 20	35 70	31 90	35 40	37 60
20	32 80	36 70	39 30	35 10	39 20	41 60

EXTRAS

Square blunt.....advance 1 inch
Slotting (blunt) ..... " 2 "
Cotter blunt or taper..... " 2 "

Inches.	Half Rd. and Three Sq.: Bastard.	2d Cut.	Smooth.	Warding: Bastard.	2d Cut.	Smooth.
4	$4 80	$5 60	$6 10	$4 00	$4 80	$5 40
5	5 40	6 10	6 40	4 50	5 30	5 80
6	6 10	6 70	7 10	4 90	5 90	6 40
7	7 00	7 70	8 20	5 90	6 90	7 50
8	7 50	8 30	8 90	6 40	7 50	8 20
9	8 50	9 40	9 90	7 80	9 00	9 90
10	9 10	10 10	10 70	8 70	10 10	11 00
11	10 70	11 80	12 70	10 90	12 70	13 70
12	11 80	13 00	13 90	12 30	14 30	15 40
13	14 10	15 40	16 60	15 20	17 40	18 70
14	15 50	17 00	18 30	17 00	19 40	21 00
15	18 50	20 40	21 70			
16	20 60	22 50	24 20			
17	24 70	27 00	28 90			
18	27 50	29 90	32 00			
19	32 80	35 70	38 10			
20	36 20	39 40	42 30			

EXTRAS

Ginsaw, take bast'd price
Crossing.....adv. 2 in.
Tumbler..... " 2 "
Feather edge blunt..... " 2 "
High back..... " 2 "
Half round..... " 2 "

STAVESAW

8 inch.....$9 40

STAVESAW IMPROVED

6 inches.....$6 40
7 " 7 40
8 " 8 10
9 " 9 70
10 " 10 70
12 " 15 40

Inches.	Mill, One Round Edge: Bastard.	2d Cut.	Smooth.	Mill, Two Round Edges: Bastard.	2d Cut.	Smooth.
4	$3 40	$3 90	$4 40	$3 80	$4 40	$4 90
5	3 60	4 30	4 60	4 00	4 80	5 10
6	3 90	4 50	5 10	4 40	5 00	5 60
7	4 40	5 20	5 50	4 90	5 80	6 10
8	4 80	5 50	6 10	5 40	6 10	6 80
9	5 50	6 50	7 10	6 10	7 30	7 90
10	6 30	7 20	7 90	7 00	8 00	8 80
11	7 50	8 80	9 60	8 40	9 80	10 60
12	8 40	9 70	10 60	9 40	10 80	11 80
13	10 60	12 00	13 20	11 80	13 40	14 60
14	12 00	13 70	14 70	13 40	15 30	16 40
15	14 70	16 90	18 10	16 40	18 80	20 10
16	16 50	18 90	20 10	18 40	21 00	22 40
17	20 50	22 70	24 40	22 80	25 30	27 10
18	22 70	25 50	27 30	25 30	28 40	30 40

Inches.	Tapers, Single Cut.	Tapers, Double Cut.	Slim Tapers, Single Cut.	Slim Tapers, Double Cut.	Bandsaw, Blunt and Taper, Regular.	Bandsaw, Blunt and Taper, Slim.
3	$2 10	$2 50	$2 10	$2 50	$2 50	$2 50
3½	2 10	2 50	2 10	2 50	2 50	2 50
4	2 20	2 90	2 20	2 60	2 90	2 60
4½	2 40	3 10	2 30	3 00	3 10	3 00
5	2 60	3 50	2 50	3 20	3 50	3 20
5½	3 00	4 00	2 90	3 50	4 00	3 50
6	3 40	4 70	3 10	3 90	4 70	3 90
7	4 30	5 60	3 80	4 50	5 60	4 50
8	5 40	6 70	4 50	5 30	6 70	5 30
9	6 60	8 10	5 40	6 30	8 10	6 30
10	8 10	9 70	6 40	7 50	9 70	7 50
11	10 70	12 10	8 30	9 10	12 10	9 10
12	12 50	14 70	9 50	11 00	14 70	11 00
13	15 90	17 50	12 10	13 10	17 50	13 10
14	18 20	20 60	13 80	15 40	20 60	15 40

Inches.	Pit Saw, Single Cut.	Cant Saw, Single Cut.	Cross Cut, Single Cut.	Hook Tooth, Single Cut.	Planer Knife, Single Cut.	Inserted Tooth or Chisel Tooth.
4	$4 80	$4 30	$4 80	.....	.....	.....
5	5 40	4 70	5 40	.....	.....	.....
6	6 10	5 40	6 10	$6 70	.....	.....
7	7 00	6 10	7 00	7 70	.....	.....
8	7 50	6 40	7 50	8 30	$6 40	$8 30
9	8 50	7 80	8 50	9 40	.....	9 40
10	9 10	8 70	9 10	10 10	8 60	10 10
11	10 70	10 40	10 70	11 80	.....	.....
12	11 80	11 40	11 80	13 00	12 10	.....

Climax, advance 2 in. on half round bastard.
Round Gulleting.....take pitsaw price.

DOUBLE ENDED TAPER

6	7	8	9	10
$3 50	$3 50	$3 90	$4 40	$4 90

EXTRAS, GENERAL

Sizes below 4 inches, not extended, take 4 inch price.
Half inches not specified, take next higher full inch price.
Dead smooth, double the price of bastard cut.
One round edge, advance 12½ per cent.
All lengths above those listed, advance 20 per cent. on next lower inch price.
Blunt files not specified, advance one inch on respective kinds and cuts.
Single or float cut not specified, on regular shapes take double cut price.
Equalings (bellied), advance 2 inches on respective kinds and cuts.
Two round edges, advance 25 per cent.
Files varying from standard sizes, subject to special prices.
Cuts not specified, made upon regular blanks, advance 1 inch on respective kinds and nearest cut.

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AMERICAN FILES, SWISS PATTERNS

PRICES, PER DOZEN

Hand							Pillar, Pillar Narrow, Pillar Extra Narrow					3-Square and Metal Saw				Knife				Warding				
Nos.	00-2	3-4	5	6	7	8	Nos.	00-2	3-4	5-6	7-8	Nos.	00-2	3-5	6-8	00-2	3-4	5-6	7-8	Nos.	00-2	3-4	5-6	7-8
3 in.	$2 80	$2 90	$3 00	$3 15	$3 30	$3 45	3 in.	$2 60	$2 65	$2 70	$2 80	3 in.	$2 80	$2 95	$3 05	$2 90	$3 00	$3 05	$3 15	3 in.	$2 55	$2 60	$2 70	$2 80
3½	3 00	3 15	3 20	3 35	3 55	3 75	3½	2 75	2 80	2 90	3 00	3½	3 05	3 15	3 30	3 30	3 35	3 45	3 55	3½	2 80	2 90	3 00	3 15
4	3 15	3 30	3 40	3 55	3 75	3 95	4	2 95	3 00	3 10	3 20	4	3 30	3 40	3 50	3 60	3 70	3 80	3 90	4	3 15	3 30	3 45	3 60
4½	4 15	4 25	4 40	4 60	4 80	5 00	4½	3 85	3 90	4 00	4 15	4½	4 15	4 25	4 40	4 60	4 75	4 95	5 15	4½	4 05	4 20	4 35	4 55
5	4 35	4 50	4 70	5 00	5 20	5 40	5	4 00	4 15	4 25	4 45	5	4 35	4 45	4 60	4 90	5 10	5 30	5 50	5	4 20	4 40	4 60	4 80
6	4 80	5 00	5 20	5 40	5 80	6 20	6	4 30	4 40	4 55	4 75	6	5 00	5 10	5 25	5 40	5 80	6 20	6 60	6	4 80	5 00	5 20	5 40
7	6 40	6 60	6 80	7 20	7 60	8 00	7	5 50	5 70	6 00	6 15	7	6 60	6 90	7 20	7 20	7 60	8 00	8 40	7	6 10	6 40	6 80	7 20
8	7 00	7 20	7 60	8 00	8 40	9 15	8	6 50	6 70	6 90	7 10	8	7 80	8 15	8 55	8 80	9 20	9 60	10 00	8	6 80	7 20	7 60	8 00
10	9 55	9 90	10 50	11 10	11 50	12 30	10	8 70	8 90	9 30	9 70	10	9 15	9 55	9 90	10 30	10 70	11 10	11 50	10	9 00	9 60	10 00	10 40
12	12 30	12 60	13 60	14 00	14 70	15 50	12	11 20	12 00	14 10	15 50	12	11 20	11 60	12 00	12 30	12 70	13 10	13 50	12	11 40	12 20	12 60	13 00
14	15 00	15 00	16 00	17 00	18 20	19 50																		

Width in decimal parts of an inch stated as near as practicable.

Inches	2	2½	3	3½	4	4½	5	6	7	8	10	12	14
Hand	$0 33	$0 38	$0 43	$0 48	$0 53	$0 58	$0 62	$0 72	$0 81	$0 90	$1 09	$1 27	$1 45
Pillar	23	26	29	32	35	38	42	48	54	60	73	85	
" narrow	17	19	22	24	27	29	31	36	41	45	55	64	
" ex. narrow	12	13	14	16	18	19	21	24	27	30	36	42	

Pillar, pillar narrow, and pillar extra narrow, with one or both edges cut, take same list price as with two safe edges.

Half Round			Crossing			Barrette			Square			Round			Barrette Cut All Sides and Cant			Crochet			
Nos.	00-2	3-5	6-8	00-2	3-5	6-8	Nos.	00-2	3-5	6-8	00-2	3-5	6-8	Nos.	00-2	3-5	6-8	00-2	3-5	6-8	Nos.	00-2	3-5	6-8
3 in.	$2 90	$3 00	$3 15	$2 80	$2 85	$2 95	3 in.	$2 80	$2 85	$2 95	$2 25	$2 25	$2 25	3 in.	$2 05	$2 05	$2 05	$3 30	$3 35	$3 45	3 in.	$2 80	$3 00	$3 20
3½	3 05	3 15	3 60	3 25	3 30	3 40	3½	3 25	3 35	3 40	2 50	2 50	2 50	3½	2 25	2 25	2 25	3 90	4 00	4 10	3½	3 20	3 40	3 60
4	3 20	3 70	4 20	3 70	3 80	4 00	4	3 70	3 75	3 85	2 80	2 95	3 05	4	2 50	2 60	2 65	4 40	4 60	4 80	4	3 50	3 70	3 90
4½	4 10	4 65	5 10	4 70	4 95	5 20	4½	4 60	4 75	4 95	3 70	3 75	3 90	4½	3 25	3 35	3 50	5 80	6 00	6 20	4½	4 40	4 70	5 00
5	4 35	4 95	5 30	5 00	5 40	5 80	5	5 25	5 40	5 60	3 85	3 95	4 05	5	3 35	3 50	3 70	6 20	6 40	6 55	5	4 60	4 95	5 25
6	5 00	5 60	6 15	5 60	6 10	6 55	6	6 20	6 35	6 55	4 40	4 55	4 70	6	3 70	3 90	4 10	7 35	7 60	7 75	6	5 40	5 70	6 00
7	6 80	7 60	8 20	7 40	8 10	8 75	7	7 95	8 15	8 35	5 65	5 85	6 00	7	4 85	5 25	5 65	8 60	8 90	9 10	7	7 20	7 60	8 00
8	7 80	8 75	9 55	8 50	9 25	10 10	8	9 15	9 35	9 55	6 40	6 80	7 20	8	5 65	6 00	6 40	10 00	10 40	10 60	8	8 35	8 75	9 15
10	10 70	13 80	16 20	11 50	14 30	16 90	10	12 30	12 50	12 80	7 20	8 00	8 80	10	7 60	8 35	9 55				10	11 60	12 00	12 45
12	12 90	16 90	19 30	14 70	18 50	22 00	12	15 50	15 70	16 00	8 80	9 60	10 40	12	9 30	10 10	11 30							

Inches	3	3½	4	4½	5	6	7	8	10	12
Equaling, All cuts	$2 50	$2 80	$3 20	$4 20	$4 55	$4 90	$6 10	$6 90	$10 00	$13 50
Slitting, "	3 15	3 50	4 00	5 20	5 70	6 80	8 20	9 40	12 60	16 00
Rd. straight, "	2 25	2 50	2 80	3 50	3 90	4 50	6 00	7 20		
Drill or joint, Rd. or sq. edge, "	2 50	2 60	2 70	3 50	4 05	4 40	5 45	5 85		
Thickness of drill or joint: Thin	.02	.03	.04	.05	.06	.08	.09	.10		
Thickness of drill or joint: Thick	.06	.07	.08	.09	.10	.12	.13	.14		

Pivot files or burnishers.

2½ in. with tang.....$3 50
2½ " " handle... 4 80
2½ " double..... 7 00

Right and left cut in either sharp or conical corners.

Screw head.

3 in. with tang $3 00
Plain or without tang.... 2 70
Ratchet, 3 in.. 2 70

Die sinkers.

3½ inch, 12 in a set, $2 80, assorted shapes.

Broach, all cuts, from gauge 40 to 65 inclusive, per dozen, $1 65.

NEEDLE FILES

	Inch.	Per Doz.
Round handle	10 c/m or 4	$1 90
	12 c/m " 4¾	1 90
	14 c/m " 5½	2 10
	16 c/m " 6¼	2 25
Square handle or escapement	14 c/m " 5½	2 35

Of the following twelve varieties, viz: Round, half round, flat, oval, knife, square, 3 square, equaling, slitting, joint, barrette, and marking, if round handle, or half round blunt, if square handle.

Put up in dozens, either assorted, one of each kind, or in kinds. Assorted dozens will always be sent when order does not state otherwise.

FILE HOLDERS AND FILES IN SETS

Stub files and holder, set of 6 files, assorted, per set.....$6 00
Extra files, each.....$0 35
Bent rifflers, handled, set of 6, assorted shapes..... 3 00
Machinist scrapers, handled, set of 6, assorted shapes..... 2 75

HORSE MOUTH RASPS

Long handle, plain, per dozen.....$15 00
Nickeled, per dozen.....$24 00
Jointed, nickeled, per dozen..... 33 00

WE CAN ALSO FURNISH THE ABOVE IN THE GENUINE SWISS GOODS

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PETER STUBS' FILES

Half Round, Round Edge Joint, and Flat Back, Half Round.

Inches.	Bastard.	Smooth.	Super.
2	$2 10	$2 30	$3 05
2½	2 10	2 30	3 05
3	2 50	2 70	3 45
3½	2 70	3 00	3 65
4	3 10	3 35	4 05
4½	3 30	3 50	4 50
5	4 00	4 45	5 40
6	4 85	5 30	6 20
7	5 80	6 65	8 00
8	6 20	7 05	8 90
9	7 05	8 35	10 60
10	8 35	9 65	11 45
12	10 50	12 20	15 00

Round Files, Taper

Inches.	Bastard.	Smooth.	Super.
2	$1 85	$2 30	$3 05
2½	1 85	2 30	3 05
3	2 25	2 70	3 45
3½	2 35	2 90	3 65
4	2 50	3 10	4 05
4½	2 70	3 30	4 50
5	3 40	4 00	5 40
6	3 80	4 85	6 70
7	4 90	6 20	8 45
8	5 80	7 05	8 90
9	6 65	8 35	10 60
10	7 50	9 65	11 45
12	8 80	12 20	15 00

Equaling Files

Inches.	Bastard.	Smooth.	Super.
2	$2 10	$2 30	$3 05
2½	2 10	2 30	3 05
3	2 50	2 70	3 45
3½	2 50	2 70	3 45
4	2 70	2 90	3 85
4½	2 90	3 35	4 30
5	3 60	4 00	5 00
6	4 00	4 85	5 85
7	4 90	5 80	7 15
8	5 80	7 05	8 50
9	6 65	7 90	9 75
10	7 90	8 80	10 60
12	9 65	11 35	14 35

Hand or Pottance

Inches.	Bastard.	Smooth.	Super.
3	$2 35	$2 60	$3 45
3½	2 35	2 60	3 45
4	2 50	2 90	3 85
4½	2 80	3 30	4 30
5	3 40	4 00	5 00
6	4 25	4 85	5 85
7	5 35	6 20	7 15
8	6 20	7 05	8 45
9	7 05	7 90	9 75
10	7 90	8 80	10 50
12	9 65	11 35	14 30

Taper Three Sq. Files

Inches.	Bastard.	Smooth.	Super.
2	$1 80	$2 10	$2 40
2½	1 80	2 10	2 40
3	2 15	2 45	2 80
3½	2 25	2 70	3 15
4	2 50	2 90	3 40
4½	2 60	3 10	3 85
5	3 40	4 00	4 75
6	3 80	4 45	5 65
7	4 90	5 80	7 15
8	6 20	7 05	8 00
9	7 05	7 90	9 75
10	7 90	8 80	10 60
12	9 65	11 35	13 15

Taper Flat, Pillar and Cotter.

Inches.	Bastard	Smooth.	Super.
1 to 3	$2 15	$2 35	$3 10
3½	2 15	2 35	3 10
4	2 50	2 90	3 70
4½	2 75	3 35	4 30
5	3 40	4 00	4 95
6	4 25	4 85	5 85
7	5 35	6 20	7 15
8	5 80	6 65	8 00
9	6 65	7 50	8 90
10	7 50	8 80	9 75
12	8 80	10 50	13 15

Hollow Edge Equaling Files—Same as Round Edge Joint, except that the edges are concave, instead of convex, 3 inch bastard, $3.60.

Saw Files, Taper or Blunt, Single or Double Cut.

Inches	1 to 2	3	3½	4	4½	5	5½	6	6½	7	8	9	10
	$1 80	2 20	2 30	2 50	2 80	3 40	3 60	3 80	4 25	4 65	6 20	7 20	8 10

Crossing Files

Inches.	Bastard.	Smooth.	Super.
2	$2 55	$2 75	$3 25
2½	2 55	2 75	3 25
3	2 90	3 10	3 65
3½	3 10	3 35	4 05
4	3 35	3 55	4 50
4½	3 55	4 00	5 00
5	4 25	4 85	5 85
6	5 30	5 75	6 70
7	6 65	7 50	8 90
8	7 05	7 90	9 75
9	7 90	9 20	11 50
10	8 80	10 50	12 30
12	10 50	12 20	14 00

Warding Files

Inches.	Bastard.	Smooth.	Super.
2	$1 85	$2 10	$3 05
2½	1 85	2 10	3 05
3	2 25	2 50	3 45
3½	2 25	2 50	3 45
4	2 50	2 75	3 65
4½	2 60	3 10	4 05
5	3 15	4 30	5 00
6	4 00	4 65	5 85
7	....	....	....
8	....	....	....

Slitting Files

Inches.	Bastard.	Smooth.	Super.
2	$2 10	$2 30	$3 05
2½	2 55	2 75	3 25
3	3 10	3 55	4 05
3½	3 35	3 70	4 50
4	3 55	3 95	4 95
4½	3 60	4 30	5 50
5	4 45	5 55	6 30
6	5 30	5 75	7 35

Square

Inches.	Bastard.	Smooth.	Super.
2	$1 85	$2 10	$2 85
2½	1 85	2 10	2 85
3	2 25	2 50	3 20
3½	2 35	2 70	3 45
4	2 50	2 90	3 90
4½	2 80	3 35	4 30
5	3 40	4 00	5 00
6	4 25	4 90	5 85

Larger sizes same as Taper Flat.

Knife Files

Inches.	Bastard.	Smooth.	Super
2	$1 85	$2 10	$2 85
2½	1 85	2 10	2 85
3	2 25	2 50	3 20
3½	2 35	2 60	3 45
4	2 50	2 90	3 70
4½	2 75	3 35	4 30
5	3 40	4 00	5 00
6	4 25	4 85	5 85

Fork Files

Inches.	Bastard.	Smooth.
5	$4 40	.....
6	5 20	$5 55

Pinion Files.

3 inch bastard	$2 30
4 " "	2 50

Dentists' Separating Files.

Per dozen..... $2 25

Square Edge Joint Files.

4 inch bastard...$2 50

Round Off Files.

5 inch bastard	$3 85
5 " smooth	4 25
6 " "	4 65

Cant.

Inches	3	3½	4	4½	5	6
	$2 85	$3 05	$3 25	$4 20	$4 40	$5 20

Chequering.

4 inch	$2 30
Tumblers Bent R. & L.	2 30

Frame Saw.

Inches	3 to 4	4½	5	6
	$2 35	$3 25	$3 60	$4 00

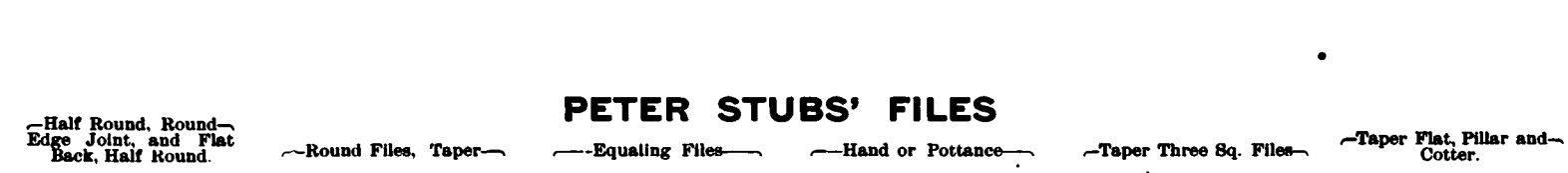
Blunt Round Files.

Inches	3½	4	4½	5	6
Bastard	$2 20	$2 30	$3 35	$3 45	$4 25
Smooth	2 65	2 85	3 80	4 05	4 80

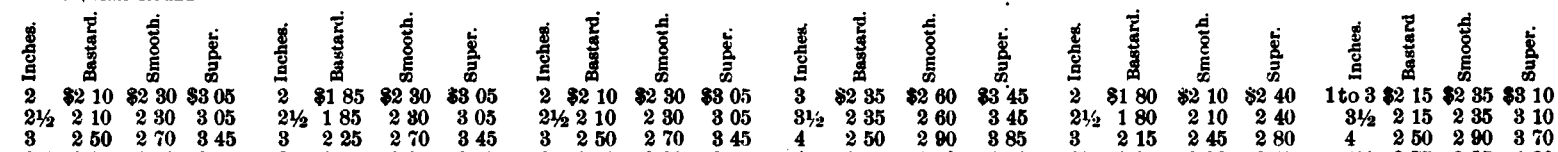
Prices per dozen.

RASPS

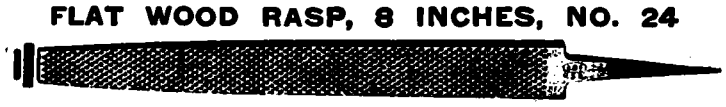
HALF ROUND WOOD RASP, 6 INCHES



CABINET RASP, 6 INCHES



FLAT WOOD RASP, 8 INCHES, NO. 24



PLAIN HORSE RASP, NO. 25



SHOEMAKER'S RASP, 8 INCHES, NO. 27



TANG HORSE RASP, NO. 26



Horse Rasps

Inches.	Plain.	Beveled and ¾ Rasp.	Tanged.
6	.....	.....	.....
7	.....	.....	.....
8	.....	.....	.....
9	.....	.....	.....
10	$9 40	$10 70	$12 80
11	11 40	12 90	15 20
12	12 80	14 40	16 80
13	15 20	17 00	19 60
14	17 80	20 10	23 10
15	20 90	23 60	27 30
16	24 40	27 50	32 20
17	28 90	31 50	.....
18	32 90	36 20	.....

File Rasps

Inches.	Flat.	Half Round.
6	$7 40	$8 10
7	8 60	9 30
8	9 40	10 10
9	11 40	12 20
10	12 80	13 70
11	15 50	16 80
12	17 50	18 70
13	20 90	22 40
14	23 20	24 80
15	27 80	29 70
16	30 80	32 90
17	36 20	38 90
18	40 90	43 60

Wood Files

Inches.	Flat.	Half Round.	Cabinet.
6	$4 30	$6 10	$8 10
7	4 80	7 00	9 30
8	5 30	7 50	10 10
9	6 30	8 50	12 20
10	7 00	9 10	13 70
11	8 60	10 70	16 80
12	9 70	11 80	18 70
13	11 80	14 10	22 40
14	13 30	15 50	24 80
15	16 00	18 50	29 70
16	17 80	20 60	32 90
17	21 50	24 70	38 90
18	23 90	27 50	43 60

Wood Rasps

Inches.	Flat.	Half Round.	Cabinet.
6	$7 40	$8 10	$10 10
7	8 60	9 30	11 70
8	9 40	10 10	12 80
9	11 40	12 20	15 50
10	12 80	13 70	17 50
11	15 50	16 80	20 70
12	17 50	18 70	22 80
13	20 90	22 40	26 80
14	23 20	24 80	29 60
15	27 80	29 70	33 90
16	30 80	32 90	36 90
17	36 20	38 90	42 40
18	40 90	43 60	46 90

Shoe Rasps

Inches.	Flat.	Half Round.	Oval.
6	$8 10	$8 10	$9 30
7	9 30	9 30	10 10
8	10 10	10 10	12 20
9	12 20	12 20	13 70
10	13 70	13 70	16 80
11	16 80	16 80	18 70
12	18 70	18 70	22 40
13	22 40	22 40	.....
14	24 80	24 80	.....

Last Makers' Rasps. One inch advance on Cabinet Rasp.

Knife

Inches.	Bastard.	Second Cut.	Smooth.
4	$5 40	$6 10	$6 40
5	6 10	6 70	7 10
6	6 90	7 50	7 90
7	7 80	8 50	8 90
8	8 50	9 10	9 50
9	9 40	10 60	11 30
10	10 10	11 50	12 30
11	12 20	13 70	14 60
12	13 70	15 20	16 10
13	16 30	17 90	19 20
14	18 20	19 90	21 20

Prices per dozen.

MANNING, MAXWELL & MOORE, 85, 87 AND 89 LIBERTY STREET, NEW YORK

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FILE HANDLES, CLEANERS AND HOLDERS

FILE HANDLES

PRICES, FIG. 3969

No. 1	Hardwood, polished brass ferrules, assorted, sizes 60 to 63, per gross	$4 00
" 2	" " " " " 62 to 64, "	4 50
" 3	" " iron " " 60 to 63, "	4 00
" 4	" " " " " 62 to 64, "	4 50
" 7	Softwood, brass ferrules, assorted, sizes 60 to 63, per gross	3 25
" 8	" " " " 62 to 64, "	3 50
" 9	" iron " " " 60 to 63, "	3 25
" 10	" " " " " 62 to 64, "	3 50
" 11	Jewelers' straight file handles, assorted	3 75



FIG. 3969

Numbers of sizes	60	61	62	63	64
Lengths, inches	4¼	4¼	4¾	5	5¼
Largest diameters, in.	1 1/16	1⅛	1¼	1⅜	1½

JEWELER'S FILE HANDLE

Brass Ferrule.



FIG. 3970

Nos. of Sizes.	Lengths.	Diameters.
100	4¼	⅜
101	4¼	7/16
102	4¼	½
103	4¼	⅝
104	4¼	¾
105	4¼	⅞

Nos.		Per Gross.
1	Maple, birch or cherry, polished, assortment of sizes, 100 to 103	$4 00
2	" " " " " " 104 " 105	5 00
3	Cocobola, " " " 100 " 103	8 00
4	" " " " 104 " 105	10 00

LOCK JAW FILE HANDLE



FIG. 3971

Nos.		Per Gross.
1	For files 13 inches and larger	$6 00
2	" 9 to 12 inches	5 50
3	" 7 " 10 "	5 25
4	" 5 " 8 "	5 00
4½	" 4 " 7 "	4 75
5	" 2 " 5 "	4 50
Assorted, Nos. 1 to 5		5 00
No. 6, for tinners' soldering coppers		8 00

Packed in paper boxes. If sold in bulk, list price, 25 cents per gross less.

FILE HOLDER

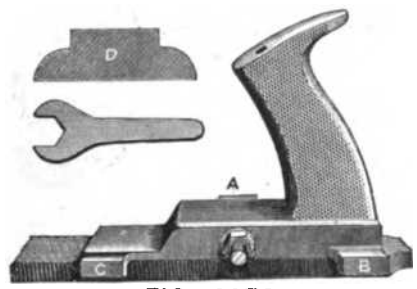


FIG. 3972

Price, each..... $0 75

OAK LEATHER RETANNED FILE CARD

In strips, per square foot.....$1 75

FILE CLEANER

This tool has four copper blades which are marked, each blade to be used on a certain cut of file, thus obviating the need of re-forming teeth on the blades after once properly formed. Lead or babbitt can be removed from a file quickly.



FIG. 3979

Width of Blade, In.	Prices.	Per Doz.	Per Gross.
1	$0 14	$1 60	$19 00
1½	18	2 00	23 50

FILE CLEANER

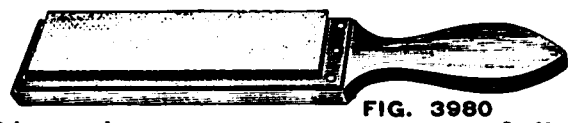


FIG. 3980

Price, per dozen.....$1 25

COLTON'S FILE CLEANER

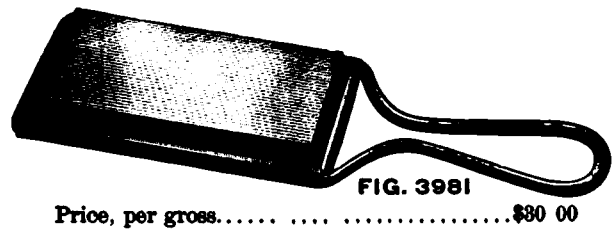


FIG. 3981

Price, per gross.....$30 00

STUB FILES AND HOLDERS



FIG. 3973

Price, with 6 files assorted.....$6 00



CABINET

FIG. 3974



THREE SQUARE

FIG. 3975



PITSAW

FIG. 3976



PILLAR

FIG. 3977



REAPER

FIG. 3978

Price, Figs. 3974 to 3978, each.....$0 85

SURFACE FILE HOLDER

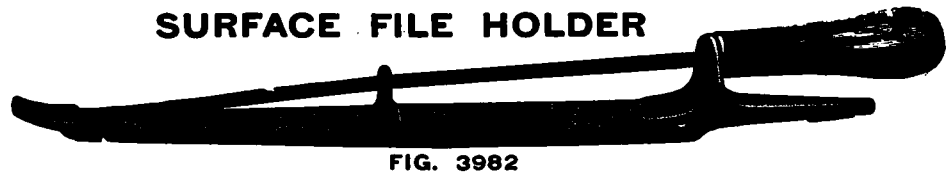


FIG. 3982

Prices, No. 4.....$1 25. Price, No. 5.....$1 50.

FILE CARD



FIG. 3983

Price, per dozen.....$2 75

FILE BRUSH

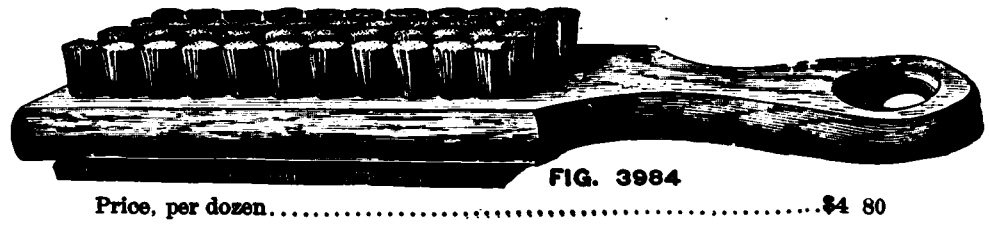


FIG. 3984

Price, per dozen.....$4 80

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CARPENTER'S PINCERS

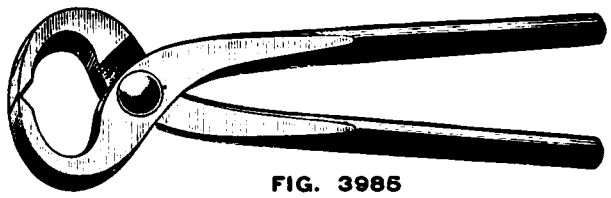


FIG. 3985

No. 40. Half size cut of 6 inches; style of 6 and 7 inches.

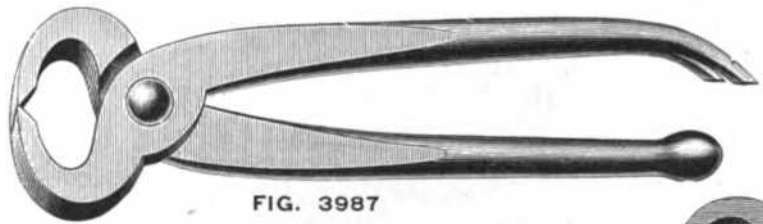


FIG. 3987

No. 40. Half size cut of 8 inches; style of 8, 9, 10 and 12 inches.

No. 40. Wrought, polished face—6 inches, per dozen, $4.00; 7 inches, per dozen, $4.40; 8 inches, per dozen, $4.80; 9 inches, per dozen, $5.20; 10 inches, per dozen, $6.00; 12 inches, per dozen, $6.80.



FIG. 3989

No. 42. Half size cut of 8 inches.
No. 42. Extra quality, steel face—6 inches, per dozen, $6.00; 8 inches, per dozen, $7.00; 10 inches, per dozen, $8.00; 12 inches, per dozen, $9.00.

BLACKSMITH'S HOOF OR CUTTING NIPPERS

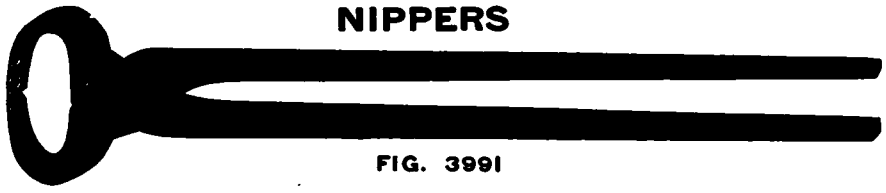


FIG. 3991

No 32. Solid cast steel, all steel, 14 inches....,.....per dozen, $26 00

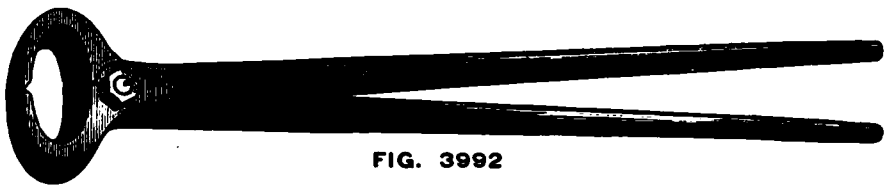


FIG. 3992

No. 82. Solid cast steel, all steel, 14 inches.....per dozen, $35 00

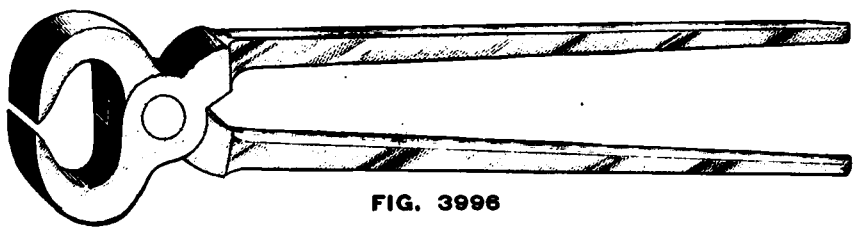


FIG. 3996

			Per Dozen.
No. 20	10 inches long,	forged from high grade steel, full polished	$15 00
" 22	12 "	" " " "	20 00
" 24	14 "	" " " "	24 00

ACME NIPPERS

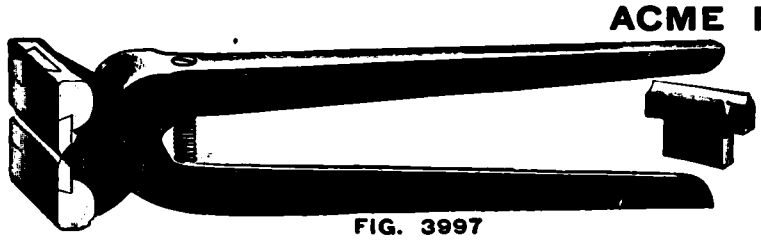


FIG. 3997

BLACKSMITH'S PINCERS

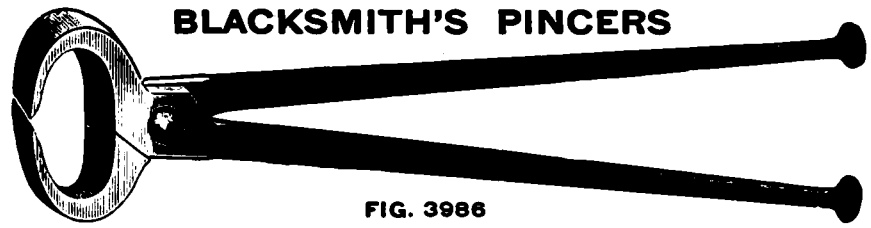


FIG. 3986

PRICES

Forged steel, polished jaws, extra finish.

No. 32	12 inches long	per dozen,	$15 00
" 34	14 "	"	23 00
" 36	16 "	"	29 00

HORSESHOEING PINCERS

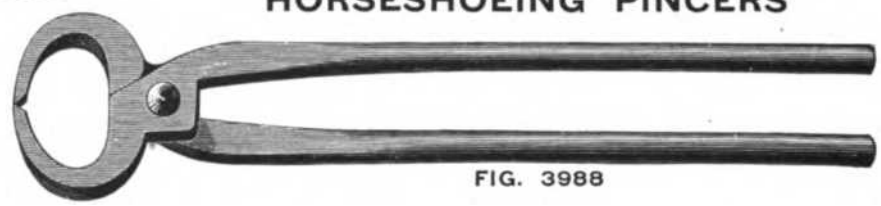


FIG. 3988

No. 52. Wrought iron, steel face—10 inches, per dozen, $15.50; 12 inches, per dozen, $17.40; 14 inches, per dozen, $19.30.

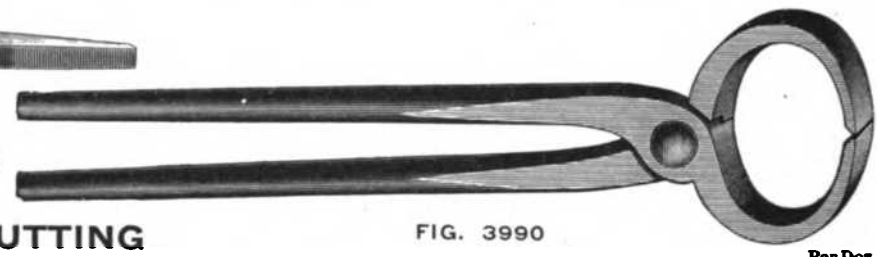


FIG. 3990

		Per Doz.
No. 62	Solid cast steel—12 inches, all cast steel	$27 00
No. 72	" " —14 " "	35 00

CAREW'S WIRE CUTTER ADJUSTABLE JAWS

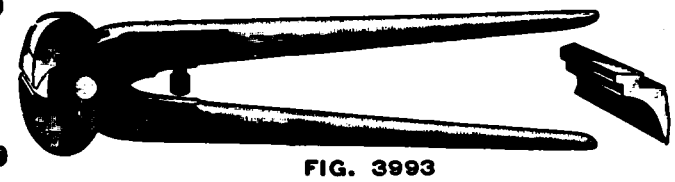


FIG. 3993

PRICES

6 inches	each,	$1 75	Extra jaws, per pair,		$0 50
8 "	"	2 00	" "		55
10 "	"	2 25	" "		60
12 "	"	2 60	" "		65
14 "	"	3 00	" "		70

STAR NIPPERS

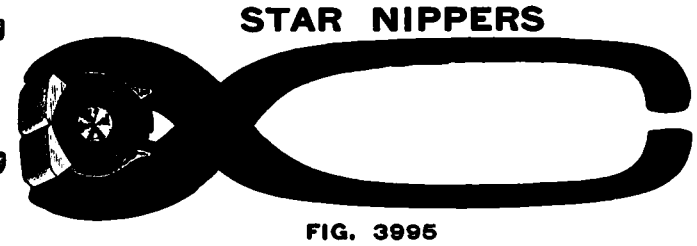


FIG. 3995

PRICES

No. 0	5 inches	$1 00	Extra jaws	each,	$0 75		
" 1	7 "	1 25	" "	"	90		
" 2	9 "	1 75	" "	"	1 25		
" 3	12 "	2 50	" "	"	1 75		

PRICES

No. 1	12 inches long	each,	$2 25
" 2	11 "	"	2 00
" 3	10 "	"	1 75
" 4	8 "	"	1 50
" 5	7 "	"	1 25

For Nos. 1, 2 and 3, extra jaws, per pair, 55 cents; for Nos. 4 and 5, extra jaws, per pair, 50 cents.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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PERFECT CUTTING PLIERS OR NIPPERS

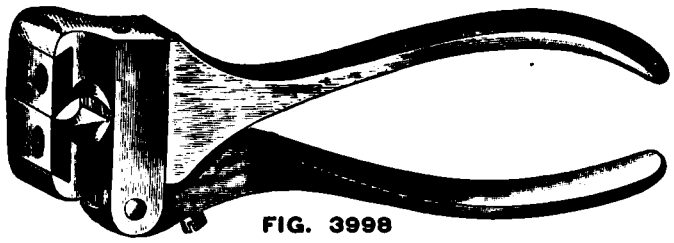


FIG. 3998

No. 2, 5 inches long, $14.50 per dozen. No. 3, 6 inches long, $16.00 per dozen.

PRICES, FIG. 3999.

Nos.		Per Doz.
5	5 inches, polished faces, with detachable jaws and duplicate parts	$15 00
6	6 " " " " " " " " "	19 00
	For Music Wire.	
15	5 inches, all polished	24 00
16	6 " " " "	28 00

These cutting nippers can also be furnished 7 and 8 inches in length.

ADJUSTABLE JAW CUT NIPPERS

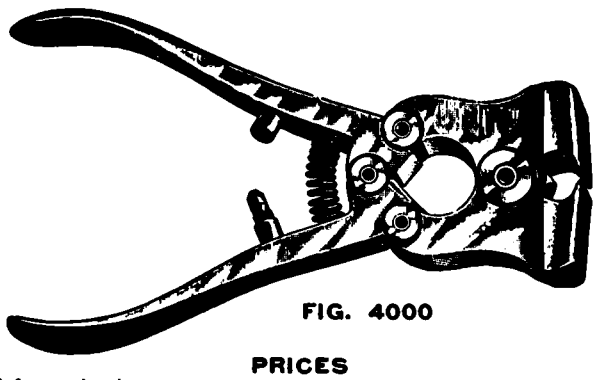


FIG. 4000

PRICES

5½ inch M, for music wire	$2 00
" " C, for common use	2 00
" " B, for bicycle use	2 00
7 " either M, C, or B	2 50
Extra jaws, either M, C or B, which should be designated as above, per pair	50

CUTTING NIPPERS

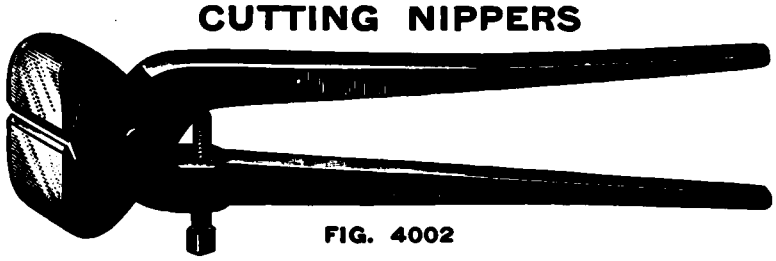


FIG. 4002

The jaws of these nippers are made from best cast steel.

PRICES

Nos.		Each.
0	Very large and strong, 2 inch jaws, 14 inches long	$3 75
1	Extra large size, 12 inches long	2 25
2	Large size, 11 inches long	2 00
3	Common size, 10 inches long	1 50
4	Small size, 8 inches long	1 40
5	" " 7 " "	1 00

END CUTTING NIPPERS

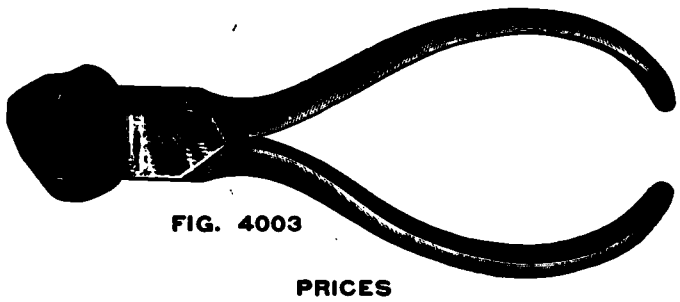


FIG. 4003

PRICES

No. 710—Cast steel, bright face.

Inches	4	4½	5	5½	6	6½	7	8
Per dozen	$3 00	$3 00	$3 50	$3 80	$4 30	$4 80	$5 50	$7 20

No. 848½—Cast steel, polished face.

Inches	4	4½	5	5½	6	6½	7	8
Per dozen	$3 50	$3 50	$4 00	$4 60	$5 20	$5 80	$6 50	$8 20

No. 848—Cast steel, polished face, hand forged.

Inches	3	3½	4	4½	5	5½	6	6½	7	8
Per dozen	$4 20	$4 20	$4 20	$4 20	$4 70	$5 20	$5 80	$6 70	$7 60	$10 20

No. 849—Fine cast steel, polished face, hand forged. Stubs' Pattern.

Inches	3	3½	4	4½	5	5½	6	6½	7	8
Per dozen	$5 00	$5 00	$5 00	$5 00	$5 50	$6 00	$6 70	$7 50	$8 50	$11 00

No 850½– Extra quality cast steel, polished face, hand forged.

Inches	3	3½	4	4½	5	5½	6	6½	7	8
Per dozen	$6 40	$6 40	$6 40	$6 40	$6 40	$7 10	$7 80	$9 80	$11 25	$14 80

COMPOUND LEVER CUTTING NIPPERS

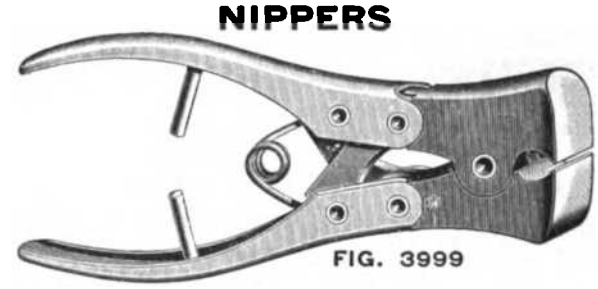


FIG. 3999

COMPOUND CUTTING NIPPERS

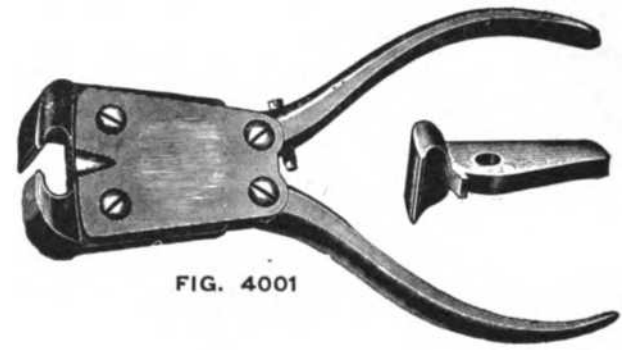


FIG. 4001

No. 3. 6 inch nippers.

Forged from best tool steel. All parts are interchangeable

PRICES

Bright Jaws and Plates, Black Handles.	No. 1, 4 in.	No. 2, 5 in.	No. 3, 6 in.	No. 4, 7 in.	No. 6, 8 in.	No. 9, 11 in.
Regular finish, per dozen	$18 30	$21 70	$29 80	$32 10	$36 75	$41 15
Bright " " "	22 25	26 50	34 10	36 40	40 90	46 10
Nickel plated, " " "	25 25	29 65	37 10	40 05	44 45	50 55
Will cut wires up to, inch	1/16	5/32	1/8	5/32	3/16	7/32
Net weight, per dozen, pounds	2½	4½	7¾	10⅛	13¾	17¾
Jaws polished, "	4 80	4 95	5 90	6 60	8 25	9 90
" nickeled, "	6 60	6 75	7 40	8 75	9 90	10 70
Handles, black, "	4 80	4 95	5 90	6 60	8 25	11 80
" polished, "	6 60	6 90	7 40	9 90	11 50	13 15
" nickeled, "	7 40	7 55	8 75	10 70	13 15	15 80
Screws, black, "	1 15	1 15	1 15	1 15	1 95	1 95
" nickeled, "	1 35	1 35	1 35	1 35	3 00	3 00
Springs, black, "	1 15	1 15	1 15	1 15	1 95	1 95

BULL DOG END CUTTING NIPPERS

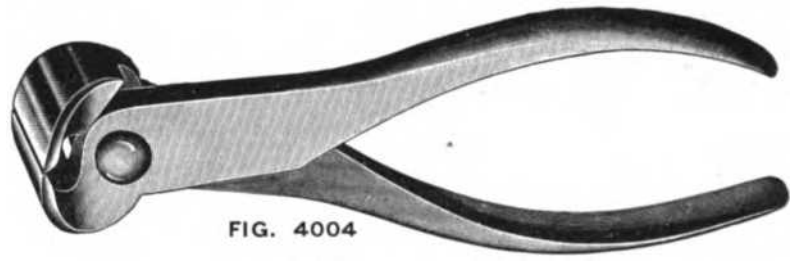


FIG. 4004

Forged from special tool steel.

PRICES

	5 Inches.	5½ Inches.	6 Inches.	7 Inches.	8 Inches.
No. 60 Black, polished jaws	$12 85	$14 75	$18 35	$20 60	$24 25
No. 160 Bright	13 70	15 55	19 30	21 70	25 75
Net weight, per dozen, pounds	5½	5¾	8	8½	11

SWEDISH SAMSON JOINT END NIPPERS

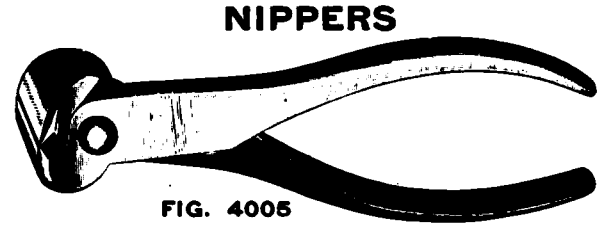


FIG. 4005

PRICES

	5 Inches.	5½ Inches.	6 Inches.	7 Inches.	8 Inches.
No. 72 Black, per dozen	$15 [illegible]	$17 45	$21 50	$24 15	$28 70
No. 73 Polished, " "	15 85	18 30	22 75	25 50	30 25

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SIDE CUTTING NIPPERS

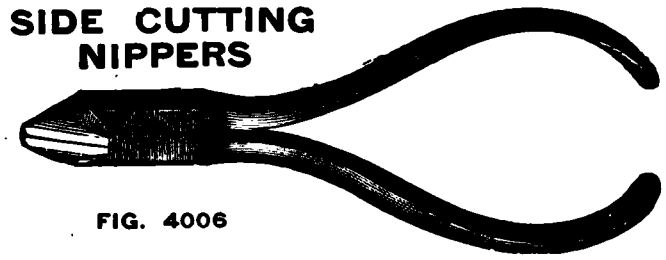


FIG. 4006

No. 852. Fine cast steel, bright face, hand forged.

Inches.	3	3½	4	4½	5	5½	6	6½	7	8
Per doz.	$5 80	5 80	5 80	5 80	5 80	6 70	7 50	8 80	9 50	12 00

No. 853. Extra quality cast steel, polished face, hand forged.

STUBS' PATTERN

Inches.	3	3½	4	4½	5	5½	6	6½	7	8
Per doz.	$7 50	7 50	7 50	7 50	7 50	8 40	9 50	10 60	12 00	15 80

STUBS'

Length in inches	5 inch and smaller	5½	6	7	8
Per dozen	$10 50	11 50	14 00	19 00	25 00

ELECTRIC WIRE CUTTER

FOR GENERAL PURPOSES

No. 1. With insulated handles.

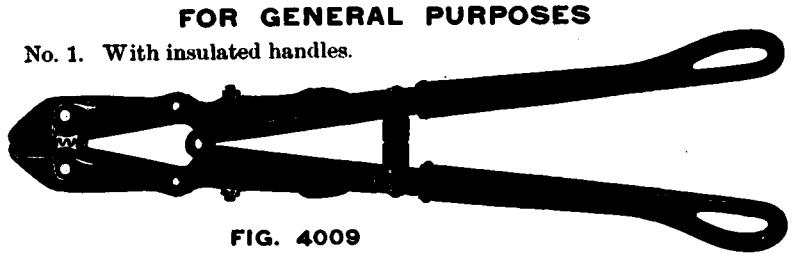


FIG. 4009

ELECTRIC WIRE CUTTER

FOR FIREMEN

No. 1. With hook and insulated handles.

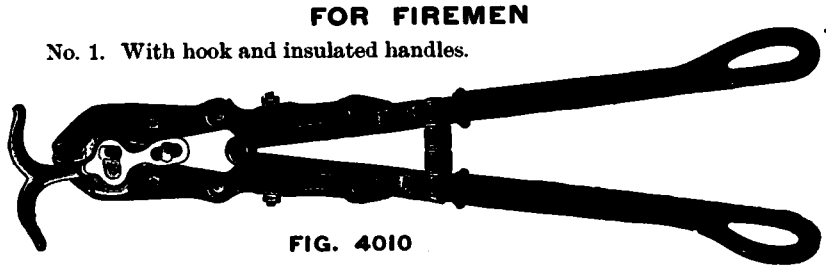


FIG. 4010

No. 0 Electric Wire Cutter, for general purposes, with insulated handles, but without automatic hook, opening to 5/16 inch.... $5 50

No. 1 Electric Wire Cutter, for general purposes, with insulated handles, but without automatic hook, opening to ¾ inch..... 6 50

No. 2 Electric Wire Cutter, for general purposes, with insulated handles, but without automatic hook, opening to 1⅛ inch.... 9 00

No. 3 Electric Wire Cutter, for general purposes, with insulated handles, but without automatic hook, opening to 1¼ inch.... 12 00

No. 1 Electric Wire Cutter, with insulated handles and automatic hook, for fire and police departments, opening to ¾ inch..... 12 00

No. 1 Storage Battery Cutter, for cutting off the necks of worn out lead plates in storage batteries. Cutting edges 2½ inches long. Handles not insulated..... 15 00

No. 2 Storage Battery Cutter, for same purpose as No. 1. Cutting edges same length as No. 1..... 18 00

The storage battery cutters have jaws hand forged and hand finished; they have long cutting edges. In ordering, send sketch showing section of necks of plates and the distance they are apart in the battery.

SWEDISH SIDE CUTTING PLIERS

SQUARE EDGE



FIG. 4013

These pliers are especially adapted for electrical work, such as telephone, telegraph, and all purposes where side cutting pliers are required.

PRICES

Nos.		4 Inch.	5 Inch.	5½ Inch.	6 Inch.	7 Inch.	8 Inch.
112	Black, per doz.	$12 35	$13 60	$15 60	$16 70	$21 50	$25 85
113	Polished, per doz.	16 00	17 10	19 70	20 95	25 70	30 30
114	Nickel plated, per doz.	19 85	20 75	23 50	24 60	29 50	34 20

CUTTING NIPPERS



FIG. 4007

No. 857. Extra quality cast steel, for piano wire, hand forged.

Inches.	6	6½	7
Per dozen.	$15 00	$18 00	$21 00

WIRE CUTTER

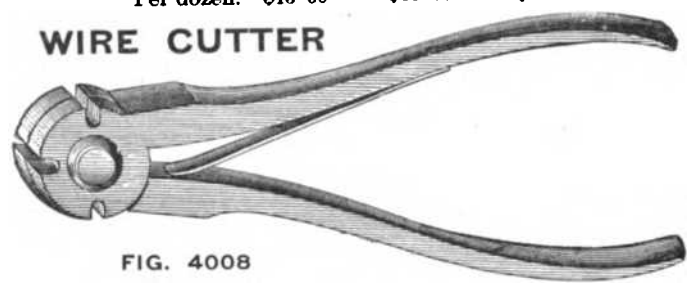


FIG. 4008

No. 858. Extra quality cast steel, hand forged.

Inches.	7	8	9	10
Per dozen.	$15 00	$18 00	$22 00	$26 00

IMPROVED WIRE CUTTER

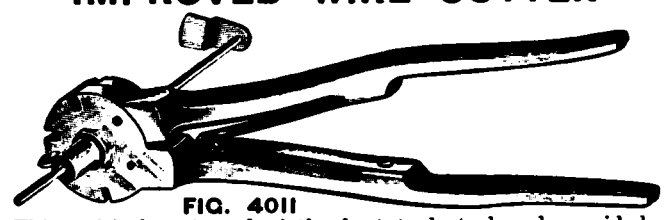


FIG. 4011

This tool is drop forged of the best tool steel and provided with four cutting edges on the rim, besides two which are inclosed. It will cut iron wire, tool steel wire and Stubs' rods.

There is also an adjustable gauge attached, by which wire can be cut into uniform lengths.

Length, 10 inches, each.....$3 00

TELEPHONE WIRE SNIPS

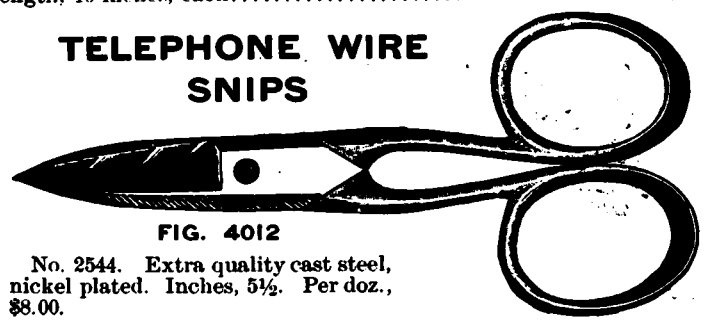


FIG. 4012

No. 2544. Extra quality cast steel, nickel plated. Inches, 5½. Per doz., $8.00.

HEART CUTTING PLIERS

FOR COVERED ELECTRICAL WIRE

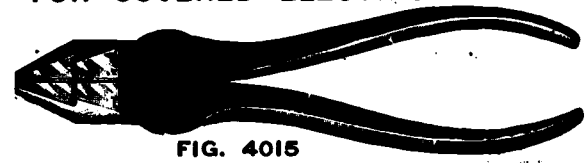


FIG. 4015

PRICES, SOLID CAST STEEL

Sizes, inches.	5½	6	7	8
Per dozen.	$8 80	$9 50	$12 20	$17 60

SWEDISH SIDE CUTTING PLIERS

ROUND EDGE



FIG. 4014

Similar in design to Fig. 4013, with the addition of the round edge. The advantage of this is that a lineman can carry it in his pocket without wearing or tearing his clothes. It is also very desirable where they are liable to drop the pliers on wire that they are working. The round edge will not break the scale in any way. It is well adapted for copper work.

PRICES

Nos.		4 Inch.	5 Inch.	5½ Inch.	6 Inch.	7 Inch.	8 Inch.
115	Black, per doz.	$12 85	$14 15	$16 35	$17 45	$22 35	$27 00
116	Polished, per doz.	16 50	17 85	20 85	22 00	26 85	31 50
117	Nickel plated, per doz.	20 50	21 50	24 45	25 65	31 15	35 75

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREETS, NEW YORK

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ROYAL BLUE SIDE CUTTING PLIERS

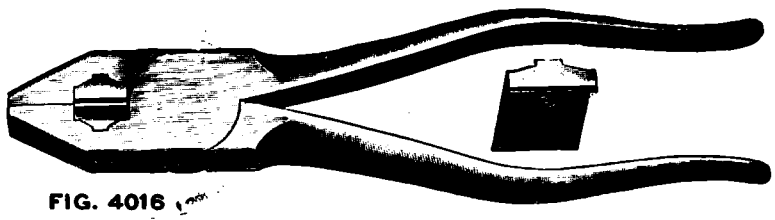


FIG. 4016

Forged from best tool steel. Reversible and renewable jaws, and rounded sides and corners.

PRICES

Nos		Per Doz.
90—Black, blue head	8 inches,	$36 00
190—Bright	"	39 00
290—Nickel plated	"	41 00
390—Full blued	"	41 00

Net weight, per dozen, 13½ lbs.

SIDE CUTTING AND SPLICING PLIERS

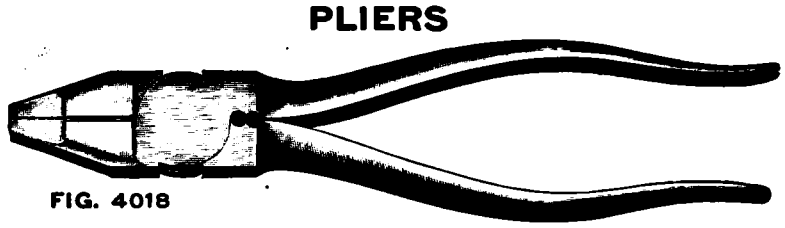


FIG. 4018

PRICES

Nos.	4 in.	5 in.	5½ in.	6 in.	7 in.	8 in.
350—Black, polished jaws.	$8 55	$9 15	$10 20	$10 90	$13 80	$16 30
450—Bright	11 20	11 90	13 10	13 90	16 90	19 50
550—Nickel plated	13 65	14 50	15 75	16 70	19 80	22 50

STANDARD SIDE CUTTING PLIERS

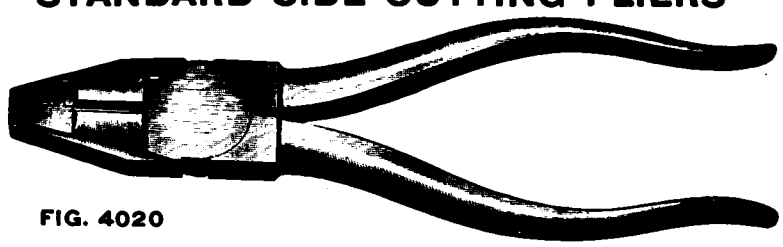


FIG. 4020

Forged from special tool steel.

PRICES

No.	4 in.	5 in.	5½ in.	6 in.	7 in.	8 in.
50—Black, polished jaws	$7 20	$7 80	$8 65	$9 35	$12 00	$14 50

COMBINATION PLIERS

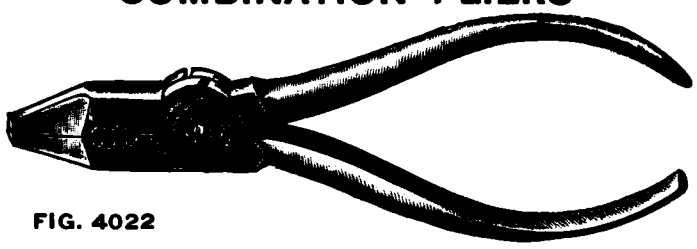


FIG. 4022

No.	Per Doz.
722—All bright, cast steel, 5½ inches	$2 90

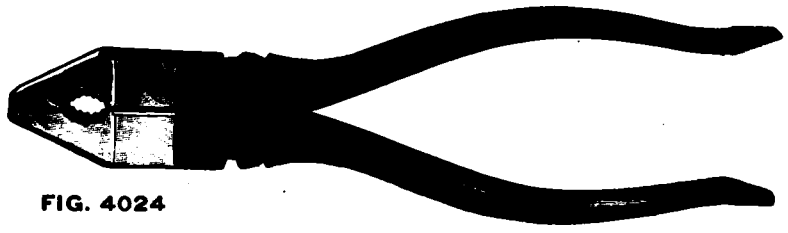


FIG. 4024

No. 780—Black, common.

Inches	7	8	
Per dozen	$7 50	$9 30	

No. 780—All bright, common.

Inches	7	8
Per dozen	$9 30	$11 00

Extra quality, cast steel, hand forged.

No. 880—Black.	Inches	6	7	8
	Per dozen	$11 30	$12 50	$13 75
No. 880—All bright.	Inches	6	7	8
	Per dozen	$12 80	$13 75	$15 00
No. 880—Nickel plated.	Inches	6	7	8
	Per dozen	$14 00	$16 50	$18 50

ROYAL BLUE SPLICER AND SIDE CUTTING PLIERS

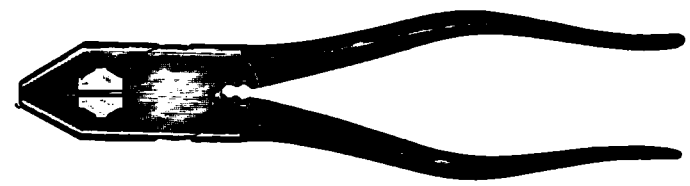


FIG. 4017

Forged from tool steel. Reversible and renewable jaws, and rounded sides and corners.

PRICES

Nos.		Per Doz.
490—Black, blue head	8 inches,	$37 00
590—Bright	"	40 00
690—Nickel plated	"	42 00
790—Full blued	"	42 00
Screws		0 60
Jaws		4 80

SIDE CUTTING AND SPLICING PLIERS

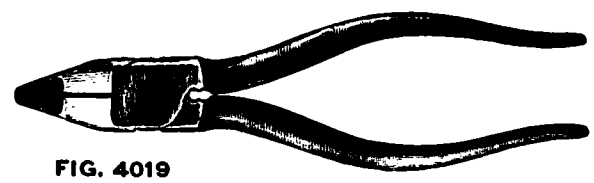


FIG. 4019

Has a splicing clamp in the handle which takes the place of a connector. Polished head and jaws. Round edges.

PRICES

Nos.	4 in.	5 in.	6 in.	7 in.	8 in.
125—Half polished	....	....	$16 65	$21 40	$25 75
135—Polished	....	....	21 00	26 25	30 75
140—Nickel plated	....	....	24 65	30 40	35 20

LONG REACH SIDE CUTTING PLIERS

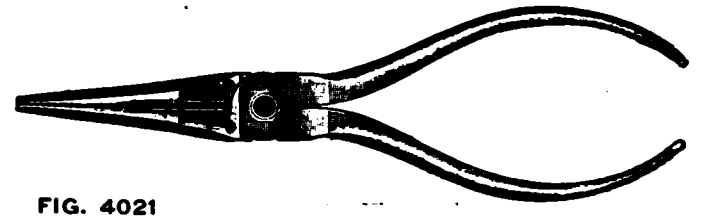


FIG. 4021

Indispensable for working in deep and narrow places; useful for telephone and switch board builders.

PRICES

Nos.	Per Doz.
650—Black, polished jaws, 5½ inches	$9 60
750—Bright	12 00
850—Nickel plated	13 50

BUTTON'S PATTERN PLIERS



FIG. 4023

No. 847½—Cast steel.

Inches	4½	6	7	8	9	10
Per dozen	$3 20	$3 80	$4 60	$5 00	$5 75	$6 30

No. 1847½—Extra quality, best grade.

Inches	4½	6	7	8	9	10
Per dozen	$3 60	$4 40	$5 20	$5 60	$6 40	$7 00

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ALL STEEL SIDE CUTTING PLIERS

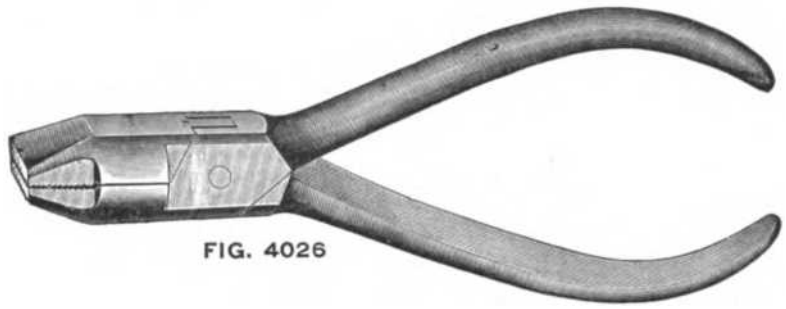


FIG. 4026

No. 1864S—Black, Polished Face.

Inches	4	4½	5	5½	6
Per dozen	$8 00	8 00	8 00	9 00	10 00

SIDE CUTTING PLIERS

FLAT CUTTER

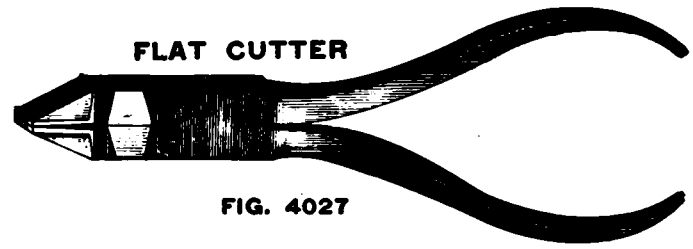


FIG. 4027

No. 860—Best Cast Steel, Hand Forged.

Inches	4	4½	5	5½	6	6½	7	8
Per doz.	$5 00	5 00	5 40	6 20	7 00	8 00	9 00	11 00

No. 861—Extra Quality, Cast Steel, Hand Forged.

Inches	4	4½	5	5½	6	6½	7	8
Per doz.	$6 00	6 00	6 40	7 20	8 00	9 00	10 00	12 00

BELL HANGERS' PLIERS

FLAT NOSE, SIDE CUTTER

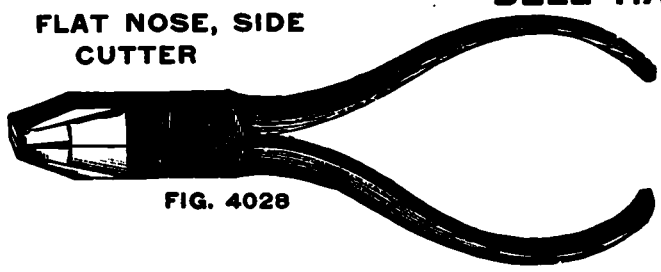


FIG. 4028

No. 715—Cast Steel.

Inches	4	4½	5	5½	6	6½	7	8
Per doz.	$2 90	2 90	3 00	3 50	4 00	4 40	5 00	6 60

No. 863—Best Cast Steel, Hand Forged.

Inches	4	4½	5	5½	6	6½	7	8
Per doz.	$5 00	5 00	5 40	6 20	7 00	8 00	9 00	11 00

No. 864—Extra Quality, Cast Steel, Hand Forged.

Inches	4	4½	5	5½	6	6½	7	8
Per doz.	$6 00	6 00	6 50	7 40	8 30	9 20	10 50	13 50

No. 864—All Polished.

Inches	4	4½	5	5½	6	6½	7	8
Per doz.	$7 00	7 00	7 50	8 40	9 60	10 50	12 00	15 00

RAISED CUTTER

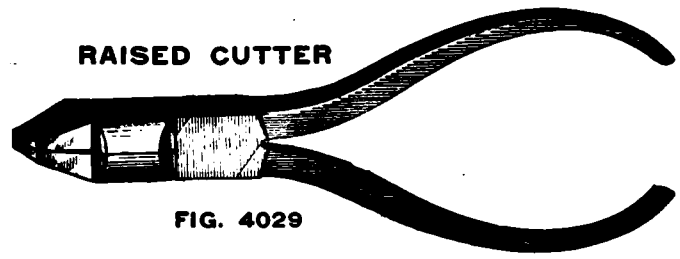


FIG. 4029

No. 862—Extra Quality Cast Steel, Hand Forged.

Inches	4	4½	5	5½	6	6½	7	8
Per doz.	$6 00	....	6 50	7 40	8 30	9 20	10 50	13 50

No. 862½—Best Cast Steel, Hand Forged.

Inches	4	4½	5	5½	6	6½	7	8
Per doz.	$5 00	5 00	5 40	6 20	7 00	8 00	9 00	11 00

TELEPHONE SIDE CUTTING PLIERS

OVAL NOSE SIDE CUTTER

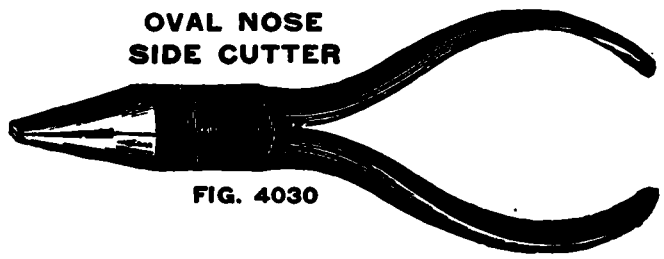


FIG. 4030

No. 866—Extra Quality Cast Steel, Hand Forged.

Inches	5	5½	6
Per dozen	$7 50	8 00	9 00

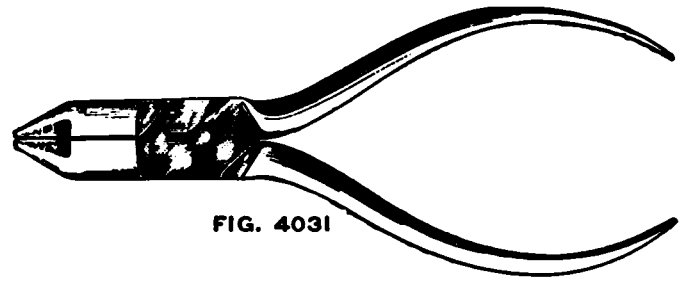


FIG. 4031

No. 870—Bright Polished, Hand Forged.

Inches	3½	5	5½	6
Per dozen	$8 00	8 00	9 00	10 00

ALL STEEL TELEGRAPH PLIERS

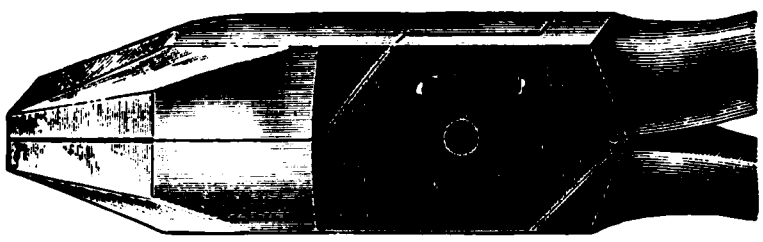


FIG. 4032

Black, Polished Jaws.

Inches	4	4½	5	5½	6	6½	7	8	9
Per doz.	$8 00	8 00	8 00	9 00	10 00	12 00	13 00	18 00	22 00

All Polished.

Inches	4	4½	5	5½	6	6½	7	8	9
Per doz.	$9 00	9 00	9 00	10 00	11 00	13 00	14 50	19 50	24 00

Full Nickel Plated.

Inches	4	4½	5	5½	6	6½	7	8	9
Per doz.	$10 00	10 00	10 00	11 00	12 00	14 25	16 00	21 00	26 00

Stubs.

Lengths, inches	5½ and under.	6	6½	7	8	9
No. 152—Per dozen	$11 50	12 50	16 00	18 00	24 00	.....
" 153— " "	10 00	11 00	14 00	18 00	24 00	30 00

No. 152 is similar to No. 153, with the exception of having raised cutters.

FLAT NOSE, WITH HOLE

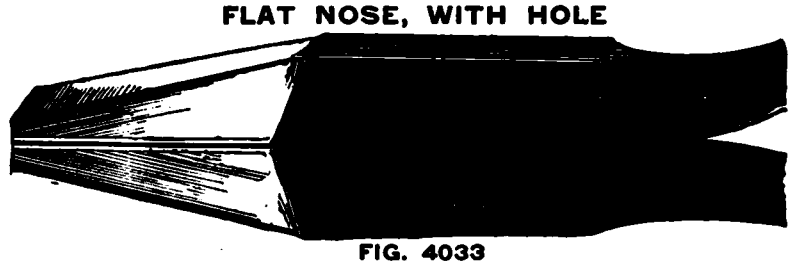


FIG. 4033

No. 840—Extra Heavy, Cast Steel, Hand Forged.
8 inches, per dozen.....$13 75

SIDE CUTTING, WITH HOLE

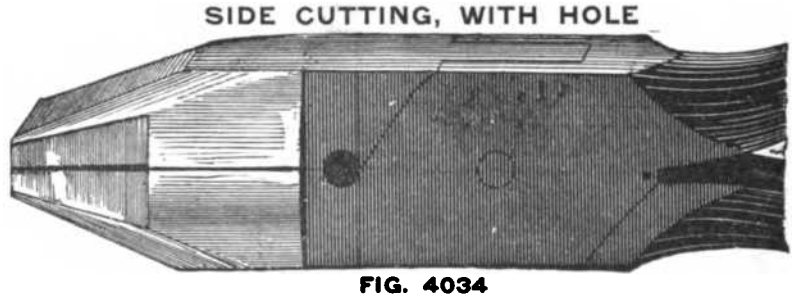


FIG. 4034

No. 842—Extra Heavy, Cast Steel, Hand Forged.
7 inches, per dozen, $13.50; 8 inches, per dozen, $18.50.

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FRY'S TELEGRAPH PLIERS

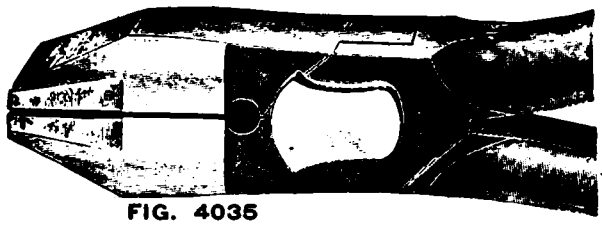


FIG. 4035

No. 842½—Hand forged, 7 inches.....per dozen. $16 00
" " 8 " ..... " " 20 00

RUBBER HANDLES FOR PLIERS

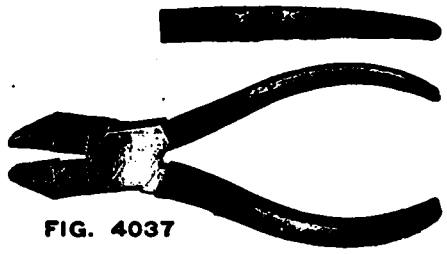


FIG. 4037

Inches.	Per Gross Pairs.
5	$17 00
6	23 00
7	28 80
8	36 00

BERNARD ELECTRIC CUTTING PLIERS

WITH RUBBER HANDLE COVERS

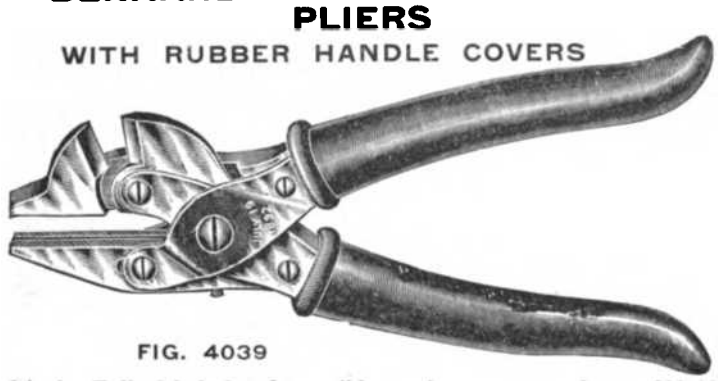


FIG. 4039

8 inch—Full nickel plated, crucible steel.....per dozen. $28 00
Extra cutting jaws..... " " 8 00
" " blades..... " " 4 00
" plain or off jaws..... " " 4 00
" rubber handle covers..... " " 1 50
" handles.....per dozen pairs. 9 00

BERNARD ELECTRICIANS' PLIERS

FOR CUTTING AND STRIPPING INSULATED WIRES

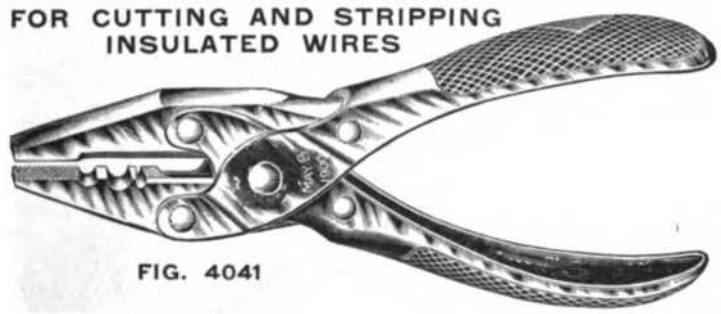


FIG. 4041

5½ inch—Full nickel plated, crucible steel.....per dozen. $11 00
Extra jaws..... " " 3 75
" handles.....per dozen pairs. 4 00

PARAGON CUTTING PLIERS

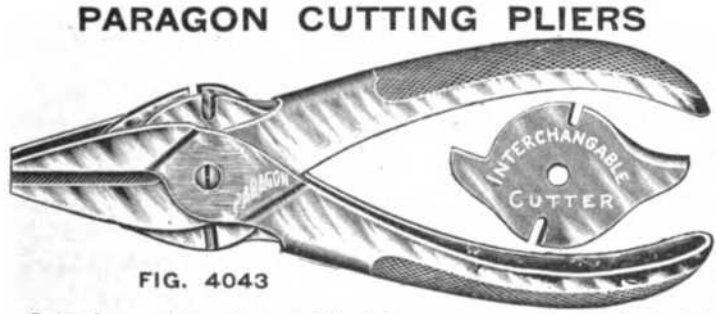


FIG. 4043

Interchangeable cutter, polished jaws, screw and nut joint, full nickel plated.

Sizes.....inches.	5	5½	6	7
Per dozen.....	$5 00	$6 00	$7 00	$9 00
Extra cutting blades, per dozen.	1 25	1 50	1 75	2 50
" handles, per dozen pairs..	3 50	4 00	4 50	6 00

INSULATED SIDE CUTTING PLIERS



FIG. 4036

These pliers are intended for linemen, motormen, electricians and others who wish to cut wires heavily charged with electricity. The tool is of forged solid steel. The insulated covering is not brittle and will not flake off.

PRICES

Inches.....	6	7	8
Per dozen.....	$25 00	$33 00	$40 00

INSULATED PLIER HANDLES

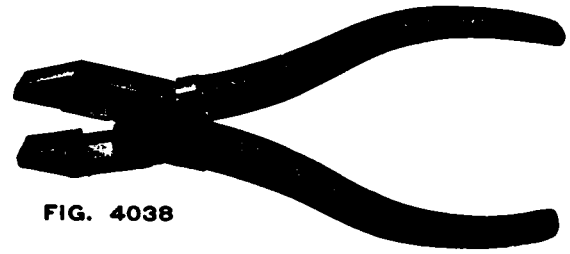


FIG. 4038

These are strong and elastic close fitting rubber shields, having the outer end closed. These shields are furnished in all sizes, and are easily applied to all kinds of line and office pliers, gas nippers, etc.

PRICES

Shields for 9 inch pliers.....per pair. $0 25
" " 7 and 8 inch pliers..... " " 20
" " smaller, office sizes, etc..... " " 15

BERNARD LINEMEN'S CUTTING PLIERS

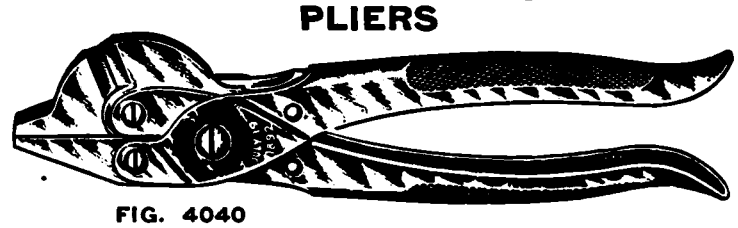


FIG. 4040

8 inch—Full nickel plated, crucible steel.....per dozen. $24 00
Extra cutting jaws..... " " 8 00
" " blades..... " " 3 50
" plain or off jaws..... " " 4 00
" handles.....per dozen pairs. 9 00

BERNARD CUTTING PLIERS



FIG. 4042

Sizes, extra heavy.....inches.	4½	5½	6½	7½
Full nickel plated, crucible steel, per dozen.	$11 50	$14 50	$17 50	$23 50
Extra cutting jaws..... " "	4 00	5 00	6 00	8 00
" " blades..... " "	2 50	2 75	3 00	3 50
" off or plain jaws..... " "	2 00	2 50	3 00	4 00
" handles.....per dozen pairs.	3 00	4 50	6 00	9 00

LODI CUTTING PLIERS

MADE TO CUT SOFT WIRE

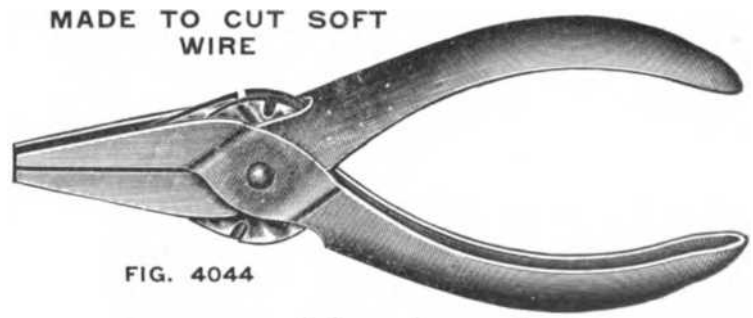


FIG. 4044

Sizes.....inches.	5	5½	6	7
Bright finish.....per dozen.	$2 00	$2 50	$3 00	$4 00

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FLAT NOSE SPRING PLIERS

FORGED FROM TOOL STEEL

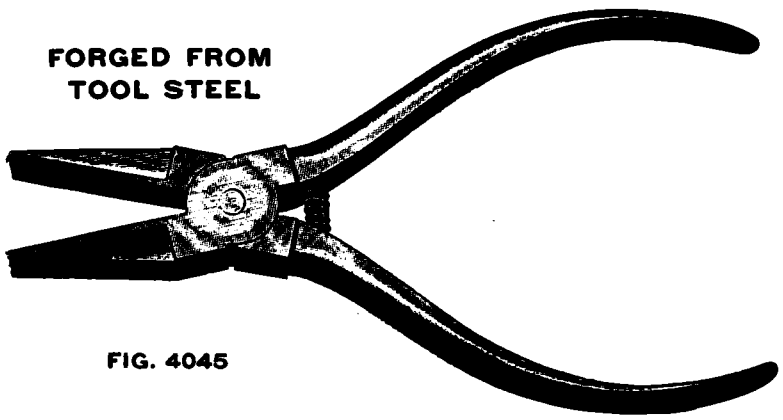


FIG. 4045

PRICES

Inches	4	4½	5	5½	6	7	8
No. 120—Black, polished jaws, per dozen	$3 60	$3 60	$4 20	$4 80	$5 40	$7 20	$8 40
No. 420—Bright, per dozen	4 50	4 50	5 10	6 00	6 70	8 90	10 10
" 520—Nickel plated, per doz.	5 40	5 40	6 00	7 60	8 10	10 70	12 00

ROUND NOSE SPRING PLIERS

FORGED FROM TOOL STEEL

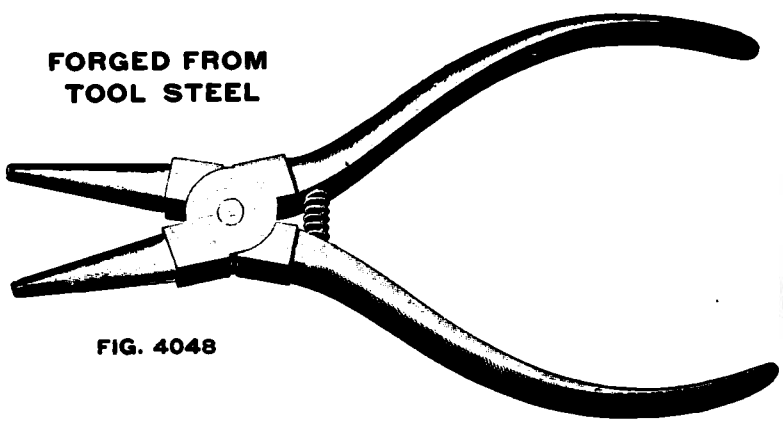


FIG. 4048

PRICES

Inches	4	4½	5	5½	6	7	8
No. 121—Black, polished jaws, per dozen	$3 60	$3 60	$4 20	$4 80	$5 40	$7 20	$8 40
No. 421—Bright, per dozen	4 50	4 50	5 10	6 00	6 70	8 90	10 10
" 521—Nickel plated, per doz.	5 40	5 40	6 00	7 60	8 10	10 70	12 00

FLAT NOSE PLIERS

FORGED FROM TOOL STEEL

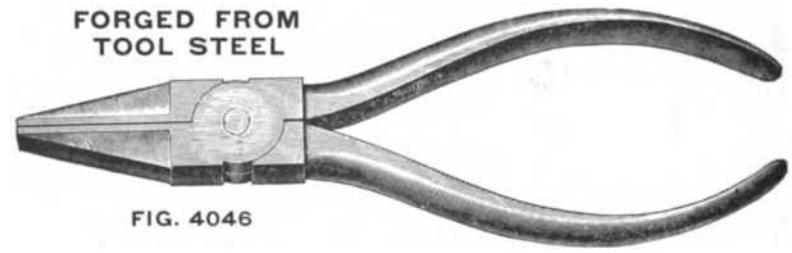


FIG. 4046

PRICES

Inches	3	3½	4	4½	5	5½	6	7	8
No. 20—Black, polished jaws, per dozen	$2 70	2 70	2 70	2 95	3 20	3 75	4 30	5 90	6 95
No. 220—Bright, "	3 80	3 80	3 80	4 00	4 45	5 65	6 35	8 25	9 70
" 320—Nickel plated, per dozen	5 20	5 20	5 20	5 35	5 80	7 20	7 90	9 80	11 60

GLASS PLIERS

FORGED FROM SOLID STEEL

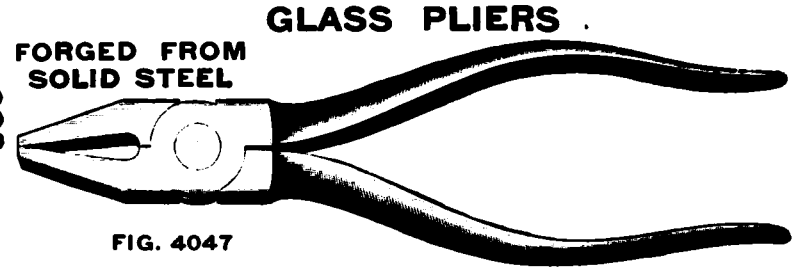


FIG. 4047

Used for trimming glass plates, flanges and disks; has long and wide jaws.

PRICES

Inches	6	7	8
No. 10—Black, bright jaws, per dozen	$10 00	$13 40	$16 70

ROUND NOSE PLIERS

FORGED FROM TOOL STEEL

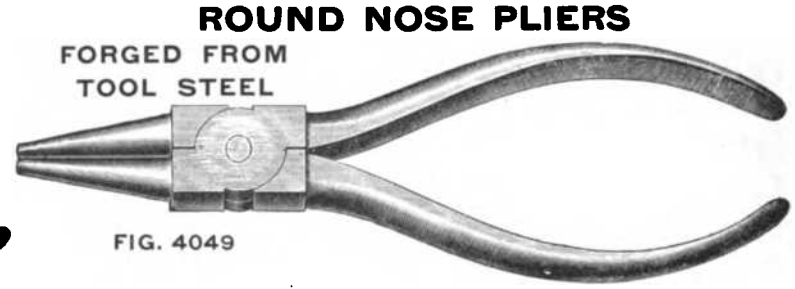


FIG. 4049

PRICES

Inches	3	3½	4	4½	5	5½	6	7	8
No. 21—Black, polished jaws, per dozen	$2 70	2 70	2 70	2 95	3 20	3 75	4 30	5 90	6 95
No. 221—Bright, "	3 80	3 80	3 80	4 00	4 45	5 65	6 35	8 25	9 70
" 321—Nickel plated, per dozen	5 20	5 20	5 20	5 35	5 80	7 20	7 90	9 80	11 60

P. S. STUBS AND STUBS' PATTERN PLIERS

FLAT NOSE

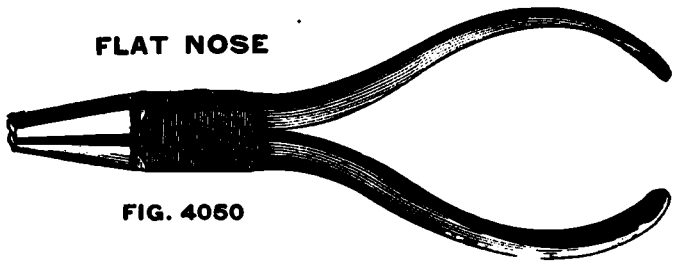


FIG. 4050

No. 702—Common, bright jaws.

	4	4½	5	5½	6	6½	7	8	inch.
Flat nose, Round "	$0 80	1 00	1 10	1 25	1 45	1 65	1 80	2 25	per dozen.

No. 703—Common, all bright.

	4	4½	5	5½	6	6½	7	8	inch.
Flat nose, Round "	$1 00	1 10	1 25	1 45	1 65	1 90	2 10	2 50	per dozen.

No. 800—Wrought, bright jaws.

	3	3½	4	4½	5	5½	6	6½	7	8	inch.
Flat nose, Round "	$1 05	1 05	1 05	1 25	1 40	1 65	1 90	2 40	2 70	3 60	per doz.

No. 802—Steeled, polished jaws.

	3	3½	4	4½	5	5½	6	6½	7	8	inch.
Flat nose, Round "	$1 30	1 30	1 30	1 50	1 70	2 05	2 35	2 80	3 20	4 00	per doz.

No. 804—Fine cast steel, polished jaws.

	3	3½	4	4½	5	5½	6	6½	7	8	inch.
Flat nose, Round "	$2 60	2 30	2 60	2 85	3 20	3 60	4 00	4 50	5 00	7 00	per doz.

ROUND NOSE

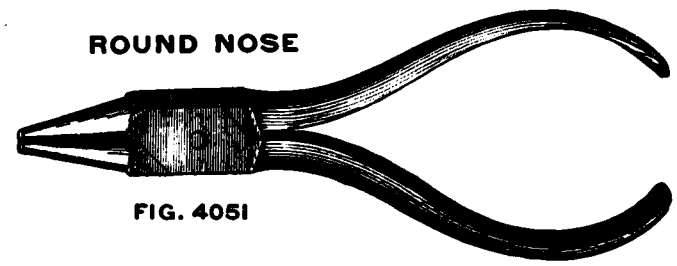


FIG. 4051

No. 805½—All bright.

	3	3½	4	4½	5	5½	6	6½	7	8	inch.
Flat nose, Round "	$1 30	1 30	1 30	1 45	1 60	1 90	2 15	2 60	3 20	4 20	per doz.

No. 805—All polished, steeled.

	3	3½	4	4½	5	5½	6	6½	7	8	inch.
Flat nose, Round "	$1 70	1 70	1 70	1 90	2 20	2 40	2 70	3 00	3 50	4 70	per doz.

No. 806—Extra fine cast steel, polished jaws

	3	3½	4	4½	5	5½	6	6½	7	8	inch.
Flat nose, Round "	$3 40	3 40	3 40	3 40	3 80	4 40	5 30	6 30	7 50	9 00	per doz.

No. 806½—Extra quality, cast steel (Stubs' Pattern).

	3	3½	4	4½	5	5½	6	6½	7	8	inch.
Flat nose, Round "	$3 60	3 60	3 60	3 60	4 00	4 75	5 50	7 00	8 40	10 00	per doz.

Stubs' Genuine.

Flat nose, Round "	$5 50	5 50	5 50	5 50	6 00	7 00	9 00	12 00	14 00	20 00	doz.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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P. S. STUBS' AND STUBS' PATTERN PLIERS

FLAT LONG NOSE OR PENDULUM

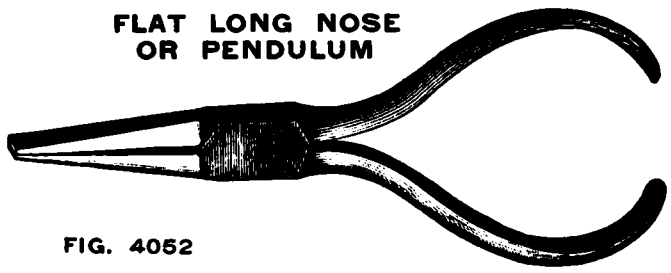


FIG. 4052

No. 810—Stubs' pattern; cast steel; extra quality:

Sizes, inches	3	3½	4	4½	5	5½	6	7
Per dozen..	$3 80	$3 80	$3 80	$3 80	$4 20	$4 80	$5 80	$8 40
Stubs' genuine:								
Per dozen..	$5 50	5 50	5 50	5 50	6 00	7 00	9 00	....

LONG ROUND NOSE

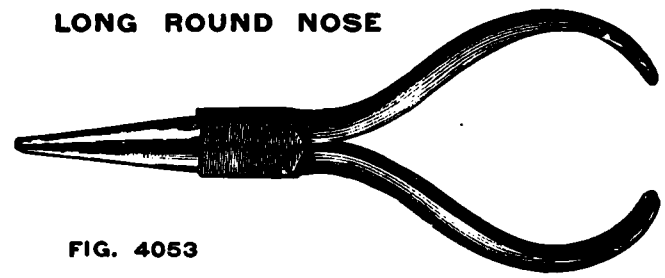


FIG. 4053

No. 810—Stubs' pattern; cast steel; extra quality:

Sizes, inches..	3	3½	4	4½	5	5½	6
Per dozen....	$3 80	$3 80	$3 80	$3 80	$4 20	$4 80	$5 80
Stubs' genuine:							
Per dozen....	5 50	5 50	5 50	5 50	6 00	7 00	9 00

GRIP NOSE OR CHAIN OVAL POINT

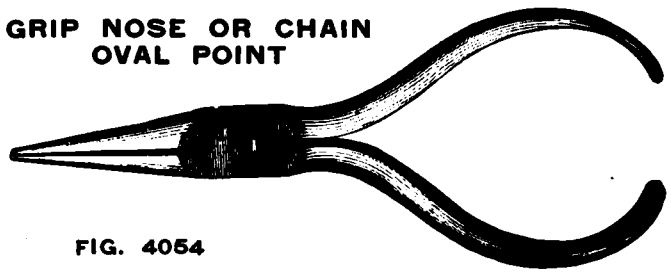


FIG. 4054

No. 813—Stubs' pattern; cast steel; extra quality:

Sizes, inches	3	3½	4	4½	5	5½	6
Per dozen..	$3 80	$3 80	$3 80	$3 80	$4 20	$4 80	$5 80
Stubs' genuine:							
Per dozen..	....	....	5 50	5 50	6 00	....	9 00

STOCKINGER OR WEAVERS'

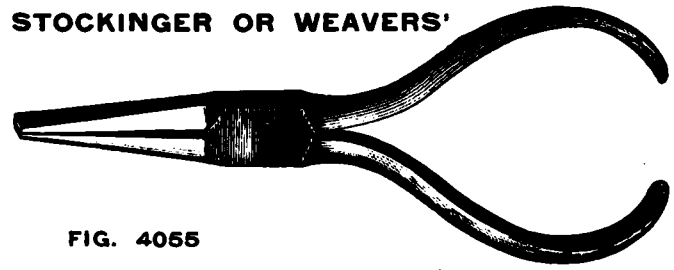


FIG. 4055

No. 822—Stubs' pattern; cast steel; extra quality:

Sizes, in.	3	3½	4	4½	5	5½	6	6½	7	8
Per doz..	$3 80	$3 80	$3 80	$3 80	$4 20	$4 80	$5 80	$7 00	$8 40	$10 00
Stubs' genuine:										
Per dozen....	....	....	5 50	5 50	6 00	7 00	9 00	....	....	.....

HALF ROUND

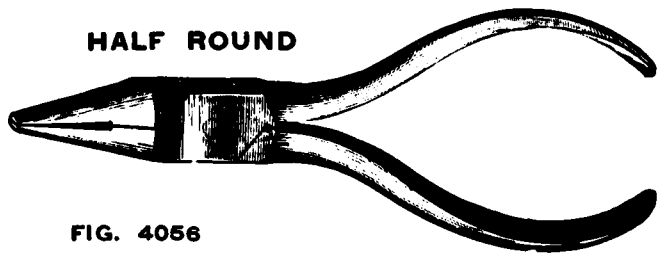


FIG. 4056

No. 845—Stubs' pattern; cast steel; extra quality:

Sizes, inches. ..	4	4½	5	5½	6
Per dozen.....	$4 00	$4 00	$4 80	$5 60	$6 20
Stubs' genuine:					
Per dozen.....	5 50	5 50	6 00	7 00	9 00

HOLLOW PLIERS

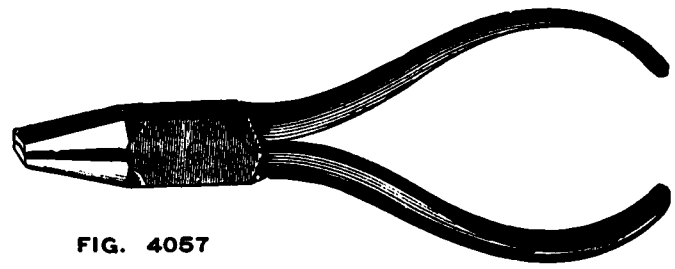


FIG. 4057

No. 847—Stubs' pattern; cast steel; extra quality:

Sizes, inches	4½	5	5½	6
Per dozen...	$6 00	$6 30	$7 20	$8 30

BERNARD FLAT NOSE PLIERS

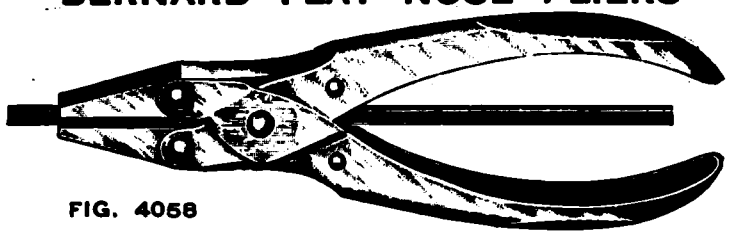


FIG. 4058

Crucible steel; full nickel plated; extra heavy:

Sizes, inches	4½	5½	6½	7½
Per dozen	$7 00	$9 00	$11 00	$15 00
Extra jaws, per dozen	2 00	2 50	3 00	4 00
" handles, per dozen pairs	3 00	4 50	6 00	9 00

BERNARD ROUND NOSE PLIERS



FIG. 4059

Crucible steel; full nickel plated:

Sizes, inches	4½	5½	6½
Per dozen	$7 00	$9 00	$11 00
Extra jaws, per dozen	2 00	2 50	3 00
" handles, per dozen pairs	3 00	4 50	6 00

BERNARD VISE PLIERS



FIG. 4060

CAN BE USED AS A WRENCH OR HAND VISE ON SMALL ARTICLES

Crucible steel; full nickel plated:

Size, inches	6½
Price, per dozen	$13 00
Extra jaws, per dozen	3 00
" thumb screws, per dozen	0 75
" handles, per dozen pairs	6 00

BERNARD DRILL ROD PLIERS

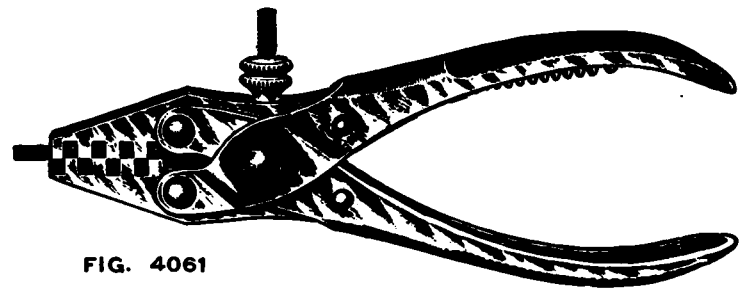


FIG. 4061

A TOOL ESPECIALLY MADE FOR HOLDING DRILLS, RODS, ETC.

Crucible steel; full nickel plated:

Size, inches	6½
Price, per dozen	$13 00
Extra jaws, per dozen	3 00
" thumb screws, per dozen	0 75
" handles, per dozen pairs	6 00

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PARAGON FLAT NOSE PLIERS

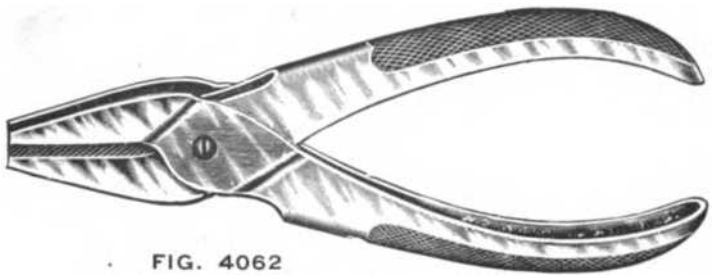


FIG. 4062

PRICES

Sizes, inches	4	4½	5	5½	6
Crucible steel polished jaws, full nickel plated, per dozen	$2 00	$2 50	$3 00	$3 50	$4 00

PARAGON ROUND NOSE PLIERS

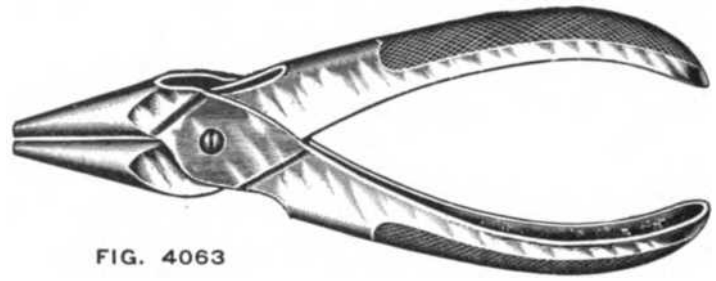


FIG. 4063

Sizes, inches	4	5	6
Crucible steel polished jaws, full nickel plated. Prices, per dozen	$2 00	$3 00	$4 00

LODI FLAT NOSE PLIERS

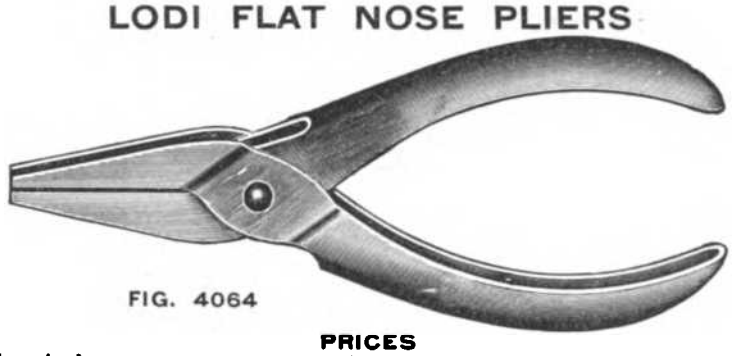


FIG. 4064

PRICES

Sizes, inches	4	4½	5	5½	6
Bright finish, per dozen	$1 00	$1 25	$1 50	$1 75	$2 00

LODI ROUND NOSE PLIERS

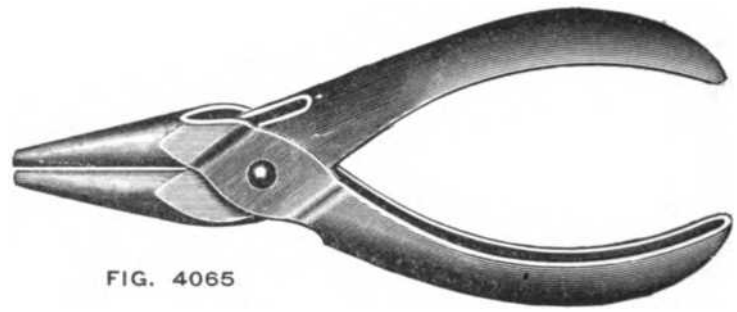


FIG. 4065

Sizes, inches	4	5	6
Bright finish. Prices, per dozen	$1 00	$1 50	$2 00

TELEGRAPH SPLICING CLAMPS

EXTRA QUALITY CAST STEEL

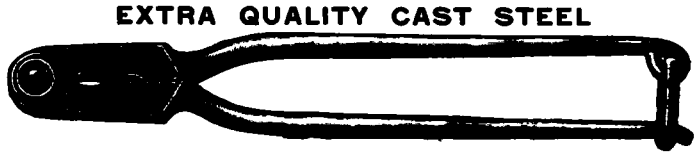


FIG. 4066

PRICES

No. 1.	All bright, extra heavy, two large holes, 10½ in., per doz.		$15 00
No. 2.	" " " " " small " 9½ " "		15 00

EXTRA QUALITY CAST STEEL

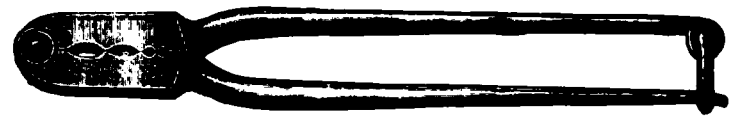


FIG. 4067

PRICES

Nos.			Inches.	Per Dozen.
5	Black,	four holes.	10	$11 80
5	Polished,	" "	"	12 50
5	Nickel plated,	" "	"	15 80
3	Polished,	" " extra heavy	"	16 50

EXTRA QUALITY CAST STEEL

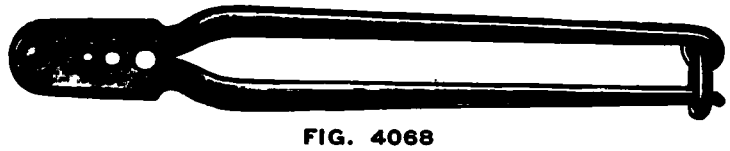


FIG. 4068

No. 6.	Polished, four round holes, 10 inches. Price, per dozen	$17 00
No. 6.	Nickeled, " " " " " "	20 00

POLISHED COPPER FACED

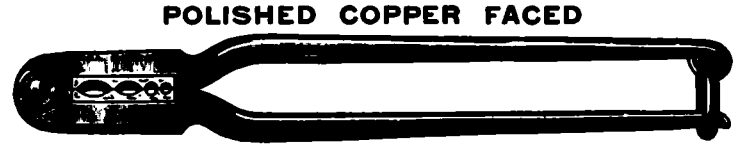


FIG. 4069

No. 3. Polished, four holes, extra heavy, 10 inches. Per doz...$22 00

TWISTING CLAMP



FIG. 4070

For No. 4, 5 and 6 wire. Price, per set of 2 pairs.....$4 50

TWISTING CLAMP

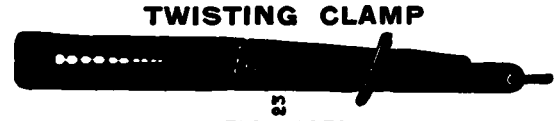


FIG. 4071

For No. 8 to No. 16 wire. Price, per set of 2 pairs.....$3 50

TWISTING CLAMP

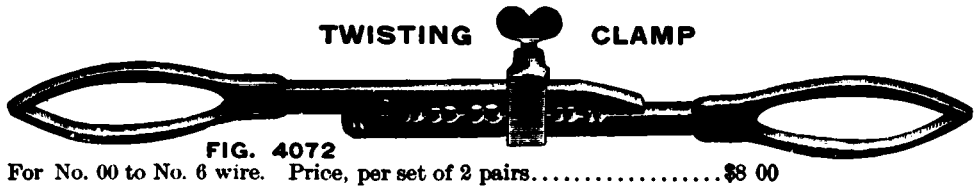


FIG. 4072

For No. 00 to No. 6 wire. Price, per set of 2 pairs.....$8 00

COMPRESSING AND CUTTING PLIERS

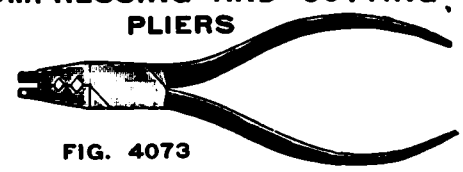


FIG. 4073

For No. 10 to No. 20 wire. Price, per pair.....$2 00

DOUBLE STEEL SPLICING WRENCH

For iron wire or heavy copper wire.

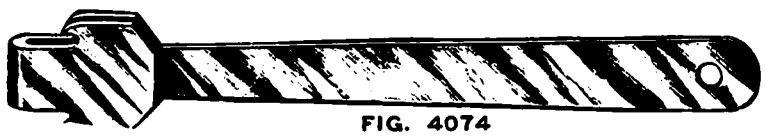


FIG. 4074

We furnish two sizes, one for 4 and 6 wire and one for 8 and 9 wire. These wrenches are accurately fitted for the respective wires and will make a tight, clean splice. We have furnished them for as large as 00 wires.
For stock sizes, price, each.....$1 05
Prices for larger sizes on application.

STEEL TIE WRENCH

For hard drawn copper wire.

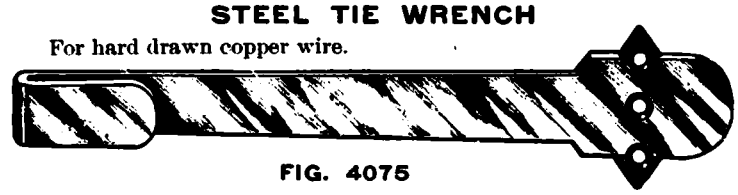


FIG. 4075

The purpose of this tool is to make the tie around the line wire, where it is fastened to the insulators. It will wind the tie wire around line smoothly without marring same.
Price, each.....$1 05

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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COMPOUND ECCENTRIC CLAMPS

STYLE A

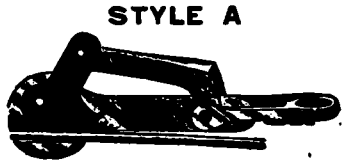


FIG. 4076

Compound eccentric clamp,
brass.....each, $1 70
Iron, large size..... " 2 50

STYLE B



FIG. 4077

For hard drawn copper wire. As both the upper and lower bearings of this clamp are made of brass, there is no danger of injuring the wire; each, $2 50

STYLE C

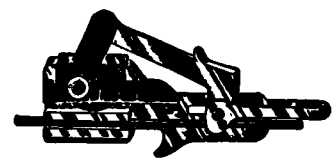


FIG. 4078

Light, for No. 4 B. & S. and finer.....each, $3 50
Heavy, for No. 0 and finer.....each, 5 00

PLAIN ECCENTRIC



FIG. 4079

Brass.....each, $1 25
Steel..... " 1 10

FULFORD'S ECCENTRIC



FIG. 4080

Will take No. 3 B. & S. bare wire.....each, $4 00

HAVEN'S CLAMP

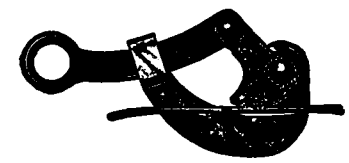


FIG. 4082

Small size.....each, $1 75
Large " ..... " 3 50

COME ALONG

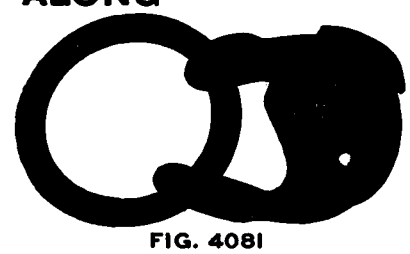


FIG. 4081

	Per Doz.
No. 126, regular size, 9 B. & S. wire and finer	$10 00
No. 127, large size, 3 B. & S. wire and finer	24 00
No. 128, extra large size, 3–0 B. & S. wire and finer	28 00

LANDEE'S CLAMP

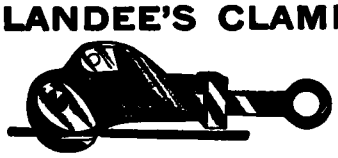


FIG. 4083

Each.....$1 50

PARALLEL SCREW CLAMP FOR TROLLEY WIRE



FIG. 4084

Each.....$2 25

THE BUFFALO GRIP

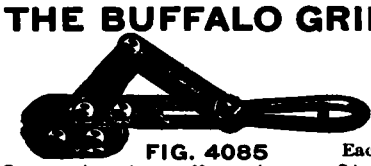


FIG. 4085

	Each.
Large size, for trolley wire	$4 00
Small " " No. 6 and smaller,	2 50
Extra large grip	6 00

Buffalo grip, with pulley, 50 cents list additional.

THE WESTFIELD GRIP

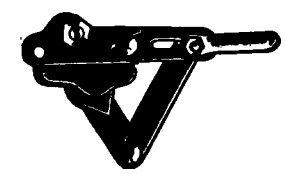


FIG. 4086

Carries any size wire up to No. 4.....each, $2 50

PARALLEL WIRE STRETCHER

NO TEETH. DIRECT PULL. ALL STEEL

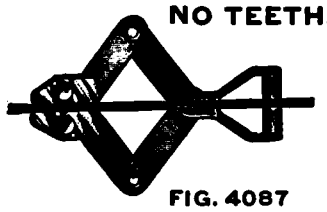


FIG. 4087

PRICES

	Per Doz.
Fine tool steel	$36 00
Cast steel, arranged for hooks; suitable for electric light and trolley wires; carries any size up to No. 000, inclusive	42 00

IMPROVED PARALLEL WIRE STRETCHER

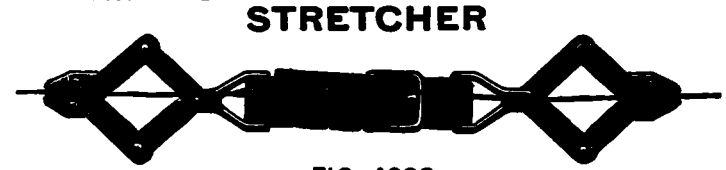


FIG. 4088

No. 0	Telephone size, small size	each, $3 00
" 1	Telegraph, electric light and trolley wire.	" 3 50

HOWE IMPROVED WIRE TOOL

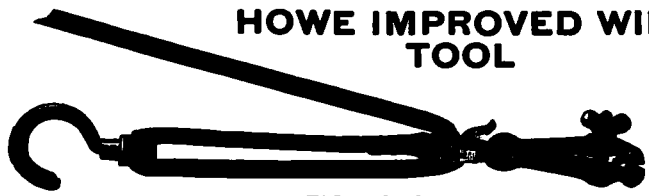


FIG. 4090

For pulling up and holding line and guy wires, the use of rolls gives great power; the grip is self adjusting and will hold in any position, at any point of the strap; the hook adds greatly to the advantages of the whole tool.

PRICES

No. 218	Wire tightener only (without vise), with strap	each,	$6 50
" 219	" " with 5½ inch vise, with strap	"	7 50
" 219½	" " without vise and strap, double purchase	"	7 75
" 219½	" " with 5½ " " " " double purchase	"	9 00

Neatly packed, one set in a box.

WIRE STRETCHING MACHINE



FIG. 4091

No. 45.....each, $45 00

DOUBLE AND SINGLE PULLEY AND ECCENTRIC CLAMP COMBINED

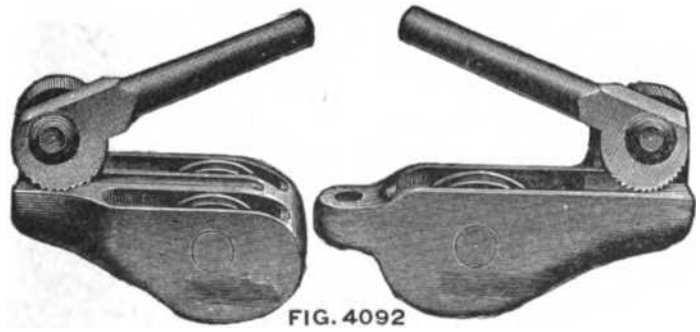


FIG. 4092

Per pair, complete, with 60 feet rope.....$3 00

The pulley frame and clamp bed are in a single casting. The eccentric clamp is made of the very best hardened steel, making a very compact and strong tool of the greatest utility in line builders' and repairers' outfits. The sheaves will accommodate ⅝ inch rope.

PULLEY BLOCKS WITH ECCENTRICS

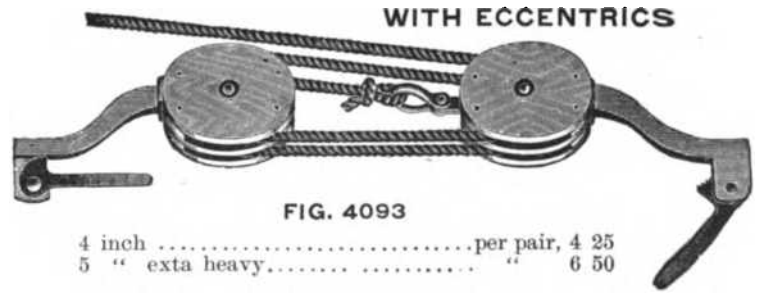


FIG. 4093

4 inch	per pair,	4 25
5 "	exta heavy	" 6 50

PULLEY BLOCKS FOR ATTACHING VISE OR CLAMP

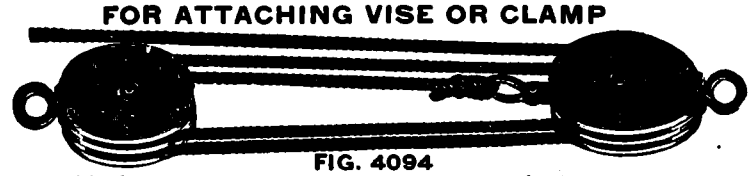


FIG. 4094

4 inch	per pair,	$2 50
5 "	"	4 00

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LINE TAPPING CLAMP

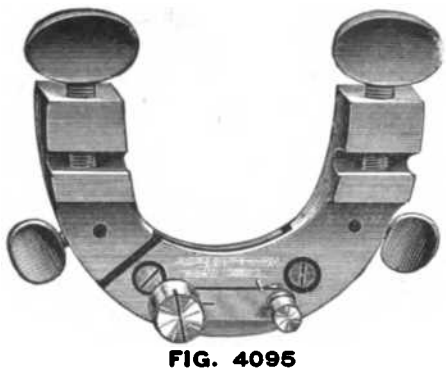


FIG. 4095

The line tapping clamp is for use in establishing a temporary office anywhere on the line. The line wire is clamped tightly in the upper clamps and then cut, and the operating instrument attached by two pieces of wire to the two lower clamps. The clamp is provided with a circuit closer, and may be left in the line after using until the line repairer can take it out and join the line. Price, $3.50.

Large size, made of steel, for extra heavy line work. Price, $4.50.

THE NOVELTY POCKET SCREW DRIVER

OPEN



FIG. 4099

CLOSED

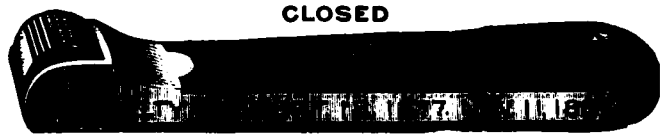


FIG. 4099

Cut full size.

Each.....50 cents.

ELECTRICIAN'S HAND FORGED TOOL STEEL SCREW DRIVER

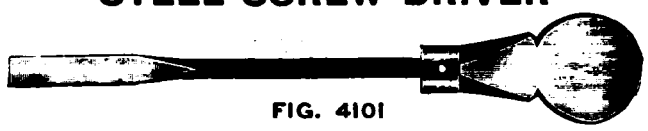


FIG. 4101

Thin, flat handle with steel cap ferrule. Pin through ferrule and blade.

Nickel, length 6½ inches, width of point ¼ inch; per dozen.....$4 00
Plain, " " " " " " " 3 50

STEEL LAG SCREW WRENCH

No. 15078.



FIG. 4097

This wrench is very convenient for drawing up lag screws through cross arms; the jaw is made tapering to accommodate variations in bolt heads.

Each.....$1 25

COMBINATION LAG SCREW AND NUT WRENCH

No. 15077.



FIG. 4098

Will take lag screws and nuts for ⅜ inch, ½ inch and ⅝ inch bolts.

Each.....$1 50

VULCAN INSULATED SCREW DRIVERS

Insulated with Molded Mica.

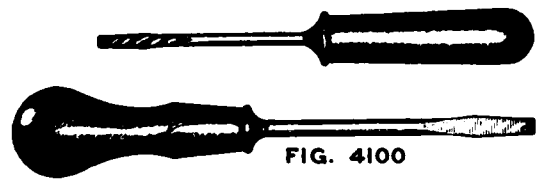


FIG. 4100

2½ inch, per dozen	$6 00
3½ " "	7 00
4 " "	8 00
5 " "	12 00
6 " "	13 50

HARD RUBBER KNURLED HANDLE SCREW DRIVERS



FIG. 4102

No. 797. Tempered steel; width of blade at point, 1/16 inch; per dozen..... $4 00



FIG. 4103

No. 806. Tempered steel; point is ⅛ inch, full width of blade; per dozen..... $4 00

ELECTRICIAN'S BORING MACHINE



FIG. 4104

Wiring made easy. Bores holes through joists at right angles, using different sizes of bits. Wires will easily pull through any number of tubes. It will bore 90 holes per hour through two inches joist. It will bore below or above the operator. It will save at least 50 per cent. in labor. It will save the insulation of the wire. Each, $14.00.

BELLHANGER'S AND ELECTRICIAN'S DRILL

STYLE E



FIG. 4104A

The numbers indicate the size in 32ds.

PRICES

Nos.	12 Inch, per Dozen.	18 Inch, per Dozen.	Nos.	24 Inch, per Dozen.	30 Inch, per Dozen.	Nos.	36 Inch, per Dozen.
6	$5 00	$7 00	6	$9 00	$11 00	6	$13 00
8	5 00	7 00	8	9 00	11 00	8	13 00
10	5 50	7 50	10	9 50	12 00	10	13 00
12	6 00	8 00	12	10 00	12 00	12	13 00
14	7 00	9 00	14	11 00	13 00	14	14 00
16	8 00	10 00	16	12 00	14 00	16	15 00
18	9 00	11 00	18	13 00	15 00	18	16 00
20	10 00	12 00	20	14 00	15 00	20	16 00
22	11 00	13 00	22	15 00	16 00	22	17 00
24	12 00	14 00	24	16 00	17 00	24	18 00
26	13 00	15 00	26	17 00	18 00	26	18 00
28	14 00	16 00	28	18 00	19 00	28	19 00
30	15 00	17 00	30	19 00	20 00	30	20 00
32	16 00	18 00	32	20 00	20 00	32	20 00
34	17 00	19 00	34	20 00	20 00	34	20 00
36	18 00	20 00	36	21 00	21 00	36	21 00

Nos. 6 to 12, one dozen; Nos. 14 to 36, one half dozen in a box.

ADJUSTABLE MALLEABLE HANDLE



FIG. 4105

For Style E, bell hangers' drills. Also fits any square shank bit or other tool.

Price, per doz.....$1 25

One half dozen in a box.

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JUMPER BRICK DRILL



FIG. 4106

For drilling a hole through masonry of any kind. Made of the best steel. Length of drill, 26 inches.

No. 164. Drill and handle, per dozen, $18.00.

HOLLOW BRICK DRILL



FIG. 4106A

This drill is hollow, and will hold the dust and dirt; on that account is preferred for interior work, where it is desired to drop as little dirt as possible. No. 146. Per dozen, $10.00.

BRICK DRILL



FIG. 4107

	Inches	¼	5/16	⅜	7/16	½
No. 20.	10 inches long, per dozen	$3 75	$3 75	$4 00	$4 00	$4 50

FLOOR GROOVER
WITH REMOVABLE KNIFE

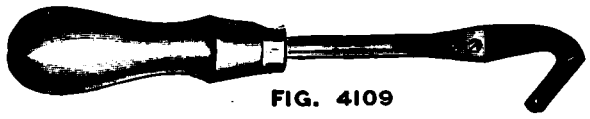


FIG. 4109

No. 156. Per dozen..... $14 00
" 156K. Extra Knives only, per dozen 8 00

WIREMAN'S TOOL BELT

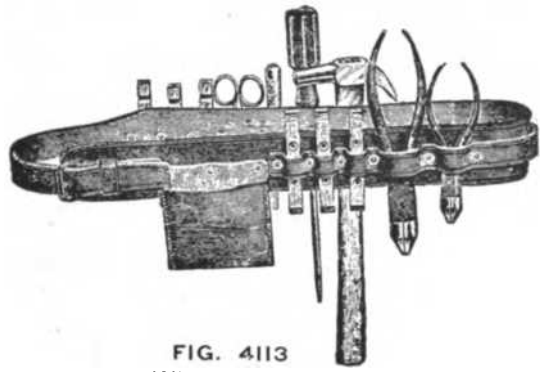


FIG. 4113

No. 152. Without Tools, per dozen, $28.00.

LINEMAN'S SAFETY BELT

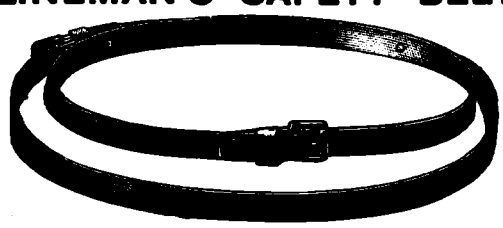


FIG. 4115

No. 154. Per dozen, $24.00.

WESTERN UNION TOOL BAG

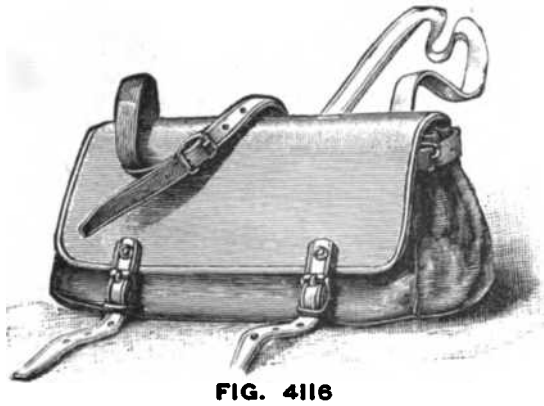


FIG. 4116

PRICE

With separate out side pocket for saw, and provided with shoulder straps.

Made of the best russet leather.

Each, $4.50.

INSPECTORS' TOOLS



FIG. 4108

PRICES

Complete set in morocco case, containing everything necessary for adjusting telephone apparatus, telegraph and stock printing instruments, etc..... $5 50
Case, only..... 1 50

RASE KNIFE OR GROOVE CUTTER

PRICE

No. 1271. Heavy Brass Handle, per dozen, $6.50.

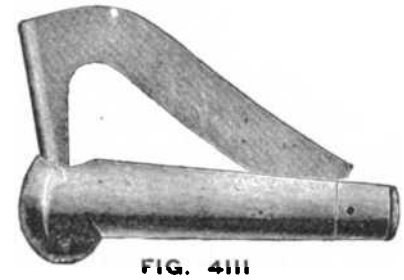


FIG. 4111

TOOL BAG



FIG. 4114

For electric light, telephone and telegraph linemen. Best material and workmanship.

No. 224. Electric Light Wiremen's Repair Bag, plain, 14 inches, each.....$4 00

No. 226. Wiremen's Tool Bag, leather sides and leather bottom, 14 inches, each.....$6 00

No. 228. W. U. Pattern Telegraph or Linemen's Tool Bag, plain, 20 inches, each.....$5 25

No. 230. W. U. Pattern Tool Bag, leather sides and bottom, 20 inches, each $6 75

CARBON CASE



FIG. 4117

All Leather, with Shoulder Straps. Capacity, 100 carbons, 7/16 inch. Each, $4.00.

CARBON BAG



FIG. 4118

All Leather, with Shoulder Straps. Each, $4.00.

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CARBON TONGS

Drop Forged of Bar Steel.

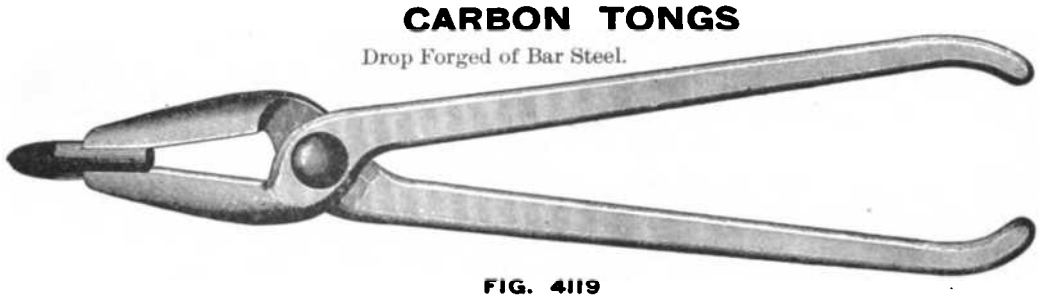


FIG. 4119

These Tongs are used for handling the carbon in electric arc lights. They are light and strong. Prices, $4.00 per dozen, 35 cents per pair.

SOLDERING IRON

FOR SOLDERING EARS TO THE TROLLEY WIRE

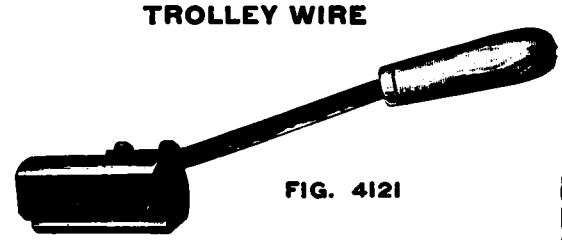


FIG. 4121

No. 327. Price each.....$2 80

TOOL FOR PUTTING UP STRAIGHT LINE TROLLEY HANGERS

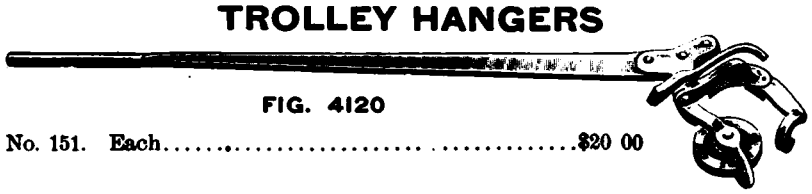


FIG. 4120

No. 151. Each.....$20 00

TOOL FOR PUTTING UP TROLLEY FROGS

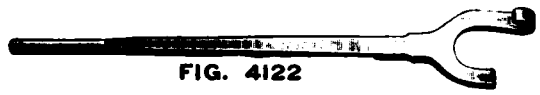


FIG. 4122

No. 152. Each.....$2 50

TELEGRAPHER'S GEM SOLDERING CASKET

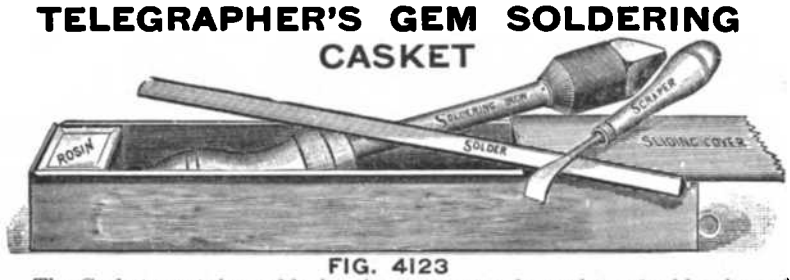


FIG. 4123

The Casket contains soldering iron, scraper, large bar of solder, box of soldering salts, and full directions, all inclosed in fancy box. The Gem Soldering Iron is so arranged as to fit any ordinary gas burner, and will heat in two or three minutes. Where there is no gas the iron can be heated in the stove.

Price, complete, each.....$1.25

THE NO. 1 LINEMAN'S FIRE POT

FOR LINEMEN'S, ELECTRICIANS' AND MACHINISTS' USES

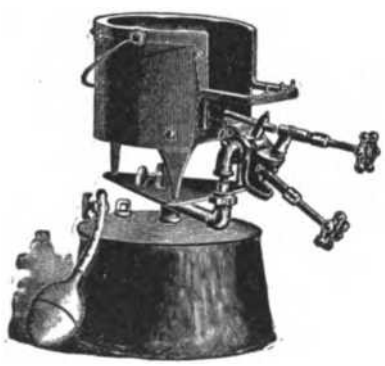


FIG. 4126

Made of the best material and of the finest mechanical construction. The tank, made of heavy sheet brass, will stand a great deal of hard usage. Castings on hood are malleable iron. The burners and swivels are brass. It has a double jet burner, which is mounted on a double swivel, thereby giving the operator the advantage of using the flames in any position required. The upper flame on burner is called the "needle flame," and is about the size of an ordinary lead pencil. The lower flame is about 1¼ inches wide. They can be used in conjunction with each other, or the lower flame can be used separately.

Price, each.....$11 00

COMBINATION HOT BLAST BLOW TORCH

FOR GASOLINE

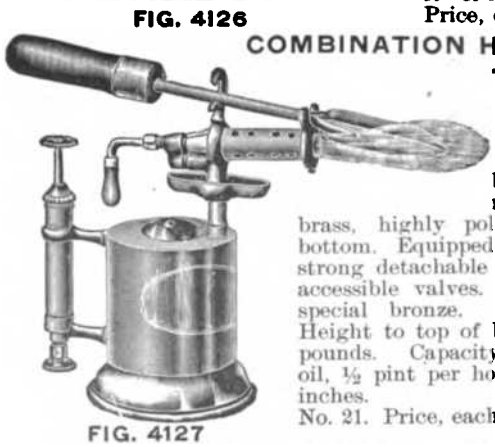


FIG. 4127

Soldering iron heater and blow torch in one tool. Tanks made of No. 18 seamless drawn brass, highly polished. Corrugated concave bottom. Equipped with brass pumps, which have strong detachable connections and simple and accessible valves. The burners are made of special bronze. All parts interchangeable. Height to top of burner, 10 inches. Weight, 4 pounds. Capacity, 1 quart. Consumption of oil, ½ pint per hour, full blast. Diameter, 4½ inches.

No. 21. Price, each.....$5 50

GLOBE BLOW TORCH

FOR GASOLINE

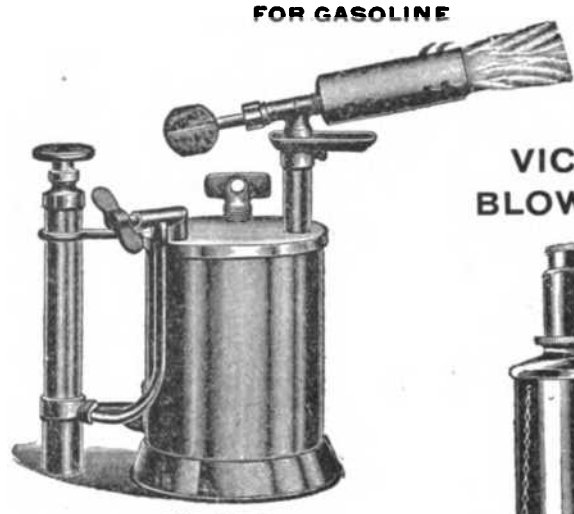


FIG 4124

Made entirely of copper and brass. Extra strong, made for soldering electric wires and other purposes where an intense heat is desired. Will not blow out in any kind of wind.

Price, each.....$6 00

VICTOR BLOW PIPE

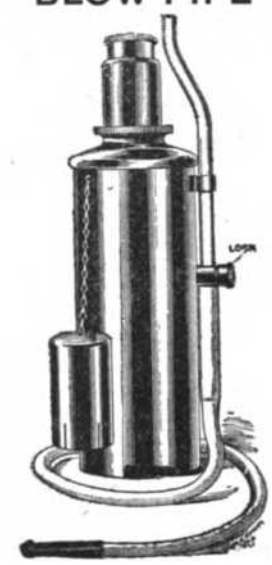


FIG. 4125

No. 221. Each.....$1.25

VULCAN ELECTRICAL SOLDERING FURNACE



FIG. 4128

This Furnace has been devised for electric linemen's use in soldering wire connections. It is improved so that a soldering iron can be heated as the solder is melting in the pot. The pot is oblong and will melt 10 pounds of solder in six minutes. It will not blow out, and is perfectly safe.

Linemen's Furnace, including pot, each.....$12 00

LINEMAN'S SOLDERING FURNACE

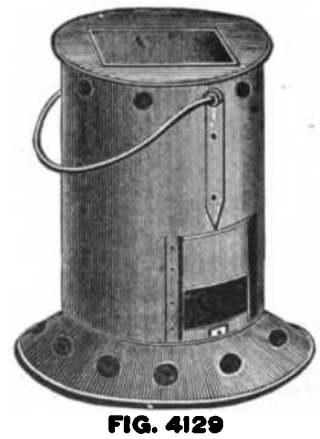


FIG. 4129

This improved Soldering Furnace has an oblong solder pot in the top, and its especial advantage consists in the fact that this form of pot allows the joint to be dipped into the solder without making a short bend in the wire.

Price, each.....$3 50

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CHARCOAL SOLDERING FURNACE



FIG. 4130

PRICE

No. 15222.....$5 00

HELPER'S FIRE POT

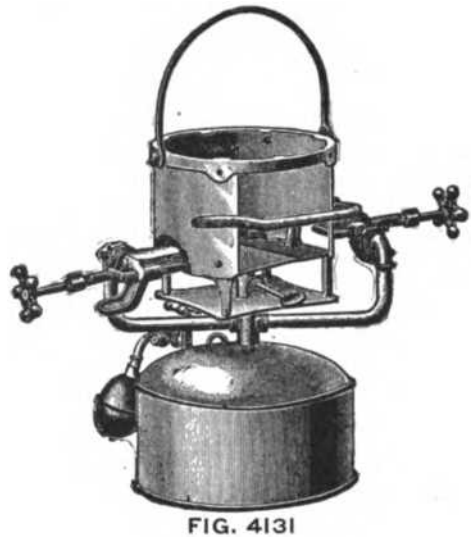


FIG. 4131

PRICE

No. 3868. Can also be used as a reversible torch.....$10 00

SOLDERING SALTS

PRICES

In ½ pound bottles, per lb., $0 75
In 1 " " " 65
In 5 " " " 50

SOLDERING PASTE

The paste being in a soft, plastic condition, can be applied to the metal to be soldered in quantities just sufficient for the purpose. After an application of this paste the solder flows easily. The paste will not tarnish or corrode the metal.

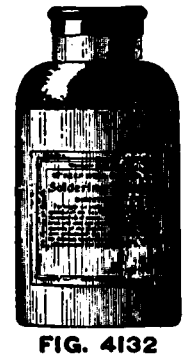


FIG. 4132

PRICES

½ pound boxes, per pound.....$1 40
1 " " " 1 80

THE ALLEN SOLDERING STICK

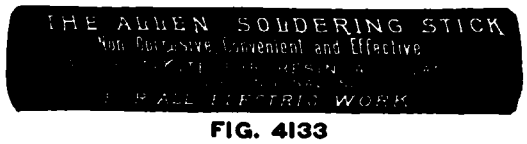


FIG. 4133

PRICE

Per stick.....$0 25

STAR SOLDERING STICK

PRICE

Per stick.....$0 25

WIRE SOLDER

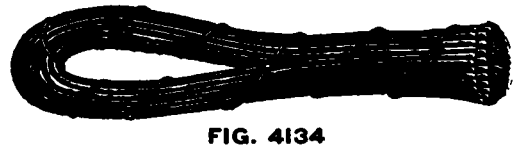


FIG. 4134

PRICES

Wire solder.....per pound,
Rosin core solder ..... "

CHICAGO FUSE REPAIR KIT

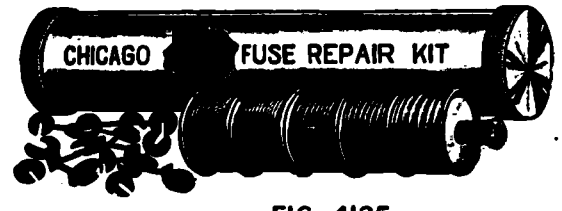


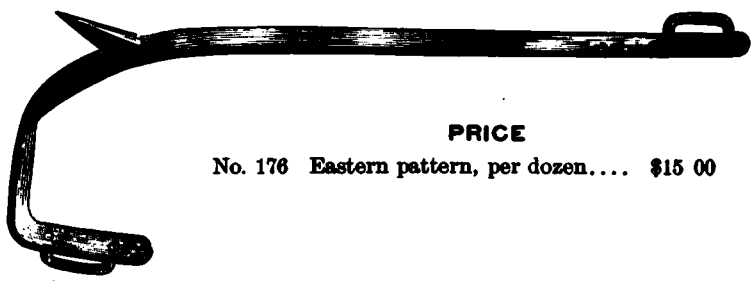
FIG. 4135

Contains five sizes of fuse wire, also a good assortment of fuse links.

PRICE

Kit, complete.....$1 00

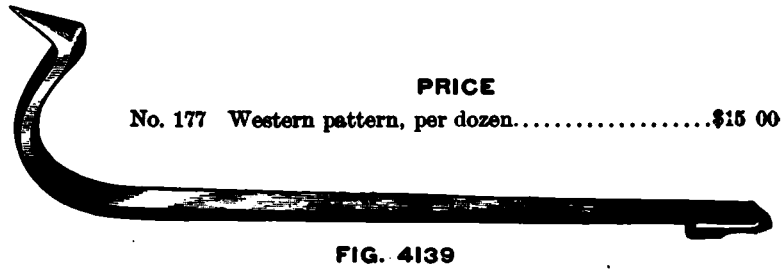
CLIMBING IRONS



PRICE

No. 176 Eastern pattern, per dozen.... $15 00

FIG. 4138



PRICE

No. 177 Western pattern, per dozen.....$15 00

FIG. 4139

WIRE WINDER

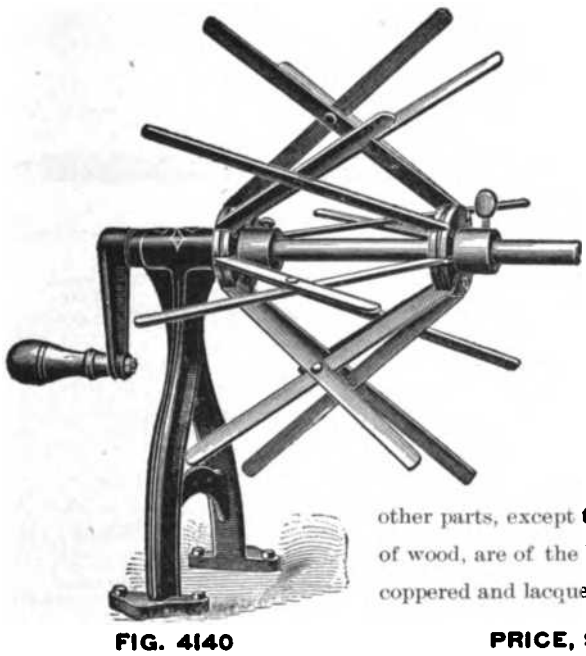


FIG. 4140

DESCRIPTION FIG. 4140

A handy article for electricians.

This is made to be adjusted quickly and easily, to reel any size coil desired.

The frame is made of good cast iron, japanned black, and all the other parts, except the handle, which is of wood, are of the best grades of steel, coppered and lacquered.

PRICE, $10.00

IMPROVED MEASURING MACHINE

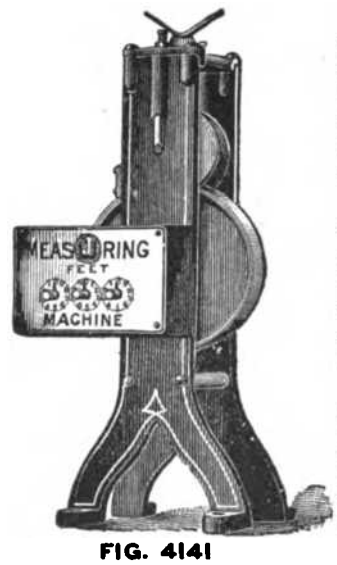


FIG. 4141

DESCRIPTION, FIG. 4141

Designed to facilitate the rapid and accurate measurement of wire, tape, ribbons, cords, thread, etc. It registers up to 10,000 feet. The dial pointers, being held in place by friction, are adjustable and easily reset.

The reading of the dials represents the ordinary rotation. As an example: If on the first left hand dial the pointer stands between 5 and 6, the second between 2 and 3, and that on the right at 9, the reading would be 529 feet.

Height over all, 12 inches; dial, 3½ x 2¼ inches; frame, cast iron, japanned and striped, dial being white enameled with black letters and figures; the reading is clear and distinct.

PRICE, $15.00

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WIRE METER FOR COUNTER

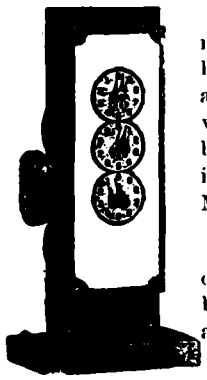


FIG. 4142

The meter is also made mounted on a neat base, to be used on a counter where a reel is not needed. For wire factories and dynamo builders the meter alone is invaluable.

Meter, without reel, price, each.....$16 00

Cable meters are made to order only, and are applicable for measuring cables of all sizes, rope or steel cables. Special prices quoted on cable meters.

WIRE REEL AND METER

The accompanying cut gives an idea of a wire measuring and reeling device.

In the meter the wire passes between two self-adjusting rollers, which admit of a wide range, and will measure accurately either large or small wire. The pointers are movable and readily adjusted to the zero point.

Meter with reel, price, each.....$25 00

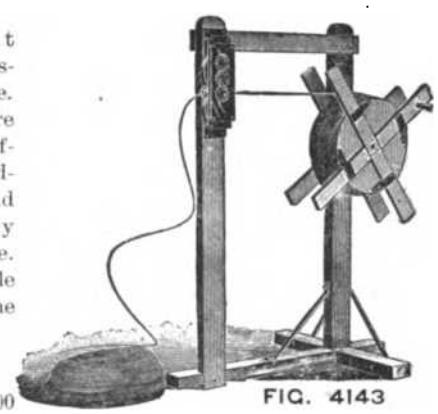


FIG. 4143

TAKE UP REEL

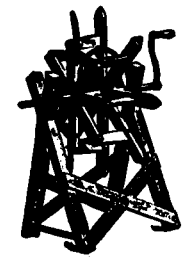


FIG. 4144

No. 138. To make 12 in. coils. Price, $20.00.

No. 139. To make 18 in. coils. Price, $22.00.

COMMON REEL

COMPLETE WITH PIN



FIG. 4145

Price, each.....$10 00

COMBINATION PAY OUT REEL

FOR TELEPHONE AND ELECTRIC LIGHT STATIONS

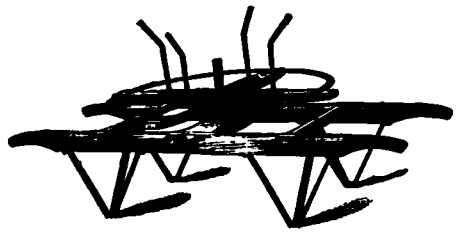


FIG. 4146

Price, each.....$12 50

MULE SUPPORT

Fork and Pike Made from Crucible Steel.

PRICES

Nos.	Feet.	Each.
324	4½	$3 00
325	6	5 00
326	7½	6 00



FIG. 4148

JENNY PATTERN POLE SUPPORT

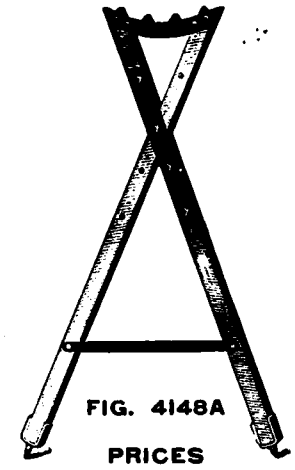


FIG. 4148A

PRICES

Nos.	Feet.	Each.
322	6	$5 00
323	7½	6 00

RAILWAY AND TELEGRAPH COMBINATION PAY OUT REEL

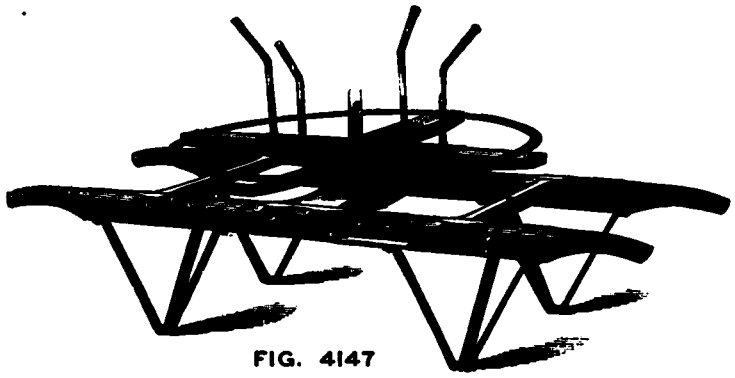


FIG. 4147

DESCRIPTION, FIG. 4147

Carrying frame is strongly mortised. Reel is very heavy, ironed and bolted. It is made from the best clear oak to stand the hardest work.

No. 136. Price, each.....$16 00

RAISING FORK

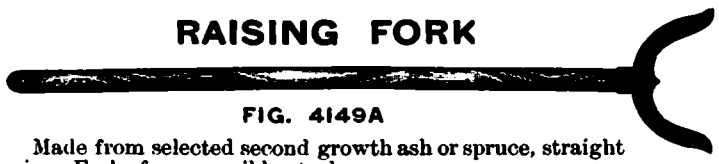


FIG. 4149A

Made from selected second growth ash or spruce, straight grain. Forks from crucible steel.

PRICES

Nos.	Feet.	Per Dozen.
317	12	$15 00
318	14	20 00
319	16	23 00
320	18	26 00
321	20	29 00

TIMBER CARRIER

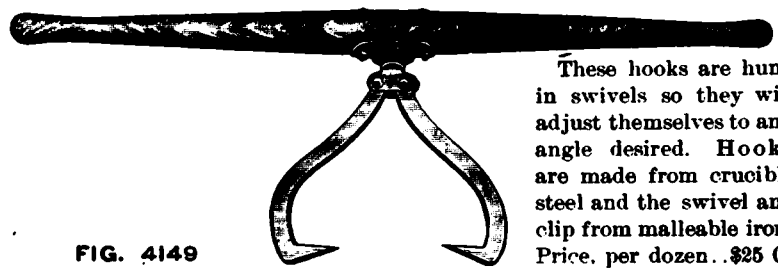


FIG. 4149

These hooks are hung in swivels so they will adjust themselves to any angle desired. Hooks are made from crucible steel and the swivel and clip from malleable iron. Price, per dozen..$25 00

PIKE POLE



FIG. 4150

Made from selected second growth ash or spruce, straight grain. Pikes from crucible steel.

Nos.	Feet.	Per Dozen.	Nos.	Feet.	Per Dozen.
312	12	$14 00	315	18	$20 00
313	14	16 00	316	20	22 00
314	16	18 00			

LITTLE GIANT CANT HOOK

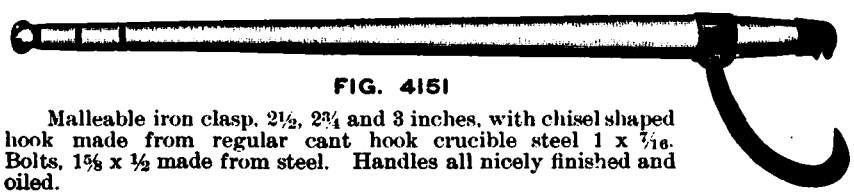


FIG. 4151

Malleable iron clasp, 2½, 2¾ and 3 inches, with chisel shaped hook made from regular cant hook crucible steel 1 x 7/16. Bolts, 1⅝ x ½ made from steel. Handles all nicely finished and oiled.

PRICES, FIG. 4151

With selected hickory handles, chisel shaped hooks.

No. 232	2½ in.	x 4½ or 5	foot handles,	per dozen	$16 50
" 233	2¾ "	x 4½ " 5 "	"	"	18 00
" 234	3 "	x 4½ " 5 "	"	"	20 00

With selected rock maple handles, chisel shaped hooks.

No. 235	2½ in.	x 4½ or 5	foot handles,	per dozen	$15 00
" 236	2¾ "	x 4½ " 5 "	"	"	16 50
" 237	3 "	x 4½ " 5 "	"	"	18 50

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LINEMEN'S TOOLS

COLUMBUS CANT HOOK

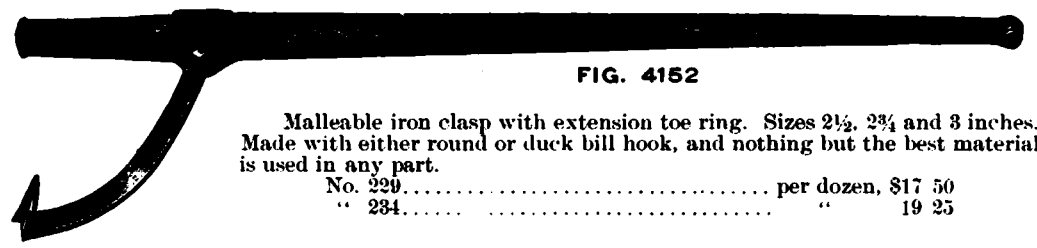


FIG. 4152

Malleable iron clasp with extension toe ring. Sizes 2½, 2¾ and 3 inches. Made with either round or duck bill hook, and nothing but the best material is used in any part.

No. 229..... per dozen, $17 50
" 234..... " 19 25

LITTLE DANDY PEAVY

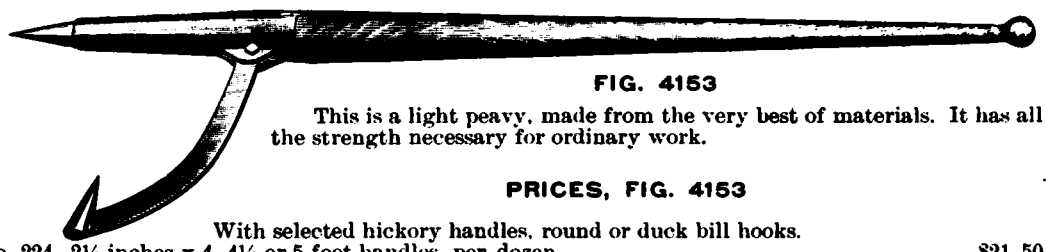


FIG. 4153

This is a light peavy, made from the very best of materials. It has all the strength necessary for ordinary work.

PRICES, FIG. 4153

With selected hickory handles, round or duck bill hooks.

No. 224. 2¼ inches x 4, 4½ or 5 foot handles, per dozen $21 50

With selected rock maple handles, round or duck bill hooks.

No. 225. 2¼ inches x 4, 4½ or 5 foot handles, per dozen 20 00

SAMPSON CANT HOOK

Malleable iron clasp and toe rings, 2½, 2¾ and 3 inches, round or duck bill hooks, made from 1 x 7/16 cant hook crucible steel. If wanted from heavier steel will supply at same price.

PRICES, FIG. 4156

With selected hickory handles, oiled, round or duck bill hooks.

Nos.	Handles.	Per Doz.
238	2½ inches x 4, 4½, 5 or 5½ foot	$16 50
239	2¾ " 4, 4½, 5 or 5½ "	20 00
240	3 " 4, 4½, 5 or 5½ "	22 00

With selected rock maple handles, round or duck bill hooks.

Nos.	Handles.	Per Doz.
241	2½ inches x 4, 4½, 5 or 5½ foot	$17 00
242	2¾ " 4, 4½, 5 or 5½ "	18 50
243	3 " 4, 4½, 5 or 5½ "	20 50

LOY OR SLICK



FIG. 4154

A most useful construction tool, used in digging holes for setting poles. Only best crucible steel used. It is a large flat chisel with a wooden handle.

No. 813. 8 foot handle, each.....$7 00

WOOD HANDLE TAMPING BAR

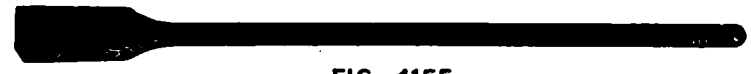


FIG. 4155

Handles made from selected second growth ash.

No. 311. Handles 8 feet long, with iron shoe, per dozen,.....

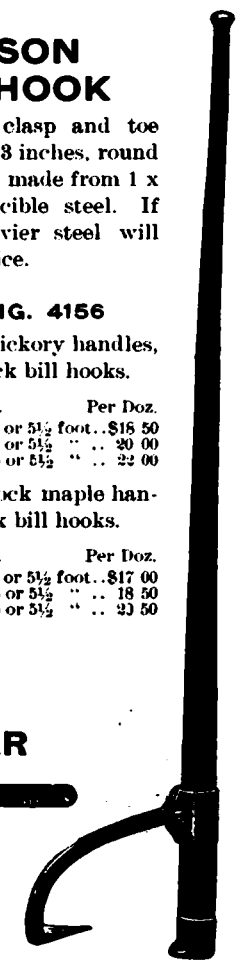


FIG. 4156

TAMPING AND DIGGING BAR
SOLID STEEL

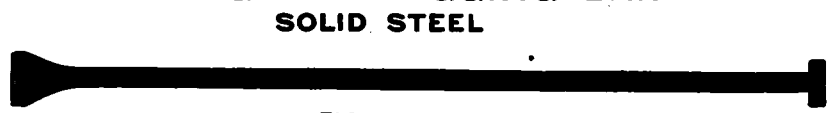


FIG. 4157

Nos.		Per Lb.
309	Octagon, 1 inch diameter, 7 feet long, weight 19 lbs.....	
310	" 1⅛ " 8 " " 30 "	

DIGGING BARS
SOLID STEEL

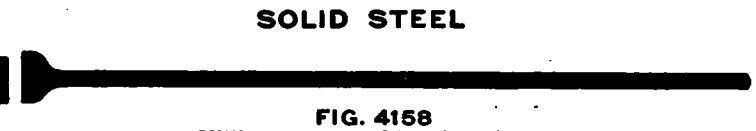


FIG. 4158

Will cut roots and break rocks.

Nos.		Per Lb.
305	Round, 1⅛ inch diameter, 8 feet long, weight 27 lbs.....	
306	Octagon, 1⅛ " 8 " " 28 "	

CROW AND DIGGING BAR
SOLID STEEL

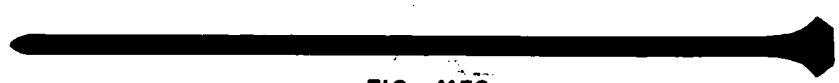


FIG. 4159

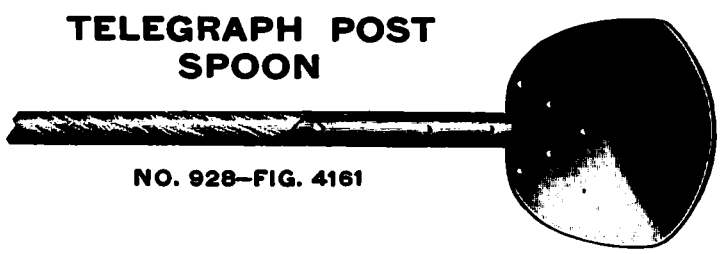
Nos.		Per Lb.
307	Octagon, 1 inch diameter, 7 feet long, weight 17 lbs.....	
308	" 1⅛ " 8 " " 28 "	

TELEGRAPH POST SPOON



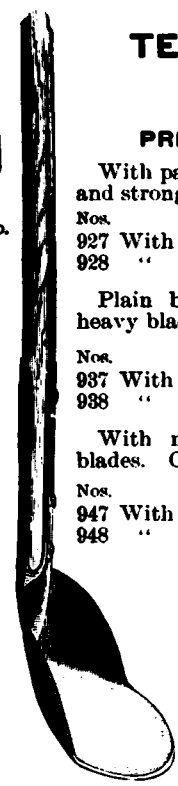
NO. 947—FIG. 4160

TELEGRAPH POST SPOON



NO. 928—FIG. 4161

SIDE VIEW



NO. 938—FIG. 4162

FRONT VIEW

TELEGRAPH POST SPOON

PRICES, FIGS. 4160 TO 4162

With patent protected straps, heavy gauge, and strong handles. New style.

Nos.		Sizes.	Per Doz.
927	With 6 or 7 foot handles....	2	$30 75
928	" 8 foot handles.....	2	33 75

Plain back solid cast steel spoons, with heavy blades and strong handles. New style.

Nos.		Sizes.	Per Doz.
937	With 6 or 7 foot handles....	2	$33 75
938	" 8 foot handles.....	2	36 75

With malleable iron sockets, cast steel blades. Old style.

Nos.		Sizes.	Per Doz.
947	With 6 or 7 foot handles....	2	$30 75
948	" 8 foot handles...	2	33 75

Telegraph spoon handles

	Per Doz.
6 feet long...	$16 50
7 " ...	18 00
8 " ...	19 50



NO. 938—FIG. 4162

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LINEMEN'S TOOLS

TELEGRAPH AND POST HOLE SPOONS

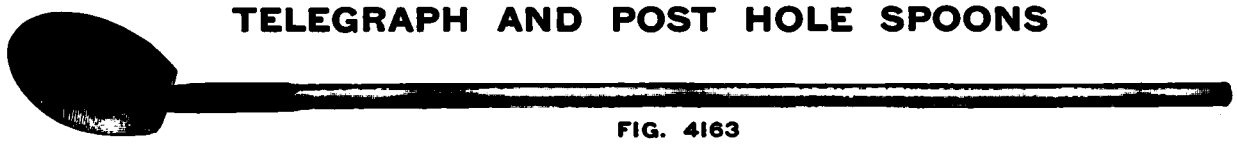


FIG. 4163

No. 823	Spoon for digging out post holes; sizes,	10 x 8¼	inches;	length of handle,	7	feet;	per dozen							$15 25
" 823	" " " " " " "	10 x 8¼	"	"	"	8	"	"	"					16 50
" 823	" " " " " " "	10 x 8¼	"	"	"	9	"	"	"					18 00
" 823	" " " " " " "	10 x 8¼	"	"	"	10	"	"	"					19 25

POST HOLE SPOON



FIG. 4164

Selected Second Growth Ash Handles.

No. 303	W. U. pattern, 7 foot handle, oil finish; per dozen	
" 304	" " 8 " " " " " " "	

EUREKA POST HOLE DIGGER

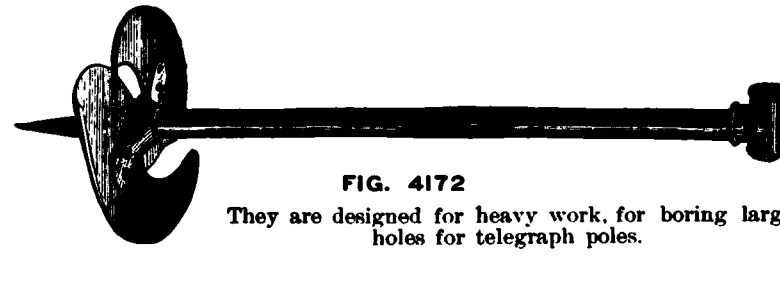


FIG. 4166

PRICES

	Each.
Digger, complete	$3 00
Extras.	
Malleable iron heads	60
Cast steel blades	60
Hinge bolts	20
Handles, per pair	40

POST HOLE OR TELEGRAPH SHOVEL

Reinforced Handle.



FIG. 4165

Selected Second Growth Ash.

No. 301	7 foot handle, oil finish; per dozen	
No. 302	8 " " " " " "	

Telegraph Shovels, not Illustrated, with Patent Protected Straps and Heavy Cast Steel Blades and Strong Handles.

Nos.	Handles.	Sizes.	Per Doz.
906	6 foot	2	$27 00
907	7 "	2	30 00
908	8 "	2	33 00

Plain Back Solid Cast Steel Shovels with Heavy Blades and Strong Handles.

Nos.	Handles.	Sizes.	Per Doz.
916	6 foot	2	$28 50
917	7 "	2	31 50
918	8 "	2	34 50

Straps 9 inches long above blades; for longer straps extra charge will be made. Telegraph shovel handles, 6 feet long, $13.50; 7 feet, $15.00; 8 feet, $16.50.

POLISHED CONCAVE OR POST SPADE



FIG. 4166A

Tapers from 6 inches at point to 5½ inches at shoulder.

Inches long		14	16	18	20	22
No. 1022	Solid cast steel, per dozen,	$15 00	$15 50	$16 00	$16 50	$16 75
" 1023	" " " " "	12 50	13 00	13 50	14 00	14 25
" 1024	" steel, " "	11 25	12 25	12 25	12 75	12 75

Half polished post spades, 15 cents per dozen less than polished; unpolished, 25 cents per dozen less than polished.

POST HOLE DIGGERS

CHAMPION
Iron Handle.



FIG. 4167
Per dozen, $10.00.

CHAMPION
With Tamping Iron.
Wood Handle.



FIG. 4168
Per dozen, $12.00.

PIONEER
With Folding Handle.



FIG. 4169
Per dozen, $15.00.

INVINCIBLE POST HOLE DIGGER



FIG. 4170

Each blade and shank is dropped out of a single piece of steel properly tempered; no cast or malleable iron parts. Per dozen..... $18 00

HERCULES POST HOLE DIGGER

FIG. 4171

Per dozen $20 00

TELEGRAPH AUGERS

FIG. 4172

They are designed for heavy work, for boring large holes for telegraph poles.

PRICES, FIG. 4172

Inches.	Complete with 5 Foot Handle, Each.	Points Only, Each.	Blades Only, Each.	Bottoms Only, Each.
10	$7 00	$1 00	$1 00	$3 00
11	7 50	1 00	1 25	3 50
12	8 00	1 00	1 50	4 00
14	9 00	1 00	2 00	5 00

Extra price per foot for handles longer than 5 feet.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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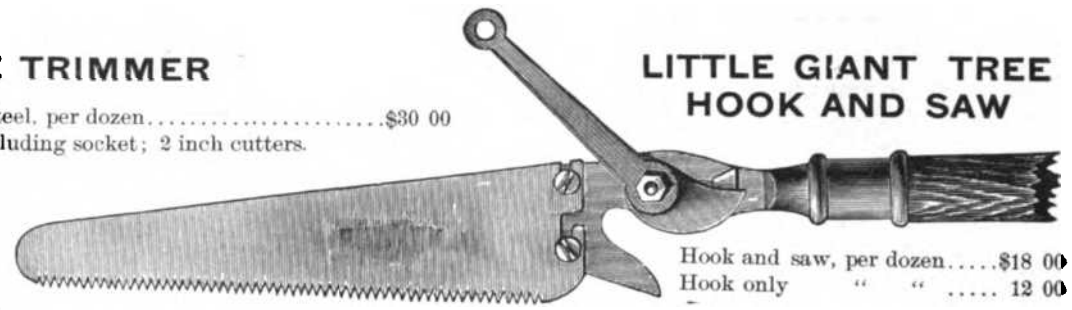
POLE TREE TRIMMER

No. 100—Polished blades, best cast steel, per dozen.....$30 00
Length, 12 inches, including socket; 2 inch cutters.



FIG. 4174

LITTLE GIANT TREE HOOK AND SAW



Hook and saw, per dozen.....$18 00
Hook only " " 12 00

FIG. 4173

POLE BAND



FIG. 4178

CROSS ARM POLE CLAMP

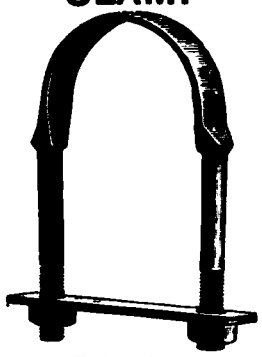


FIG. 4176

POLE CLAMP

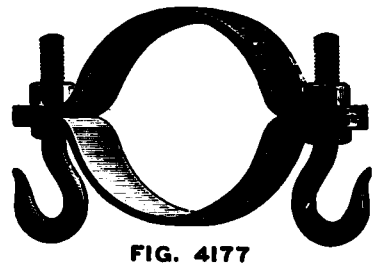


FIG. 4177

Prices, Figs. 4176 to 4179, on application.

POLE STEP FOR IRON POLES



FIG. 4179

STEEL CROSS ARM BRACE



FIG. 4184

Three ½ inch by 2 inch Lag Screws included with each pair of Braces.

Nos.							Prices.
			PLAIN				
705	20	inches long,	1	inch wide,	3/16	inch thick, per pair,	$0 26
706	20	" "	1¼	" "	3/16	" " "	30
707	24	" "	1¼	" "	3/16	" " "	32
708	24	" "	1¼	" "	¼	" " "	36
709	28	" "	1¼	" "	3/16	" " "	36
710	28	" "	1¼	" "	¼	" " "	38
Nos.							Prices.
			GALVANIZED				
712	20	inches long,	1	inch wide,	3/16	inch thick, per pair,	$0 32
713	20	" "	1¼	" "	3/16	" " "	36
714	24	" "	1¼	" "	3/16	" " "	40
715	24	" "	1¼	" "	¼	" " "	42
716	28	" "	1¼	" "	3/16	" " "	44
717	28	" "	1¼	" "	¼	" " "	46

DRIVE SCREW



FIG. 4180

Made of ½ inch and ⅝ inch diameter.

In 1,000 lots.

½ x 4 in.,	27 lbs.	per 100.	Black,	$2 40	per 100.	Galvanized,	$3 65	per 100
½ x 5 "	31	" " "		2 45	"	"	3 75	"
½ x 6 "	36	" " "		2 50	"	"	3 85	"
½ x 7 "	41	" " "		2 80	"	"	4 30	"
½ x 8 "	46	" " "		3 10	"	"	4 70	"

POLE STEP

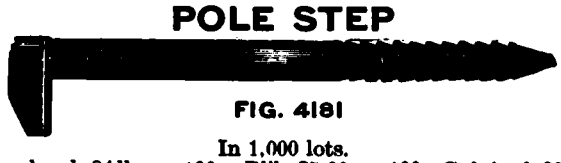


FIG. 4181

In 1,000 lots.

⅝ x 8 under head,	84 lb.	per 100.	Bl'k,	$5 00	per 100.	Galv'zed,	$8 00	per 100
⅝ x 9 " "	92	" "		5 25	"	"	8 45	"

EYE BOLTS

WITH OPEN AND WELDED EYES, FURNISHED WITH WASHERS

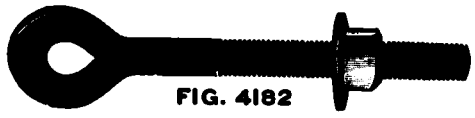


FIG. 4182

⅝ x 12 in., cut 6 in.		50 lbs.	per 100 bolts.			$17 50	per 100 in 1,000 lots.		
½ x 12 " "		90	" "			20 00	"	"	
⅝ x 14 " "		160	" "			24 00	"	"	

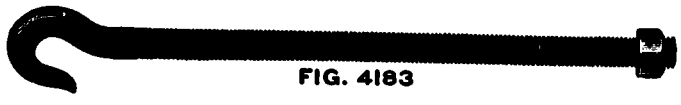


FIG. 4183

⅜ x 12 in., cut 6 in.		50 lbs.	per 100 bolts.			$13 50	per 100, in 1,000 lots.		
½ x 12 " "		90	" "			15 00	"	"	
⅝ x 14 " "		160	" "			18 00	"	"	

UPRIGHT BRACKETS



FIG. 4185

NO. 26

NO. 25



FIG. 4186

PRICE, FIG. 4185

No. 26 is 30 inches long, four pins, and weighs, complete with pins, 6½ pounds.
Galvanized, with pins, each.....65 cts.

PRICE

No. 25 is 16½ inches long, two pins, and weighs 3¼ pounds, with pins.
Galvanized, with pins, each...38 cts.

GALVANIZED RIDGE IRON FOR POLE TOPS

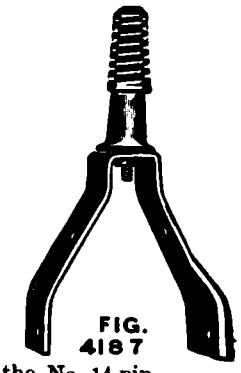


FIG. 4187

It is especially convenient in three wire construction. It is fitted with the No. 14 pin.

Numbers	27	28
Base of pin	Iron	Porcelain
Weight, pounds	2¼	2½
Each	$0 35	$0 35

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YELLOW PINE CROSS ARMS

Standard size, 3¼ inches by 4¼ inches, painted two coats of red, and bored for pins and lag screws.

PRICES

No. 750	3	feet	long,	bored	for	2	pins,	per foot	$0 08
" 751	4	"	"	"	"	4	"	"	08
" 752	5	"	"	"	"	4	"	"	08
" 753	6	"	"	"	"	4	"	"	08
" 754	6	"	"	"	"	6	"	"	08
" 755	8	"	"	"	"	8	"	"	08

WOOD INSULATOR PIN

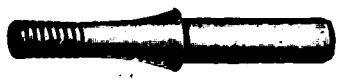


FIG. 4190

No. 650. 1½ inches, Oak, per thousand $16 00

No. 651. 1½ inches, Locust, per thousand 21 00

CORNER PIN

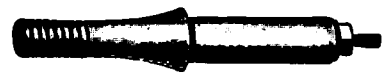


FIG. 4191

No. 759. 1½ inches, Locust, with Steel Dowel, each $0 10

PAINTED OAK BRACKETS

No. 756, per thousand $24 00

DROP FORGED STEEL PIN



FIG. 4192

No. 286. 1½ inches, of uniform quality and size, with perfect thread, without screw and washer $0 40

No. 285. 1½ inches, of uniform quality and size, with perfect thread, with screw and washer 45

FLEXIBLE RAIL BOND

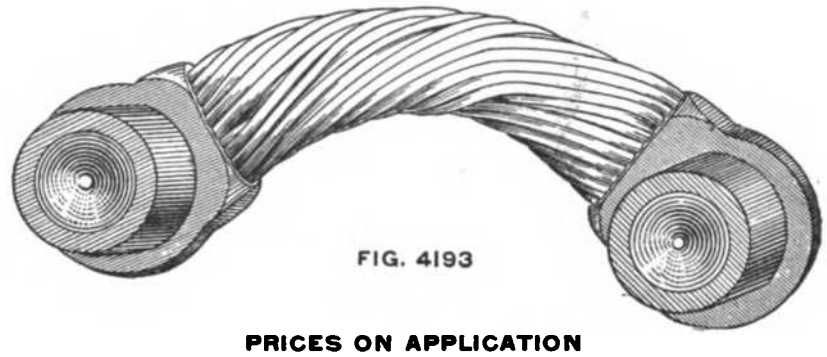


FIG. 4193

PRICES ON APPLICATION

COLUMBIA RAIL BOND

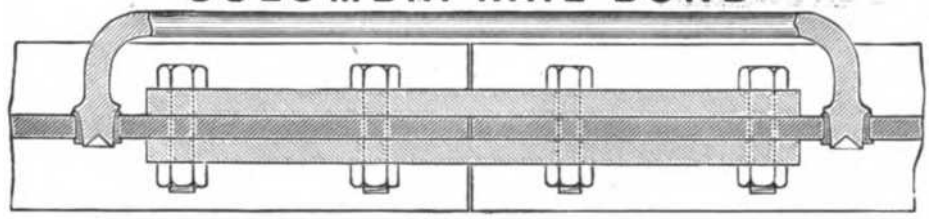


FIG. 4194

Length, center to center of holes in rails 16 inches to 480 inches. Sizes Nos. 0 and 00, having ⅝ inch terminal, B. & S. gauge. Sizes, Nos. 000 and 0000, having ⅞ inch terminal, B. & S. gauge.

PRICES ON APPLICATION

HAND SCREW BONDING PRESS

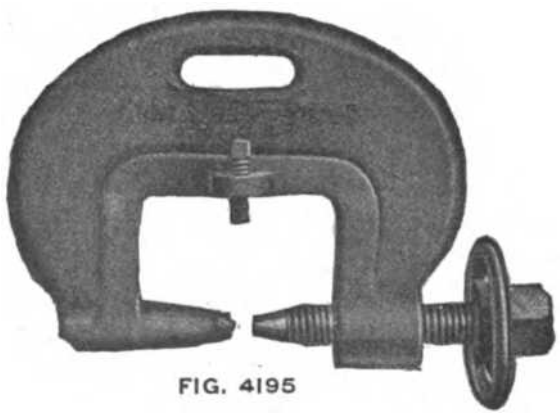


FIG. 4195

To be used in upsetting Bond Terminals.

PRICE, $35.00

BONDING TRACK DRILL

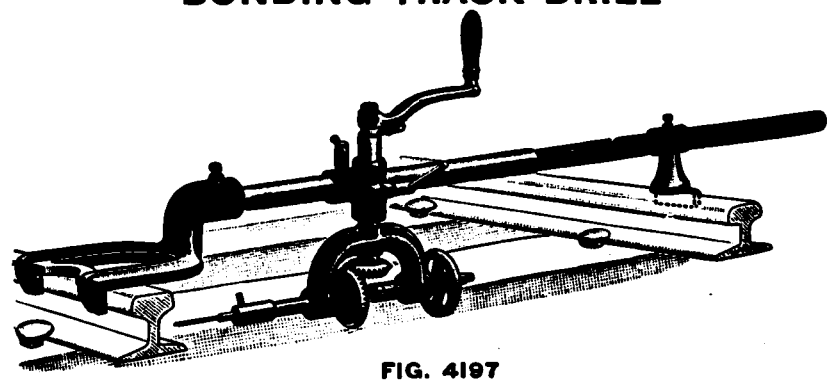


FIG. 4197

For drilling holes through rails for electric bonding wires, and for binding rods, etc. Two sets of gears go with each drill, making it either speeded or geared back. It weighs 68 pounds and will carry drills up to 1 inch. We carry in stock a full line of twist drills with shank turned to ½ inch to suit hole in the spindle of machine. A chuck is furnished with each machine which will hold drills smaller than ¼ inch.

PRICE, $25.00

MANNING, MAXWELL & MOORE, 85, 87 LIBERTY STREETS, NEW YORK

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COMBINATION OF STOW FLEXIBLE SHAFT AND IRON CLAD MULTI-SPEED ELECTRIC MOTOR FOR TRACK DRILLING

This Electric Street Railroad Drilling Plant will be readily understood by anyone interested in railway track construction. It is compact, easily transported, takes its power from the trolley and will do the work in a fraction of the time required by hand. The motor is arranged with special reference to the exacting requirements of a grounded circuit, having an approximate speed under a load of from 750 to 1,700 revolutions. All of the notches are available for intermittent work, and the motor can be run continuously on the last two.

NO. 6 PLANT, DRILLING UP TO 1 INCH

	Price.
1 One H. P. Motor, 500 volts, complete	$180 00
1 No. 6 Flexible Shaft, less pulley head	55 00
1 No. 6 Universal Joint	20 00
1 No. 6 Track Drill Press	35 00
1 No. 6 Track Old Man	16 00
	$306 00

When Automatic Track Drill, Fig. 4199, is desired in place of Drill Press shown in cut the Track Old Man is dispensed with, reducing the list price to $300 00.

NO. 8 PLANT, DRILLING UP TO 2 INCHES

	Price.
1 1½ H. P. Motor, 500 volts, complete	$220 00
1 No. 8 Shaft, less pulley head	74 50
1 No. 8 Universal Joint	22 00
1 No. 8 Track Drill Press	55 00
1 No. 8 Track Old Man	18 00
	$389 50

If reel and sixty feet of insulated wire are desired, add $10.00 to above lists.

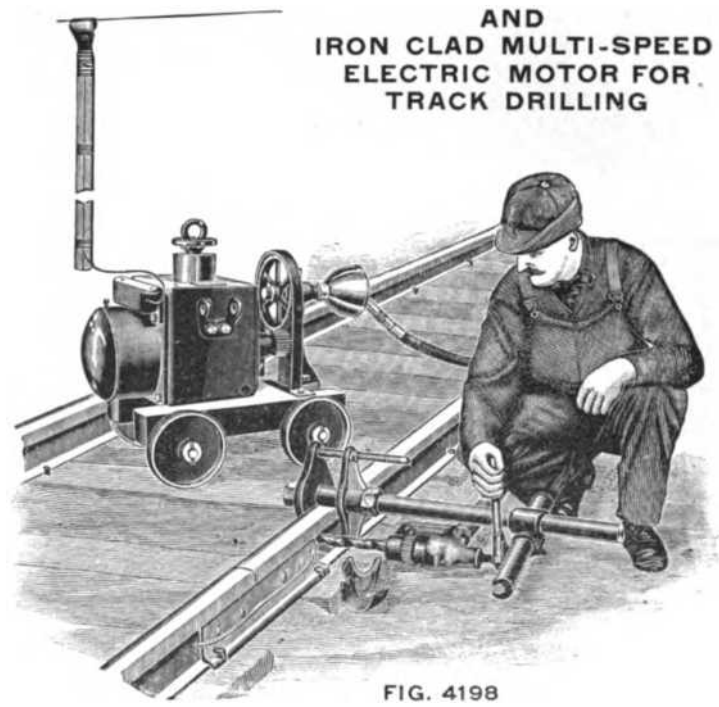


FIG. 4198

AUTOMATIC TRACK DRILL WITH CLAMP

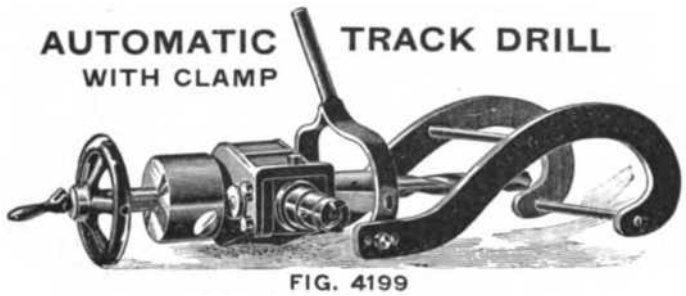


FIG. 4199

For use while road is in operation and quick adjustment is necessary this drill will meet all requirements. It is clamped to the rail or loosened from it in an instant. It is also arranged to feed automatically. It drills up to and including 1 inch holes. Price, $45.00.

TRACK AND CORNER DRILL PRESS

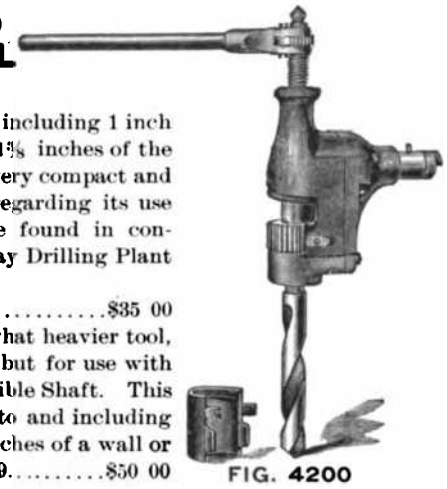


FIG. 4200

It drills holes up to and including 1 inch in diameter, and within 1⅝ inches of the ground or a corner. It is very compact and easily handled. Details regarding its use for track drilling will be found in connection with Street Railway Drilling Plant illustrated in Fig. 4198.

Price of No. 6 ..... $35 00

We can furnish a somewhat heavier tool, similar in design to No. 6, but for use with either No. 8 or No. 9 Flexible Shaft. This has a drilling capacity up to and including 2 inches, and within 2¼ inches of a wall or corner. Price of No. 8 or 9 ..... $50 00

UNIVERSAL JOINT

To prevent too sharp a bend at the end of the flexible shaft, when using in connection with an electric motor, this Universal Joint, with bell, is used as shown in cut (also see illustration of Electric Motor Plant, Fig. 4198), when the shaft is attached to a motor or to any other equally rigid driving shaft.

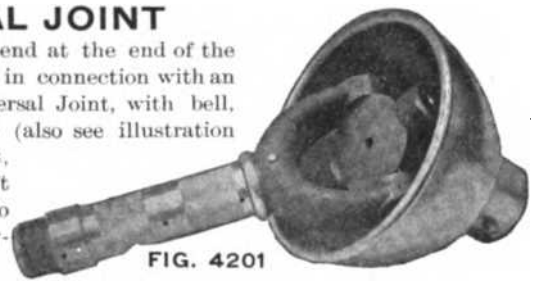


FIG. 4201

PRICES, FIG. 4201

No. 3	Universal	Joint	$16 00
" 4	"	"	18 00
" 6	"	"	20 00
" 8	"	"	22 00
" 9	"	"	23 00
" 11	"	"	25 00

When brass bells are desired, add $2.00 each to the prices above given.



FIG. 4202

Showing tower partially raised and platform extended over passing car.

LIGHT ONE HORSE TROLLEY WAGONS

DESCRIPTION, FIGS. 4202 AND 4203

Not topheavy, not collapsible, not dangerous.

The reach of tower and platform is ample for every requirement, and all work can be done without interfering with passing cars.

This wagon is designed for emergency and general repair work where it is desirable to use only one horse.

Prices and particulars furnished on application.

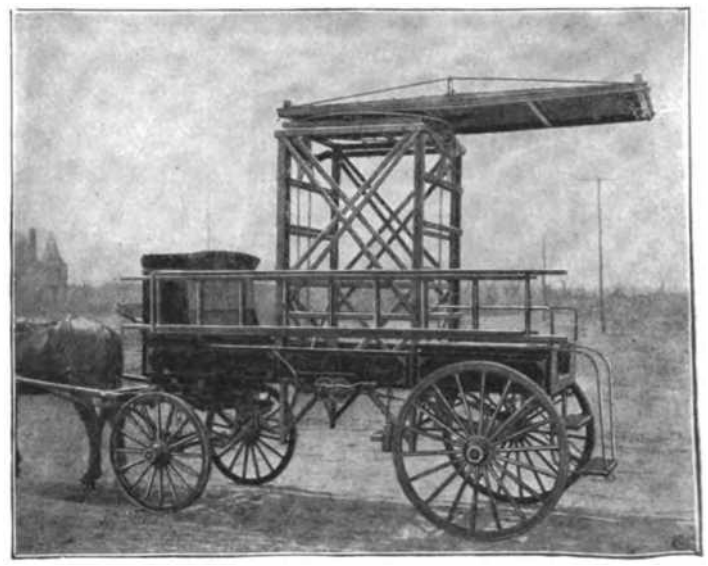


FIG. 4203

Showing platform in line with body. Tower and guard rails lowered.

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COMMUTATOR BAR

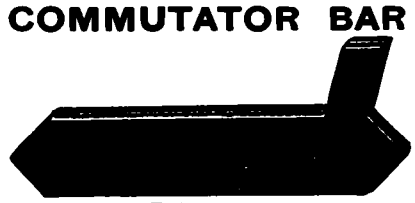


FIG. 4204

These bars are drop forged, of one single piece of unalloyed copper, and are of a perfectly homogeneous molecular structure throughout, the fiber or grain of the copper being so arranged as to be everywhere parallel with the axis of the arm, and of the greatest possible density. Prices on application.

We can furnish segments for all standard stationary motors, dynamos, generators, lighting machines and street car motors, and will be pleased to furnish catalogues illustrating over two hnndred and fifty different designs. If quotations are desired on special designs of segments, please send accurate model or drawing, with statement of quantity required.

STAMPED SOLID SHEET MICA COMMUTATOR SEGMENTS

	Per Lb.
G, E, 800, drum form 4 and 6	$2 20
G, E, 800, ring " 3	2 20
G, E, 1000	2 20
G, E, 1200, form 2	2 20
G, E, 2000	2 20
G, E, 51, 52, 53, 57	2 20
T, H, W, P, 50, form 1, 4, 6, 7	2 20
T, H, W, P, 30, " 1, 4, 6, 7	2 20
T, H, F, 30, " 4	2 20
T, H, F, 20, " 4	2 20
Edison, Nos. 8, 12, 14, 16	2 20
Sprague, No. 6	2 20
Westinghouse, No. 3, form 12, 12A, 38SC	2 20
Walker, 10s, 2000. form D and 50 HP	2 20
Johnson, Nos. 18, 20, 22, 28, 34, C60, D50	2 20

We can also furnish taper rings, taper band rings and sleeves for shell for any of the above makes of commutators. Prices on application.

MICANITE PLATES

	Per Lb.
No. 1 Standard, 18 in. x 36 in., any thickness	$1 80
No. 2. Special, 18 in. x 36 in., any thickness; for commutator segments	1 80

FLEXIBLE MICANITE PLATES

	Per Lb.
Style A, 32 in. x 32 in., any thickness	$1 80
" B, 36 " 36 " "	1 00

MICANITE CLOTH

	Per Lb.
Rolls 32 inches x 16 feet and sheets 32 in. x 32 in., 8, 11 and 14 mils. thick	$1 80

MICANITE PAPER

	Per Lb.
Rolls 32 inches x 16 feet and sheets 32 in. x 32 in., 5, 8 and 11 mils. thick	$1 80

EXTRA FLEXIBLE MICANITE CLOTH AND PAPER

	Per Lb.
Rolls 32 inches x 16 feet; sheets 32 in. x 32 in., 8 and 11 mils. thick	$1 80

RED PAPER AND MICA INSULATIONS

ARMATURE TROUGHS.

General Electric Co.'s, W. P. 50...12½ cents each.
" " " W. P. 30... 9 "

CARBON BRUSH

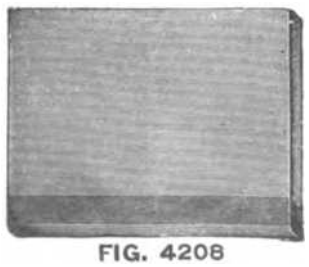


FIG. 4208

DESCRIPTION

In addition to this list we are prepared to quote prices on any size needed. When you are in the market for brushes write to us for special price list, which will be mailed on application.

CARBON BRUSH

REGULAR STOCK SIZES OF BRUSHES

Style.	Width.	Thickness.	Length.	Prices.
A	½	5/16	8	$ 90
M	¾	5/16	8	1 05
R	⅞	5/16	8	1 15
B	1	5/16	8	1 25
N	1	⅜	8	1 45
F	1¼	¼	8	1 15
I	1¼	5/16	8	1 40
O	1¼	⅜	8	1 65
D	1⅜	⅜	10	2 00
J	1⅜	½	10	2 60
P	1½	5/16	8	1 55
Q	1¾	5/16	8	1 70
L	1⅞	5/16	10	2 05
C	1⅞	⅜	10	2 45
K	1⅞	½	10	3 25
G	1⅞	7/16	10	2 85
E	1⅞	⅝	12	4 60

NON-SPARKING BRUSH



FIG. 4206

These brushes are made of selected material of the best quality and in the most careful manner possible. The outside strips of stiffened metal should never be allowed to touch the commutator. If this happens, the high resistance metal is short circuited and rendered useless. When the brushes become worn down use a file or hacksaw to cut away about an inch of the metal of the stiffening springs. If brushes tend to spread at the toe, the stiffening springs may be bowed at the brush holder to hold the toe more tightly together. Tension may be light if commutator is true and smooth. Some lubrication is needed; oil is generally used, but in some cases something heavier is to be preferred, such as vaseline or tallow.

PRICES, BRUSHES

Thickness, Inches.	Length, Inches.	Width in Inches ½	⅝	¾	⅞	1	1⅛	1¼	1⅜	1½	1⅝	1¾	1⅞	2
5/16	8	$0 55	$0 60	$0 55	$0 70	$0 75	$0 80	$0 85	$0 90	$0 95	$1 00	$1 05	$1 10	$1 15
	10	65	70	75	80	85	90	1 00	1 05	1 10	1 15	1 25	1 30	1 35
	12	70	75	80	90	95	1 05	1 10	1 20	1 25	1 30	1 40	1 45	1 50
¼	8	75	80	90	95	1 00	1 10	1 15	1 20	1 25	1 30	1 40	1 45	1 50
	10	80	90	95	1 05	1 15	1 20	1 30	1 35	1 45	1 50	1 60	1 70	1 75
	12	85	95	1 05	1 15	1 25	1 35	1 45	1 50	1 65	1 70	1 80	1 90	2 00
5/16	8	90	1 00	1 05	1 15	1 25	1 35	1 40	1 45	1 55	1 60	1 70	1 80	1 85
	10	1 00	1 10	1 20	1 30	1 40	1 50	1 60	1 70	1 80	1 85	1 95	2 05	2 15
	12	1 05	1 20	1 30	1 40	1 50	1 65	1 75	1 90	2 00	2 15	2 25	2 35	2 50
⅜	8	1 10	1 15	1 25	1 35	1 45	1 55	1 65	1 75	1 80	1 90	2 00	2 10	2 20
	10	1 15	1 30	1 40	1 50	1 65	1 75	1 85	2 00	2 10	2 20	2 35	2 45	2 60
	12	1 20	1 40	1 55	1 70	1 85	1 95	2 10	2 25	2 40	2 50	2 65	2 80	2 95
7/16	8	1 25	1 35	1 45	1 55	1 70	1 80	1 90	2 00	2 10	2 20	2 35	2 45	2 55
	10	1 35	1 50	1 60	1 75	1 90	2 05	2 15	2 30	2 45	2 60	2 70	2 85	3 00
	12	1 45	1 60	1 80	1 95	2 10	2 30	2 45	2 60	2 75	2 90	3 10	3 25	3 40
½	8	1 40	1 50	1 65	1 80	1 90	2 00	2 15	2 30	2 40	2 50	2 65	2 80	2 90
	10	1 60	1 70	1 85	2 00	2 15	2 30	2 45	2 60	2 80	2 95	3 10	3 25	3 40
	12	1 65	1 85	2 00	2 20	2 40	2 60	2 80	2 95	3 15	3 35	3 50	3 70	3 90
⅝	8	1 70	1 90	2 05	2 20	2 35	2 50	2 65	2 80	3 00	3 15	3 30	3 45	3 60
	10	1 90	2 05	2 25	2 45	2 65	2 85	3 05	3 25	3 45	3 65	3 85	4 05	4 20
	12	2 05	2 25	2 50	2 75	3 00	3 20	3 45	3 70	3 90	4 15	4 40	4 60	4 85

Thickness is given for the middle of the brush. For price of 6 inch brush, subtract from 8 inch, difference between 8 and 10 inch; 5/16 in. price will be charged for any size under that thickness.

PERFECTION WOVEN WIRE BRUSH



FIG. 4207

Inches Wide.	Inches Thick.	Inches Long.	Prices, Each.	Inches Wide.	Inches Thick.	Inches Long.	Prices, Each.	Inches Wide.	Inches Thick.	Inches Long.	Prices, Each.
½	5/16	6	$0 75	1½	½	7	$2 75	2	½	8	$3 75
¾	¼	7	1 25	1½	⅝	7	3 00	2	⅝	8	4 50
¾	½	7	1 50	1½	⅝	8	3 25	2⅛	⅜	8	3 30
⅞	¼	7	1 35	1⅝	¼	7	2 20	2¼	⅜	8	3 50
1	⅛	7	1 30	1⅝	5/16	7	2 50	2¼	½	8	4 25
1	¼	7	1 50	1⅝	⅜	7	2 75	2¼	⅝	8	4 75
1	5/16	7	1 60	1⅝	½	7	3 25	2½	5/16	8	3 25
1⅛	¼	7	1 60	1¾	¼	7	2 25	2½	⅜	8	4 00
1⅛	5/16	7	1 70	1¾	5/16	8	2 35	2½	½	8	4 50
1⅛	⅜	7	1 80	1¾	⅜	8	2 50	2½	⅝	8	5 00
1⅛	½	7	2 00	1¾	½	8	3 00	2⅞	⅜	8	4 25
1¼	¼	7	1 75	1¾	⅝	8	3 50	2⅞	½	8	4 75
1¼	5/16	7	1 90	1¾	¾	8	4 00	2⅞	⅝	8	5 25
1¼	⅜	7	2 05	1¾	⅞	8	4 50	3	⅜	8	4 50
1¼	½	7	2 30	1⅞	¼	7	2 30	3	½	8	5 00
1⅜	5/16	7	1 75	1⅞	5/16	8	2 45	3	⅝	8	5 75
1⅜	¼	7	1 85	1⅞	⅜	8	2 75	3	¾	8	6 50
1⅜	5/16	7	2 00	1⅞	½	8	3 50	3⅜	¼	8	3 00
1⅜	⅜	7	2 20	1⅞	⅝	8	4 25	3⅜	5/16	8	3 75
1⅜	½	7	2 50	1⅞	⅝	12	7 00	3⅜	⅜	8	4 75
1½	¼	7	2 00	2	¼	7	2 50	3⅜	½	8	5 50
1½	5/16	7	2 20	2	5/16	8	2 75	3⅜	⅝	8	6 50
1½	⅜	7	2 40	2	⅜	8	3 00	3⅜	¾	8	7 50

PRICES, FIG. 4208

Inches Long.	Inches Wide.	Inches Thick.	Per 1,000.	Inches Long.	Inches Wide.	Inches Thick.	Per 1,000.
1⅜	⅝	¼	$20 00	2½	1¼	⅜	$25 00
1¾	¾	⅜	20 00	2½	1¼	7/16	25 00
1¾	¾	7/16	20 00	4	1⅝	¾	55 00
2	¾	7/16	20 00	4	1¾	¾	60 00
2	1	½	25 00	4	1¾	⅞	65 00
2	2	¾	40 00	4	1¾	1	70 00
2½	⅝	⅜	25 00	4	2	1	80 00
2½	1⅛	⅜	25 00	4	2	1⅛	100 00
2½	1⅛	½	25 00	4	2	1⅜	130 00
2½	1 3/16	1	40 00				

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LEAD CAPPED SOFT HAMMER

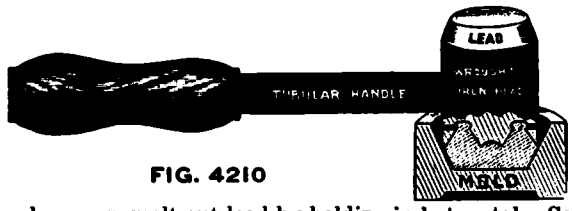


FIG. 4210

To renew hammer, melt out lead by holding in hot metal. Set in mold, pour metal on the side, knock off rim, and the job is complete.

Weight, Pounds.	Single Hammer.	Per Dozen.	Single Mold.	Dozen Molds.
3	$0 45	$5 10	$0 15	$1 71
5	70	7 98	25	2 85
10	1 00	11 40	35	3 99
20	1 90	21 66	55	6 27

COPPER FACED HAMMER

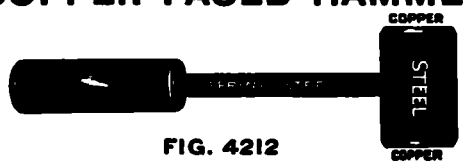


FIG. 4212

Weight, Pounds.	Single Hammer.	Per Dozen.
1	$0 20	$2 30
1½	28	3 20
2	35	4 00
3	45	5 15

COPPER TIPPED HAMMER

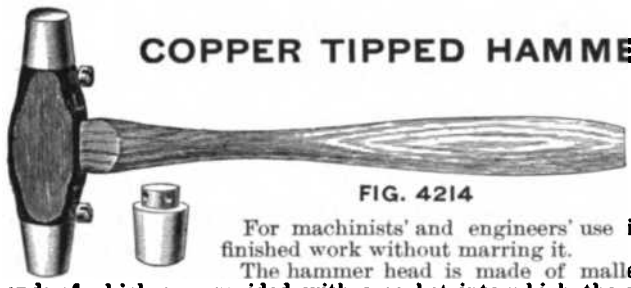


FIG. 4214

For machinists' and engineers' use in hammering finished work without marring it.

The hammer head is made of malleable iron, the ends of which are provided with a socket into which the copper tips are fitted and held in position by a set screw. In case one corner of the tip becomes battered more than the other, it may be rotated by loosening the set screw until the whole tip has been battered, when it can be removed, hammered into shape and readjusted. The tips are made of solid bar pure copper, not cast. Extra tips furnished at a slight additional cost. A wrought iron button in the head makes a solid foundation and prevents driving tip through.

PRICES, HAMMER COMPLETE WITH HANDLE AND TIPS

Numbers	1	2	3
Weight	12½ oz.	15½ oz.	24 oz.
Black, per dozen	$18 00	$20 40	$24 00
Nickel " "	24 00	26 40	30 00

COPPER TIPS, EXTRA

Numbers	1	2	3
Per dozen pairs	$6 00	$7 20	$8 40

FIBER FACED HAMMER



FIG. 4216

These hammers take the place of the mallet without being bulky, and will be found very useful to any metal worker, as a hard elastic blow can be given without injury to the work. The fiber faces, held by the screw rings, can be quickly replaced when worn by use.

PRICES

Weights.	Each.	Per Dozen.
5 ounces.	$0 60	$6 00
10 "	0 60	6 00
1 pound.	0 85	9 00
1½ "	1 10	12 00

RAWHIDE MALLET



FIG. 4218

PRICES, FIG. 4218

Nos.	Diameters, Inches.	Lengths, Inches.	Weight, Ounces.	Each.
0	1	2⅛	1½	$0 20
1	1¼	2¾	3½	25
2	1½	3	6	30
3	1¾	3⅛	7½	35
4	2	3¼	10	45
5	2¾	4¼	21	1 00
6	2¾	4¾	23	1 25

These are light mallets, made entirely of hide, except the handle.

SOFT IRON HAMMER



FIG. 4211

Head is solid Norway iron, made as soft as possible. This hammer will not injure ordinary work, and has great driving power.

Weight, Pounds.	Single Hammer.	Per Dozen.
2½	$0 30	$3 45
5	50	5 75
10	90	10 30
20	1 75	20 00

COPPER HAMMER

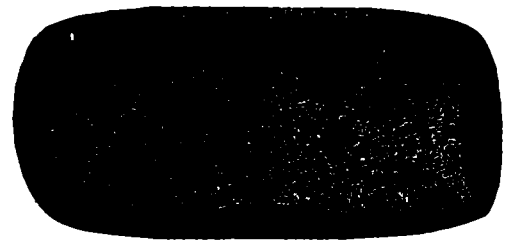


FIG. 4213

Weight of heads, 1 to 10 pounds.

Per pound.... .....50 cents.

HIDE FACED HAMMER

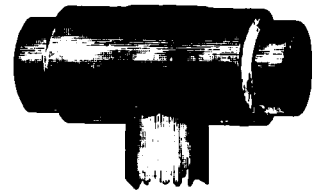


FIG. 4215

DESCRIPTION

One pair of extra faces is sold with each hammer, and when worn out they can be renewed at slight cost, the old ones being easily removed by fastening the hammer in a vise, when a few blows on the side of the face will usually knock it out. If worn down very much a cold chisel may be necessary. The new faces need no fastening except a tight fitting in the shell.

PRICES

Nos.	Weight, Pounds.	Diameters of Face, Inches.	Each.	Extra Faces, per Pair.
1	1	1¼	$0 75	$0 16
2	1½	1½	95	20
3	2	1¾	1 15	25
4	4	2	1 65	35
5	5½	2¾	2 35	50

PATENT RAWHIDE MALLET

LOADED

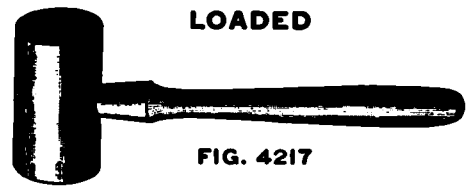


FIG. 4217

These mallets are of same size as Fig. 4218, ordinary rawhide mallets, Nos. 1 to 5 inclusive, but having a central strip of soft metal rolled up with the hide, the weight is doubled without increasing the size. They are numbered 7 to 11 to avoid confusion.

PRICES

Nos.	Diameters, Inches.	Lengths, Inches.	Weight, Ounces.	Each.
7	1¼	2¾	7	$0 30
8	1½	3	12	35
9	1¾	3⅛	15	40
10	2	3¼	20	50
11	2¾	4¼	42	1 00

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RAWHIDE MALLET

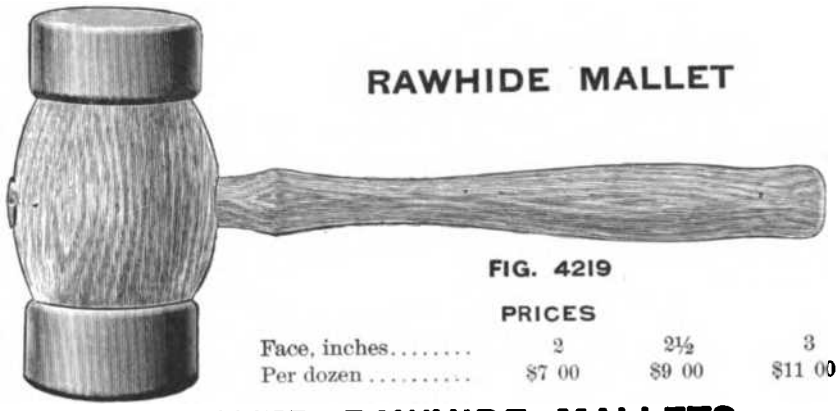


FIG. 4219

PRICES

Face, inches.....	2	2½	3
Per dozen.....	$7 00	$9 00	$11 00

VULCANIZED FIBER HEAD MALLET



FIG. 4220

SECTION OF HEAD

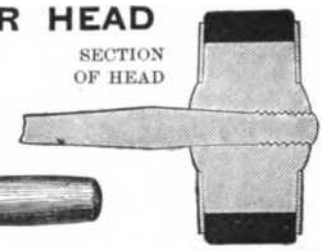


FIG. 4220

DESCRIPTION, FIG. 4220

The heads of these mallets are vulcanized fiber, a material which is produced by treating specially prepared vegetable fiber with powerful chemical agents, then consolidating it under very heavy pressure.

It is very hard and dense, extremely tough, and elastic enough to form a cushion, relieving the arm from the jar occasioned by the force of the blow.

The body and handle are thoroughly kiln dried. Handle screws in. The bands are of malleable iron, riveted to the body and tapering on the inside to hold the fiber heads firmly in place. See sectional view.

PRICES

Nos.	Face. Inches.	Per Dozen.
2	2	$6 50
2½	2½	7 50
3	3	9 00
3½	3½	12 00

IMPROVED RAWHIDE MALLETS

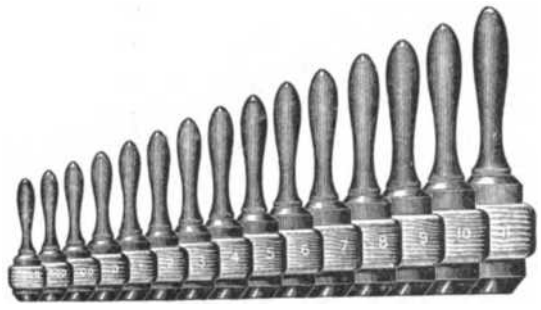
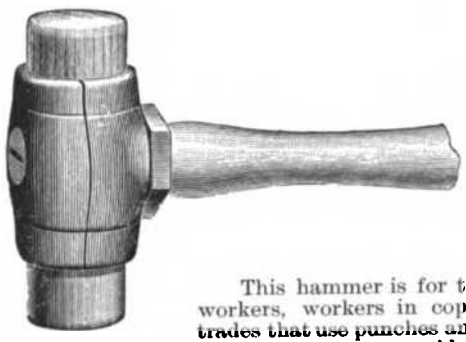


FIG. 4221

PRICES, FIG. 4221

Nos.	Weight, Pounds.	New, Each.	Refilled, Each.
0000	1	$1 00	$0 50
000	1¼	1 00	50
00	1½	1 50	75
0	1¾	1 50	75
1	2½	2 00	1 00
2	4	2 50	1 25
3	6	3 00	1 50
4	8	3 50	1 75
5	10	4 00	2 00
6	12	4 50	2 25
7	14	5 00	2 50
8	16	5 50	2 75
9	18	6 00	3 00
10	20	6 50	3 25
11	22	7 00	3 50

COLVIN INTERCHANGEABLE HAMMER



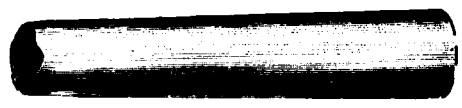


FIG. 4222

This hammer is for the use of engineers, machinists, electrical workers, workers in copper, tin and other soft metals, and all trades that use punches and dies, as it prevents breaking the punch.

A rawhide head can be used on one side with a wooden, copper or hard rubber on the opposite side. Heads can be exchanged by simply unscrewing the nut.

PRICES

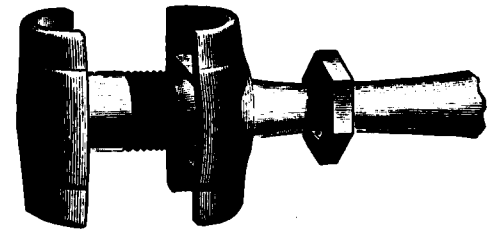
Nos.					Each.
1	With 2 wooden heads				$0 80
3	" 2 "	"			1 10
4	" 2 "	"			1 50
1	" 2 rawhide "	weight, 1 lb. 2 oz.;	diameter head, 1¼ inches		1 00
3	" 2 "	"	" 1 " 11 "	" 1¾ "	1 50
4	" 2 "	"	" 3 "	" 2 "	2 00
1	Without heads				70
3	" "				90
4	" "				1 10

Unless otherwise specified, hammers will be sent with rawhide heads.

SECTON OF HEAD FIG. 4222



WOODEN HEAD





RAWHIDE HEAD

PRICES OF HEADS FOR FIG. 4222

Nos.	Style of Head.	Diameters Head, Inches.	Per Dozen.
1	Wooden	1¼	$0 75
3	"	1¾	80
4	"	2	1 00
1	Rawhide	1¼	2 00
3	"	1¾	3 50
4	"	2	4 50

SAWMAKERS' HAMMERS

CROSS FACE HAMMER

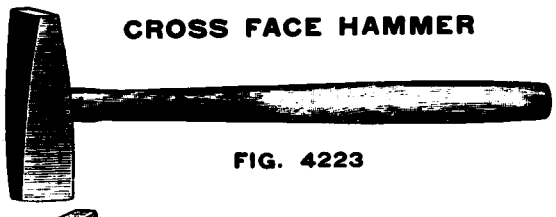


FIG. 4223

TWIST FACE HAMMER

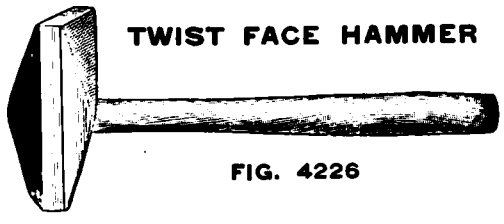


FIG. 4226

DOG HEAD HAMMER

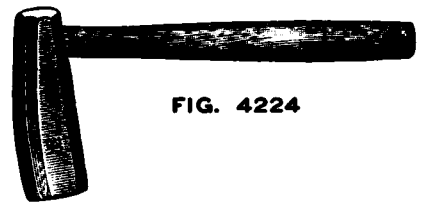


FIG. 4224

PRICES, FIGS. 4223 TO 4227

50 cents per pound.

Extra handles 30 cents each.

RIVETING HAMMER

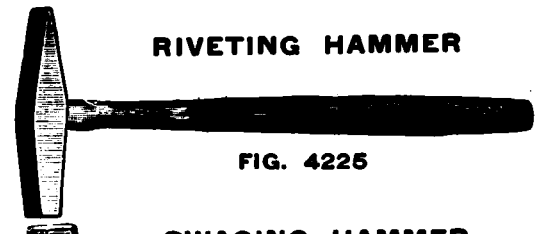


FIG. 4225

SWAGING HAMMER

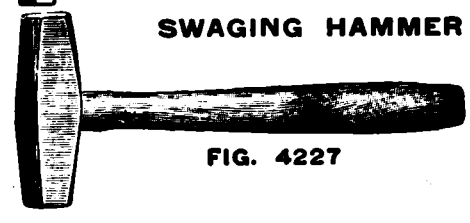


FIG. 4227

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ROCK DRILL SHARPENING TOOLS

DOLLIES



FIG. 4228

Weight, about 6 lbs. 4 oz.
Price, per lb., 80 cents.



FIG. 4229

Weight, about 6 lbs. 4 oz.
Price, per lb., 80 cents.

SOW

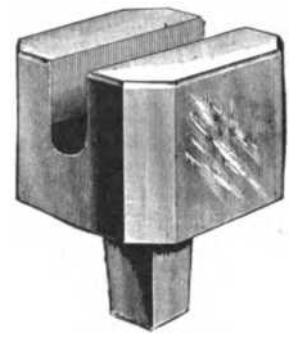


FIG. 4230

Weight, about 7 lbs.
Price, per lb., 80 cents.

SET HAMMER



FIG. 4231

Weight, about 3 lbs. 4 oz.
Price, per lb., 80 cents.

ROCK DRILL SHARPENING TOOLS

TOP SPREADER

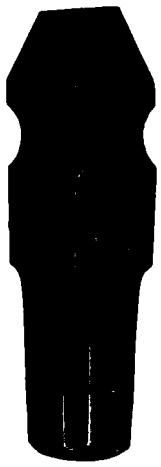


FIG. 4232

Weight, 3 lbs. 4 ozs.
Price, per lb., 80 cents.

BOTTOM SPREADER



FIG. 4233

Weight, 3 lbs. 2 ozs.
Price, per lb , 80 cents.

PAVING TOOLS

SAND RAMMERS

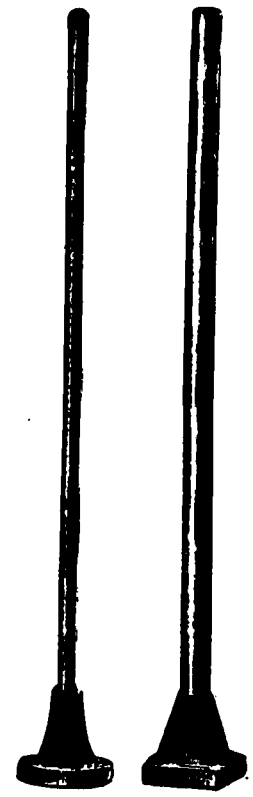


FIG. 4234 FIG. 4235

PRICES

Each.....$1 50
Either above with iron handle, each, 2 00

BELGIAN RAMMER

FIG. 4236

PRICE, $12.00

COBBLE RAMMER

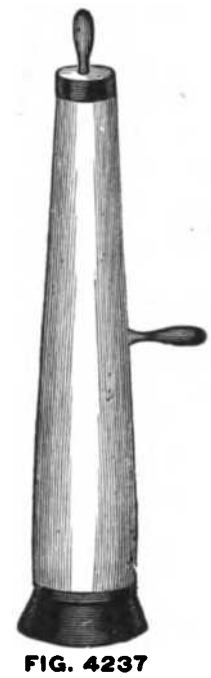


FIG. 4237

PRICE, $10.00

PAVING TOOLS

COBBLE HAMMER

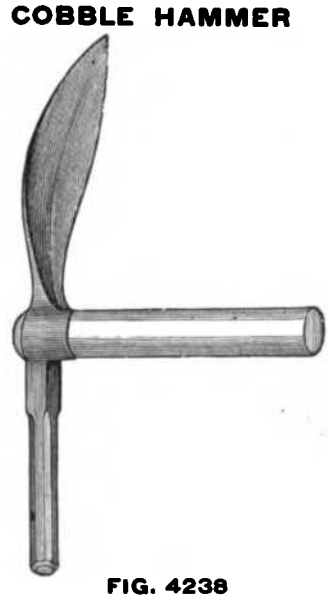


FIG. 4238

PRICE, $4.50

BELGIAN HAMMER

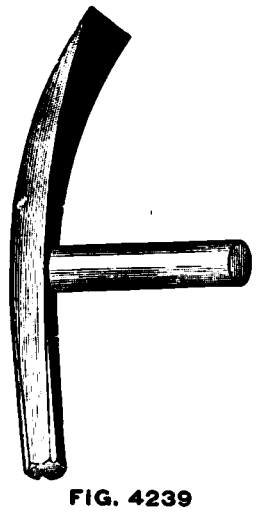


FIG. 4239

PRICE, $4.50

FLAGGING OR PAVING BARS

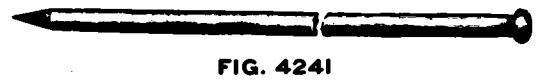


FIG. 4241

Weight, 18 lbs., length 4½ to 5 feet, 22 cents per lb.

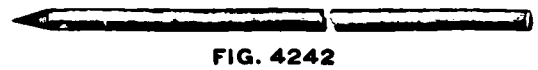
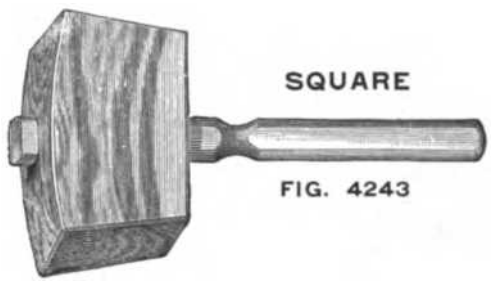


FIG. 4242

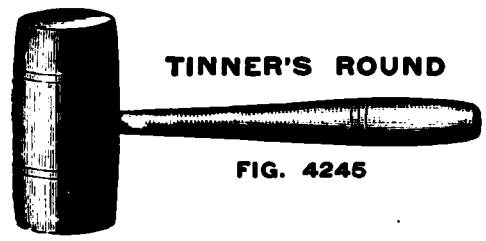
Weight, 12 to 20 lbs., length 4½ to 5 feet, 12 cents per lb.

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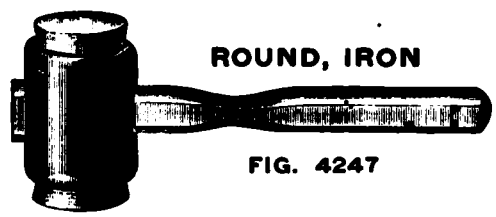
MALLETS



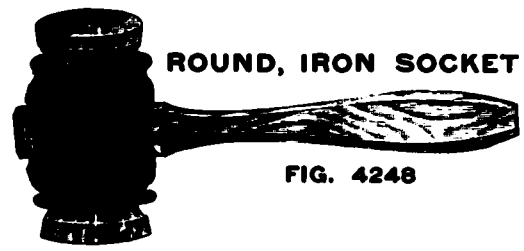
Nos.							Per Dozen.
8	Hickory, mortised,	6	inches long,	2½ x 3½	inches	.....	$2 00
9	" "	6½	" "	2¾ x 3¾	"	.....	2 50
10	" "	7	" "	3 x 4	"	.....	3 00
11	Lignum vitae "	6	" "	2½ x 3½	"	.....	3 75
12	" "	6½	" "	2¾ x 3¾	"	.....	4 75
13	" "	7	" "	3 x 4	"	.....	5 75



No. 4. Hickory, 5½ inches long, assorted, 2¼ and 2½ inches diameter, per dozen.....$1 00



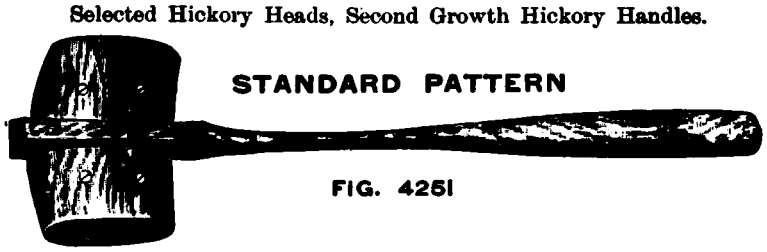
No. 15. Round iron mallet, hickory ends, 2 inches diameter, per dozen.....$4 00



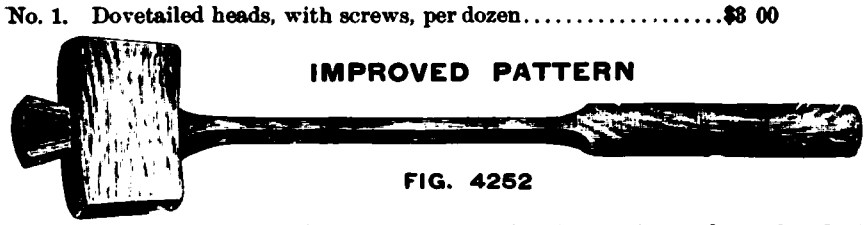
No. 15½. Round mallet, iron socket, hickory ends, 2½ inches diameter, per dozen.....$5 00
No. 16. Round mallet, iron socket, heavy hickory ends, 3 inches diameter, per dozen..... 7 50

BUNG STARTS

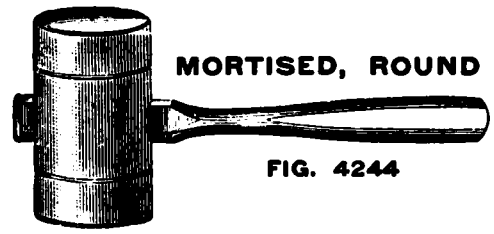
Selected Hickory Heads, Second Growth Hickory Handles.



No. 1. Dovetailed heads, with screws, per dozen.....$3 00



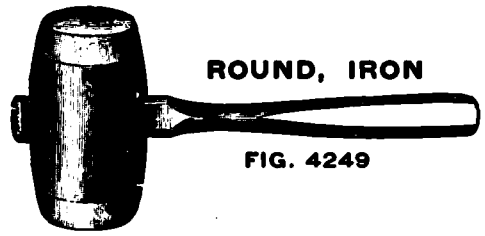
No. 2. Mortised heads, handles securely wedged and riveted at end, per doz. $5 00



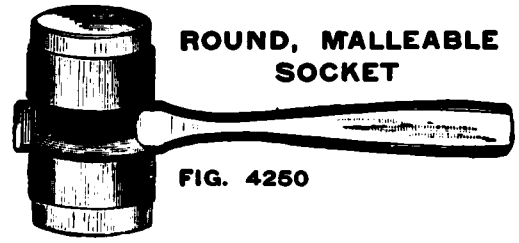
Nos.							Per Dozen.
1	Hickory, mortised,	5	inches long,	3	inches diameter	.....	$1 50
2	" "	5½	"	3½	"	.....	2 00
3	" "	6	"	4	"	.....	2 50
5	Lignum vitae, "	5	"	3	"	.....	3 00
6	" " "	5½	"	3½	"	.....	4 00
7	" " "	6	"	4	"	.....	5 00



Nos.							Per Dozen.
14	Mallet, mortised, iron rings,	6	inches long,	4	inches diameter	..	$5 50
14½	" " "	5½	" "	3½	"	..	4 00

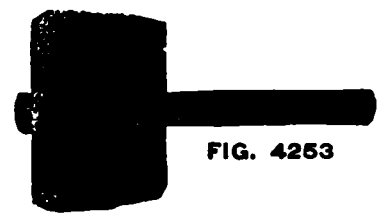


No. 15. Mortised, hickory ends, 2½ inches diameter, per dozen...$4 00



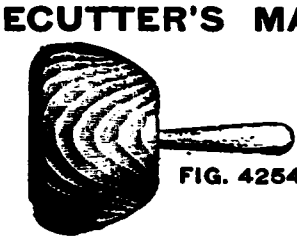
No. 16. Mallet, heavy malleable iron socket, mortised, hickory ends, 3 inches diameter, per dozen.....$7 50

OVAL LIGNUM VITAE MALLET



No. 1	Per dozen.....	$6 00
" 2	"	5 50
" 3	"	5 00

STONECUTTER'S MALLET



Pounds.	Extra, per Dozen.	No. 1, per Dozen.	No. 2, per Dozen.
3 to 4	$10 00	$9 00	$6 00
4 " 5	14 00	11 00	7 00
5 " 6	20 00	13 00	8 00
6 " 7	22 00	15 00	10 00
7 " 8	24 00	16 00	12 00

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POLISHED HICKORY HANDLES

AXE



FIG. 4255

MARKET AND N. N. Y. PATTERNS

	28 and 26 inches.	32 and 30 inches.	36 and 34 inches.
Extra, per doz.	$2 00	$3 00	$3 40
Excelsior, "	1 80	2 30	2 60
No. 1, "	1 50	1 90	2 15
" 2, "	1 30	1 65	1 80
" 3, "	....	1 35	1 50

HAND SHAVED AXE

Octagon and Oval Hand Shaved.	XXX.	XX.	X.
36, 34, 32 and 30 inches, plain end, per dozen,	$3 75	$3 00	$2 25
38 inches, "	3 90	3 00	2 25
40 " "	4 00	3 50	2 30
36 " straight lumberman's, "	3 50	3 00	2 20
38 " " " "	3 75	3 00	2 20

OAK AXE

	A.	B.	C.	D.
30 to 34 inches, per dozen,	$3 20	$2 50	$2 00	$1 50

SURFACE OR RAILWAY PICK

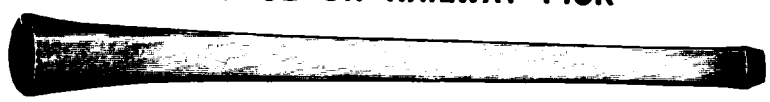


FIG. 4261

	Extra.	Exclr.	No. 1.	No. 2.	No. A.
36 inches, per dozen,	$4 50	$3 50	$2 60	$1 90	$1 65

COAL MINER'S PICK



FIG. 4263

		Extra.	Exclr.	No. 1.
Large Eye, 3⅛ x ⅞	34 inches, per dozen,	$2 70	$2 00	$1 75
Medium " 3 x ¾				
Small " 3 x ⅝				

POLL PICK



FIG. 4266

	Extra.	Exclr.	No. 1.
32, 34 and 36 inches, per dozen,	$3 50	$3 00	$2 10

DRIFTING PICK



FIG. 4267

	Extra.	Exclr.	No. 1.
32, 34 and 36 inches, per dozen,	$3 50	$3 00	$2 10

SHIP CARPENTER'S ADZE

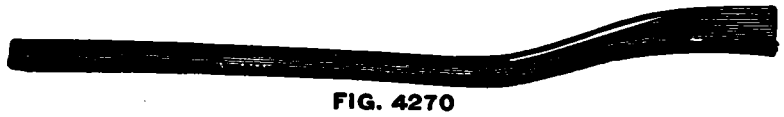


FIG. 4270

CARPENTER'S ADZE



FIG. 4272

	Extra.	Exclr.	No. 1.	No. 2.
32 and 34 inches, per dozen,	$4 00	$3 50	$2 15	$1 80

GRUB HOE

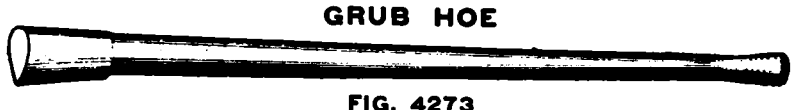


FIG. 4273

36 in., $2 00 42 in., $2 50 48 in., $3 00 54 in., $4 00 per dozen.

STRAIGHT AND DOUBLE BITTED AXE



FIG. 4256

	Extra.	Exclr.	No. 1.	No. 2.	No. 3.
34 and 36 inches, per dozen,	$3 40	$2 55	$2 15	$1 60	$1 30

SLEDGE, REGULAR PATTERN



FIG. 4257

TAPER SLEDGE

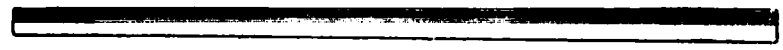


FIG. 4258

MAUL OR STRIKING HAMMER



FIG. 4259

Inches,	42	40	38	36 and 34	32 and 30	28 and 26	24
	Prices, per Dozen						
Extra,	$3 00	$2 55	$2 30	$2 25	$1 85	$1 70	$1 30
No. 1	2 50	2 00	1 80	1 80	1 45	1 30	1 05
" 2	1 75	1 60	1 40	1 25	1 10	1 00	80

Hand shaved sledge, add 40c. per dozen.

MACHINIST'S, STONE MASON'S, BLACKSMITH'S AND RIVETING HAMMER



FIG. 4260

Inches,	12 and 13	14 and 15	16 and 17	18	19	20	22 and 23	24
Per doz.	$0 60	$0 60	$0 70	$0 80	$0 85	$0 90	$0 95	$1 05

CARPENTER'S HAMMER



FIG. 4262

Inches,	12 and 13	14 and 15
Oval or Adze Eye, per dozen,	$0 60	$0 65

STONECUTTER'S HAMMER

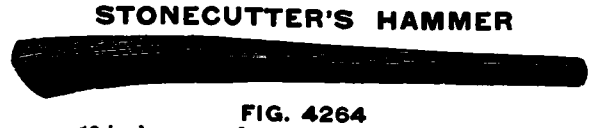


FIG. 4264

12 inches, per dozen, $0 75

HATCHET



FIG. 4265

Inches,	12 and 13	14 and 15	16	17	18	19	20
Per doz.	$0 60	$0 65	$0 70	$0 75	$0 95	$1 00	$1 00

BROAD AXE



FIG. 4268

	26
Reversible, per dozen,	$3 25

SPANISH AXE

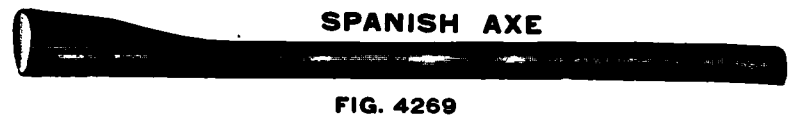


FIG. 4269

	Extra.	No. 1.	No. 2.
36 inches, per dozen,	$3 50	$2 50	$2 00

NAPPING HAMMER

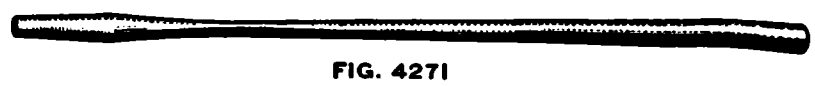


FIG. 4271

	Extra.	No. 1.	No. 2.
36 inches, per dozen,	$2 25	$1 80	$1 25
40 " "	2 55	2 00	1 60
42 " "	3 00	2 50	1 75

Long handles in cases of 2 to 12 dozen. Short handles in cases of 10 to 50 dozen.

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BOILER AND BOILERMAKERS' TOOLS

CALKING TOOL

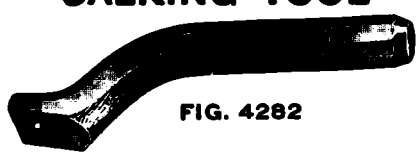


FIG. 4282

Sizes of Bits, ⅛, ¼, ⅜, ½ inch; per pound.....$0 60

YARNING TOOL

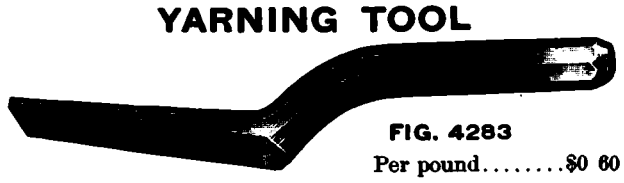


FIG. 4283

Per pound.....$0 60

CUPOLA TENDER'S TOOLS

CUPOLA PICK

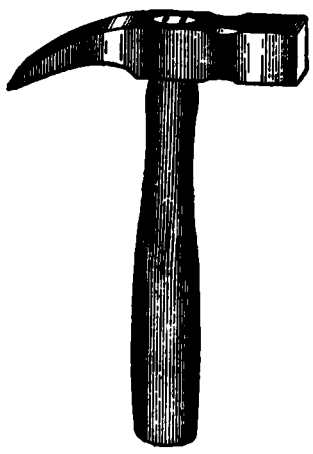


FIG. 4288

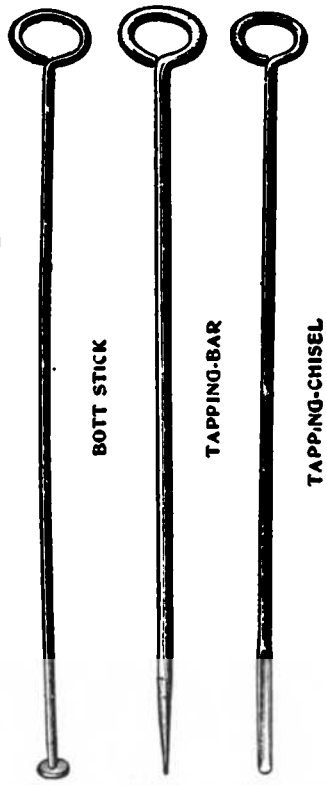


FIG. 4289 FIG. 4290 FIG. 4291

These tools made in all sizes. Prices on application.

PNEUMATIC STAY BOLT CLIPPER



FIG. 4287

Designed for the purpose of cutting off 1¼ inch stay bolts, and less, in fire box boilers, with ease and rapidity, any desired length.

PRICE, $300.00

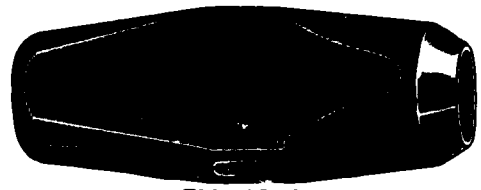


FIG. 4280

BUTTON SET

3 to 5 pounds, per pound..$0 75
5 pounds and over, " .. 70

BOILERMAKER'S MAUL

	Per Dozen.		Per Dozen.
3 x 4	$3 50	6 x 12	$10 00
3½ x 5	4 00	7 x 8	8 50
4 x 6	5 00	7 x 9	9 00
4 x 7	6 00	7 x 10	9 50
4 x 8	7 00	7 x 11	10 00
5 x 6	6 50	7 x 12	10 50
5 x 7	7 00	8 x 10	10 00
5 x 8	7 50	8 x 11	10 50
6 x 8	8 00	8 x 12	11 00
6 x 9	8 50	8 x 13	11 50
6 x 10	9 00	8 x 14	12 00
6 x 11	9 50	8 x 15	12 50

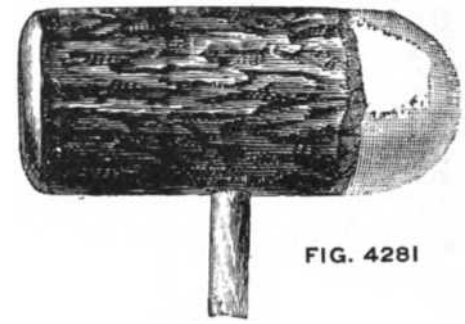


FIG. 4281

BOILER PICK



FIG. 4284

Weight.....1 pound
Per pound.....$0 75

BOILERMAKER'S HAMMER

Weight...2 to 3 lbs.
Per pound $0 50

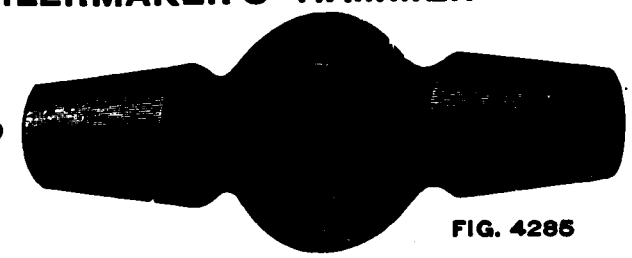


FIG. 4285

BOILERMAKER'S RIVETING HAMMER

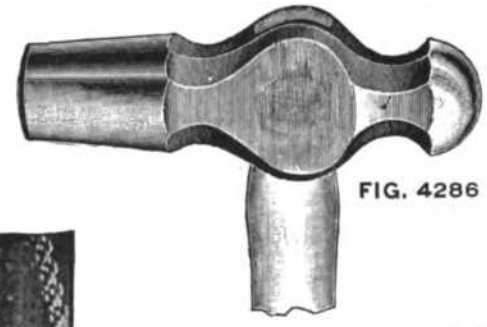


FIG. 4286

Numbers.	Sizes.	Weight.	Per Dozen.
441B	1	1 lb. 8 oz.	$14 50
442B	2	2 "	16 50
443B	3	2 " 8 "	19 00
444B	4	3 "	22 00

Weight does not include handle.

ROTARY SHEAR STAY BOLT CUTTER

DESCRIPTION
FIG. 4287A

Operated by a five foot lever attached to the hexagonal nut; it cuts the stay bolts easily and rapidly, leaving just the right length for riveting.

Made in four regular sizes, to cut ¾, ⅞, 1, and 1⅛ bolts. Other sizes made to order.

EACH, $30.00

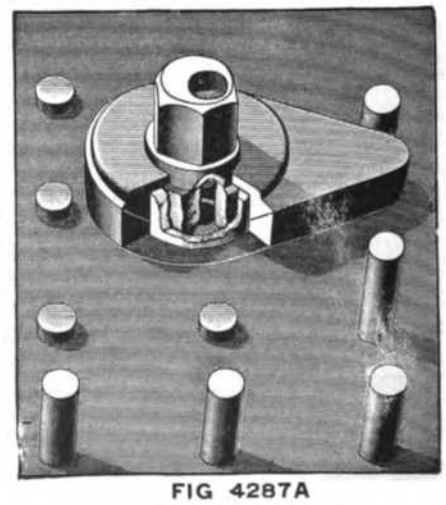


FIG 4287A

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MACHINISTS' HAMMERS, SOLID CAST STEEL

OCTAGON PATTERN

Oil Finished, Polished Sides, Face and Pene.



PRICES, FIG. 4292

Nos.	Sizes.	Weight, Pounds.	Per Dozen.
370	0000	⅜	$12 00
371	000	½	12 00
372	00	¾	12 00
373	0	1	12 50
374	1	1¼	13 50
375	2	1½	14 50
376	3	1¾	15 50
377	4	2	16 50
378	5	2¼	17 50
379	6	2½	19 00
380	7	2¾	20 50
381	8	3	22 00
382	9	3½	24 00

Weight does not include handle.



PRICES, FIG. 4293

Nos.	Sizes.	Weight, Pounds.	Per Dozen.
390	0000	⅜	$12 00
391	000	½	12 00
392	00	¾	12 00
393	0	1	12 50
394	1	1¼	13 50
395	2	1½	14 50
396	3	1¾	15 50
397	4	2	16 50
398	5	2¼	17 50
399	6	2½	19 00
400	7	2¾	20 50
401	8	3	22 00
402	9	3½	24 00

Weight does not include handle.



PRICES, FIG. 4294

Nos.	Sizes.	Weight, Pounds.	Per Dozen.
410	0000	⅜	$12 00
411	000	½	12 00
412	00	¾	12 00
413	0	1	12 50
414	1	1¼	13 50
415	2	1½	14 50
416	3	1¾	15 50
417	4	2	16 50
418	5	2¼	17 50
419	6	2½	19 00
420	7	2¾	20 50
421	8	3	22 00
422	9	3½	24 00

Weight does not include handle.



PRICES, FIG. 4298

Nos.	Sizes.	Weight, Lbs.	Ozs.	Per Dozen
361	1	0	4	$12 00
362	2	0	8	12 00
363	3	0	12	13 00
364	4	1	0	13 50
365	5	1	4	14 50
366	6	1	12	16 00

Weight does not include handle.

ROUND PATTERN

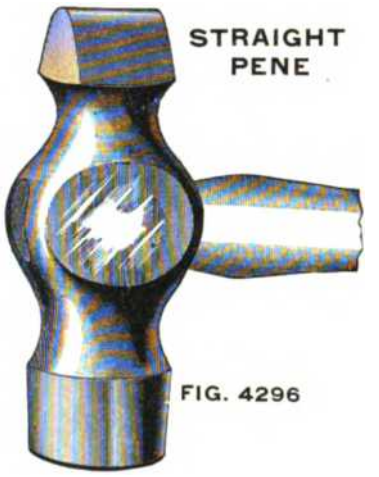
Full Polished.



PRICES, FIG. 4295

Nos.	Sizes.	Weight, Pounds.	Per Dozen.
330	00	½	$15 00
331	0	¾	15 00
332	1	1½	17 50
333	2	2	19 50
334	3	2¼	20 50
335	4	2½	22 00
336	5	3	25 00
337	6	3½	27 00

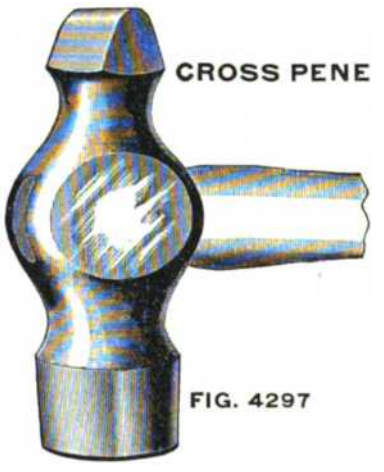
Weight does not include handle.



PRICES, FIG. 4296

Nos.	Sizes.	Weight, Pounds.	Per Dozen.
340	00	½	$15 00
341	0	¾	15 00
342	1	1½	17 50
343	2	2	19 50
344	3	2¼	20 50
345	4	2½	22 00
346	5	3	25 00
347	6	3½	27 00

Weight does not include handle.



PRICES, FIG. 4297

Nos.	Sizes.	Weight, Pounds.	Per Dozen.
350	00	½	$15 00
351	0	¾	15 00
352	1	1½	17 50
353	2	2	19 50
354	3	2¼	20 50
355	4	2½	22 00
356	5	3	25 00
357	6	3½	27 00

Weight does not include handle.



PRICES, FIG. 4299

Nos.	Sizes.	Weight, Lbs.	Ozs.	Per Dozen.
371	1	0	4	$12 00
372	2	0	8	12 00
373	3	0	12	13 00
374	4	1	0	13 50
375	5	1	4	14 50
376	6	1	12	16 00

Weight does not include handle.

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SOLID CAST STEEL NAIL HAMMERS



ADZE EYE

FIG. 4300

PRICES

Nos.	Sizes.	Weight.	Per Doz.
70	0	1 lb. 12 oz.	$12 50
71	1	1 lb. 4 oz.	9 00
72	1½	1 lb.	8 50
73	2	13 oz.	8 00
74	3	7 oz.	7 50

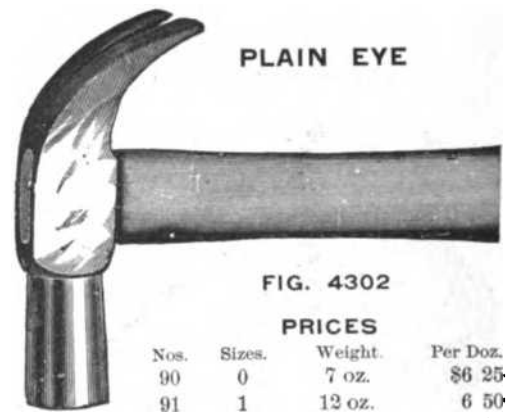


ADZE EYE, BELL FACE

FIG. 4301

PRICES

Nos.	Sizes.	Weight.	Per Doz.
80	1	1 lb. 4 oz.	$9 00
81	1½	1 lb.	8 50
82	2	13 oz.	8 00
83	3	7 oz.	7 50



PLAIN EYE

FIG. 4302

PRICES

Nos.	Sizes.	Weight.	Per Doz.
90	0	7 oz.	$6 25
91	1	12 oz.	6 50
92	2	15 oz.	6 75
93	3	1 lb. 2 oz.	7 00
94	4	1 lb. 8 oz.	8 00

SOLID CAST STEEL ENGINEERS' HAMMERS

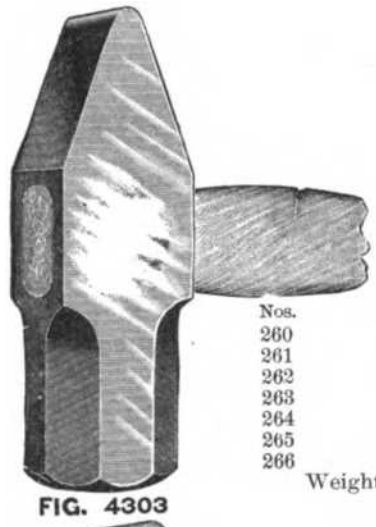


FIG. 4303

FACE AND PENE

PRICES

Nos.	Sizes.	Weight.	Per Dozen.
260	0	1 lb. 2 oz.	$12 00
261	1	1 lb. 10 oz.	13 00
262	2	2 lb.	14 00
263	3	2 lb. 8 oz.	15 00
264	4	3 lb.	16 00
265	5	3 lb. 8 oz.	17 00
266	6	4 lb. 8 oz.	19 00

Weights do not include handles.

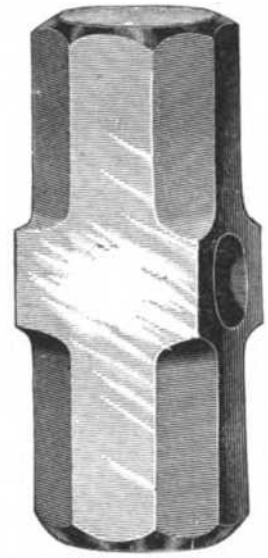


FIG. 4304

DOUBLE FACE

PRICES

Nos.	Sizes.	Weight.	Per Doz.
270	0	1 lb. 8 oz.	$14 50
271	1	2 lb.	15 50
272	2	2 lb. 6 oz.	16 50
273	3	3 lb.	18 00
274	4	3 lb. 10 oz.	19 50

Weights do not include handles.

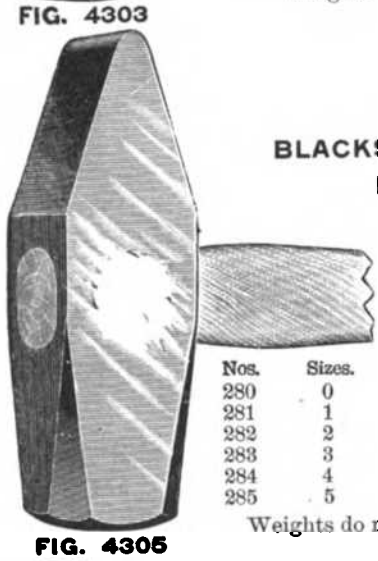


FIG. 4305

BLACKSMITH'S HAND HAMMER

PRICES

Nos.	Sizes.	Weight.	Per Doz.
280	0	1 lb. 10 oz.	$13 00
281	1	2 lb.	14 00
282	2	2 lb. 10 oz.	15 00
283	3	3 lb.	16 00
284	4	3 lb. 8 oz.	17 00
285	5	4 lb. 8 oz.	19 00

Weights do not include handles.

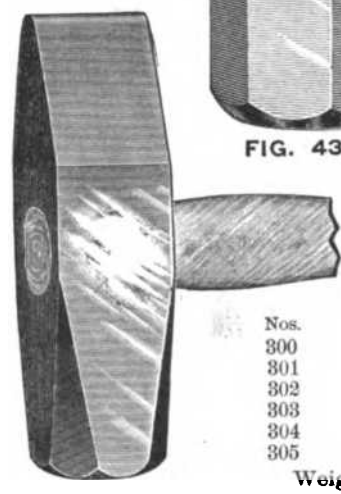


FIG. 4306

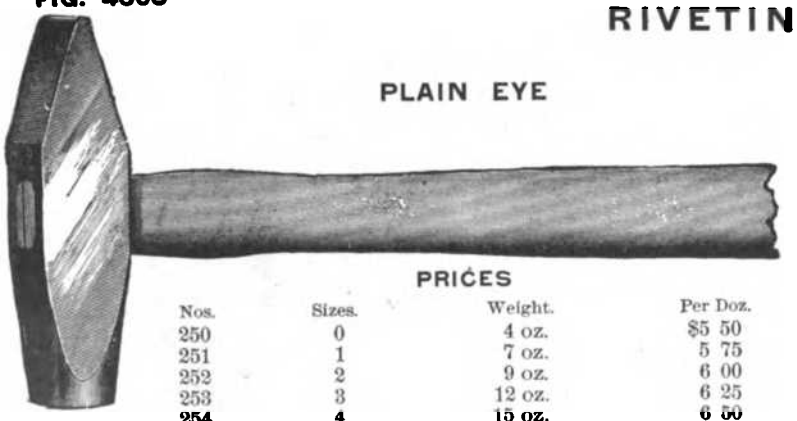
CHIPPING HAMMER

PRICES

Nos.	Sizes.	Weight.	Per Doz.
300	0	1 lb.	$12 50
301	1	1 lb. 4 oz.	13 00
302	2	1 lb. 8 oz.	13 50
303	3	2 lb.	14 50
304	4	2 lb. 8 oz.	15 50
305	5	2 lb. 14 oz.	16 50

Weights do not include handles.

RIVETING HAMMERS



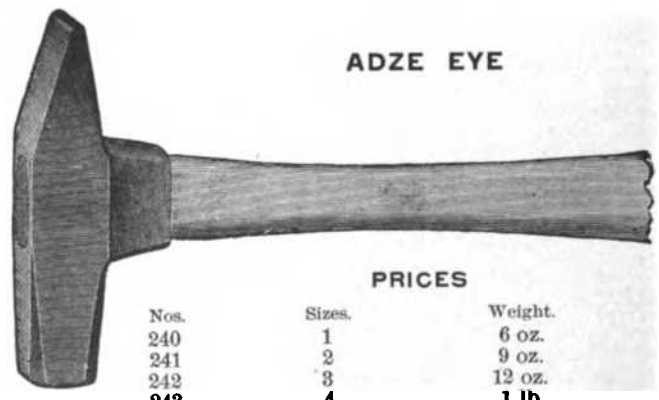
PLAIN EYE

FIG. 4307

PRICES

Nos.	Sizes.	Weight.	Per Doz.
250	0	4 oz.	$5 50
251	1	7 oz.	5 75
252	2	9 oz.	6 00
253	3	12 oz.	6 25
254	4	15 oz.	6 50
255	5	1 lb. 2 oz.	7 00
256	6	1 lb. 6 oz.	7 50
257	7	1 lb. 10 oz.	8 00

Weights do not include handles.



ADZE EYE

FIG. 4308

PRICES

Nos.	Sizes.	Weight.	Per Doz.
240	1	6 oz.	$7 00
241	2	9 oz.	7 50
242	3	12 oz.	8 00
243	4	1 lb.	8 50
244	5	1 lb. 4 oz.	9 00

Weights do not include handles.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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SOLID CAST STEEL TINNERS' HAMMERS

PANEING, SQUARE FACE

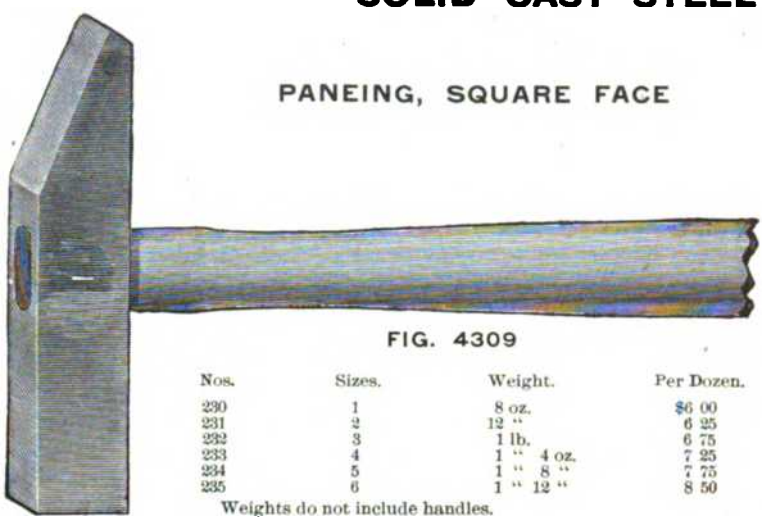


FIG. 4309

Nos.	Sizes.	Weight.	Per Dozen.
230	1	8 oz.	$6 00
231	2	12 "	6 25
232	3	1 lb.	6 75
233	4	1 " 4 oz.	7 25
234	5	1 " 8 "	7 75
235	6	1 " 12 "	8 50

Weights do not include handles.

RIVETING, OCTAGON

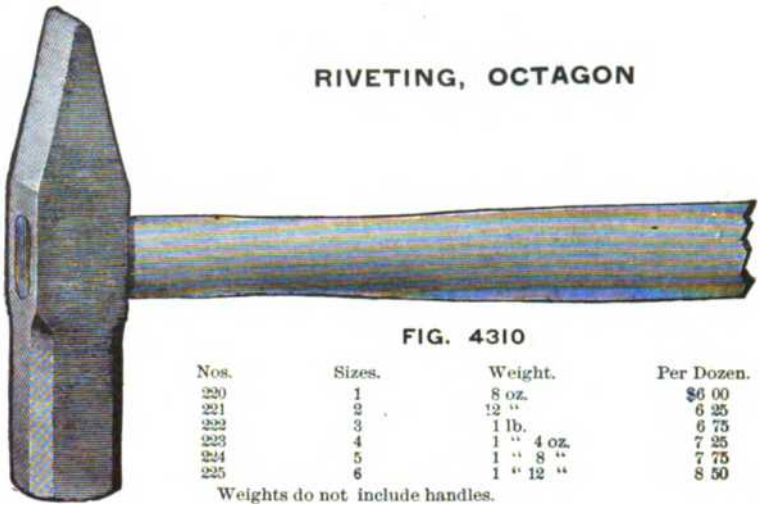


FIG. 4310

Nos.	Sizes.	Weight.	Per Dozen.
220	1	8 oz.	$6 00
221	2	12 "	6 25
222	3	1 lb.	6 75
223	4	1 " 4 oz.	7 25
224	5	1 " 8 "	7 75
225	6	1 " 12 "	8 50

Weights do not include handles.

COOPER'S HAMMER



FIG. 4311

Nos.	Sizes.	Weight.	Per Dozen.
290	1	2 lbs.	$16 00
291	2	2 " 8 oz.	17 00
292	3	3 "	18 00
293	4	3 " 8 oz.	19 00
294	5	4 "	20 00
295	6	4 " 8 oz.	21 00
296	7	5 "	22 00
297	8	6 "	24 00

Weights do not include handles.

CHIPPING HAMMER

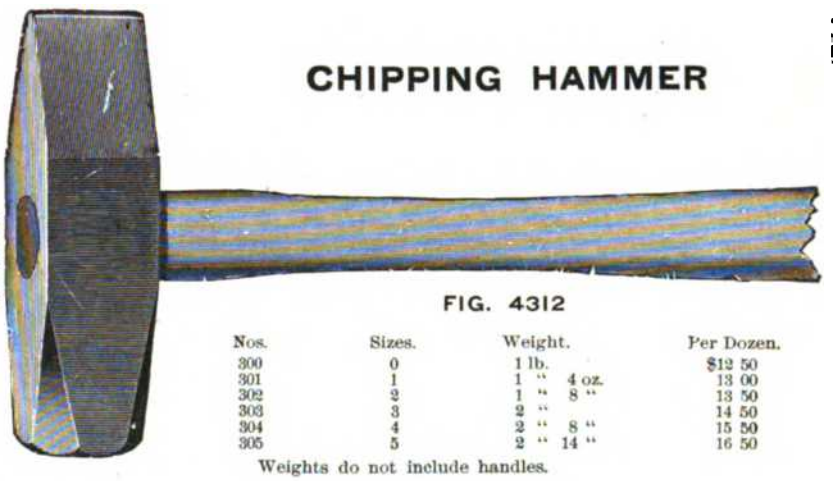


FIG. 4312

Nos.	Sizes.	Weight.	Per Dozen.
300	0	1 lb.	$12 50
301	1	1 " 4 oz.	13 00
302	2	1 " 8 "	13 50
303	3	2 "	14 50
304	4	2 " 8 "	15 50
305	5	2 " 14 "	16 50

Weights do not include handles.

CARRIAGE IRONER'S HAMMER

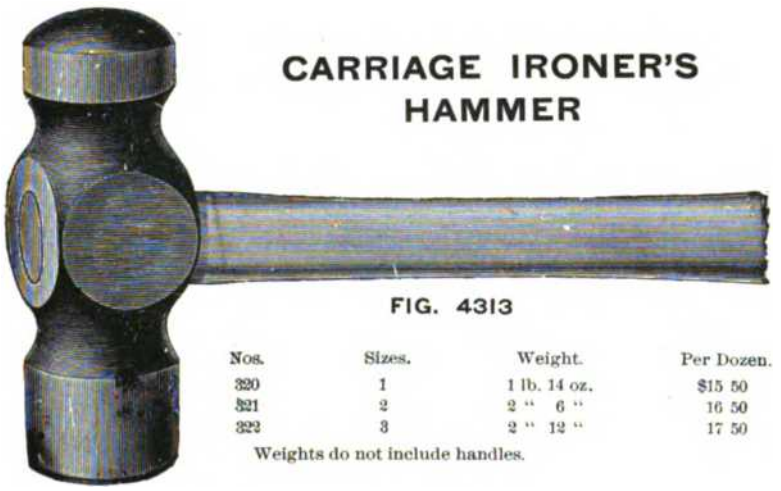


FIG. 4313

Nos.	Sizes.	Weight.	Per Dozen.
320	1	1 lb. 14 oz.	$15 50
321	2	2 " 6 "	16 50
322	3	2 " 12 "	17 50

Weights do not include handles.

PLUMBER'S HAMMER

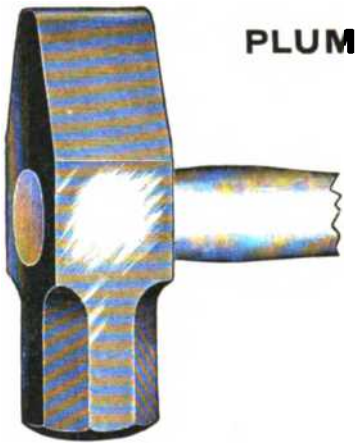


FIG. 4314

PRICES, FIG. 4314

Nos.	Sizes.	Weight.	Per Dozen.
240A	0	1 lb. 2 oz.	$12 00
241A	1	1 " 10 "	13 00

Weights do not include handles.

PROSPECTING HAMMER



FIG. 4315

PRICES, FIG. 4315

Nos.	Sizes.	Weight.	Per Dozen.
260	0	1 lb.	$13 00
261	1	1 " 6 oz.	14 00
262	2	1 " 12 "	15 00
263	3	2 "	16 00

Weights do not include handles.

PROSPECTING PICK

PRICES, FIG. 4316

Nos.	Sizes.	Weight.	Per Dozen.
251	1	1 lb.	$15 00
252	2	1 " 8 oz.	16 00

Weights do not include handles.

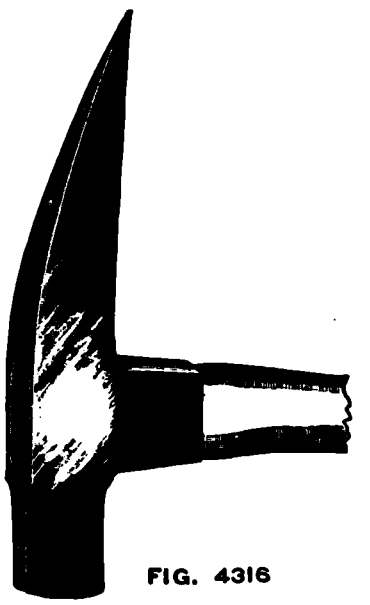


FIG. 4316

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BRICKLAYERS' HAMMERS

PLAIN EYE

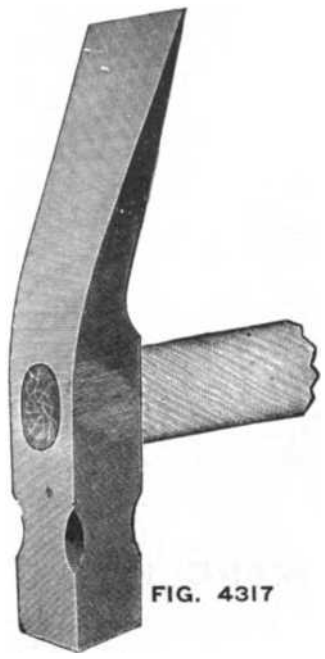


FIG. 4317

ADZE EYE

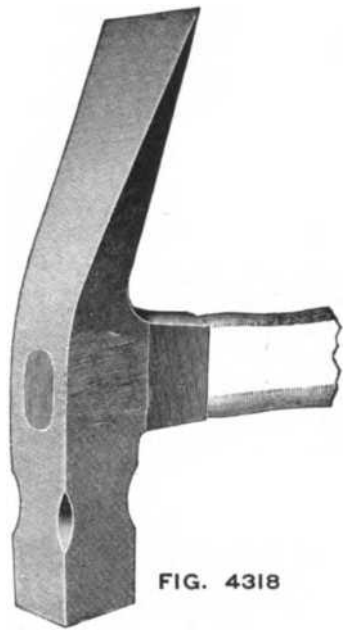


FIG. 4318

Nos.	Sizes.	Weight, Lbs.	Weight, Oz.	Prices, per Dozen.
441	1	1	2	$11 00
442	2	1	8	12 00
443	3	2	0	13 00
444	4	2	8	14 00

Weights do not include handles.

Nos.	Sizes.	Weight, Lbs.	Weight, Oz.	Prices, per Dozen.
441A	1	1	2	$13 00
442A	2	1	8	14 00
443A	3	2	0	15 00
444A	4	2	8	16 00

Weights do not include handles.

PLANISHING HAMMERS



FIG. 4319

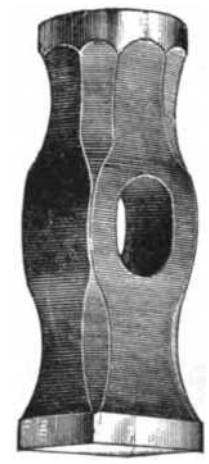


FIG. 4320

PRICES, FIG. 4319

¼ to 1 lb., each	$0 70
Over 1 lb., per lb.	70

PRICES, FIG. 4320

Square and round head, ¼ to 1 lb., each	$0 70
Square and round head, over 1 lb., per lb.	70

NAPPING HAMMER

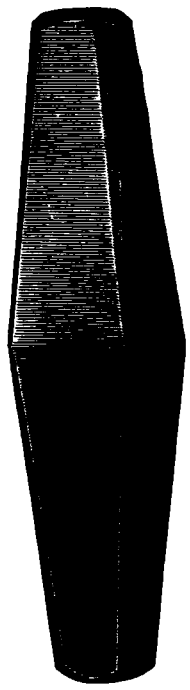


FIG. 4325

Number	890
5 lbs. and over, per lb.	$0 30
3 to 5 lbs., "	36
Under 3 lbs., "	45

SHIP OR BRIDGE BUILDERS' RIVETING HAMMERS

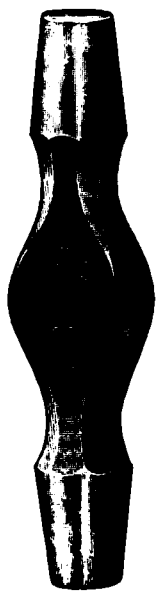


FIG. 4321

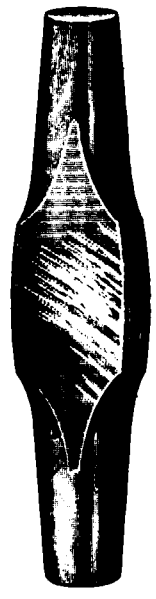


FIG. 4322

	4321	4322
Number	1060A	1060B
Weight, lbs.	4 to 4½	4 to 4½
Length, inches	8½	8½
Price, per lb.	$0 40	$0 40

BLACKSMITHS' HAND HAMMERS

NOT HANDLED

Western Pattern.

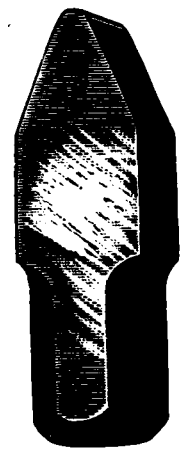


FIG. 4323

New England Pattern.

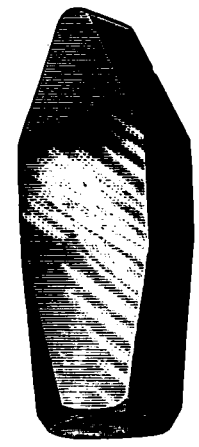


FIG. 4324

PRICES, FIGS. 4323 AND 4324

Oil Finish, Not Handled.

5 lbs. and over, per lb.	$0 30
3 to 5 lbs., "	36
Under 3 lbs., "	45

BLACKSMITHS' SLEDGES, NEW ENGLAND PATTERN

CROSS PENE



FIG. 4326

PRICES FIG. 4326

No. 810
5 lbs. and over, per lb., $0.30.
3 to 5 lbs., per lb., $0.36.

PRICES FIG. 4327

No. 820
5 lbs. and over, per lb., $0.30.
3 to 5 lbs., $0.36.

STRAIGHT PENE



FIG. 4327

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BLACKSMITHS' SLEDGES

STRAIGHT PENE



FIG. 4328

Number	840
5 pounds and over	per pound, 30 cents
3 to 5 pounds	" 36 "

CROSS PENE

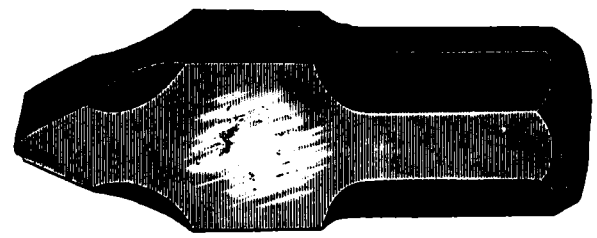


FIG. 4329

Number	830
5 pounds and over	per pound, 30 cents
3 to 5 pounds	" 36 "

BLACKSMITHS' SLEDGE
DOUBLE FACE

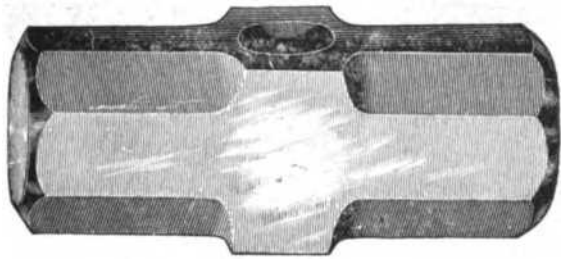


FIG. 4330

Number	850
5 pounds and over	per pound, 30 cents

COAL SLEDGE

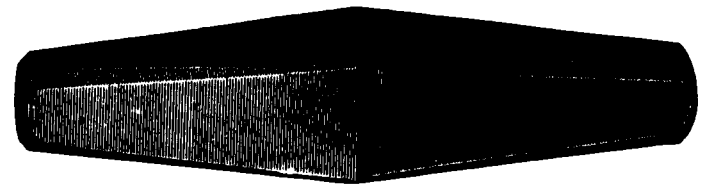


FIG. 4331

Number	800
5 pounds and over	per pound, 30 cents
3 to 5 pounds	" 36 "

STRIKING OR DRILLING HAMMERS

SHORT PATTERN



FIG. 4332

Number	760
5 pounds and over	per pound, 30 cents
3 to 5 pounds	" 36 "
Under 3 pounds	" 45 "

LONG PATTERN

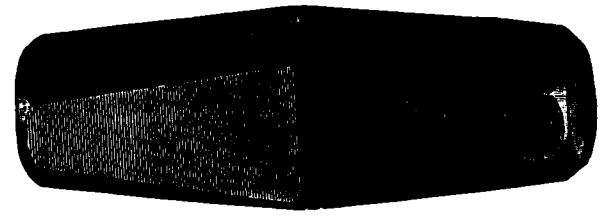


FIG. 4333

Number	750
5 pounds and over	per pound, 30 cents
3 to 5 pounds	" 36 "
Under 3 pounds	" 45 "

HAND DRILLING OR STONE CUTTERS' HAMMERS

CALIFORNIA PATTERN

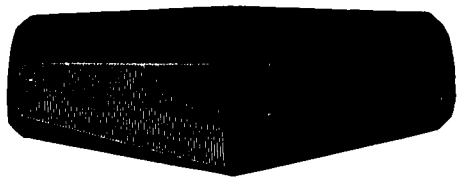


FIG. 4334

Number	760B
5 pounds and over	per pound, 36 cents
3 to 5 pounds	" 40 "
Under 3 pounds	" 45 "

COLORADO PATTERN

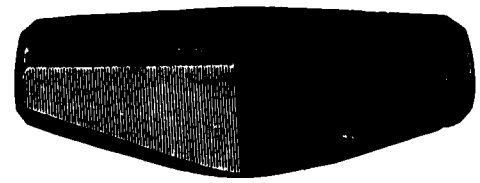


FIG. 4335

Number	770
5 pounds and over	per pound, 36 cents
3 to 5 pounds	" 40 "
Under 3 pounds	" 45 "

NEW ENGLAND PATTERN

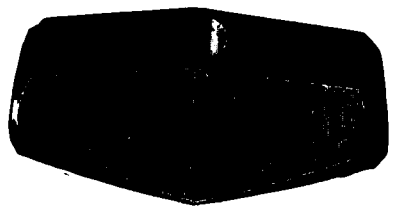


FIG. 4336

Number	780
5 pounds and over	per pound, 36 cents
3 to 5 pounds	" 40 "
Under 3 pounds	" 45 "

FULL POLISHED AND HANDLED

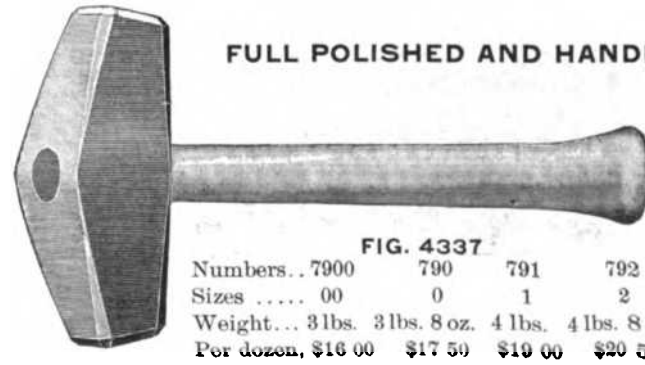


FIG. 4337

Numbers	7900	790	791	792	793
Sizes	00	0	1	2	3
Weight	3 lbs.	3 lbs. 8 oz.	4 lbs.	4 lbs. 8 oz.	5 lbs.
Per dozen,	$16 00	$17 50	$19 00	$20 50	$22 00

Weights do not include handles.

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STONE SLEDGES

FLAT FACE



FIG. 4338

Number	730
Weight	5 to 30 pounds
Price, per pound	30 cents

OVAL FACE

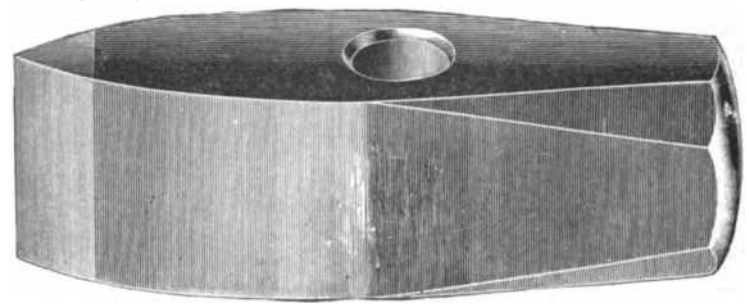


FIG. 4339

Number	740
Weight	5 to 30 pounds
Price, per pound	30 cents

SPAULING OR STONE HAMMERS



FIG. 4340

Number	710
5 pounds and over	per pound, 36 cents
3 to 5 pounds	" 40 "
Under 3 pounds	" 45 "

DOUBLE FACE

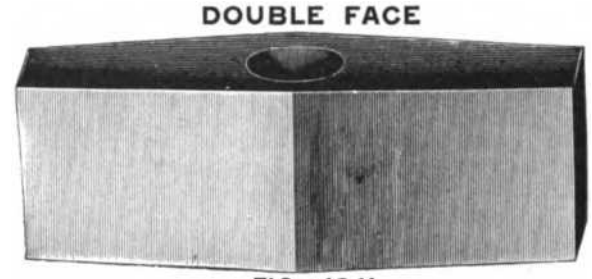


FIG. 4341

Number	720
5 pounds and over	per pound, 36 cents
3 to 5 pounds	" 40 "
Under 3 pounds	" 45 "

SORTING HAMMER

AXE FINISH

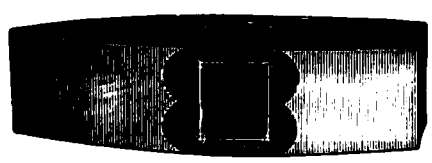


FIG. 4342

Number	700
Weight	1¼ to 2½ pounds
Price, per pound	50 cents

MASON'S HAMMER

AXE FINISH, WITH TEETH

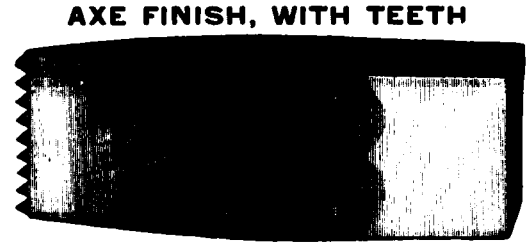


FIG. 4343

Number	690
5 pounds and over	per pound, 45 cents
3 to 5 pounds	" 50 "
Under 3 pounds	" 55 "

MASONS' HAMMERS

AXE FINISH

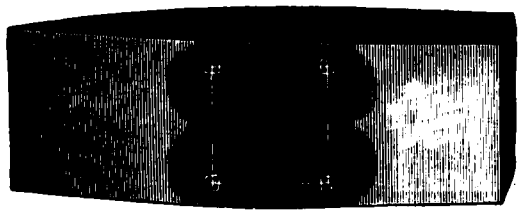


FIG. 4344

Number	670
5 pounds and over	per pound, 40 cents
3 to 5 pounds	" 45 "
Under 3 pounds	" 50 "

DOUBLE FACE

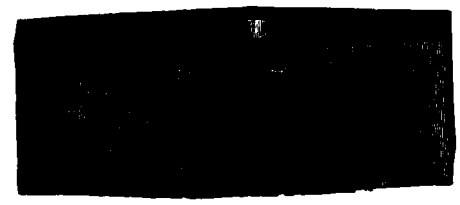


FIG. 4345

Number	680
5 pounds and over	per pound, 40 cents
3 to 5 pounds	" 45 "
Under 3 pounds	" 50 "

BUSH HAMMERS

WARRANTED BEST TOOL STEEL

TEETH, MACHINE CUT

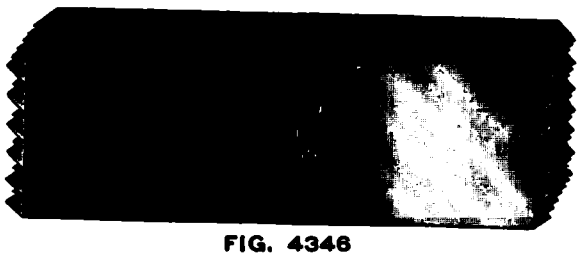


FIG. 4346

Number	580B
Weight	4 to 10 pounds
Price, per pound	$1 00

PATENT, WITH BLADES

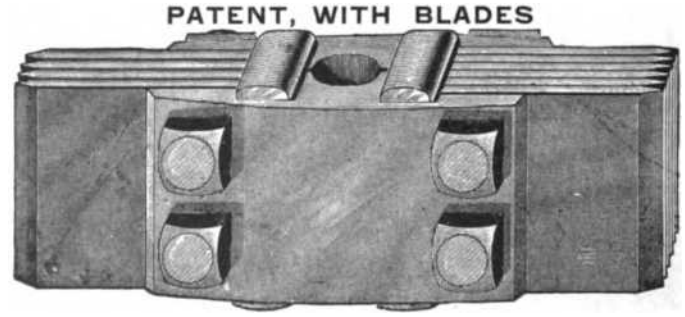


FIG. 4347

PRICES

No.	Sizes.	Jaws Open.	Weight.	Each.	No.	Sizes.	Jaws Open.	Weight.	Each.
2070	0	⅝ ins.	5 lbs. 8 oz.	$23 00	2073	3	⅞ "	8 lbs. 8 oz.	$24 50
2071	1	¾ "	7 "	23 50	2074	4	15/16 "	9 " 8 "	24 50
2072	2	13/16 "	7 " 8 "	24 00	2075	5	1 "	10 " 8 "	25 00

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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STONE AXES OR PEIN HAMMERS
WARRANTED BEST TOOL STEEL

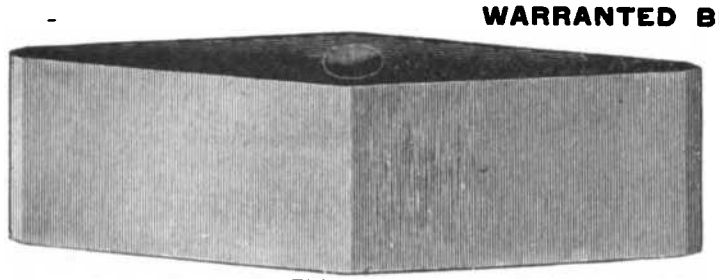


FIG. 4348

Number	590
Weight	5 to 15 lbs.
Price per pound	$0 50

With Teeth.



FIG. 4349

Number	600
Weight	5 to 15 lbs.
Price per pound	$0 55

STONE BREAKING HAMMER
WARRANTED BEST TOOL STEEL

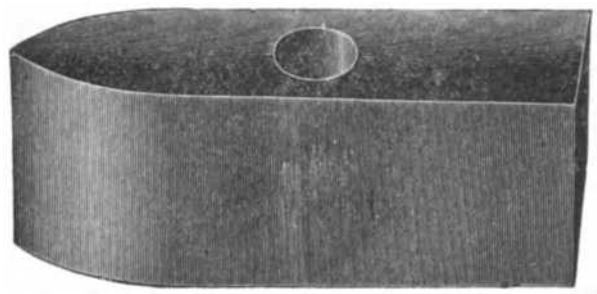


FIG. 4350

Number	610
Weight	5 lbs. and over.
Price per pound	$0 60

PAVER'S BURSTING HAMMER
WARRANTED BEST TOOL STEEL

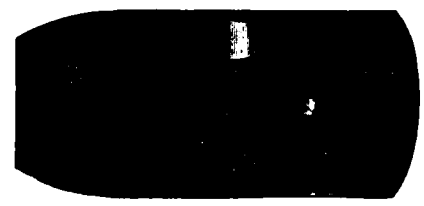


FIG. 4351

Number	620
Weight	5 lbs. and over.
Price per pound	$0 60

PAVER'S REEL
WARRANTED BEST TOOL STEEL

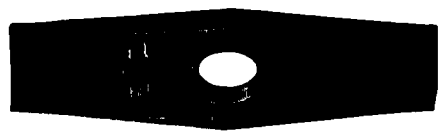


FIG. 4352

Number	640
Weight	5 to 7 lbs.
Price per pound	$0 60

SIDE HAMMER
WARRANTED BEST TOOL STEEL

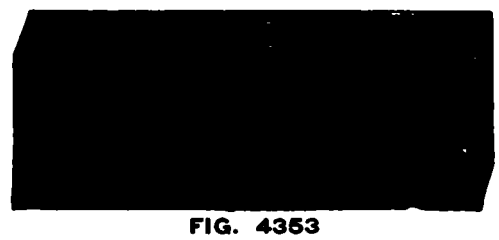


FIG. 4353

Number	630
Weight	4 lbs. and over
Price per pound	$0 60

QUARRY PICK



FIG. 4354

Number	650
Weight	5 to 14 lbs.
Price per pound	$0 40

STONE PICK



FIG. 4355

Number	660
Weight	5 to 14 lbs.
Price per pound	$0 40

MILL PICK



FIG. 4356

Number	1080
Weight	1½ to 3 lbs.
Price per pound	$0 75

SPLITTING CHISEL

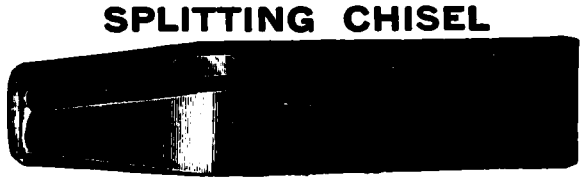


FIG. 4357

Number	580
Weight	2½ to 5 lbs.
Price per pound	$0 36

COOPER'S DRIVER

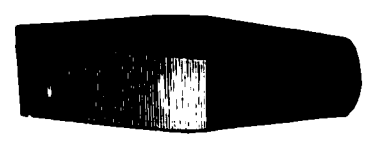


FIG. 4358

Numbers	561	562
Sizes	1	2
Weights	12 ozs.	1 lb. 4 ozs.
Per dozen	$8 50	$9 00

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HEAVY HOOP SET

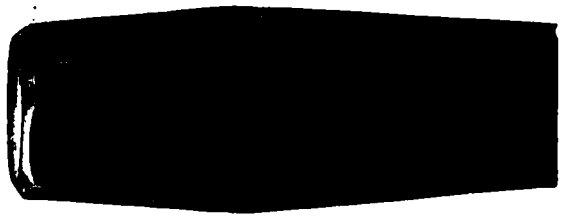


FIG. 4359

Number	570
Weight, pounds	2½ to 5
Price per pound	$0 36

SHIP OR TOP MAUL

Solid Cast Steel.

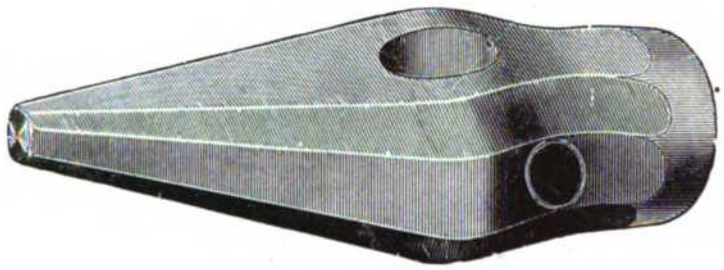


FIG. 4361

Number 1,560	Oil Finished, Polished Face; per pound		$ 0 42
" 1,561	Full Polished;	"	45
" 1,562	Full Polished and Handled;	"	50

BULL SET

Best Tool Steel.



FIG. 4360

Number	580A
Weight	4 lbs. and over
Price per pound	$0 60

WOOD CHOPPER'S MAUL

Solid Cast Steel.



FIG. 4362

No. 1,550. Axe Finish, Painted Blue; weight 6 to 12 lbs.; per lb..$0 36

WOOD CHOPPERS' MAULS

OREGON PATTERN

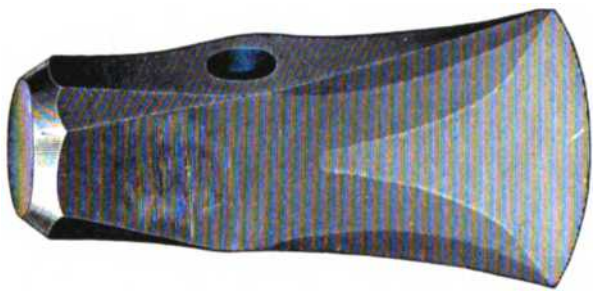


FIG. 4363

Number	960
Weight (warranted cast steel)	5 lbs. and over
Price per pound	$0 36

AXE EYE

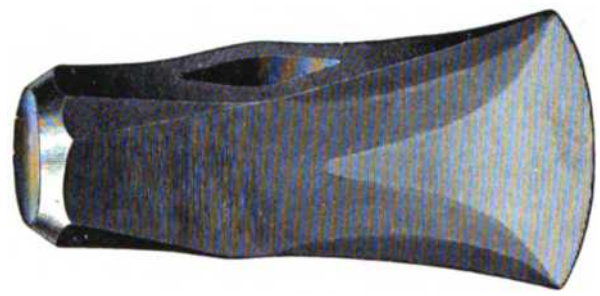


FIG. 4364

Number	960A
Weight (warranted cast steel)	5 lbs. and over
Price per pound	$0 36

Single Bitt Axe Eye furnished if specified.

WEDGES

TRUCKEE PATTERN



FIG. 4365

No. 1,490. Forge Finished and Oiled; weight 8 to 10 pounds; per lb.....$0 25

OREGON PATTERN

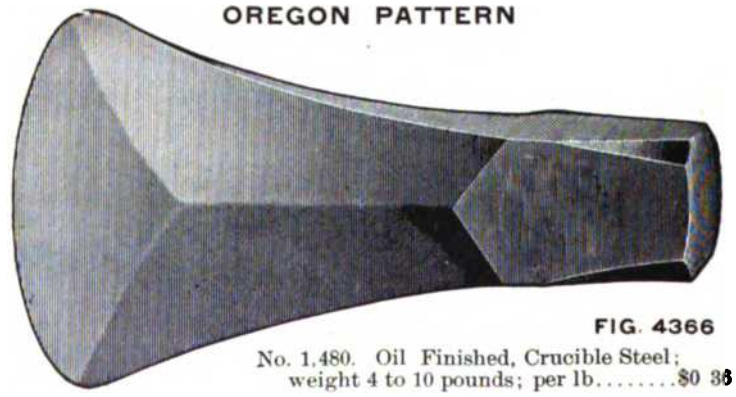


FIG. 4366

No. 1,480. Oil Finished, Crucible Steel; weight 4 to 10 pounds; per lb.....$0 36

POLISHED POINTS, PAINTED RED

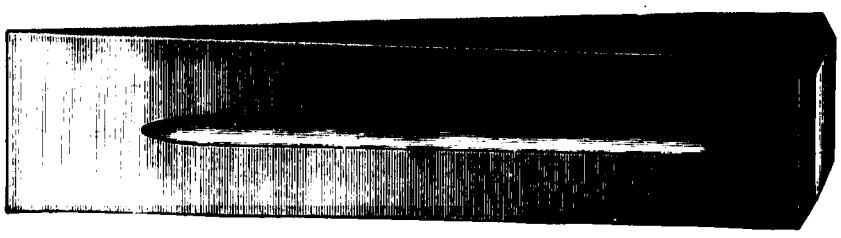


FIG. 4367

No. 1,510	Weight under 2 pounds; per pound			$0 25
" 1,510	" 2 to 3	"	"	20
" 1,510	" 3 10	"	"	15

FALLING WEDGE



FIG. 4368

No. 1,470. Forge Finished and Oiled; 4 to 10 pounds; per pound.$0 40
Dimensions of 8 pound Falling Wedge: Length, 12½ inches; head, 2¾ x 1¼ inch; bitt, 3½ inches wide.

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IMPROVED SAW WEDGE

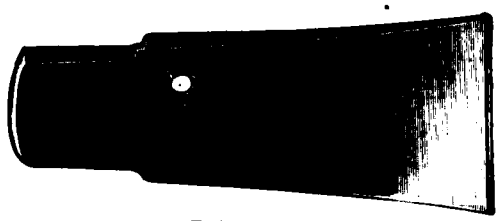


FIG. 4369

Dimensions of 2¼ Pounds.

Head, 2¼ x ½ inches; length, 9 inches; bitt, 3½ inches. Number, 1020C; weight, 2 to 2½ pounds. Per pound, 30 cents.

COMMON SAW WEDGE



FIG. 4370

Dimensions of 2¼ Pounds.

Head, 3 x ⅜ inches; length, 7½ inches; bitt, 3 inches. Number, 1020D; weight, 2 to 2½ pounds. Per pound, 25 cents.

COAL WEDGES

PITTSBURG PATTERN



FIG. 4371

Weight, 1½ to 5 pounds. Per pound, 20 cents.

CHICAGO PATTERN

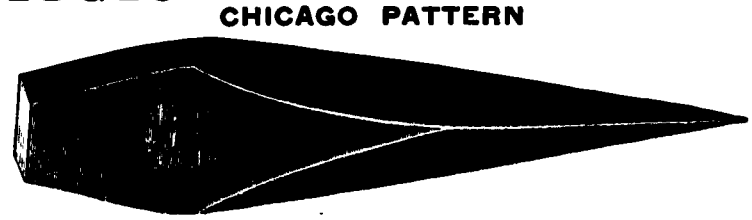


FIG 4372

Weight 1½ to 5 pounds. Per pound, 20 cents.

ANTHRACITE COAL WEDGE

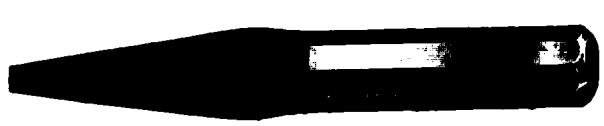


FIG. 4373

Number 1040; weight, 1¾ to 8 pounds. Per pound, 25 cents.

STONE WEDGE



FIG. 4374

Number 1050; weight, 3 to 8 pounds. Per pound, 36 cents.

SPOONS FOR MINING USE



FIG. 4375

Any length desired. Made from ⅝ round steel. Prices on application.

STAR DRILL



FIG. 4376

Inches.....	⅝	7/16	½	⅝	¾	⅞	1	1⅛	1¼
12 Per doz..	$8 50	$9 00	$10 00	$12 00	$14 00	$16 00	$18 00	$20 00	$22 00
18 "	....	....	12 50	15 00	17 50	20 00	22 50	25 00	27 50
24 "	....	....	15 00	17 50	20 00	22 50	25 00	27 50	30 00

PLUG AND FEATHERS

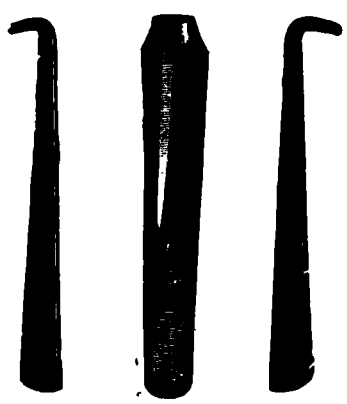


FIG. 4377

Price. 40 cents per pound.

FLAT DRILL



FIG. 4378

Nos.	Sizes, Inches.	Price per Doz.	Nos.	Sizes, Inches.	Price per Doz.
1440A	⅜	$4 80	1445A	1	$5 40
1441A	½	4 80	1446A	1⅛	6 00
1442A	⅝	4 80	1447A	1¼	6 60
1443A	¾	5 40	1448A	1⅜	7 20
1444A	⅞	5 40	1449A	1½	7 80

All 6 inches long.

STONE CUTTER'S PLUG DRILL



FIG. 4379

Standard size, ¾ in., 18 in. long. Per lb., 38 cents.
Special sizes made to order.

FARRIER'S PRITCHEL



FIG. 4380

⅝ in. octagon steel, 12 in. long; weight, 1 lb. 3 oz. Per lb., 38 cents.

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HORSESHOE TURNING HAMMER

CHICAGO PATTERN

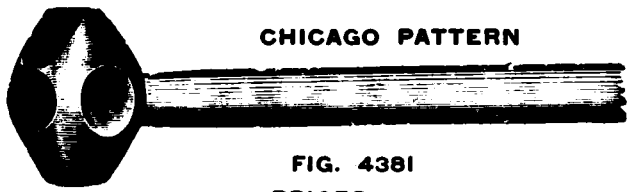


FIG. 4381

PRICES

No. 430 Half polished, weight, 2 to 3 pounds. Per dozen.....$30 00
" 431 Full " " 2 " 3 " " 34 00

HORSESHOE TURNING AND FITTING HAMMER

MALLERY'S PATENT

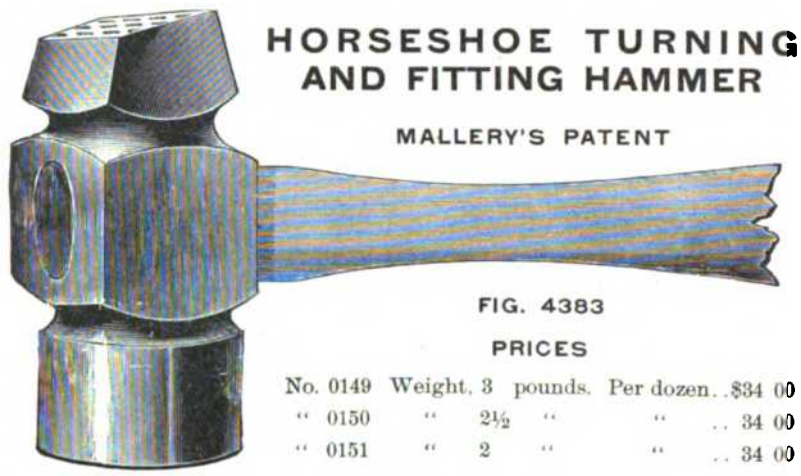


FIG. 4383

PRICES

No. 0149 Weight, 3 pounds. Per dozen..$34 00
" 0150 " 2½ " " .. 34 00
" 0151 " 2 " " .. 34 00

HORSESHOE TURNING SLEDGE

WESTERN PATTERN

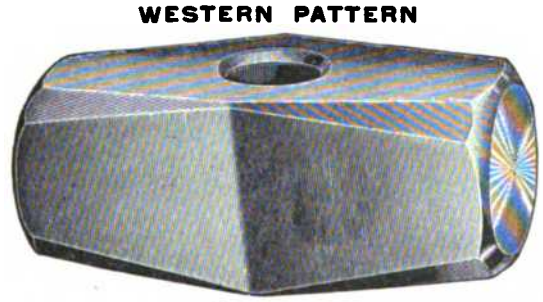


FIG. 4385

No. 2510 Weight, 6 to 12 pounds. Price, per pound.....$0 30

ADZE EYE FARRIER'S HAMMER

OCTAGON POLE



FIG. 4387

PRICES

No. 173 Size 2, weight, 10 oz. Per dozen.....$7 75
" 174 " 3, " 7 " " 7 50

ADZE EYE FARRIER'S HAMMER

BOSTON PATTERN

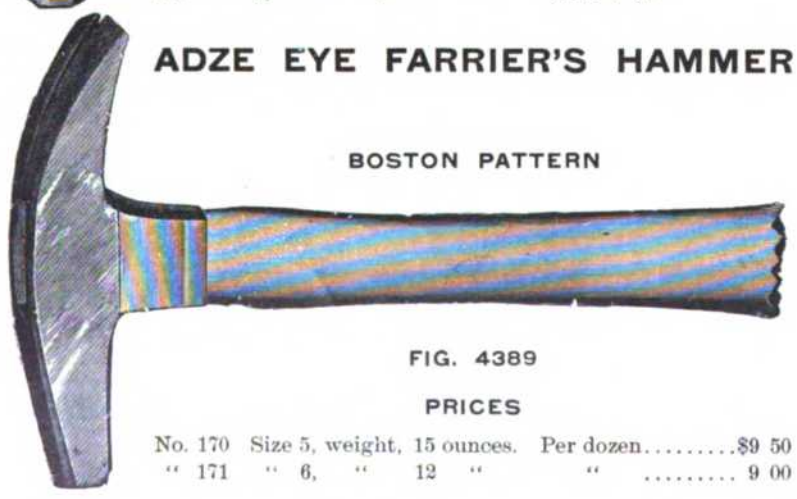


FIG. 4389

PRICES

No. 170 Size 5, weight, 15 ounces. Per dozen.....$9 50
" 171 " 6, " 12 " " 9 00

HORSESHOE TURNING HAMMER

NEW YORK PATTERN

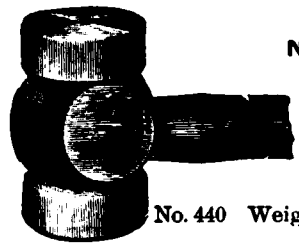


FIG. 4382

No. 440 Weight, 2 to 3 pounds. Price, per dozen.$30 00

HORSESHOE TURNING SLEDGE



FIG. 4384

No. 1070 Weight, 6 to 10 pounds. Price, per pound.....$0 40

ADZE EYE FARRIER'S HAMMERS

PHILADELPHIA PATTERN

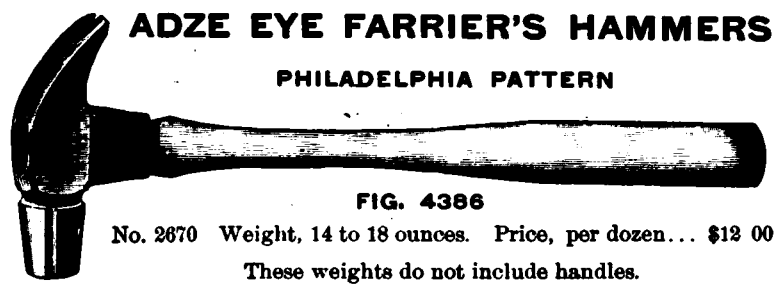


FIG. 4386

No. 2670 Weight, 14 to 18 ounces. Price, per dozen... $12 00

These weights do not include handles.

CHICAGO PATTERN



FIG. 4388

No. 2671 Weight, 14 to 18 ounces. Price, per dozen.....$12 00

ADZE EYE FARRIER'S HAMMER

CINCINNATI PATTERN, OCTAGON POLE



FIG. 4390

No. 172 Weight, 10 oz. Price, per dozen.....$8 00

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FARRIERS' HAMMERS

ADZE EYE CINCINNATI PATTERN ROUND POLE

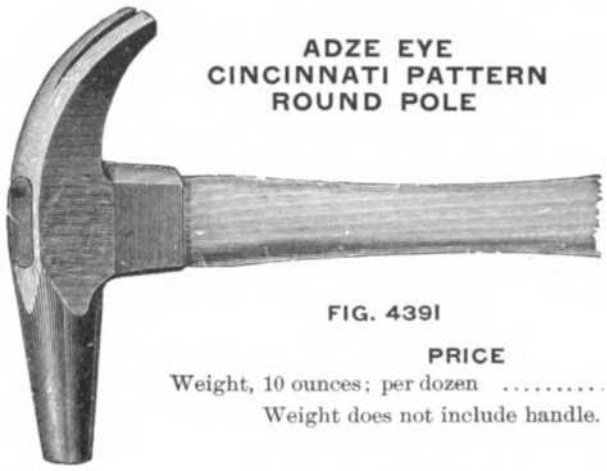


FIG. 4391

PRICE

Weight, 10 ounces; per dozen $8 00

Weight does not include handle.

PLAIN EYE FARRIER'S HAMMER

Round Pole.



FIG. 4393

PRICE

No. 183 Weight, 7 ounces; per dozen.....$6 25

Weight does not include handle.

PLAIN EYE FARRIER'S HAMMER

Octagon Pole.



FIG. 4395

PRICE

No. 175 Weight, 7 ounces; per dozen.....$6 25

Weight does not include handle.

ADZE EYE, ROUND POLE

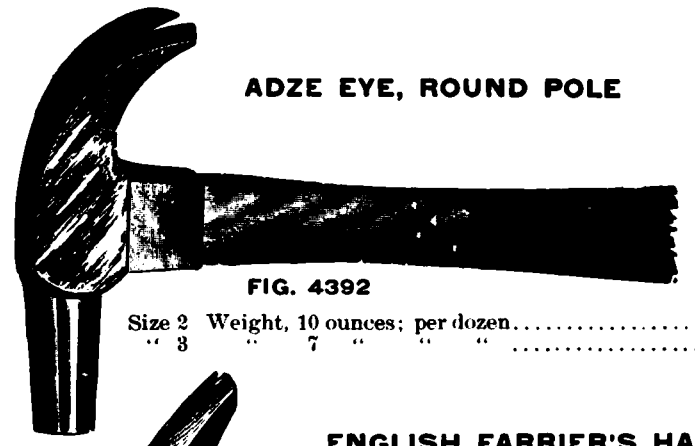


FIG. 4392

Size 2 Weight, 10 ounces; per dozen.....$7 75
" 3 " 7 " " " 7 50

ENGLISH FARRIER'S HAMMER

Octagon Pattern.



FIG. 4394

PRICE

No. 190. Weight, 10 ounces; per dozen.....$10 00

Weight does not include handle.

HIGHEST GRADE TOOL STEEL CHISELS

Round Nose.



FIG. 4396

Per pound.....$0 60

Diamond Point.

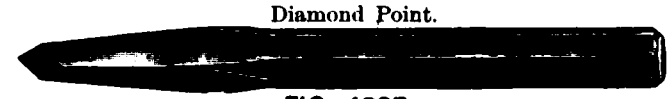


FIG. 4397

Per pound.....$0 60

HAND CHIPPING AND CAPE CHISELS

Hand Chipping.



FIG. 4398

Per pound.....$0 50

Cape.



FIG. 4399

Per pound.....$0 60

STONE CUTTERS' CHISELS—PLAIN AND MALLET HEADS

Mallet Head.



FIG. 4400

No. 1420 Plain head, per pound.....$0 50
" 1430 " " with teeth, per pound..... 0 60

Mallet Head, With Teeth.

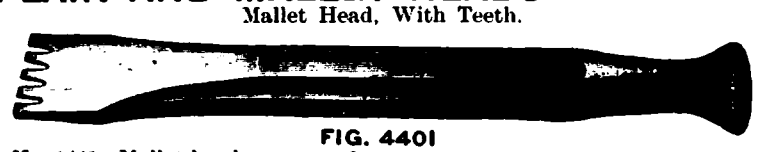


FIG. 4401

No. 1440 Mallet head, per pound.....$0 60
" 1450 " " with teeth, per pound..... 0 70

BLACKSMITHS' CHISELS

Cold.



FIG. 4402

No. 1350 Cold; weight, 1 to 3 pounds; per pound.....$0 50

Hot.

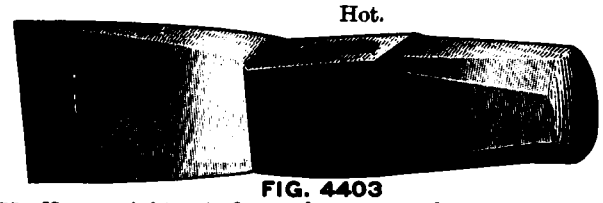


FIG. 4403

No. 1355 Hot; weight, 1 to 3 pounds; per pound.....$0 50

BLACKSMITHS' PUNCHES

Round

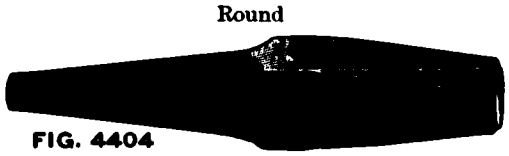


FIG. 4404

No. 1230 Round, ¼ to 1 in.; per pound...$0 50

Square.

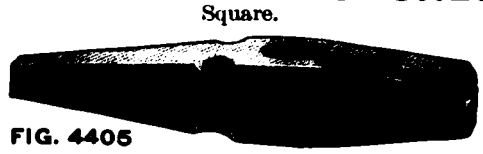


FIG. 4405

No. 1240 Square, ¼ to 1 in.; per pound..$0 50

BACKING OUT PUNCH



FIG. 4406

Weight about 2 pounds 8 ounces; per lb...$0 80

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MACHINISTS' CENTER PUNCHES

Knurled.



FIG. 4407

Inch	¼	5/16	⅜	7/16	½
No. 10 Highly polished, per dozen	$2 25	3 00	3 50	4 50	6 50

Octagon, 5/16 Inch.



FIG. 4409

Cast steel, per dozen.....$2 00

CENTER OR PRICK PUNCH

Square, 5/16 Inch.



FIG. 4410

Cast steel, per dozen.....$1 50

SOLID PUNCH

Square.



FIG. 4411

Cast steel, forged, Nos. 0, 1, 2, 3, 4, 5, 6, 7, 8, per dozen.....$1 50

BLACKSMITH'S ROUND HAND PUNCH

Octagon, Cast Steel.



FIG. 4412

Sizes of steel, inch	⅜	½	⅝	¾	⅞	1
Lengths, inches	6	6½	7½	8¼	8¾	9¼
Point, inch	1/32	1/16	⅛	3/16	¼	5/16
Weight per dozen, about	2 lbs.	4 oz.	4 lbs.	7 lbs.	10 lbs.	15 lbs.	21 lbs.

Per pound.....$0 38

BLACKSMITH'S CENTER PUNCH



FIG. 4413

Per pound.....$0 50

BLACKSMITH'S COUNTERSINK



FIG. 4414

Per pound.....$0 50

BLACKSMITH'S HEADING TOOL

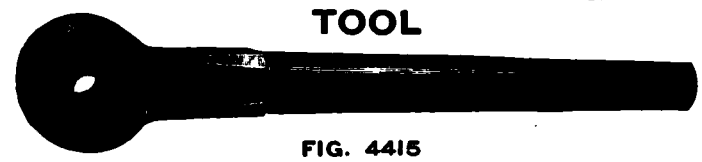


FIG. 4415

¼ to 1¼ inches, per pound.....$0 50

BLACKSMITHS' SWEDGES

Top,



Bottom.



FIG. 4417

FIG. 4416

Top, ¼ to 4½ inches, per pound...$0 50
Bottom, ¼ to 4½ inches, per pound 50

BLACKSMITHS' COLLAR SWEDGES

Top.



FIG. 4418

Bottom.

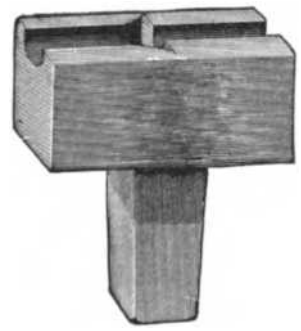


FIG. 4419

Top, per pound.....$0 70
Bottom, per pound 70

PLOW ANVIL

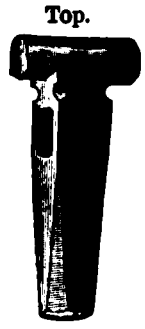


FIG. 4420

Weight, 4 to 4½ pounds, per lb....$0 85

BLACKSMITHS' FULLERS

Top.



Bottom.

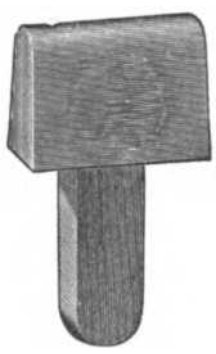


FIG. 4421

FIG. 4422

Top, ¼ to 3 inches, per pound..$0 50
Bottom, ¼ to 3 inches, per pound 50

BLACKSMITHS' FLATTERS

Square.



Round.

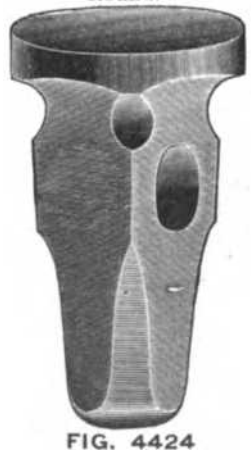


FIG. 4423

FIG. 4424

Square, 1 to 4½ inches, per pound.....$0 50
Round, 1 to 4½ " " " 50

BLACKSMITH'S HARDIE

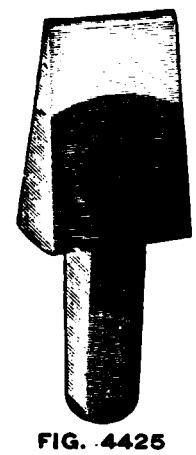


FIG. 4425

½ to 1¼ in. shanks, per lb.$0 50

TOE HARDIE

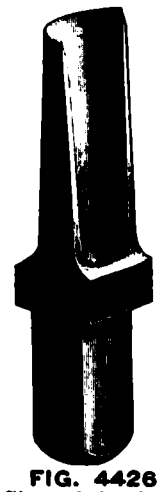


FIG. 4426

Sizes of shanks, ½ to 1⅛ inches, per lb. $0 80

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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BLACKSMITH'S SET HAMMER



FIG. 4427

1 to 2½ inch; per pound, $0 50

BLACKSMITHS' CREASERS

ADZE EYE

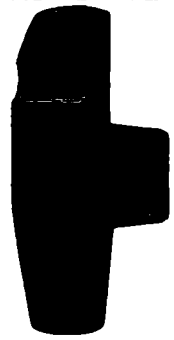


FIG. 4428
Per dozen, $10 00



FIG. 4429
Per pound, $0 42

BLACKSMITHS' TIRE SETS

OVAL PATTERN

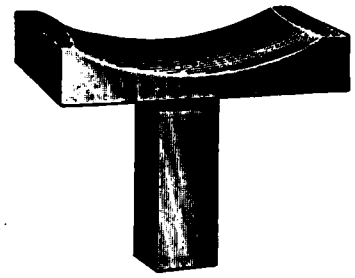


FIG. 4430

Per pound, $0 70

TAPER PATTERN



FIG. 4431

Per pound, $0 50

BLACKSMITHS' FIRE SET

SCRAPER



FIG. 4432

SHOVEL



FIG. 4433

POKER



FIG. 4434

Weight per set, 5 pounds; per set.....$2 00

CLINCH TONGS

ROUND END

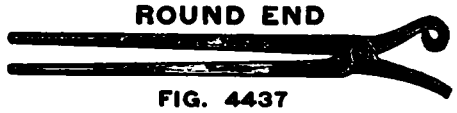


FIG. 4437

STRAIGHT END

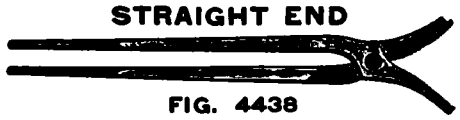


FIG. 4438

Crucible Tool Steel; per dozen.....$26 40

BLACKSMITHS' TONGS

STRAIGHT LIPPED



FIG. 4435

Length 12 inches;	per dozen	$5 75		Length 22 inches;	per dozen	$11 00
" 14 "	"	6 75		" 24 "	"	12 50
" 16 "	"	7 75		" 26 "	"	14 00
" 18 "	"	8 75		" 28 "	"	15 75
" 20 "	"	9 75		30 "	"	17 50

CURVED LIP, FLUTED JAW

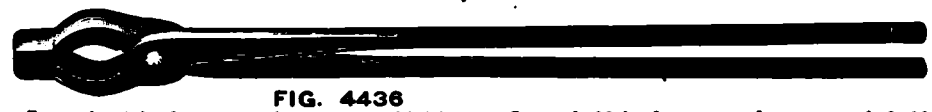


FIG. 4436

Length 12 inches;	per dozen	$6 50		Length 22 inches;	per dozen	$12 00
" 14 "	"	7 50		" 24 "	"	13 50
" 16 "	"	8 50		" 26 "	"	15 00
" 18 "	"	9 50		" 28 "	"	17 00
" 20 "	"	10 50		" 30 "	"	19 00

CHAIN

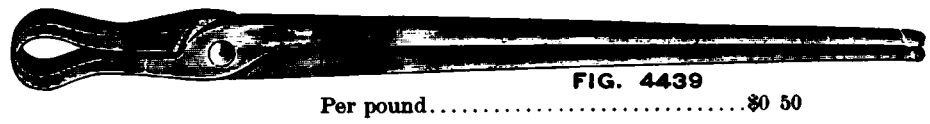


FIG. 4439

Per pound.....$0 50

BLACKSMITHS' TONGS

SINGLE PICKUP



FIG. 4440

Per pound.....$0 40

GAD

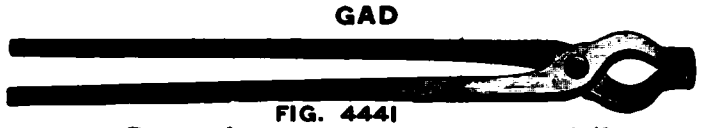


FIG. 4441

Per pound.....$0 40

RIVET



FIG. 4442

Per pound.....$0 60

ANGLE JAW

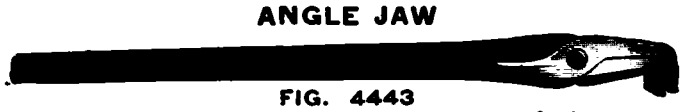


FIG. 4443

Per pound.....$0 60

BAND OR CLEVIS

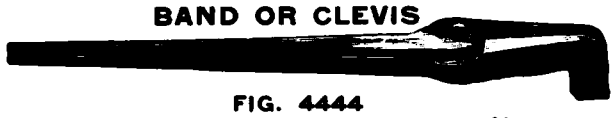


FIG. 4444

Per pound.....$0 60

CLIP

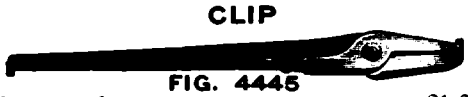


FIG. 4445

Per pound.....$1 20

DOUBLE PICKUP

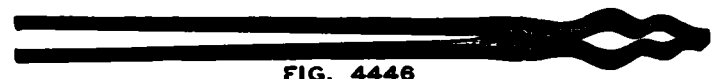


FIG. 4446

Per pound.....$0 40

BOLT

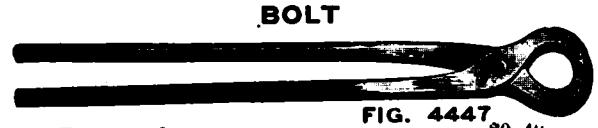


FIG. 4447

Per pound.....$0 40

PICK

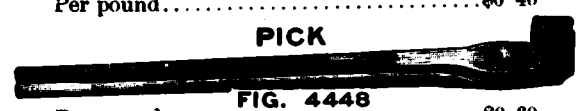


FIG. 4448

Per pound.....$0 60

ROUND JAW OR BAND



FIG. 4449

Per pound.....$0 40

LATHE TOOL



FIG. 4450

Per pound.....$0 60

HORSESHOERS'

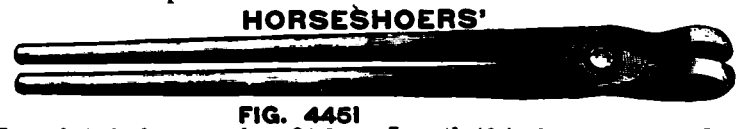


FIG. 4451

Length 10 inches; per doz., $4 75 Length 12 inches; per doz., $5 75
Length 14 inches; per doz., $6 75.

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STEEL FORGING TONGS



FIG. 4452

PRICES

From 12 to 16 inches.

No. 31, heavy	per dozen,	$6 00
" 46, medium	"	6 00
" 32, light	"	6 00

HOOF TESTER

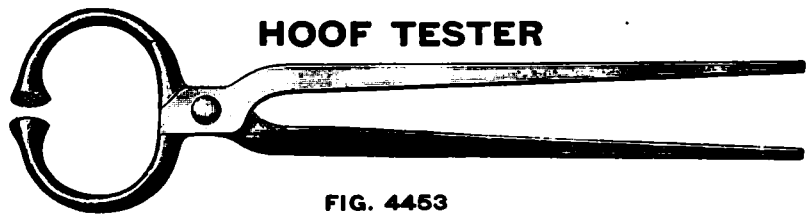


FIG. 4453

PRICE

15 inch ..... per dozen, $28 80

HOOF PARER

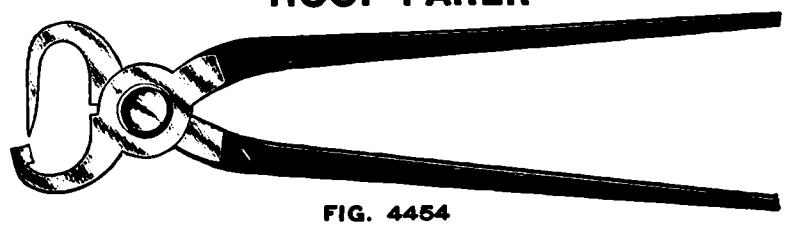


FIG. 4454

PRICES

Solid cast steel. Full polished.

14 inch	per dozen,	$28 80
12 "	"	24 00

BUFFER

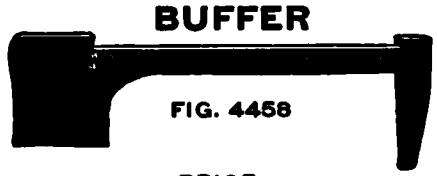


FIG. 4458

PRICE

No. 17, 1 dozen in box.... per dozen, $6 00

SOLE KNIFE



FIG. 4459

PRICE

1 dozen in box ..... per dozen, $6 00

HOOF KNIFE

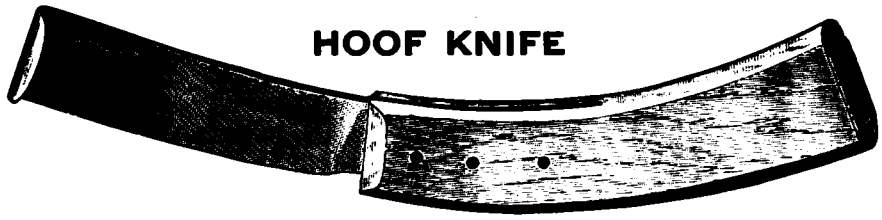


FIG. 4461

PRICE

¼, ⅜, ½, ⅝, ¾, ⅞, and 1 inch blade ..... per dozen, $5 00

HOOF PARER

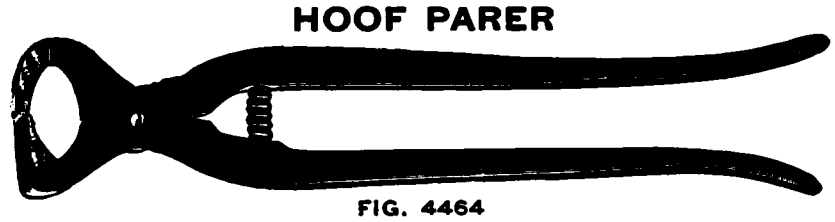


FIG. 4464

It is fitted with adjustable knife, which can be replaced when worn out.

PRICE, PER DOZEN, $28.80

NAIL HEAD NIPPER

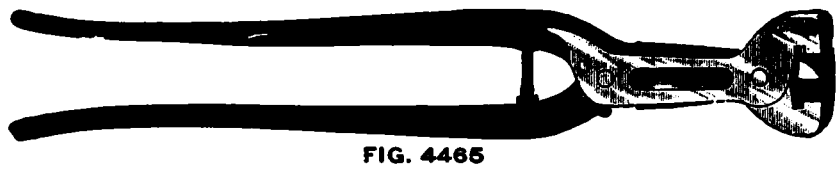


FIG. 4465

2 and 2¼ pounds. This is in every sense a labor saving tool. It cuts the nail head clean and smooth and level with the shoe. It can also be used for cutting rivets, small bolts, etc. It has adjustable cutters, which can be replaced when worn out or broken.

PRICES

No. 1, cuts up to No. 5 horse nail	per dozen,	$43 20
" 2, " " " 8 "	"	57 60

HORSESHOERS' BUTTERIS

EBONY WOOD HANDLE

MALLEABLE IRON HANDLE

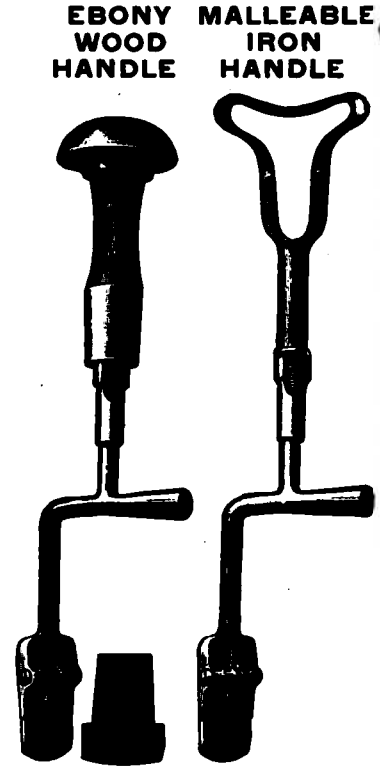


FIG. 4455 FIG. 4456



FIG. 4457

Per Doz.
Half polished...$15 00

PRICES

FIGS. 4455 AND 4456

Handles adjustable to length. Knives replaceable. Malleable iron brace, highly polished.

Ebony handle	$1 50
Crutch "	1 50
Extra knives	25

HOOF KNIFE

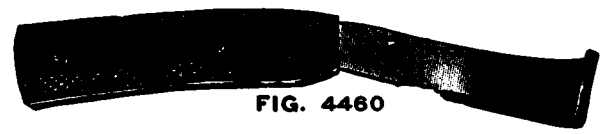


FIG. 4460

Blades can be changed in an instant.

PRICES

Handles	per dozen,	$3 35
Blades, any size	"	4 80
One handle and blade	"	8 10
Complete sets	"	17 70
Nickeled handles, extra	"	65

FARRIERS' TOOL BOX

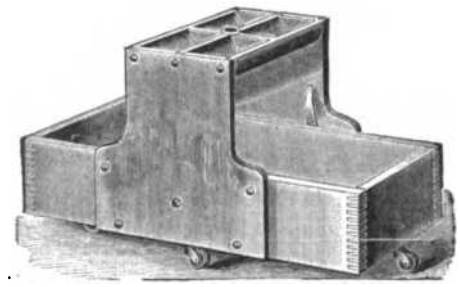


FIG. 4462

PRICE, EACH, $2.00

THE EASY AND NEW

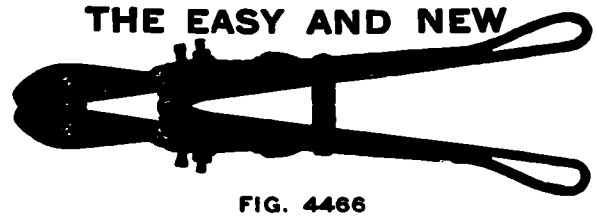


FIG. 4466

Length, 18 inches; weight, 3 pounds.

PRICES

	Each.
No. 0 "New Easy" bolt clipper for 5/16 inch bolts	$3 75
" 1 "Easy" bolt clipper for ⅜ inch bolts	5 00
" 2 " " " " ½ " "	7 00
" 3 "New Easy" bolt clipper for ⅝ inch bolts	9 00

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BOLT AND RIVET CLIPPERS

PHILADELPHIA

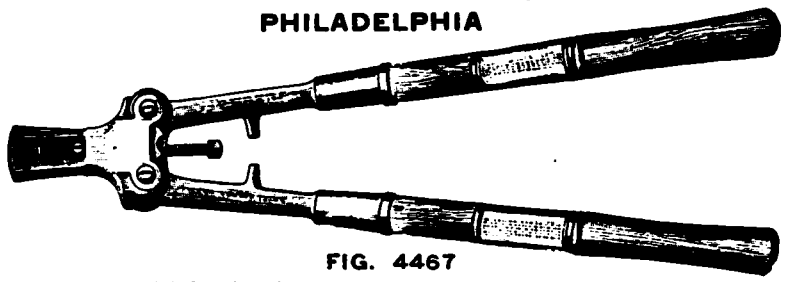


FIG. 4467

No. 1	For ⅝ inch bolt or less, for carriage work, harness makers, etc., each	$7 50
" 2	" ½ " " " wheelwrights, machinists, founders, etc., each	9 00
" 3	" ⅝ " " " car builders, and heavy work generally, each	12 00
" 4	Special to cut ¾ inch, each	15 00

The tool is extra strong, and designed especially for the use of manufacturers of portable engines, agricultural implements, boilermakers, car builders, etc. It cuts a ¾ inch bolt or stay rod ⅛ inch above the surface of the work through which it projects, thus always leaving ⅛ inch for riveting. We can furnish the No. 4 Regular to cut flush with the work, as do the other sizes.

No. 4 Regular to cut ¾ inch, each $15 00

When No. 4 is wanted, specify whether Special or Regular.

HELWIG'S

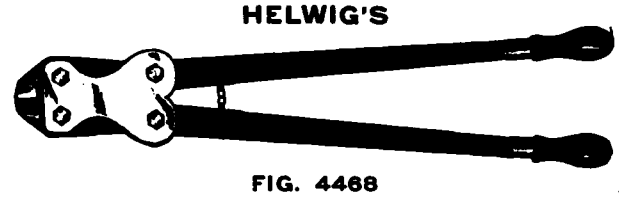


FIG. 4468

		Each.
No. 1	Weight, 15 pounds; length, 40 inches; cuts ¾ inch bolt and less	$13 00
" 2	" 7½ " " 32 " " 9/16 " " "	9 00
" 3	" 5 " " 26 " " ½ " " "	7 00
" 4	" 2½ " " 18 " " ⅝ " " "	5 00

All Parts Are Interchangeable.

SWAGE BLOCKS AND SWAGE BLOCK STANDS

OF SPECIALLY STRONG, HARD IRON CAREFULLY MOLDED

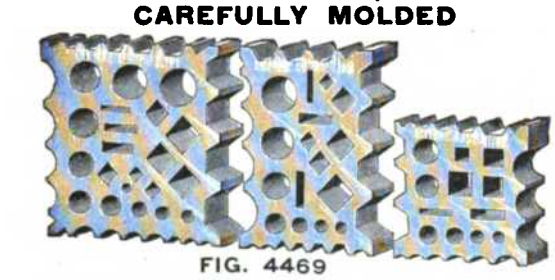


FIG. 4469

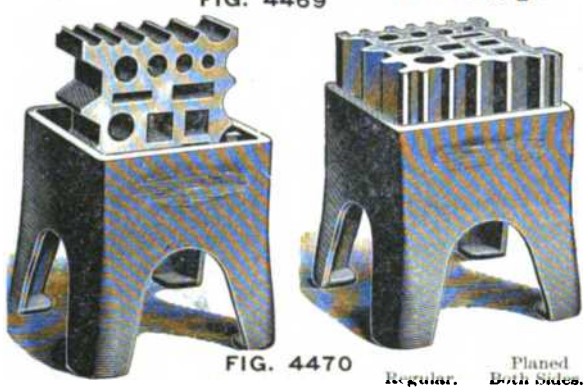


FIG. 4470

	Regular.	Planed Both Sides.
Swage block No. 1, 12¼ x 12¼ x 4¼ inches	$4 80	$5 80
Stand for No. 1 swage blocks	4 80	.....
Swage block No. 2, 13 x 18 x 4¼ inches	7 40	8 90
Stand for No. 2 swage blocks	7 40	.....
Swage block No. 3, 18¼ x 18¼ x 4¼	11 75	13 75
Stand for No. 3 swage blocks	11 75	.....

BLACKSMITHS' MANDRELS

MADE IN ONE PIECE

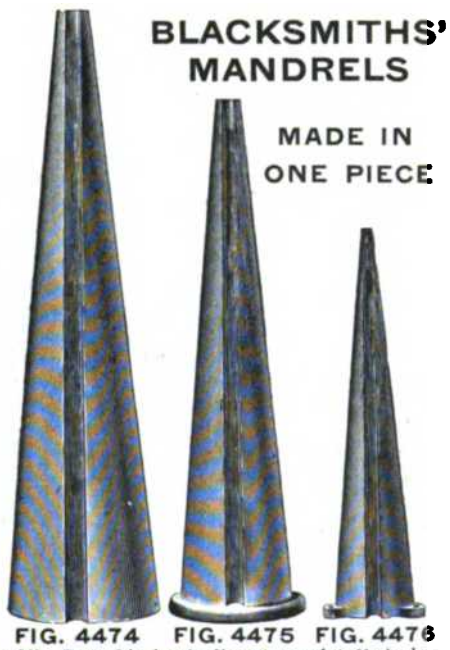


FIG. 4474 FIG. 4475 FIG. 4476

Fig. 649. Base, 8 inches in diameter; point, 1¼ inches in diameter; height, 36 inches	$4 25
Fig. 653. Base, 10 inches in diameter; point, 2 inches in diameter; height, 47 inches	7 00
Fig. 654. Base, 14 inches in diameter; point, 2¼ inches in diameter; height, 58 inches	12 00

RANDALL'S BOLT AND RIVET CLIPPER

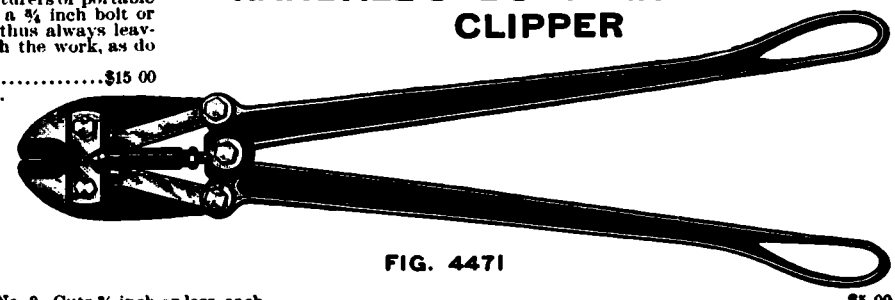


FIG. 4471

No. 3	Cuts ⅝ inch or less, each	$5 00
" 4	" ½ " " "	7 00
" 5	" ¾ " " "	10 00

KEYSTONE BOLT CLIPPER

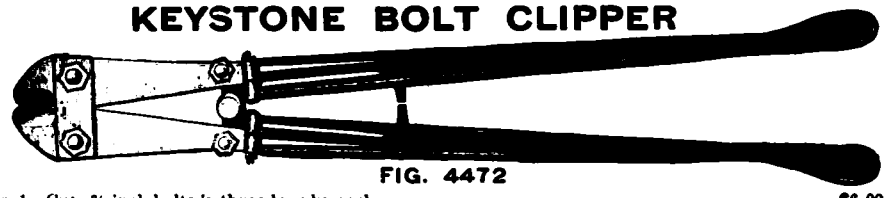


FIG. 4472

No. 1	Cuts ⅜ inch bolts in threads only, each	$6 00
" 2	" ½ " " "	8 40
" 3	" ¾ " " "	18 00

CHAMPION BOLT CLIPPER

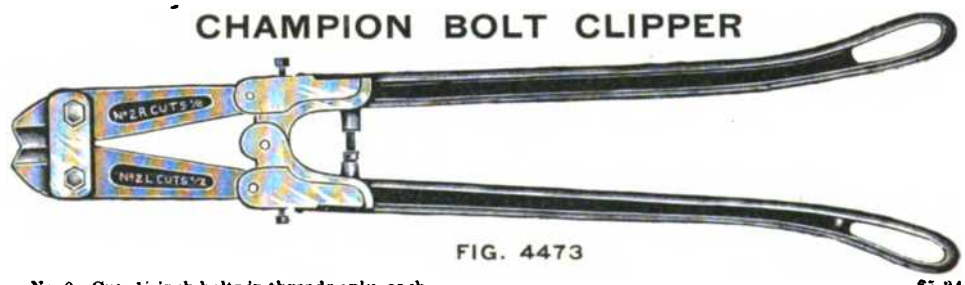


FIG. 4473

No. 0	Cuts ¼ inch bolts in threads only, each	$5 34
" 1	" ⅜ " " "	6 00
" 2	" ½ " " "	8 40

LINDSAY'S COMPOUND LEVER BOLT CUTTER

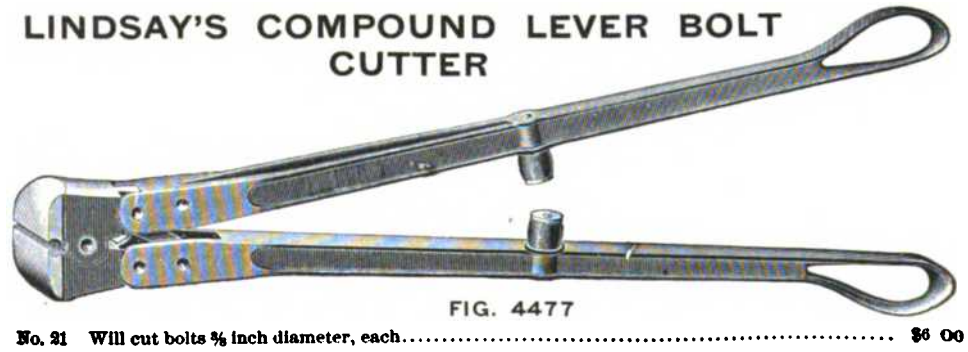


FIG. 4477

No. 21 Will cut bolts ⅝ inch diameter, each $6 00

NOTT'S COMPOUND LEVER BOLT CUTTER

WITH DETACHABLE AND DUPLICATE CUTTERS

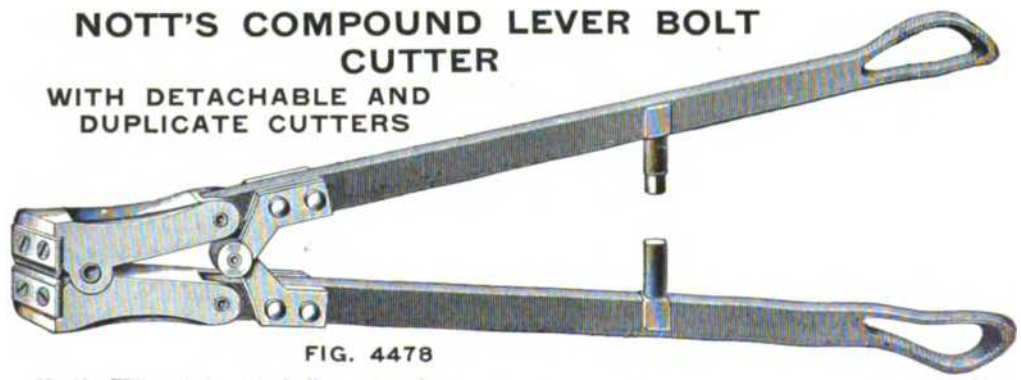


FIG. 4478

No. 23 Will cut bolts ½ inch diameter, each $5 00

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LITTLE GIANT MANDRELS

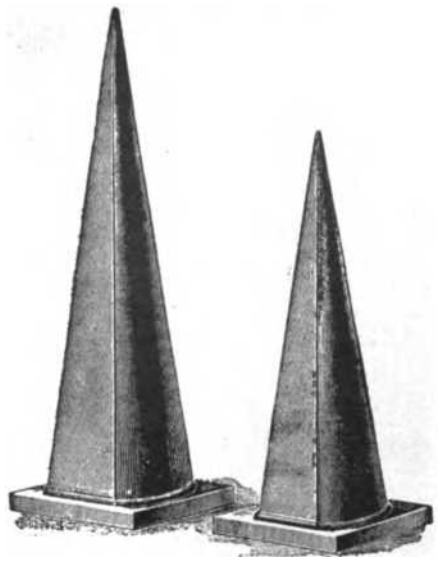


FIG. 4479

BLACKSMITHS' CONES OR MANDRELS

DESCRIPTION

They are flattened on one side to permit work to be grasped firmly with tongs. They have square bases, which keep them from being so easily tipped over. When ordering, mention the number of mandrel wanted.

PRICES, FIG. 4479

Nos. of Mandrel.	Sizes of Base, Inches.	Height, Inches.	Each.
1	10	36	$6 00
2	10	46	7 75
3	12	48	11 00
4	16	62	16 00

PRICES, FIG. 4480

Sizes, Nos.	Height, Inches.	Diams. at Base, Inches.	Diams. at Top, Inches.	Weight, About, lbs.
1	32	8	1	55
1½	40	10	1	90
2	48	12	1	115
3	52	14	1	140
4	54	16	2	200

Per pound.....

CAST IRON

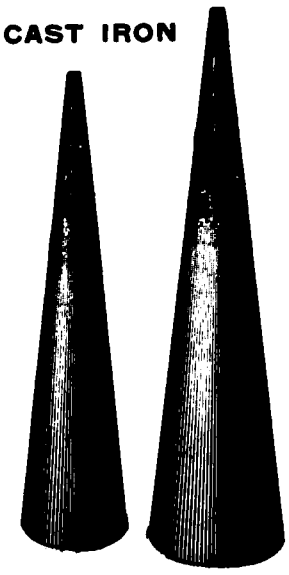


FIG. 4480

NEW CENTURY TIRE BENDER

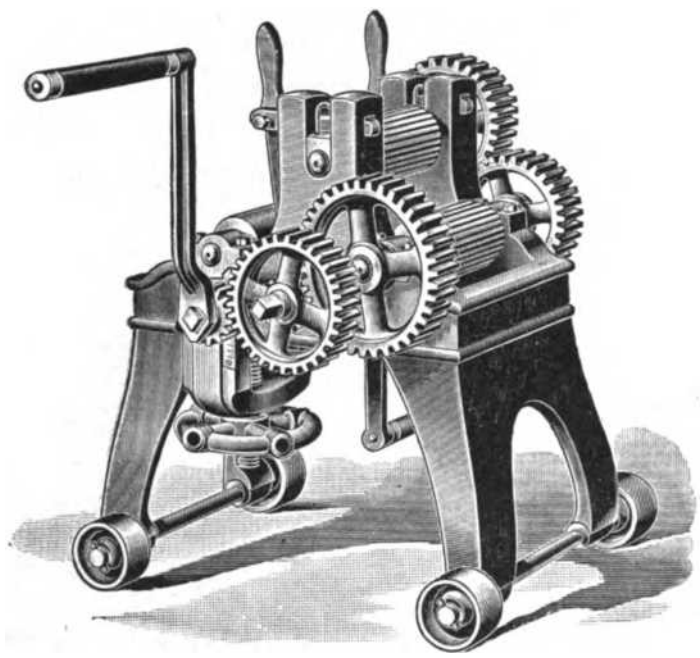


FIG. 4481

The New Century Tire Bender has been designed and built to bend with comparative ease all sizes of steel and iron tires up to 6x1¼ inches. This bender is compounded in its gearing 14 to 1. The center roll lifts out for removing the tire from the bender after being bent. The greatest time saving advantage in lifting the center roll to take the tire out of, the bender is that the collars may stay in place on the rolls until all the tires in the set are bent. Another great advantage is the gears are placed at each end of the roll, distributing or equalizing the strain over the entire bender. For taking the bent tire out of the machine the center roll is removed in an instant by simply drawing the two levers attached to the two wedged shaped clamps about 6 inches. This is done without the use of a tool of any kind. The bender has two speeds for light or heavy work; both are worked from either side or both sides at the same time. The rolls are 4 inches in diameter, made from a solid piece of steel corrugated and hardened. The bearings are long and heavy, with ample adjustment for years of wear, for bending true circle tires. The adjusting yoke and roll for large or small tires is simple and practical. If the tire is in the bender, a lever may be employed in the rim of the hand wheel for raising the roll. The adjusting roll is supplied at each end with a graduated indicator with a steel point showing the size of tire being bent. This machine is very convenient as a combined hand and power bender.

PRICES

No. 1 New Century Tire Bender, weight 850 lbs., bends tires up to 6x1¼ in., complete with collars and two cranks, $80 00
Power and hand combined, extra..... 10 00

COLUMBIAN TIRE BENDER

DESCRIPTION FIG. 4482

The Columbian Tire Bender is built both strong and powerful, with gearing compounded for heavy bending as well as light. The center roll for taking the bent tire out of the machine is removed in an instant by simply drawing the two levers attached to the two wedge shaped clamps about 6 inches. This is done without the use of a wrench or tool of any kind, the removing of the center roll being very convenient, as the collars when once set need not be removed until the full set of tires are bent. The adjusting of the Columbian Bender for large or small tire is also a thorough mechanical principle, working on an incline, as the cut will show, with a novel movable device which at all times works to its own center.

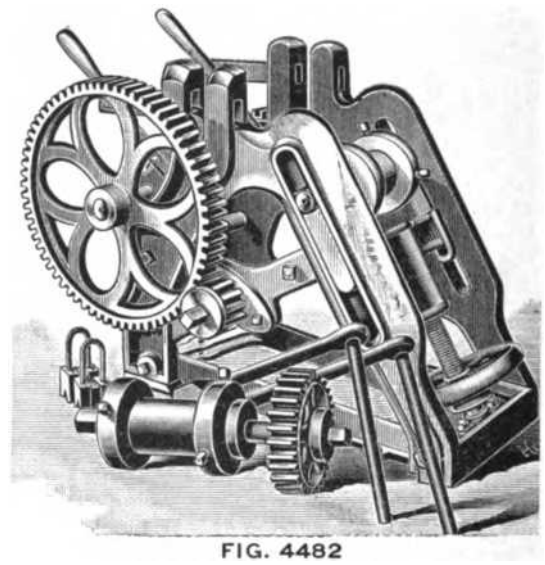


FIG. 4482

PRICES

Extra heavy Columbian Bender, capacity 6x1 in., weight 500 lbs..... $50 00
No. 1 Columbian Bender, capacity 5x1 in., weight 380 lbs..... 40 00
No. 2 Columbian Bender, capacity 4x1 in., weight 215 lbs..... 34 00
All above benders made for power when specially ordered, for which an extra charge will be made.

GIANT TIRE BENDER

DESCRIPTION, FIG. 4483

The adjusting roll is adjusted by a screw at each end of the roll, with a graduated indicator on each side of the bender showing the exact size of the tire being bent, giving the operator entire control of his work, doing away with the unpleasantness of having the tire coming out twisted and not meeting at the ends. The center roll pulls out. All rolls are supplied with collars. It has two speeds, one fast, for light tires, the second for heavy work.

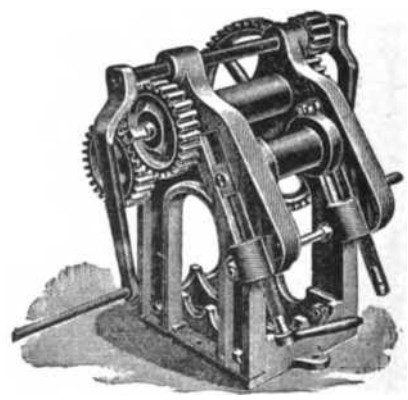


FIG. 4483

PRICES

Extra heavy Giant Bender, weight 400 lbs., bends 6x1 inch,..... $45 00
No. 1 Giant Bender, weight 330 lbs., bends 4x1 inch..... 40 00
No. 2 " " " 236 " " 3x1 " 30 00
No. 3 " " " 175 " " 3x¾ " 24 00
All above benders made for power when specially ordered, for which an extra charge will be made.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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PEERLESS TIRE BENDER

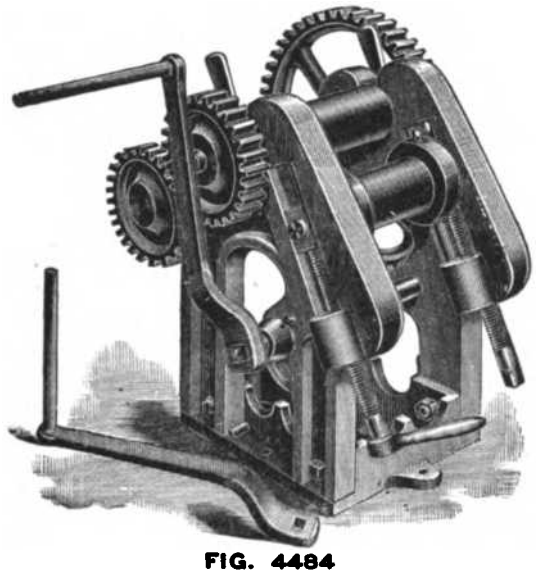


FIG. 4484

DESCRIPTION

The Peerless Tire Bender is powerfully constructed and designed for the very heaviest as well as the very lightest work. The adjustment of the adjusting roll is of the latest improvement. With an adjusting screw at each end of the roll, with a graduated indicator on each side of the bender, showing the exact size of the tire being bent, this principle of adjusting overcomes all former trouble of bending irregularly rolled iron into a perfect tire. The principle for removing the center roll is simple and perfect, very quick and convenient, simply two levers thrown over, and you are ready to lift the tire. The rolls are all lathe turned and supplied with collars. The advantage of lifting the center roll out, instead of drawing, is that the collars need not be moved when tire is taken out; consequently, when once set, is always ready. It can be changed from slow to fast speed in an instant; is made in double gear only.

PRICES

No. 0, Extra heavy Peerless Bender, bends 6 x 1 inches, weight 400 pounds.....$45 00
No. 1, Peerless Bender, bends 4 x 1 inches, weight 340 pounds..... 40 00
No. 2, Peerless Bender, bends 3 x 1 inches, weight 250 pounds..... 30 00
No. 3, Peerless Bender, bends 3 x ¾ inches, weight 185 pounds..... 24 00

All above benders made for power when specially ordered, for which an extra charge will be made.

NOS. 1 AND 2 TIRE BENDERS

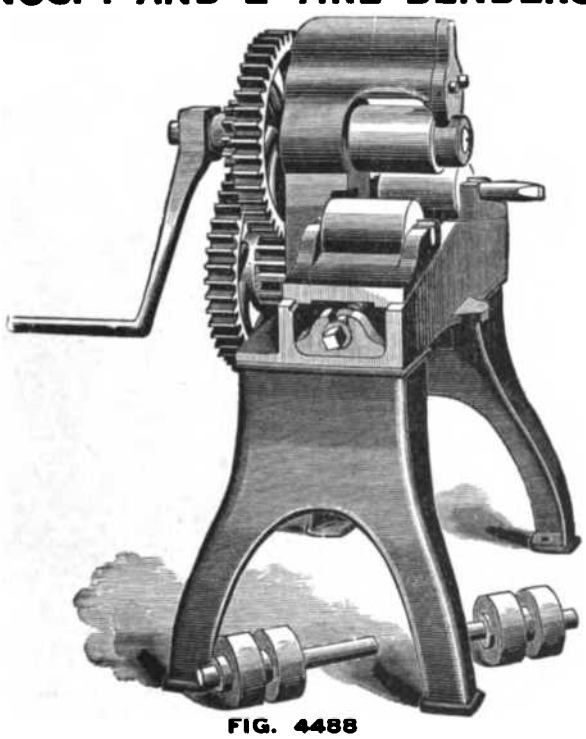


FIG. 4488

EUREKA TIRE BENDER

DESCRIPTION, FIG. 4485

The Eureka Tire Bender is a strong and powerful tool, built with all the latest improvements; adjusting screws at each end of the adjusting roll with a graduated indicator on each side of bender, showing the exact size of tire being bent, giving the operator full control of the work. No more trouble to bend imperfect iron into perfect tires; the principle for getting the tire out after being bent is quick and entirely practical. The two end rolls are provided with collars to prevent the tire from twisting so both ends meet when bent. It is double-back geared, and worked with two cranks which are furnished with each bender; also two speeds; one for light and fast work and the second for heavy work. It will bend fifth wheel as well as large tire.

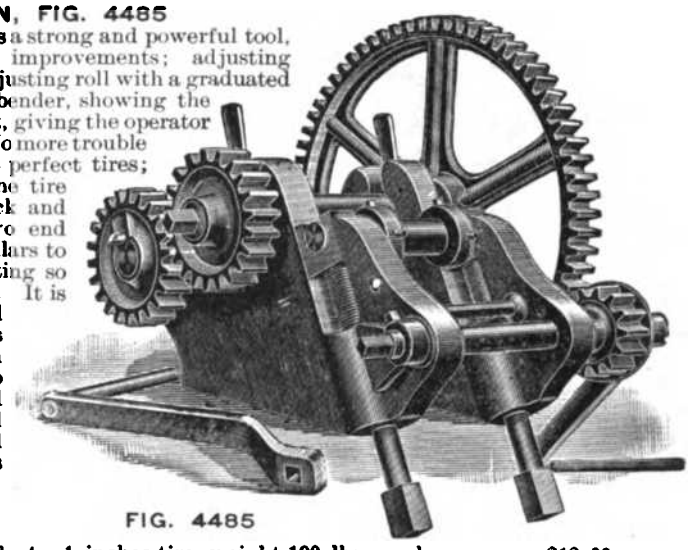


FIG. 4485

PRICES

No. 1, Eureka Bender, bends 4 x 1 inches tire, weight 190 lbs., each.....$18 00
No. 2, " " " 6 x 1 " " " 300 " " 25 00

NEW PATENT TIRE BENDER

The New Patent Tire Bender is constructed with all the new improvements. It will bend from a fifth wheel to any size up to 3 x ¾. Its adjusting roll has an adjusting screw at each end, with a graduated indicator on each side of the bender showing the exact size of the tire being bent, giving all the benefits of bending perfect tires from imperfectly rolled iron. The frame is cast strong and substantial, with double back gear and worked with two cranks and two speeds, one for light and fast work, and the second for heavy work. The center roll pulls out to take the tire out; very convenient.

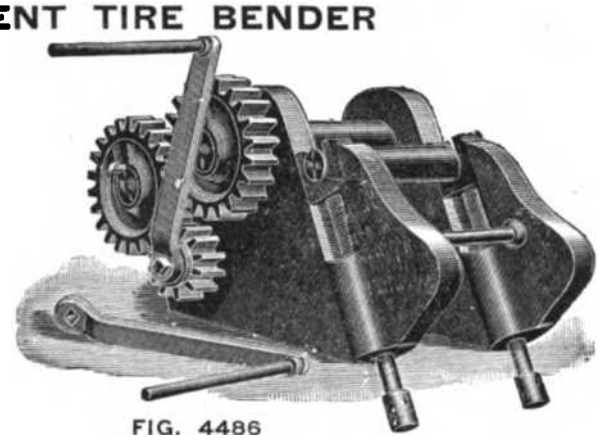


FIG. 4486

Price, weight, 115 lbs.; each.....$11 00

SINGLE AND DOUBLE GEAR TIRE BENDER

PRICES, FIG. 4487

Nos.		Iron. Inches.	Weight, Lbs.	Each.
1,	single gear. will bend	2 x ½	105	$7 50
2,	" " " "	3 x ⅝	155	11 00
3,	double " " "	3½ x ¾	165	12 50
4,	" " " "	6 x 1	320	22 50
5,	" " " "	6 x 1¼	350	24 00

Prices include handles.

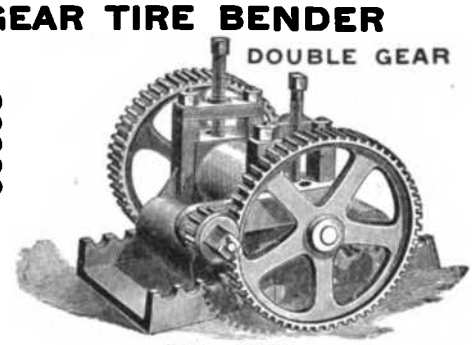


FIG. 4487

DESCRIPTION AND PRICE, FIG. 4488

NO. 1

It has an open side, so that tires can be taken out without springing. The bearings or track of carriages are planed perfectly parallel, which insures the tire going through the rolls and ends coming together perfectly square. A pair of grooved rolls for bending iron edgewise is furnished when ordered. Also tight and loose pulleys can be fitted to the machine for power when desired. It will bend tires from the lightest to ¾ in. thick by 5 wide. Weight, 500 pounds. Geared, 9 to 1.

Each.....$45 00
" with grooved rolls..... 60 00
" " 16x3½ tight and loose pulleys, extra. 15 00

NO. 2

Same as No. 1, but smaller; bending iron to ⅝ inch thick by 3 inches wide. Weight, 250 pounds. Geared, 9 to 1.

Each.....$24 00
" with grooved rolls..... 36 00
" " 14x3 tight and loose pulleys, extra. 12 00

DESCRIPTION, FIG. 4489

This machine will bend accurately and easily tires from the lightest to ⅝ inch thick. The circle to be made is fixed by means of a right and left hand screw, operated by the hand wheel acting equally upon the two lower rollers.

The rollers are 3 inches wide.

The upper roller is faced with steel and milled to insure the regular feeding through of the work.

It is strongly geared, and two cranks may be used if desired. Weight, 140 pounds.

Price, each.....$25 00

TIRE BENDING MACHINE

FOR LIGHT AND MEDIUM WORK

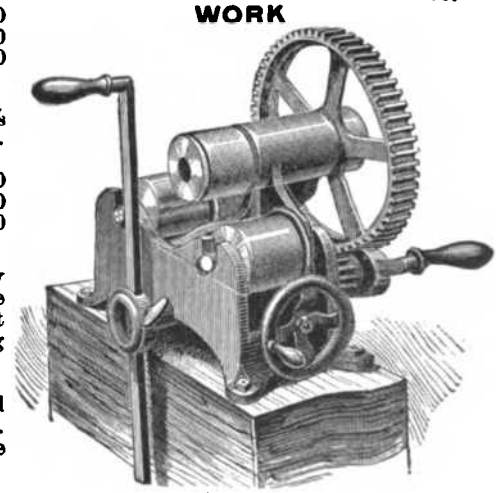


FIG. 4489

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TIRE BENDING MACHINE
FOR LIGHT AND MEDIUM WORK

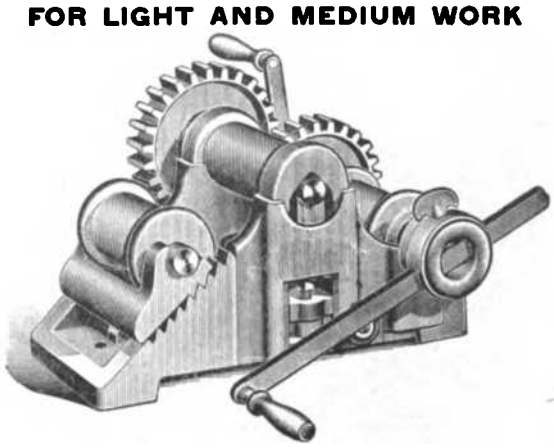


FIG. 4490

Will bend accurately and easily tires from the lightest to 3 inches in width by ½ inch thick. The size of the circle is fixed by sliding the loose roller up or down. This machine is strongly geared, and two cranks may be used. Weight, 120 pounds.
Price, each, $12.00.

TIRE BENDING MACHINE NO. 3
FOR LIGHT AND HEAVY TIRES

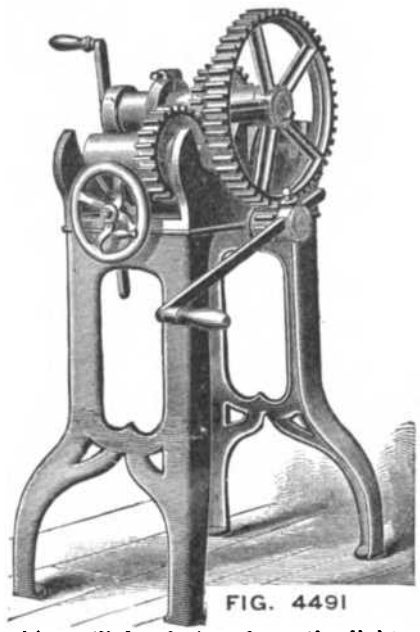


FIG. 4491

This machine will bend tires from the lightest to ½ x 6 inches or ¾ x 4 inches, or edgewise ⅜ x 1⅝ inches. In principle it is like the No. 2. The rollers are 6 inches wide. The upper roller has a collar to guide narrow work. For convenience in taking out finished tire, the yoke supporting center roller is removed, leaving machine open. Weight, 325 pounds.
Price, each, $45.00.

PERFECTED TIRE BENDER

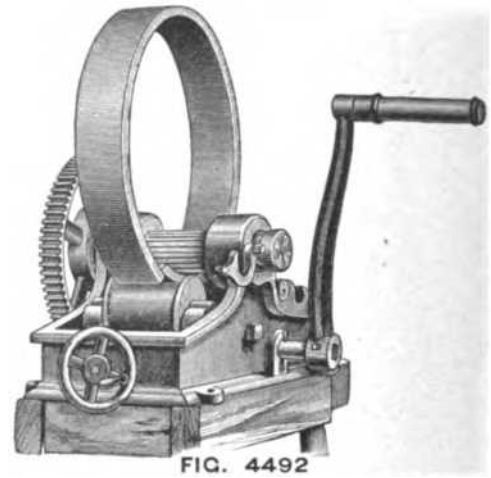


FIG. 4492

The body of machine consists of one solid piece without bolt or nut. The rolls are turned true, and are adjusted by a screw as shown in cut. The size of circle ranges from 12 inches to 12 feet. Tires can be trued up after welding. The center top roll is removable, and a heavy tire can be taken out after bending, without springing the ends apart.

PRICES

No. 21	will take 4 x ½ inch tire, not geared.	$12 00
" 22	" 4 x ⅞ " is geared..	19 00
" 23	" 6 x ¾ or 4 x 1 inch tire, is geared.....	26 00
" 24,	same as No. 23, with countershaft and pulleys for power.....	35 00
" 25	will take 6 x 1 inch tire, double geared, extra heavy bed.....	55 00
" 26,	same as No. 25, with countershaft and pulleys.....	65 00

LIGHTNING TIRE UPSETTERS

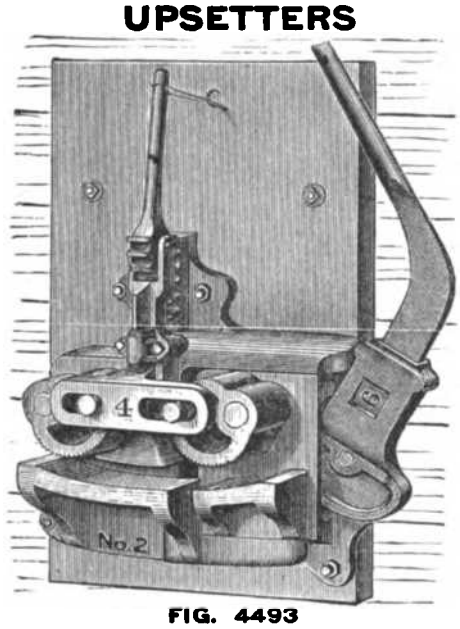


FIG. 4493

PRICES, FIG. 4493

No. 1 is a 2 inch machine.....	$14 00
Will upset a tire from ⅛ to ¾ inch thick, and any width up to 2 inches.	
No. 2 is a 4 inch machine.....	22 50
Will upset any tire to 4 inches wide.	
No. 3 is a Special 4 inch machine.....	26 00
Has sets of loose jaws. Can be adjusted for large and small circles, and also for upsetting axles up to 1¾ inches thick.	
No. 4 is a 6 inch machine.....	36 00
This is for upsetting tires 6 inches wide.	
No. 5 is a special 6 inch machine.....	45 00
Has two sets of loose jaws. Can be adjusted for large and small circles, and also for upsetting axles up to 2 inches thick. This is for upsetting tires 6 inches wide.	

These upsetters take the tire on the flat side, and have clamping head, as shown in cut, that prevents light tires from kinking.

TIRE AND AXLE SHRINKER

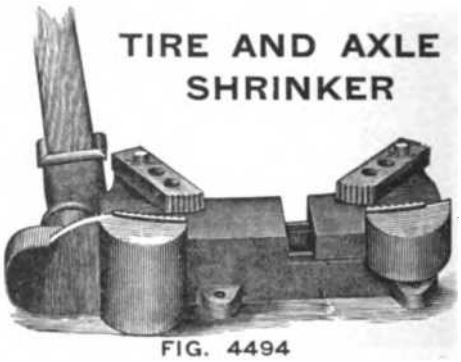


FIG. 4494

DESCRIPTION AND PRICE

It is managed by one man with perfect ease and works equally well on the lightest steel tire and on wagon tire 4 x 1 inch. To operate, simply place the tire between the jaws, draw the two cams against the tire, then, with but little pressure on the handle, you can shrink the tire to suit. Weight, 140 pounds. Will shrink tire 4 x 1 inch, will shrink axles 1¼ x 1¼ inches. Floor space, 18 x 10 inches. Each, $12.00.

TIRE AND AXLE SHRINKER
DESCRIPTION AND PRICE, FIG. 4495

The jaws or cams are drop forged from the highest grade of black diamond tool steel. The jaws or cams are opened and closed by a single movement of the hand, and it is not necessary to hold on to the handle while shrinking. The tire is released on the same principle on which it is fastened. The cams are so arranged that it makes no difference what width of tire or axle is being shrunk. They always work in direct line with the center and directly opposite the grip on the other side of the shrinker. Will shrink from smallest to 4 x 1 inch tire or 1½ inch axle. Weight, 200 pounds. Each, $20.00.

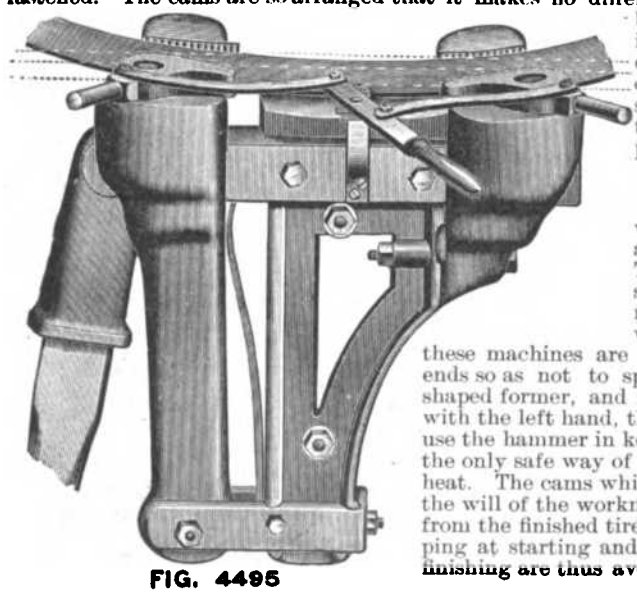


FIG. 4495

DESCRIPTION, FIG. 4496

They are managed by one man with perfect ease, and work well on all tires within their capacity. They occupy a space about 2 feet square on the floor. The handles may be taken out of the sockets when not in use. The bolts used on these machines are steel, and are supported at both ends so as not to spring. The tire lies in a properly shaped former, and force being applied to the handle with the left hand, the right hand remains at liberty to use the hammer in keeping the work true and straight, the only safe way of getting a perfect result at a single heat. The cams which grip the work are readily set at the will of the workman, and are instantly withdrawn from the finished tire by means of the levers. All slipping at starting and all jamming and sticking after finishing are thus avoided

HORIZONTAL TIRE SHRINKER



FIG. 4496

No. 1. For smallest tires, and up to ¾ x 3 inches, weight, 180 pounds. Each, $17.50.
No. 1½. For smallest tires, and up to 1 x 4 inches, weight, 250 pounds. Each, $20.00.

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UPRIGHT TIRE SHRINKER

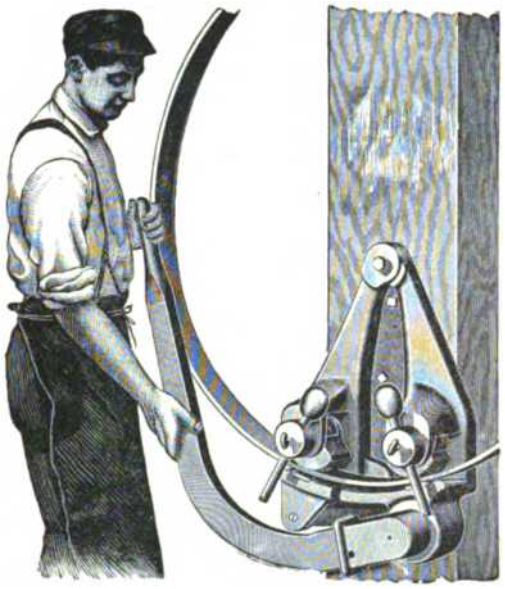


FIG. 4497

DESCRIPTION

The gripping cams, standing open to receive the work, are adjusted instantly to the tire, and are readily withdrawn to release it after the operation. No. 0 has straight handle.

PRICES

No. 0. For smallest tires and up to ⅜ x 2 inches in size. Weight, 100 pounds.
Each..... $15 00

No. 2. For smallest tires and up to 1 x 4 inches in size. Weight, 250 pounds.
Each..... $20 00

STAR TIRE AND AXLE UPSETTER AND WELDING MACHINE

DESCRIPTION, FIG. 4498

The Star Shrinker and Welder is designed and built as a powerful tool. The eccentric shaft as well as the eccentric strap is made from the best quality of hammered steel. The jaws are steeled with refined tool steel. When welding tires or axles, the machine requires to be drawn together as much as possible and held in that position solid, to keep the ends of the metal solid together while weld is being hammered down in shape; for this purpose a ratchet and a dog is arranged on the hand wheel, which hold it as tightly as may be required. The jaws are 3½ inches high; the teeth are machine cut and hardened. The machine will stand all the pounding required to weld the heaviest tires and axles; it is mounted on wheels so that it can be moved about the shop when necessary.

PRICES

No. 1. Upsets or welds tire from ¾ to 5 x 1¼ inches; upsets or welds axles ¾ to 2½ inches; upsets, with one revolution, 2 inches. Weight, 900 lbs.
Each..... $100 00

No. 2. Upsets or welds tire from ¾ to 7 x 1½ inches; upsets or welds axles ¾ to 3½ inches; upsets, with one revolution, 2 inches. Weight, 1,200 lbs.
Each..... $125 00

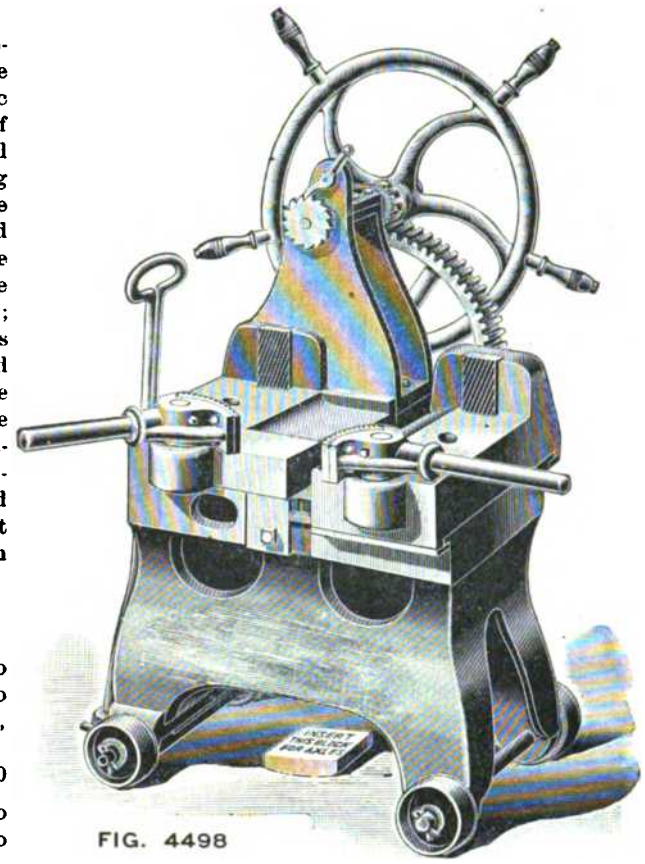


FIG. 4498

MAGIC TIRE SHRINKER



FIG. 4500

This is a strong and durable machine. It is always ready for use and occupies but little room. Will shrink tire 3 inches wide or smaller very rapidly. Price, each, $12.00.

REYNOLDS' TIRE BOLTING MACHINE

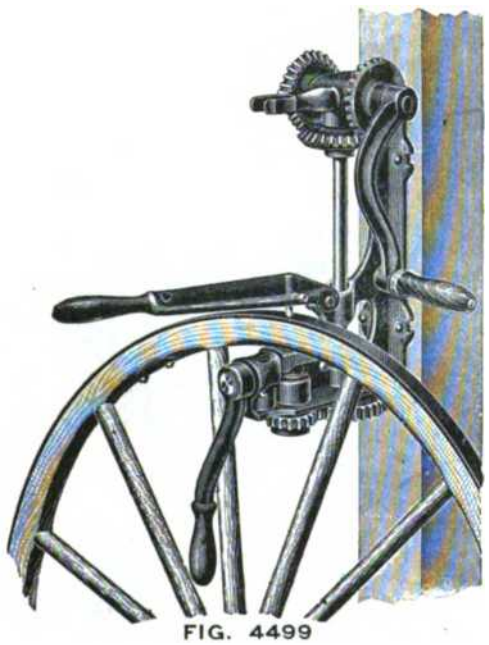


FIG. 4499

DESCRIPTION, FIG. 4499

A combination bolt clipper, bolt wrench and tire bolt holder.

Will remove burrs, run them on, or clip off the ends of tire bolts. Will fit any sized tap.

Either operation can be performed on any ordinary buggy wheel in less than two minutes, with perfect ease to the operator.

PRICE

Each..... $6 00

NO. 1 TIRE SHRINKER

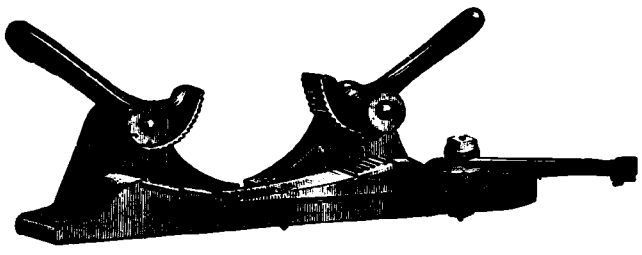


FIG. 4501

No. 1 will shrink tire 2 x ¾ inches. Price, each, $12.00.

NO. 2 TIRE SHRINKER



FIG. 4502

No. 2 will shrink tire 4 x 1 inches. Price, each, $20.00.

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GRADUATED TIRE MEASURING WHEEL

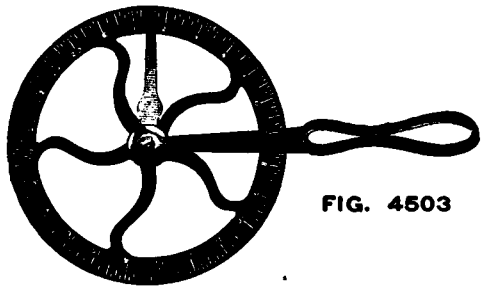


FIG. 4503

The Graduated Tire Wheel, a drop forging, is made so that the figures and lines are raised above the surface of the wheel and can not be filled or defaced with rust or dirt. It is a perfect running wheel, turned carefully in a lathe, exactly 24 inches in circumference, and accurately graduated.

The index hand saves trouble of marking with chalk, and the whole, made of metal, is light, accurately fitted, handy and strong.

Price.....$1 50

PLAIN TIRE MEASURING WHEEL

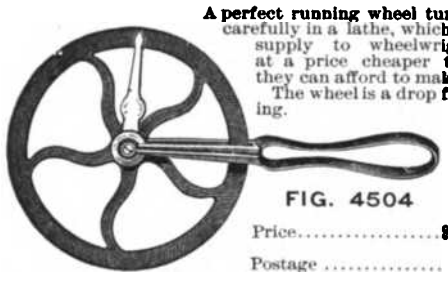


FIG. 4504

A perfect running wheel turned carefully in a lathe, which we supply to wheelwrights at a price cheaper than they can afford to make it.

The wheel is a drop forging.

Price.....$1 25

Postage 15

AXLE SETTER AND STRAIGHTENER

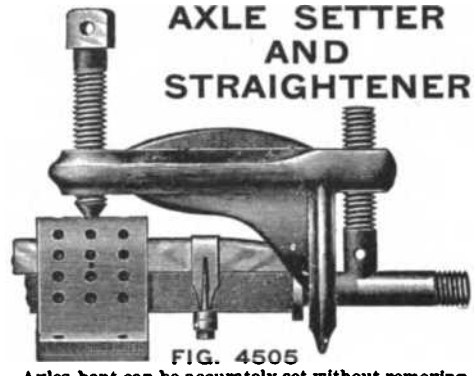


FIG. 4505

Axles bent can be accurately set without removing, making a perfect job. With the use of this machine it is not necessary to set axles on a new job until it is ready for the paint shop.

PRICE

No. 2. For axles up to and including 1¾.....each, $6 00

TIRE BOLT HOLDER

FOR CLAMPING BOLTS WHILE THE NUTS ARE BEING TURNED ON OR OFF



FIG. 4506

PRICES

Each.....$0 75
Per dozen..... 8 50

LEVELING BLOCK SOLID



PRICES, FIG. 4507

Planed on One Side and One Edge.

Size 24 x 16 x 1⅝ inches.....each, $10 75
" 24 x 18 x 1⅝ " ..... " 11 75
" 30 x 18 x 1⅝ " ..... " 14 10

Planed on Both Sides and on Both Edges, but not on Ends.

Size 24 x 16 x 1½ inches.....each, $12 00
" 24 x 18 x 1½ " ..... " 14 00
" 30 x 18 x 1½ " ..... " 15 50

Not Planed.

Size 24 x 16 x 1¾ inches.....each, $8 75
" 24 x 18 x 1¾ " ..... " 9 90
" 30 x 18 x 1¾ " ..... " 11 90

If Planed on Ends, price extra.

LEVELING BLOCK CORED



PRICES, FIG. 4508

Planed on One Side and One Edge.

Size 24 x 16 x 2⅛ inches.....each, $8 00
" 24 x 18 x 2⅛ " ..... " 8 75
" 30 x 18 x 2⅛ " ..... " 10 60

Planed on Both Sides and Both Edges, but not on Ends.

Size 24 x 16 x 2 inches.....each, $9 25
" 24 x 18 x 2 " ..... " 10 00
" 30 x 18 x 2 " ..... " 12 00

Not Planed.

Size 24 x 16 x 2¼ inches.....each, $6 15
" 24 x 18 x 2¼ " ..... " 6 75
" 30 x 18 x 2¼ " ..... " 8 50

For Planed Ends price extra.

IRON PLATE FOR TIRE SETTING

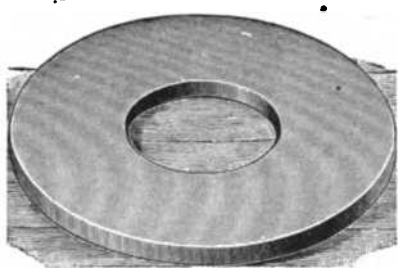


FIG. 4509

These plates are cast in one piece, and are supported by ribs. A strong plate, yet light for handling.

When ordering, give number of plate.

PRICES

Nos.	Form.	Outside Diameters.	Diameters of Hole.	Each.
1	Dished	5 foot	30 inches	$20 00
2	Flat	5 "	30 "	20 00
3	Dished	5 "	20 "	23 00
4	Flat	5 "	20 "	23 00
5	Dished	5 "	16 "	25 00
6	Flat	5 "	16 "	25 00
7	Dished	6 "	30 "	40 00
8	Flat	6 "	30 "	40 00
9	Dished	5 " 6 inches	30 "	25 00
10	Flat	5 " 6 "	30 "	25 00
11	Dished	5 " 6 "	20 "	28 00
12	Flat	5 " 6 "	20 "	28 00
13	Dished	5 " 6 "	16 "	30 00
14	Flat	5 " 6 "	16 "	30 00

NIAGARA PLATE AND ROD SHEARS

These machines have a powerful toggle mechanism. They are durable and especially adapted to cutting sheets of any length and width, as well as bars. Each machine is fitted with adjustable gauges for sheet and rod cutting and a vertical hold down to prevent the sheet from rising while being cut.

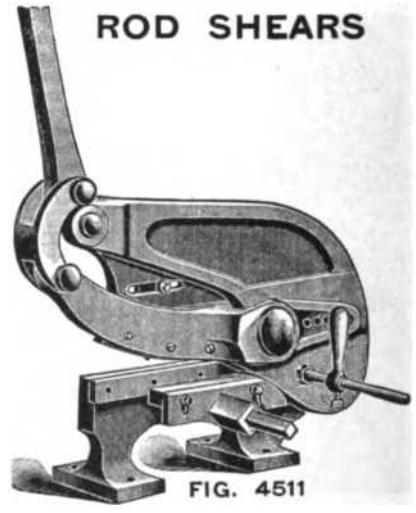


FIG. 4511

PRICES

Numbers	1	2	3
Lengths of knives.....inches	10	10	10
Will cut plate iron up to "	⅛	5/16	¼
" " flat " " "	¼ x 3	5/16 x 3	⅜ x 3
" " round " " "	½	¾	⅞
Weight, pounds.....	160	210	315
Each.....$32 00	$38 00	$45 00	
Iron legs, extra.....	5 00	5 00	5 00

DETROIT IRON SHEARS



FIG. 4510

They will cut ⅞ inch round or square bar, and 4 x ½ inch cold. Hot up to 2½ inch or 4 x 1½ inch. We furnish a lever end to fit the socket, on which a bar can be welded for a handle.

Price, each $25 00

NIAGARA LEVER SHEARS

FOR CUTTING PLATE IRON OF ANY WIDTH AND LENGTH

The lever works to the front, so that one operator can use the machine. All the parts are well fitted. The bolts and pins which take the strain are of steel. The knives are readily removed and ground. The frame is cut back to allow the sheets to pass freely.

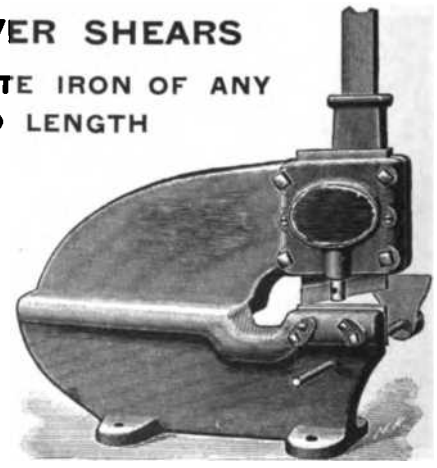


FIG. 4512

PRICES, FIG. 4512

Sizes.	Lengths of Knives, Inches.	Weight.	Each.
No. 13 will cut ¼ plate iron	4½	200 lbs.	$25 00
" 14 " " ⅜ " "	5	400 "	40 00
" 15 " " ½ " "	6	800 "	90 00

Iron legs, Nos. 13 and 14, $5 00. Iron legs, No. 15, $10 00.

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BAR IRON AND STEEL CUTTER

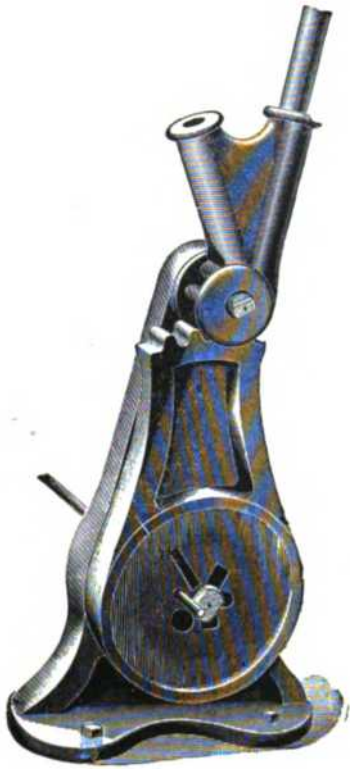


FIG. 4513

Cuts flat bars 2 x ½ inch and smaller.

Cuts round and square bars 1⅛ inch and smaller.

Price, each.....$75 00

COMPOUND LEVER AND PINION SLITTING SHEARS

For Cutting Sheet Metal.

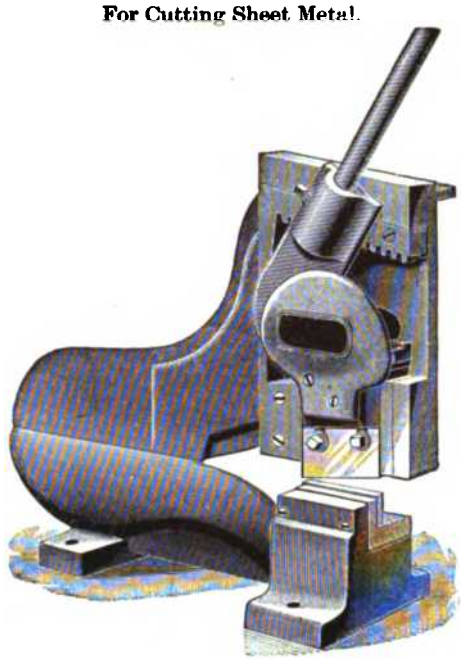


FIG. 4514

Will cut ⅛ inch cast steel, No. 8 sheet iron and No. 6 hard brass.

Price, each.....$40 00

COMPOUND LEVER AND PINION GAP SHEARS

For Cutting Sheet Metal.

The design combines strength and simplicity. It is especially adapted for cutting circular or irregular forms and shapes, although it is well adapted for straight work.

Will cut No. 10 cast steel, No. 8 sheet iron and No. 6 hard brass.

The length of blade is 8 inches and of such shape as to allow of the cutting of square, round or oblong holes in the center of any size sheet that will turn in the 12 inch gap.

Price, each....$40 00



FIG. 4515

McLANE IRON SHEARS



FIG. 4516

Have a double sided cam. Reversible and interchangeable shear blades, with four cutting edges on each. Shear beam raised by a negative cam and dog. Have no springs or keys to get out of order; adjustable for the wear of blades; made in the most thorough workmanlike manner.

Will cut 3 x ⅝, 4 x ½, 6 x ¼ and ⅞ round.

Price.....$30 00

With legs, extra..... 8 00

BUFFALO ANGLE IRON CUTTER



FIG. 4517

No. 16. Will cut up to 3 x 3 x ¼ angle iron or steel; weight 190 lbs. Price.....$40 00

NIAGARA LEVER SHEARS



FIG. 4518

DESCRIPTION, FIG. 4518

These shears are particularly intended for cutting apart heavy plates of any length and width, and are very useful for light work as well. They can be operated at three different speeds, viz.: With the lever acting direct on the slide for light work, or with the ratchet and pawl for plates of medium thickness, or with compound lever for heavy work. One man can operate the machine when using it to its utmost capacity.

The frame carries a device, working on springs, that crowds between the two parts of the sheet. At the upstroke of the knives it holds them apart and gives the operator a chance to move the sheet forward without difficulty for the next cut. The knives are adjustable for wear, and an adjustable gauge is provided besides the hold down that prevents the material from rising while being cut.

PRICES

Length of knives	6 inches
Will cut plates and flat bars up to	½ inch
Weight, complete	800 lbs.
Each	$90 00
Iron legs, extra	10 00

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IMPROVED ROD CUTTER

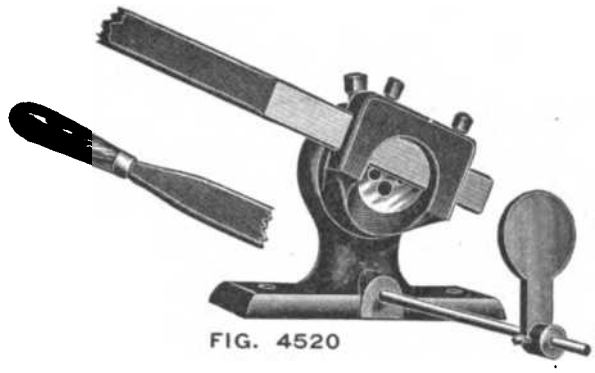


FIG. 4520

Made of malleable iron, with tool steel cutters; simple in construction; sure to cut off square; easy to adjust; can be sharpened; piece to be cut off entirely exposed to view; every part in duplicate.

No. 1 Cuts up to 5/8 inch diameter. Each..... $10 00
" 2 " 3/4 " 5 50

PERFECT WIRE AND ROD CUTTER

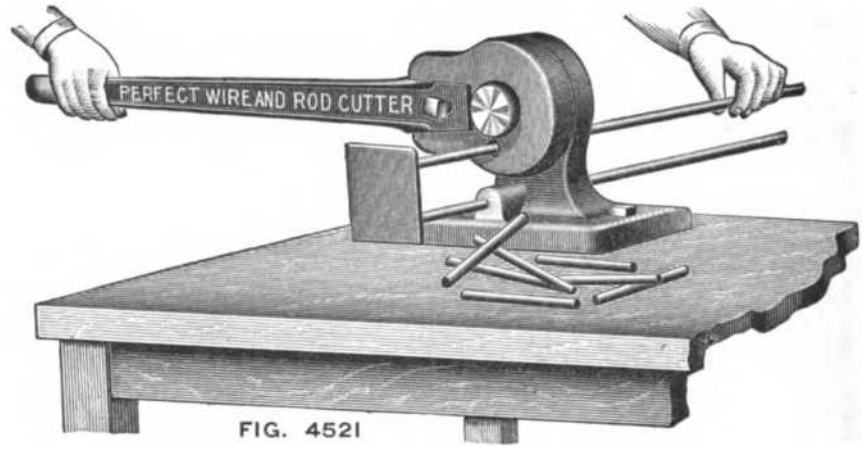


FIG. 4521

This cutter will cut off all sizes of wire and rods, from the smallest up to one-quarter inch diameter. Will cut to almost any desired length, and in the case of smaller sizes of wire will cut them off in a bunch or cluster. The circular cutting dies are made of the best cast steel, and hardened. When the dies get dull grind them on the flat surface of a grindstone or emery wheel, but be sure and keep the dies constantly wet when grinding to prevent drawing the temper. New dies can be had at extra cost. Each, $4.50.

WIRE AND ROD CUTTER

Has Tool Steel Blades.

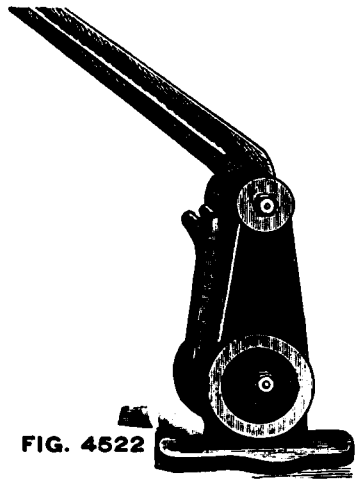


FIG. 4522

No. 1 Cuts 1/8, 3/16, 1/4, 5/16 and 3/8 in. rods. Each..... $6 00
" 2 Cuts 3/8, 7/16, 1/2, 9/16 and 5/8 in. rods. Each..... 12 00

COMBINED PUNCH SHEAR AND BAR CUTTER

DESCRIPTION AND PRICES, FIG. 4524

No. 1—With 3/32 in. and 1/8 in. punch and die. Each, $40.00.

No. 2—With 1/8, 5/16 and 1/4 in. punch and die. Each, $50.00.

No. 3—With 1/4, 5/16 and 3/8 in. punch and die. Each, $70.00.

No. 4—With 1/4, 3/8 and 1/2 in. punch and die. Each, $100.00.

Capacity No. 1—Will shear 1/4 in. strap iron 1 1/2 in. wide; will punch 1/8 in. in 1/8 in. iron, and cut off 3/8 in. bar; weight, 30 lbs.

Capacity No. 2—Will shear 7/16 in. strap iron 2 in. wide; will punch 1/4 in. in 1/4 in. iron, and cut off 3/4 in. bar; weight, 175 lbs.

Capacity No. 3—Will shear 1/2 in. strap iron 3 in. wide; will punch 5/8 in. in 3/8 in. iron, and cut off 1 in. bar; weight, 425 lbs.

Capacity No. 4—Will shear 5/8 in. strap iron 3 in. wide; will punch 1/2 in. in 1/2 in. iron, and cut off 1 1/4 in. bar; weight, 590 lbs.

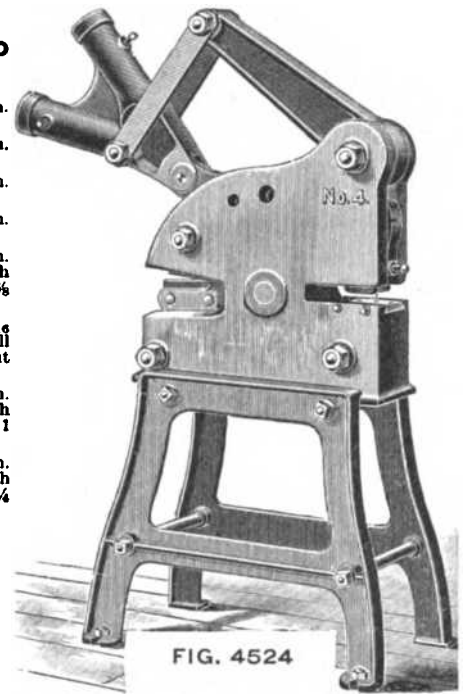


FIG. 4524

DEEP THROAT LEVER SHEAR AND PUNCH

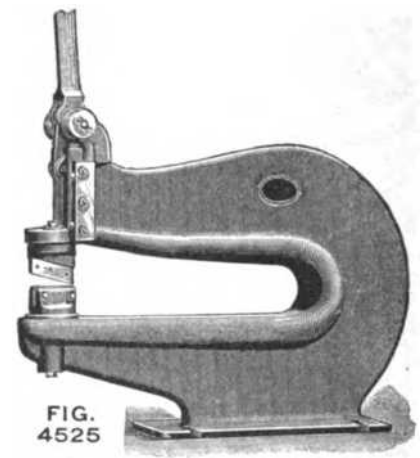


FIG. 4525

Will cut iron or soft steel up to 1/8 in. thick. The knives are arranged to swivel, which permits of cutting from front to back, right to left, or at any desired angle, according to the nature of the work. The position of the knives can be changed quickly. The V shaped slide is provided with adjustable gib to compensate for wear. The knives are 4 in. long, and each of them has two cutting edges. This machine can be arranged for punching small holes, the capacity being 1/4 in. hole through No. 14 iron, or equivalent.

PRICES, FIG. 4525

	Shipping Weight, Pounds.	Each.
Deep Throat Shears, 18 in. throat.....	300	$40 00
" " " 24 " "	450	50 00
" " Punch, 18 " " for 1/4 in. hole.....	300	40 00
" " " 24 " " " " "	450	50 00
Iron table and legs.....	100	5 00
Holders, punch, die and stripper (1/4 in. hole), for use on deep throat shears, in place of the knives.....		10 00

CONTINUOUS SHEAR FOR TINNERS AND SHEET IRON WORKERS

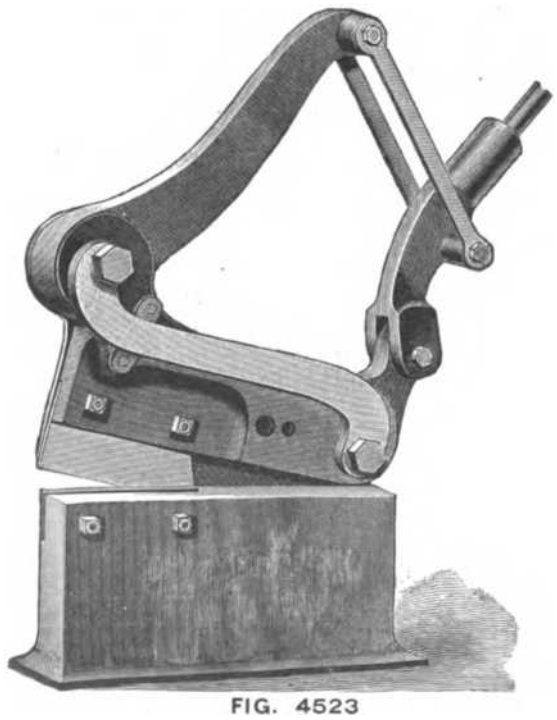


FIG. 4523

DESCRIPTION AND PRICES FIG. 4523

These shears have capacity for shearing continuously, i. e., sheets of any desired width, up to No. 12 gauge sheet iron or steel on the largest size. For narrow strips or bars they are capable of doing the work mentioned in list below. They are also furnished with dies for cutting off round or square bars, as shown by round openings in the cut. Can furnish mounted on legs.

No. 6—Shears, 1/8 in. flat, 5/8 inch round iron; weight, 95 lbs. Each, $30.00.

No. 7—Shears, 5/16 in. flat, 1/2 inch round iron; weight, 160 lbs. Each, $40.00.

No. 8—Shears, 1/4 in. flat, 1/4 to 5/8 inch round iron; weight, 340 lbs. Each, $50.00.

No. 9—Shears, 5/16 in. flat, 3/8 to 3/4 inch round iron; weight, 575 lbs. Each, $100.00.

CONTINUOUS ROLLING CUTTER SHEAR



FIG. 4526

DESCRIPTION AND PRICES, FIG. 4526

This shear is operated by a pinion lever engaging in a rack and cutting with the forward roll of the cutting disk. The advantage of this construction is that the power travels with the cutter. The motion of the circular cutting disk is about one-third of its circumference. The cutting disk is provided with three slots, which correspond with three pins on the cutting disk bolt. This enables the operator to change the cutting disk to six different positions—three on each side—the disk being reversible. The lower or stationary straight cutter blade has two cutting edges; the ends of the cutter are beveled to match the heads of the bolts which draw the cutter blade in recess of shears stock. Two set screws, which press the cutter blade in opposite directions, are the means to adjust the lower cutter perfectly to the upper cutter disk.

No. 11—Will cut No. 20 iron; each, $5.00. No. 12—Will cut No. 16 iron; each, $7.50.

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IMPROVED LEVER SHEAR WITH GAUGE



FIG. 4527

DESCRIPTION

This shear is of extra weight, and arranged with gauges for cutting No. 18 iron.

PRICES

Nos.	Cuts.	Weight.	Each.
1	4½ in.	19 lbs.	$12 00
1½	6 "	24 "	13 00
2	8 "	32 "	15 00

COMBINED SHEAR AND PUNCH

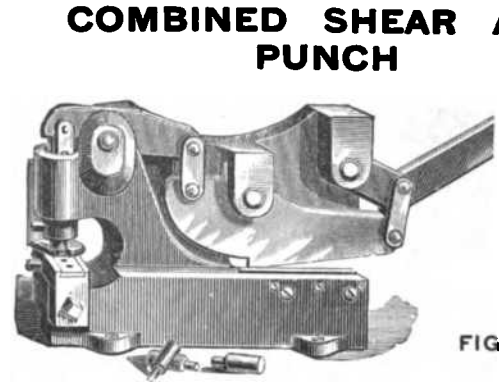


FIG. 4528

This machine is suitable for both cutting and punching metal. It may be used for cutting ⅛ inch iron and ¼ inch narrow bars. Four punches are put up with No. 1, viz.: ⅛, 3/16, ¼ and 5/16 inch. Five punches are put up with No. 2, viz.: ⅛, 3/16, ¼, 5/16 and ⅜ inch.

PRICES

No. 1 Each.....$16 00
" 2 " 20 00

HAND PUNCH AND SHEAR

With Universal Die Holder.

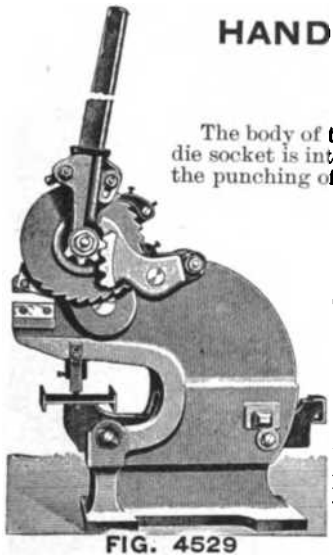


FIG. 4529

DESCRIPTION

The body of the machine is solid and durable; the wrought iron die socket is interchangeable, and so formed at its ends as to allow the punching of small and larger shapes near the edge or corner.

PRICES, FIG. 4529

	No. 12.	No. 13.
Largest diameters of hole.....	⅝ in.	¾ in.
Thickness of iron.....	⅜ "	⅝ "
Will cut bar iron up to.....	½ "	⅝ "
Distance from center of punch to body of machine.....	6 "	10 "
Distance between jaws.....	4¼ "	7¼ "
Lengths of shear blades	4 "	4¾ "
Approximate weight.....	475 lbs.	950 lbs.
Including one punch and die, each	$150 00	$250 00

CONQUEROR HAND PUNCH AND SHEAR COMBINED

PRICES, FIG. 4530

One round punch and die of the largest size is furnished with each machine.

No. 7 Will punch ⅜ inch hole in ¼ inch iron, 4 inches from edge to center of hole. Will cut bar iron 3½ x 5/16 inch. Weight, 145 pounds. Each..$50 00

No. 8 Will punch ½ inch hole in ⅜ inch iron, 6 inches from edge to center of hole. Will cut bar iron 2 x ½ inch. Weight, 300 pounds. Each..... 75 00

We can furnish larger machines upon special application, and are prepared to furnish hand punches which will punch a 1 inch hole in ¾ inch iron.

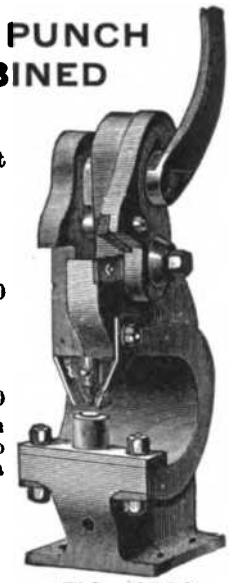


FIG. 4530

HAND PUNCH WITH ADJUSTABLE GAUGE

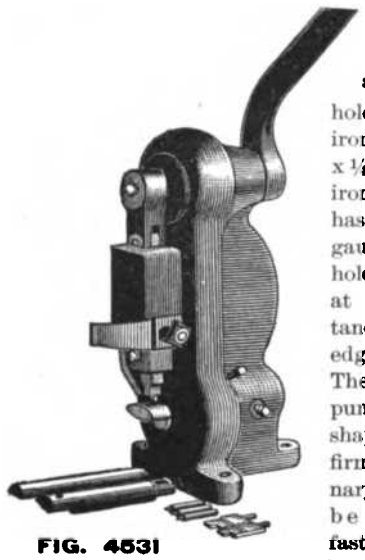


FIG. 4531

Will punch a ⅜ inch round hole in ¼ inch iron. Will slot ½ x ¼ inch in ¼ inch iron. This punch has an adjustable gauge to get all holes to be punched at the same distance from the edge of the iron. The base of the punch is of such shape as to be held firmly in an ordinary vise, or it can be permanently fastened to the bench.

The strippers are placed on each side of the punch to give the workman an unobstructed view of punch and work.

The die bar is of 1¼ inch diameter.

Weight, about 50 pounds.

Price, $40.00.

Extra round punches.....$0 75
" slotting " 1 50
" die bars with 2 round dies..... 1 75
" " " " 2 slotting " 2 50

Two round and two slot punches are furnished with each machine.

CONQUEROR HAND PUNCH NO. 2

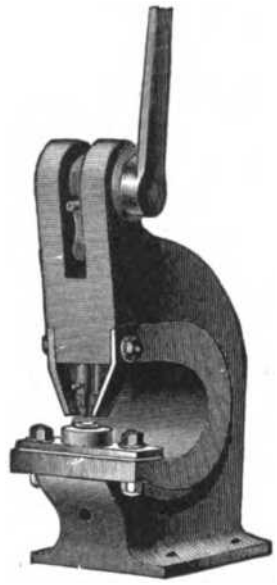


FIG. 4532

PRICES

Nos. of machines.	2	3	4	5	6
From edge to center of hole, in.	4	6	9	12½	15½
Will punch, in...	⅜	½	½	¼	½
In thickness of iron, inches....	¼	5/16	⅜	¼	⅜
Weight of machine, pounds..	120	245	500	220	760
Each.....	$35 00	60 00	85 00	60 00	120 00

VISE PUNCH

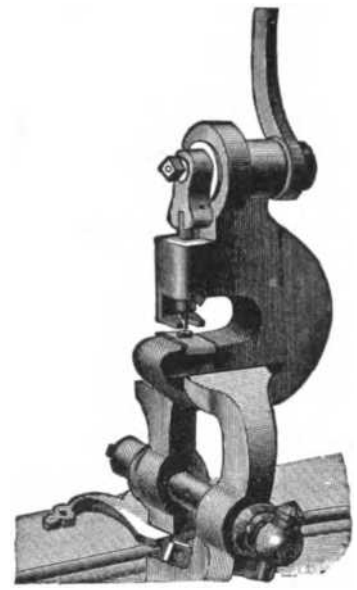


FIG. 4533

The body of this punch, as well as the working parts, are made of cast steel entirely. It will punch ⅜ inch hole in ¼ inch iron, 3¼ inch from edge to center of hole. Weight, only 40 pounds.

Price.....$30 00

We also furnish a cast iron block with this punch so that it can be used as a stationary tool on the bench, and as a portable tool for outside work, as well as in the vise.

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LEVER PUNCHES

NO. 22
WITH RATCHET

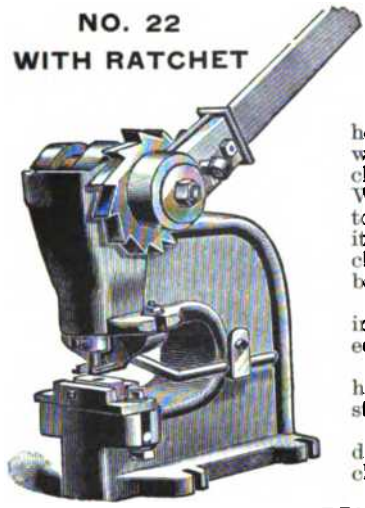


FIG. 4534

DESCRIPTION
FIGS. 4534 AND 4535

These machines are intended for heavy work. They can be operated with or without ratchet, and the change is made quickly and easily. Without the ratchet the lever works towards the front; with the ratchet it works towards the back of the machine. Stripping attachment and back gauge are provided.

Will punch, without ratchet, ½ inch hole through ¼ inch iron, or equivalent.

Will punch, with ratchet, ½ inch hole through ⅜ inch iron, at two strokes.

Three punches—¼, ⅜ and ½ inch diameter—and 1 die to match, are included in the price.

PRICES

Nos.	Throat.	Weight.	Each.
21	4 inches	150 pounds	$20 00
22	6 "	210 "	24 00
23	10 "	375 "	32 00
24	15 "	550 "	40 00

Extra punches, regular size, each, 75c; extra dies, regular size, each, $1.25.

NO. 24, WITH
RATCHET



FIG. 4535

DESCRIPTION
FIG. 4536

The lever is short and works both ways. The machine has sufficient strength to punch a hole ¼ inch diameter through iron ¼ inch thick, without exertion on the part of the operator. An adjustable gauge is applied to regulate the distance of the holes from the edge of the sheet, also a stripping attachment. Three punches—⅛, 5/16 and ¼ inch diameter—and 1 die to match, are included in the price.

NO. 12



FIG. 4536

PRICES, FIG. 4536

Nos.	Throat.	Weight.	Each.
11	4 inches	105 pounds	$12 50
12	6 "	115 "	15 00
13	10 "	150 "	20 00
14	15 "	240 "	25 00

RICE PATENT HAND PUNCHES

NOS. 0 AND 1

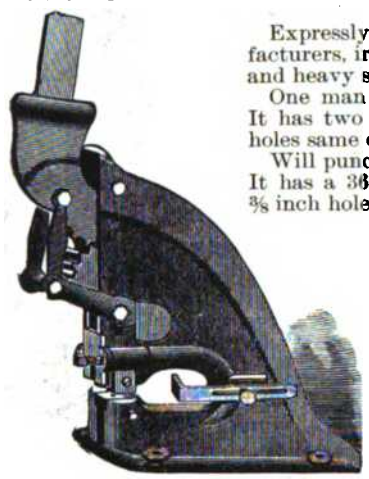


FIG. 4537

NO. 2½

Expressly made for stove manufacturers, iron roofers, boiler makers, and heavy sheet iron workers.

One man can operate it with ease. It has two gauges, one for gauging holes same distance apart.

Will punch 10½ inches from edge. It has a 36 inch lever. Will punch ⅜ inch hole in 5/16 inch iron, 5/16 inch hole in ¼ inch iron, and ½ inch hole in ⅛ inch iron, or ⅜ inch hole in ⅛ inch steel. Furnish 3/16, ¼ and 5/16 dies with punches to match with each machine unless otherwise ordered.

Price.....$40 00

Extra punches and punch blocks, each, 50 cents.

NO. 0

Will punch ¼ inch hole in ⅛ inch iron, 2¼ inches from edge to center of hole. Will furnish ⅛, 5/16, and ¼ inch die plate, with each machine. Price, $10.00; extra punches, each, 85c.; extra punch blocks, 3 holes, each, 45c.

NO. 1

Will punch 3/16 inch hole in 3/16 inch iron, 5/16 in ⅛ inch iron, or ½ inch in No. 14 wire gauge, 3 inches from edge. Will furnish ⅛, 5/16, or ¼ dies and punches to match with each machine, unless otherwise ordered. Price, $15.00; extra punch and punch blocks, each, 45c.

NO. 2½



FIG. 4538

NOS. 1½ AND 3½



FIG. 4539

PRICES

NO. 1½

Is especially adapted for blacksmiths, punching steel tire and heavy work in general. Will punch ⅜ inch hole in ¼ inch iron, 5/8 inch hole in 3/16 inch iron, or ¾ inch hole in ⅛ inch plate, 4 inches from edge. We furnish ¼, 5/16 and ⅜ inch die plates, with punches to match, with each machine.

Each	$28 00
Extra punches, from 3/16 to ½ in., each	60
" " " 5/8 to 1 " "	70
" punch blocks, each	1 00

NO. 3½

This machine will punch ½ inch hole through ⅜ inch iron. In appearance it is the same as No. 1½, except heavier. Will punch ½ inch hole in ⅜ inch iron, 9/16 inch hole in 5/16 inch iron, and 5/8 inch hole in ¼ inch iron, 4½ inches from edge. We furnish ½ inch, 7/16 inch and ⅜ inch dies with punches to match with each machine, unless otherwise ordered.

Each	$50 00
Extra punches, each	80
" dies, each	1 20

RICE HAND PUNCH NO. 2

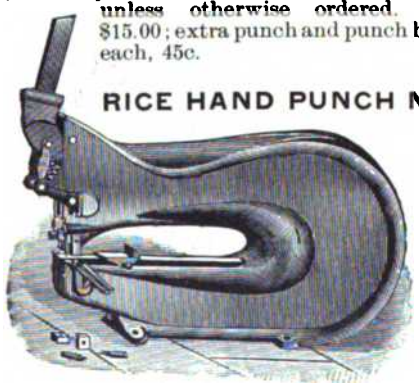


FIG. 4540

Is expressly made for tin shops and sheet iron workers generally. Will punch 3/16 inch hole in 3/16 inch iron, 5/16 inch in ⅛ inch, or ½ inch in No. 14 wire gauge, 13½ inches from edge. It has two gauges, one for gauging holes same distance apart. Will furnish ⅛, 3/16, and ¼ inch dies, with punches to match, with each machine. Price, $25.00; extra punches and punch blocks, each, 45c.

INDEPENDENT HAND PUNCH

DESCRIPTION, FIG. 4541

We furnish these punches, regularly mounted on legs, or without legs, for bench use, as shown in cut, if so ordered. Price is the same for both.

CAPACITIES
FIG. 4541

No. 12 will punch ⅛ in. hole in ⅛ in. iron.
No. 13 will punch ¼ in. hole in ¼ in. iron.
No. 14 will punch ⅜ in. hole in ⅜ in. iron.
No. 15 will punch ½ in. hole in ½ in. iron.



FIG. 4541

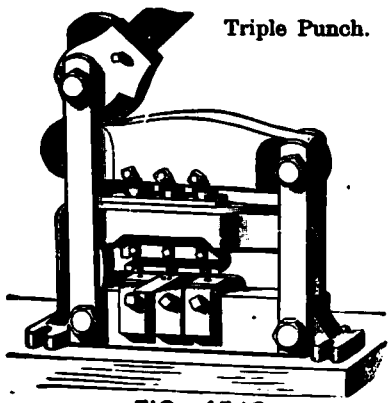
PRICES

Nos.		Each.
12	With 3/32 in. and ⅛ in. punch and die	$30 00
13	" ⅛, 3/16, ¼ in. " " "	40 00
14	" ¼, 5/16, ⅜ " " " "	50 00
15	" ¼, ⅜, ½ " " " "	60 00

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TRIPLE AND QUAD PUNCHES



Triple Punch.

FIG. 4542

DESCRIPTION AND PRICES
FIG. 4542

TRIPLE PUNCH.

Will punch a ⅝ in. hole in ⅝ in. iron. The machine is fitted regularly with ¼ in., 5/16 in. and ⅜ in. round punches and dies 1/32 in. large. Weight of machine, 150 lbs.

Complete, with three punches and dies, as above..... $25 00
With legs, extra..... 2 00

QUAD PUNCH.

It gives a blacksmith four punches, 5/16 in., ¼ in., 5/16 in. and ⅜ in., ready for instant use. There is no time lost in changing or adjusting tools. The lever operates with a cam movement, which greatly reduces the power needed for working it. A clean ⅜ in. hole can be easily punched in a cold piece of ⅝ in. bar iron with this machine. It occupies a small space. When bolted to the bench legs are not needed.

Complete, with four punches and dies, as above..... $30 00
With legs, extra..... 2 00

EXTRA PUNCHES AND DIES.

Round Punches,	⅛ to 7/16 in.	Each....	$0 50	Square Punches,	⅛ to 7/16 in.	Each....	$0 75
" "	½ "	"	75	" "	½ "	"	1 00
" Dies,	⅛ to 7/16 "	"	75	" Dies,	⅛ to 7/16 "	"	1 00
" "	½ "	"	1 00	" "	½ "	"	1 25

Special Dies and any shaped Punches will be furnished to order at reasonable prices.

HAND PUNCHING MACHINE

DESCRIPTION AND PRICE
FIG. 4543

The block is made of cast iron with flanges, with which it can be fastened to the bench in a few moments. All the other parts are made of wrought iron and steel, and are finely finished. Three punches and dies accompany each machine, ⅛ in., 3/16 in. and ¼ in. diameter. This machine will punch ¼ in. hole in ¼ in. iron, ⅜ in. hole in ⅛ in. iron, or less, etc. In working these machines the operator stands in front and pulls the lever towards him, thus being able to adjust his work and do the same very rapidly. It punches 3 inches from the edge. Weight of machine, 50 pounds. The lever is 3 feet long and is detachable.

Machine, including three punches and dies, ⅛ in. 5/16 in. and ¼ in., each $16.00.

Always specify the size of punches and dies wanted when ordering.

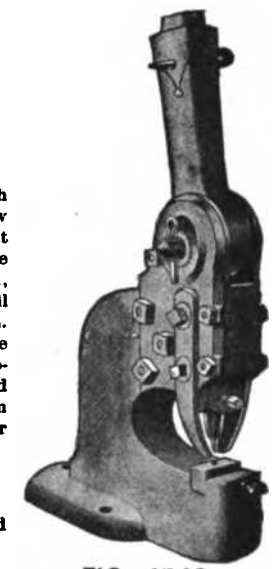


FIG. 4543

HAND PUNCH

Steel Screw Punch.

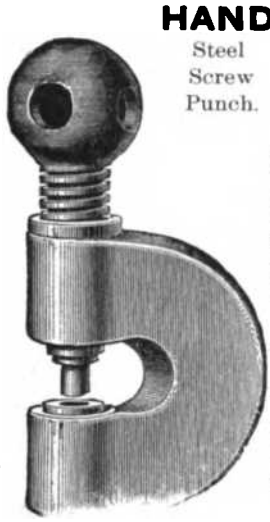


FIG. 4544

PRICES, FIG. 4544

Sizes, Nos.	To Punch Iron. Inches.		Inches.	Center of Punch to Back of Gap, Inches.	Weight, Pounds.	Each.
1	½	through	¼	1⅝	24	$20 00
2	¾	"	⅜	2	38	25 00
3	15/16	"	⅝	2½	53	41 00
4	⅞	"	¾	2½	88	50 00

Extra round punches and dies $4.00 per pair.

Ratchet lever supplied to each for $7.50 extra.

If the above are required for punching similar size holes in harder material than iron, use one size larger machine.

SAMSON PUNCH

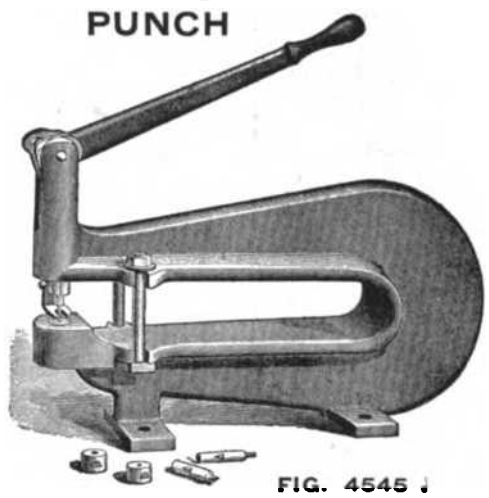


FIG. 4545

DESCRIPTION AND PRICE, FIG. 4545

No. 5. Will punch No. 9 iron with stay bolts and No. 12 iron without stay bolts. Each machine is furnished with three sets of dies and punches, ⅛ in., 5/16 in. and ¼ in. Depth of gap, 15 in. Will center on 80 in. sheets without stay bolts and 7 in. sheets with stay bolts.

Each, $20.00.

PRICES, FIG. 4546

Sizes, Nos.	Sizes of Hole, Inch.	Iron, Inch.	Depth of Jaw, Inches.	Weight, Pounds.	Each.
0	7/16	¼	2	21	$24 00
1	9/16	⅜	2¼	38	30 00
1A	⅝	½	5	50	40 00
1B	15/16	½	3¾	75	45 00
1C	13/16	½	6	88	55 00
2	15/16	½	2¾	70	40 00
3	15/16	⅝	3	90	60 00
3A	15/16	¾	3¾	105	70 00

SCREW PUNCH

Forged Steel.



FIG. 4546

SCREW PUNCHES

Forged Steel.



FIG. 4547

DESCRIPTION AND PRICES
FIG. 4547

These punches are forged entirely of crucible steel, are well made and proportioned. A full square thread is cut in a lathe, both on the screw and in the stock. The punch is held in the end of screw in an improved manner, and is easily removed for change of size.

No. 1	Punch, with one size punch and die; to punch ¾ in. hole in ¾ in. plate 2½ in. from edge.....	$75 00
" 1	Extra punch and die, each pair...	5 00
" 2	Punch, with one size punch and die; to punch ⅝ in. hole in ⅝ in. plate 2 in. from edge.....	40 00
" 2	Extra punch and die, each pair...	4 00
" 3	Punch, with one size punch and die; to punch ½ in. hole in 5/16 in. plate 1½ in. from edge.....	32 00
" 3	Extra punch and die, each pair...	3 50

Wrought Iron.

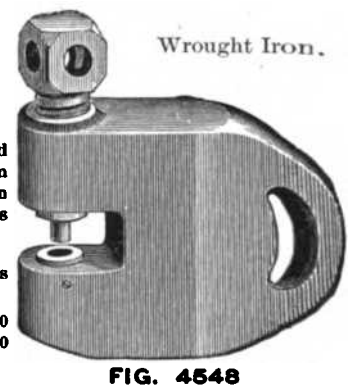


FIG. 4548

DESCRIPTION AND PRICES
FIG. 4548

These punches are forged of the best hammered iron, and are as well made as it is possible for them to be. A full square thread is cut in a lathe both on the screw and in the stock. The punches and dies are made to gauge and are interchangeable.

Will punch ¾ inch hole in ⅜ inch plate 2 inches from edge.

Punch, with one size punch and die..... $25 00
Extra punch and die, each pair..... 3 00

STEEL SCREW PUNCH

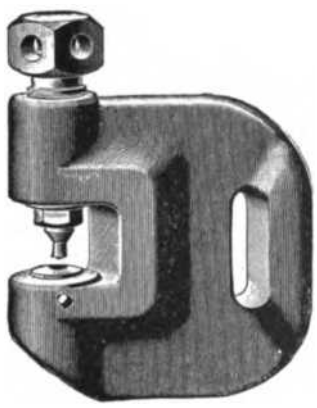


FIG. 4549

DESCRIPTION AND PRICES
FIG. 4549

Made from homogeneous cast steel of 80,000 lbs. tensible strength and machine cut square thread screws.

Sizes, Nos.	To Punch Iron. Inches.		Inches.	Center of Punch to Back of Gap, Inches.	Approximate Weight, Pounds.	Each.
6	5/16	through	¼	1⅛	15	$20 00
7	½	"	¼	1½	17	24 00
8	½	"	5/16	1½	27	30 00
9	¾	"	½	2	40	40 00
10	¾	"	¾	2½	60	60 00
11	¾	"	¾	3½	90	75 00
12	¾	"	¾	4	110	80 00

Punches and dies are supplied 1/32 inch larger unless ordered exact size. Price includes one round punch and die.

Extra round punches and dies for Nos. 6 and 7, per pair..... $3 50
Extra round punches and dies for Nos. 8 and 9, per pair..... 4 00
Extra round punches and dies for Nos. 10 to 12, per pair..... 5 00

DUPLEX LEVER SCREW PUNCH

PRICES, FIG. 4550

Nos.	To Punch Holes. Diameters, Inches.	Through Iron, Inches.	Center of Punch to Back of Gap, Inches.	Length of Heel, Inches.	Weight, Pounds.	Each.
1	½	¼	1⅛	2½	18	$31 00
2	¾	⅜	1½	2½	30	44 00
2A	¾	½	2	3	68	59 00
3	15/16	⅝	2	3	84	68 00
4	⅞	⅝	2¼	4½	132	104 00

Prices are without shoe, and include one round punch and die of the largest size and lever.

Extra round dies and punches, per pair... $4 00

If the above are required for punching similar size holes in harder material than iron, use one size larger machine.

Extra depth of gap made to order at special prices.

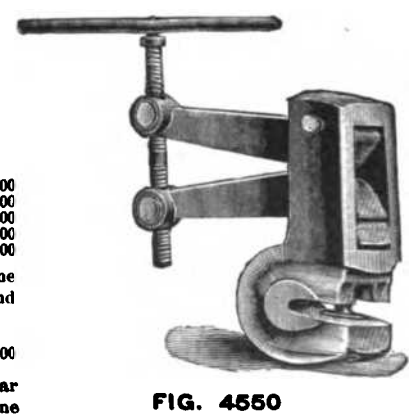


FIG. 4550

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HYDRAULIC SCREW PUNCH

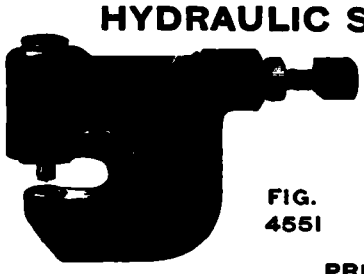


FIG. 4551

HORIZONTAL SCREW

This style of punch can be operated in a very small cramped place, and is especially useful on angles and braces, which are attached to plates, as in elevated railroad and bridge work. Punch can be operated at any angle.

PRICES

Sizes.	Diameters of Hole.	Thickness of Iron. Inches.	Depth of Jaw. Inches.	Nos. of Gland.	Nos of Punch.	Nos. of Die.	Weight, Pounds.	Each.
1	1 1/16	3/8	2	4	4	3	32	$64 00
2	1 3/16	1/2	2 5/8	5	5	4	60	90 00
3	1 5/16	3/4	3 1/8	5	5	4	90	110 00
4	1 5/16	1	4	6	6	4	140	140 00

One round punch and die furnished with each tool. Square or Oval Punches double the price of Round.

LIGHTNING PUNCHING PRESSES

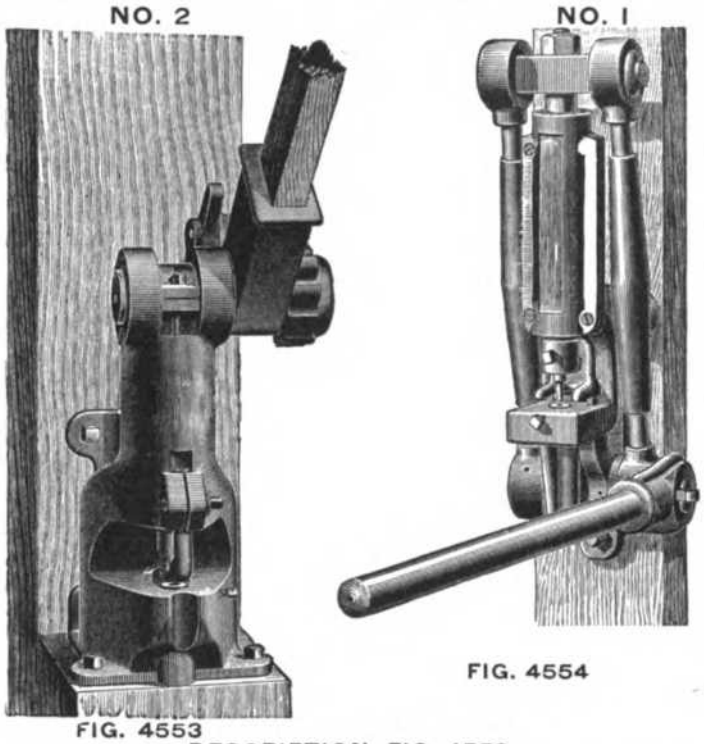


FIG. 4553

FIG. 4554

DESCRIPTION, FIG. 4553

Will punch ½ inch hole in iron 5/16 inch thick as far as 3 1/8 inches from edge of work. For convenience in using the larger sizes of punches and dies the ratchet may be brought into play by throwing in the dog. Two handles. Prices with punches and dies :

No. 622. Machine with sizes ¼, 5/16, ⅜ inches, each.....$45 00
" 623. " " " ⅛, 3/16, ¼, 5/16, ⅜ inches, each... 47 50

Extra punches, 50 cents each ; dies, 75 cents each. Weight, 250 pounds. Unless otherwise ordered, punches and dies will be supplied 1/32 inch over exact sizes.

DESCRIPTION, FIG. 4554

Will punch ¼ inch round hole in iron ¼ inch thick, or 5/16 inch round hole in iron 3/16 inch thick. It will punch as far as 1½ inches from edge of the work. Supplied with punches and dies, ⅛, 3/16, and ¼ inch. Unless otherwise ordered, punches and dies will be supplied 1/32 inch over exact sizes. Weight 80 pounds.

Price, complete.....$25 00

Extra punches or dies, 50 cents each. The handle may be set at any angle, up or down, to suit various kinds of work.

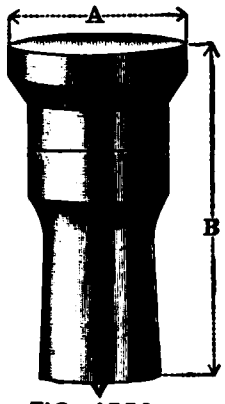


FIG. 4556

STANDARD PUNCH

PRICES, FIG. 4556

Nos.	Diameters A.	Lengths B.	Diameters C.	Diameters of Holes.	Each.	Per Dozen.
1	3/8	15/16	17/64	1/8 to 1/4	$0 40	$4 25
2	17/32	1 5/16	1 3/32	1/8 " 3/8	50	5 00
3	23/32	1 9/16	1 9/32	1/4 " 9/16	60	6 00
4	29/32	1 5/8	2 5/32	7/16 " 3/4	85	9 00
5	1 5/32	2 1/8	1 1/32	5/8 " 1	1 25	13 00
6	1 3/8	2 5/8	1 7/32	3/4 " 1 3/16	1 75	18 00
7	1 11/16	3	1 17/32	1 " 1½	2 75	24 00



FIG. 4555

SHEARING PUNCH

Where the thickness of the iron is less than one-half the diameter of the hole being punched there is a saving in power in using this type of punch, and the smaller the proportion the greater the saving. This allows a smaller tool to be used with this punch on thin material than would be necessary with a flat punch. Where the proportion is over one-half, the flat punch is better ; also less liable to break and at same time easier repaired. They fit the regular New Standard Punch, fitting as per Figs. 4558 and 4559.

PRICES

Nos.	Diams. of Head.	Lengths Over All.	Diams. of Body.	Diams. of Hole.	Each.	Per Dozen.
2	17/32	1 5/16	13/32	1/8 to 3/8	$0 50	$6 00
3	25/32	1 9/16	19/32	1/4 " 9/16	75	9 00
4	29/32	1 5/8	25/32	7/16 " 3/4	1 08	13 00
5	1 5/32	2 1/8	1 1/32	9/16 " 1	1 50	18 00
6	1 3/8	2 5/8	1 7/32	3/4 " 1 3/16	2 00	24 00
7	1 11/16	3	1 17/32	1 " 1½	3 00	36 00
8, 9, 10, 11, 12	To suit.	To suit.	To suit.			

STANDARD DIE

PRICES, FIG. 4557

FIG. 4557

Nos.	Diameters A.	Lengths B.	Diameters C.	Each.	Per Dozen.
0	¾	5/8	1/8 to 5/16	$0 75	$8 00
1	1	5/8	1/8 " 9/16	1 00	10 50
2	1 5/16	¾	3/8 " ¾	1 25	13 50
3	1½	1	3/8 " ⅞	1 50	16 00
4	1¾	1	½ " 1	2 00	22 00
5	2¼	1¼	¾ " 1¼	2 50	26 00
6	2¾	1¼	1 " 1¾	3 50	36 00

Square or Oval Punches and Dies double the price of Round.

STANDARD PUNCH STOCK AND COUPLING

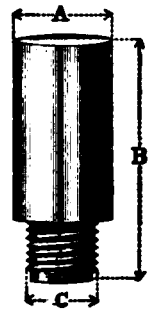


FIG. 4558

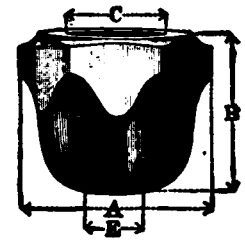


FIG. 4559

Nos.	Stock. Diameters A.	Stock. Lengths B.	Stock. Diameters C.	Stock. Nos. of Machines.	Stock. Prices.	Couplings. Diameters A.	Couplings. Lengths B.	Couplings. Diameters C.	Couplings. Diameters E.	Couplings. Nos. of Machines.	Couplings. Prices.
0	½	2¼	½	1, hand	$0 85						
1	5/8	1 5/8	½	2, comb	0 95	¾	1 13/16	½	9/32	1, hand; 2, comb	$0 90
2	5/8	1 13/16	1 1/16	2, hand	1 00	1	1 1/16	1 1/16	7/16	2, hand	1 00
3	5/8	1 7/8	1 5/16	3, hand; 4, " ; 3, comb	1 25	1 3/8	1 5/16	1 5/16	5/8	3, comb; 3, hand; 3½, " ; 4, "	1 25
4	¾	1 15/16	1 5/16	3½, hand	1 50	1 7/8	1¼	1 5/16	1 3/16	5, "	1 50
5	7/8	2 1/8	1 5/16	5, " ; 6, "	1 75	1 7/8	1¼	1 5/16	1 5/16	6, "	1 75

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U. S. STANDARD PUNCHES

PRICES

Nos. of Punches.	Punches, Each.	Couplings.	Nos. of Couplings.	Dimensions of Couplings for Stocks—Diams. of Thread, Inches.	Length of Thread, Inches.	No. of Thds., Per In.
0	$0 35	$1 00	0	11/16	1/2	14
1	40	1 50	1	7/8	5/8	12
2	60	2 00	2	1 1/8	11/16	10
3	90	2 30	3	1 13/32	3/4	10
3 (s)	70	2 30	3 (s)	1 13/32	3/4	10
4	1 40	2 50	4	1 11/16	3/4	10
4 (s)	1 00	2 50	4 (s)	1 11/16	3/4	10
5	2 00	2 80	5	2	13/16	10
5 (s)	1 50	2 80	5 (s)	2	13/16	10

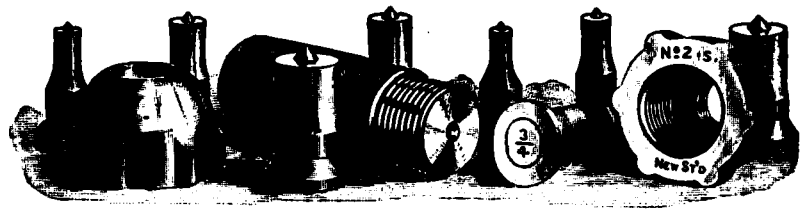


FIG. 4560

No. 2 stock holds punches from 9/32 to 13/16 inch diameter. These work well on screw punches.

SHEARING PUNCHES WITH MOVABLE CENTER

1½ to 4 inches diameter.

PRICES

Nos. of Punches.	Punches, Each.	Couplings.	Nos. of Couplings	Dimensions of Couplings for Stocks—Diams. of Thread, Inches.	Length of Thread, Inches.	No. of Thds. Per In.
6	$4 00	$3 00	6	2 5/16	7/8	10
7	6 00	3 50	7	2 5/8	7/8	10
8	9 00	4 00	8	3	15/16	10
9	12 00	4 50	9	3½	1	10
10	16 00	5 00	10	4	1 1/16	10
11	20 00	6 00	11	4¾	1 1/8	10

Square punches and dies double the price of round.

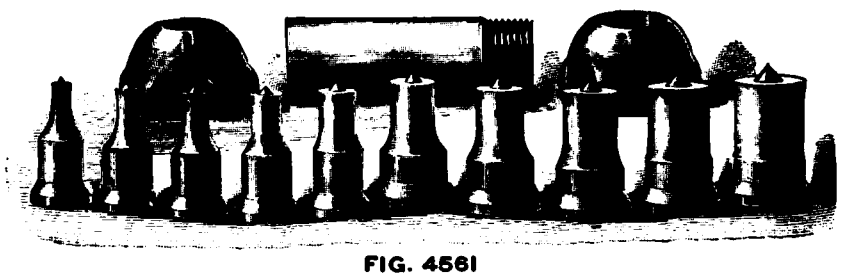
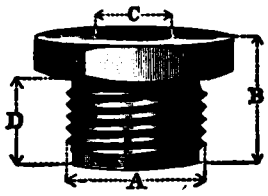


FIG. 4561

No. 3 stock, couplings and punches, 9/32 to 1 1/16 inch diameter.

NEW STANDARD PUNCH GLANDS



GLAND
FIG. 4563

In hydraulic and screw punches, where the jaw is very low, there is not room enough for stocks and couplings, and for this class of tools we furnish the gland shown instead of the coupling.

Nos.	Diameter A.	Length B.	Diameter C.	Length D.	Prices.
1	....	....	....	....	$1 00
2	1	3/4	7/16	1/2	1 15
3	1 1/8	13/16	5/8	9/16	1 40
4	1 5/16	13/16	13/16	9/16	1 65
5	1 5/8	7/8	1 1/16	5/8	2 15
6	1 7/8	1 1/16	1 1/4	11/16	2 50
7	2 1/8	1 3/16	1 9/16	13/16	3 00

STANDARD DIES



FIG. 4562

Nos. of Die.	Outside Dimensions—Diams. of Die, Inches.	Outside Dimensions—Thickness of Die, Inches.	Inside Holes. Standard Sizes for Punches.	Prices.
1	1 1/4	3/4	From 1/8 to 9/16 in. diam.	$1 00
2	1 5/8	7/8	" 9/32 " 13/16 "	1 50
3	2	1	" 9/32 " 1 1/16 "	2 00
5	2 7/8	1 1/8	" 15/16 " 1 1/16 "	4 50
7	3 7/8	1 1/4	" 1 5/16 " 2 1/16 "	8 00
9	5 1/8	1 3/8	" 2 1/16 " 3 1/16 "	14 00
11	6 3/8	1½	" 3 1/16 " 4 1/16 "	20 00

Other forms of dies and stocks for holding the punches made to order from drawings or samples. Prices, according to the time and steel used in making.

CIRCULAR WRENCHES FOR COUPLINGS

FIGS. 4560 AND 4561

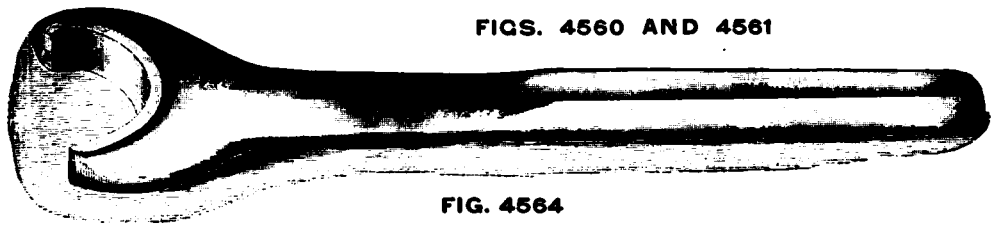


FIG. 4564

Prices, each.....	$0 10	$0 10	$0 15	$0 20	$0 20	$0 25	$0 25	$0 30	$0 30	$0 35	$0 40	$0 45	$0 50	$0 60	$0 75
Nos. of coupling.	0	1	2	3	3 (s)	4	4 (s)	5	5 (s)	6	7	8	9	10	11



FIG. 4565

PUNCH BUSHINGS

For users of small punches, who ruin a great many by breakage or excessive wear, we furnish what is termed a punch bushing, which, when used in connection with stock and coupling, Figs. 4558 and 4559, simplifies the making of the punches and greatly reduces the cost. New punches are made by cutting the required length from a rod and upsetting the end in the form of a head with a hammer. There is no set screw in the way or to strip the thread, and the punch is held central and firm.

PRICES

No. 1 coupling	$0 90
" 2 "	1 00
" 3 "	1 25
" 4 "	1 50

For coupling dimensions, see Figs. 4558 and 4559.

NEW SPIRAL TWISTER

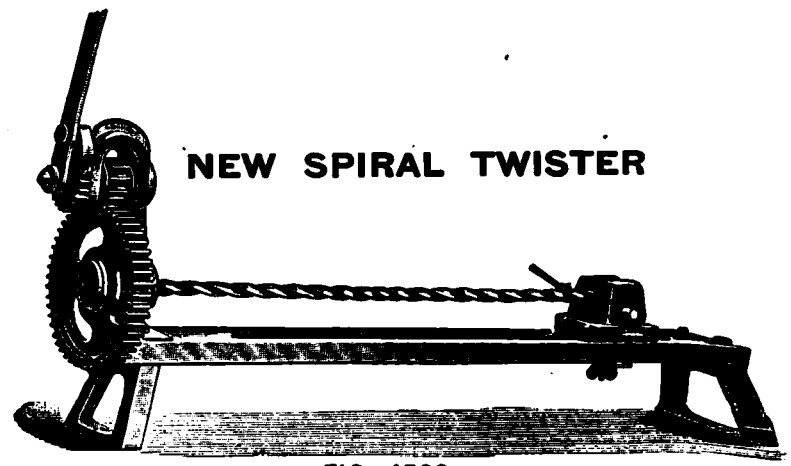


FIG. 4566

Put the bar in the square hole of large gear wheel, fasten the other end tight at full length of jaw in vise, then fasten thumb nut at bottom of vise—but slightly only, so that the vise will be able to keep moving on bed towards the gear wheel while the iron is twisted. After the bar is twisted to the required shape, first open pawl to take the strain out of the iron before relieving it from the vise. It will twist cold iron up to one inch square.

Price, each..... $50 00

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BLACKSMITHS' FORGES

BUFFALO LEVER HANDLE FORGE

GEARED

PRICES, FIG. 4567

No. 0 Without water tank.....$50 00
No. 0 With water tank..... 54 00

Height, 30 inches; size of hearth, 28x40 inches; fan, 14 inches; weight, 250 lbs.; with water tank, 300 lbs.



FIG. 4567

It will produce a welding heat on 3 inch iron in 5 minutes, on 4 inch iron in 10 minutes, and on heavier work, if desired, in the same proportion of time.

BUFFALO POWER FORGE

PRICES, FIG. 4568

No. 0 Power, with water tank.....$58 00
" 0 " without water tank..... 54 00
" 0 " with water tank and hand power attachments 62 00
" 0 " " hand power and without water tank... 58 00
" 1 " without water tank..... 45 00
" 1 " with hand power attachments..... 48 00

No. 0 Fan, 14 inches; size, 28x50 inches; weight, 250 lbs.
No. 1 Fan, 10 inches; size, 31x27 inches; weight, 150 lbs.

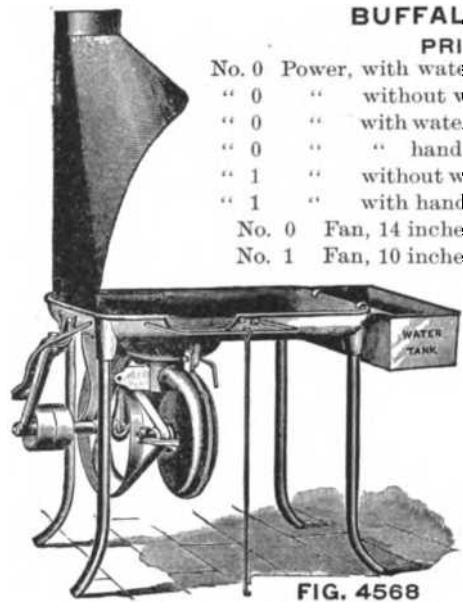


FIG. 4568

DESCRIPTION, FIG. 4568

These forges are for general work in shops where power is used, and on a great variety of work will save the labor of a helper. Built complete, with tight and loose pulleys; also cut off for the blast, by which the fire can be regulated to any degree.

BUFFALO MACHINISTS' FORGES

NO. 1. HALF OPEN HOOD

PRICE, FIG. 4569

No. 1.—Half open hood; height, 29 in.; fan, 10 in.; hearth, 21 x 27 in.; weight, 140 lbs.

Each, $40.00.

These forges will produce a welding heat on 2½ to 3 inch iron in from 5 to 10 minutes, and will do heavier work if required.



FIG. 4569

NO. 2. CLOSED HOOD

PRICE, FIG. 4570

The forges with closed hoods are strongly made of sheet iron, completely inclosing fireplace, and are fitted with a large sliding door in front and small one in rear for manipulating fire, etc. Thus equipped, the escape of sparks, fumes and smoke is prevented, and adapts them for use in annealing and refining metals, and in planing mills, furniture factories, sawmills, oil refineries, sugar works, etc.



FIG. 4570

No. 2.—Closed hood; capacity same as No. 1; weight, 150 lbs. Price, $42.00.

TOOLMAKER'S FORGE

PRICE FIG. 4571

This forge is furnished with half open hood. It will produce a welding heat on iron 1½ inches in diameter in 5 minutes, and also handle heavier work if required. They are especially recommended for the service specified on account of the size of the fireplace. Die sinkers, metal and tool makers, wood working houses, locksmiths and jewelers find this forge invaluable for heating and tempering tools of all kinds.

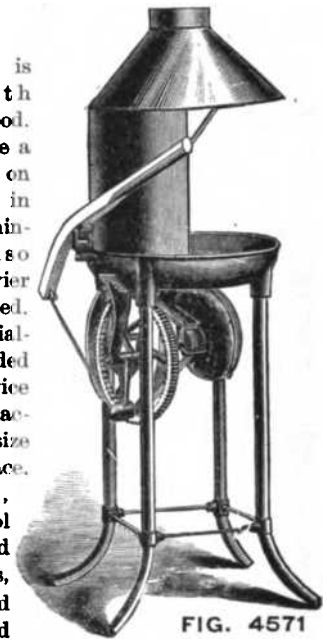


FIG. 4571

No. 4.—Half open hood; height, 33 inches; size of hearth, 18 inches diameter; weight, 80 lbs. Each, $27.00.

BUFFALO BOILER-MAKER'S FORGE



FIG. 4572

DESCRIPTION, FIG. 4572

No boiler shop is completely equipped without forges of this design. They are also suitable for iron bridge and ship builders, railroad contractors, and for general outdoor work. As will be observed by reference to cut, four handles are provided for convenience in easily moving the forge from place to place. The deep fireplace peculiarly fits this forge for heating rivets, and its capacity is guaranteed sufficient for one boy to continuously supply from three to four gangs of riveters.

PRICE

No. 3.—Height, 29 inches; fan, 10 inches; hearth, 21 x 27 inches; weight 140 lbs. Each, $36.00.

PORTABLE RIVET FORGE

DESCRIPTION FIG. 4573

The capacity of this forge is the same as the No. 4, and it is especially suitable for tank builders, elevated railroad contractors, repair work on boilers, bridges, etc. The forge is quite light, strong and compact, and may be very easily carried about the country. Widely used by structural iron workers.

PRICE

No. 5.—Height, 33 in.; hearth, 18 in. diameter; weight, 75 lbs. Each, $24.00.

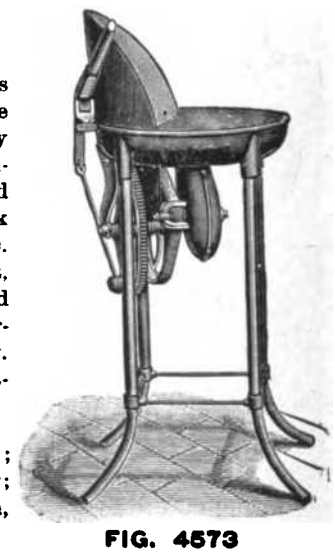


FIG. 4573

MANNING, MAXWELL & MOORE, 85, 87 AND 89 LIBERTY STREET, NEW YORK

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PORTABLE FORGES

BUFFALO JEWELER'S FORGE

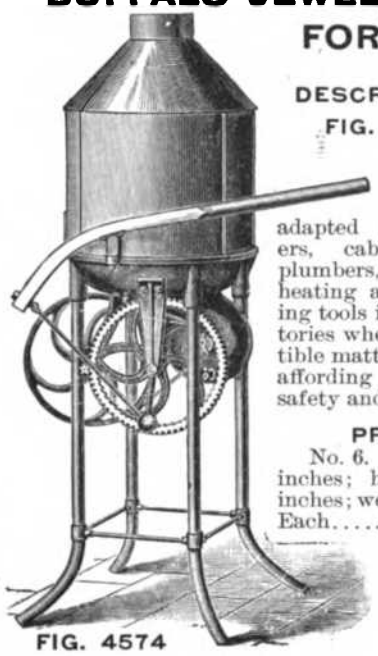


FIG. 4574

DESCRIPTION
FIG. 4574

It is especially adapted for jewelers, cabinetmakers, plumbers, and for heating and tempering tools in manufactories where combustible matter is a basis, affording maximum safety and economy.

PRICE

No. 6. Height, 33 inches; hearth, 18 inches; weight, 80 lbs. Each..... $30 00

BUFFALO FORGE
WITH FOOT POWER ATTACHMENT

For Boilermakers, Machinists, etc.

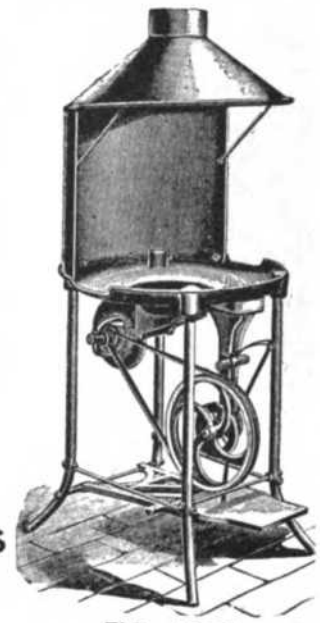


FIG. 4575

DESCRIPTION
FIG. 4575

The fan being driven by foot power affords the free use of both hands and minimum ease of operation.

PRICE

No. 13. Half open hood; height, 30 inches; hearth, 25 inches; weight, 135 pounds.
Each..... $35 00

Also furnished with closed hood. Price on application.

BUFFALO CRANK FORGE

For Boilermakers, Machinists, etc.



FIG. 4576

DESCRIPTION

Hearth, 25 inches; fan, 10 inches in diameter.

PRICE

Each..... $24 00

IMPROVED BLACKSMITH'S LEVER FORGE
NO. 1



FIG. 4577

DESCRIPTION, FIG. 4577

Improved Blacksmith's Lever Forge No. 1 has a blast wheel built precisely like blast wheels in steel pressure power blowers, with sides closed with sheet steel and with paddles and partitions so shaped with pockets that the wind is held together and delivered into the blast or fire regularly. A ball joint brass oscillating journal bearing is used on this forge, which prevents all twisting and binding of the bearings. The oil chambers or reservoirs, when filled, hold oil for lubricating the bearings automatically six months without further attention. The bearings, running in oil as they do, run smooth and easy. The brass bearings are adjustable over the entire length of the bearing with hardened steel end screws with lock nuts and fiber washers for taking up all end wear on the fan. The hearth is 32 x 45 inches, inside measurement. The slope bottom coal box is entirely out of the way, being beneath the level of the bottom. At the deep end of the sloped bottom box the coal may be kept as wet as water will make it, while on top it can be kept dry or mixed to suit the work being done. The fan is 16 inches in diameter.

PRICES

No. 1. Hearth, 32 x 45 inches; height, 30 inches; fan, 16 inches, with pressure blast wheel; weight, 350 pounds. Without water tank.
Each..... $50 00

With water tank, weight, 375 pounds.
Each..... 55 00

BOILERMAKER'S LEVER FORGE
WITH SHIELD

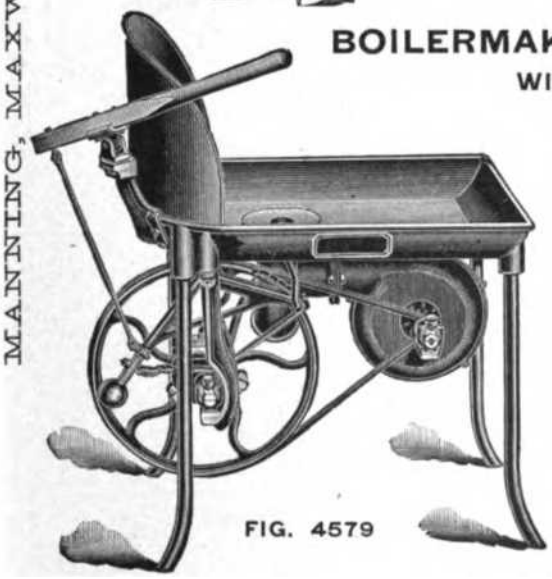


FIG. 4579

DESCRIPTION, FIG. 4579

This forge is larger in size of hearth and fan than customary for this class of forge. The increase of hearth in length makes it a very desirable and convenient forge, allowing space for coal, or very handy for laying irons or tools on when at work. In connection with the increase in size it is also a very desirable and quiet running forge and especially adapted for boilermakers, iron bridge and ship builders, railroad contractors, miners, tank builders, etc. Will produce a welding heat on 3 inch iron in five minutes. It is made with ball tuyere iron. The ball joint brass oscillating journal bearings used on this forge require oiling but once in 6 months.

PRICE

No. 2. Hearth, 23 x 35 inches; height, 30 inches; fan, 12½ inches; weight, 120 pounds.
Each..... $36 00

LEVER AND POWER FORGE COMBINED

For Heating Band Saw Brazing Irons.

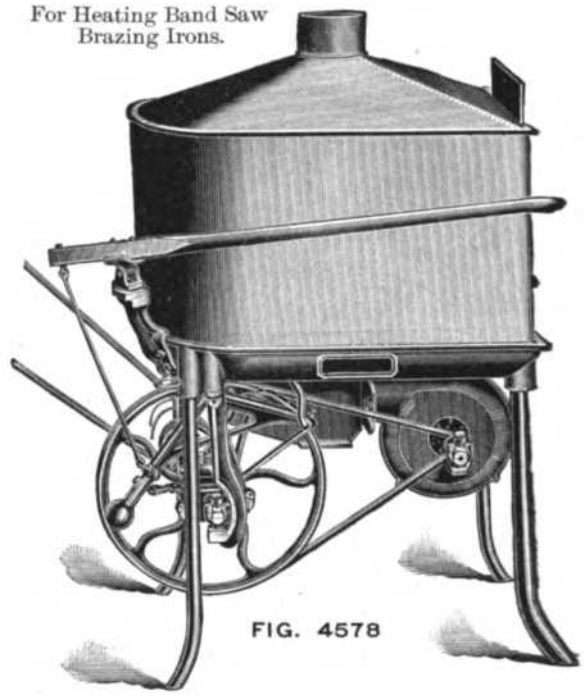


FIG. 4578

DESCRIPTION

This lever and power forge combined is intended for heating band saw brazing irons in sawmills, planing mills, furniture factories, etc. The tuyere iron in this forge is 12 inches long by 4 inches wide; will make a fire pulley 15 inches long if desired. It has a closed hood with a sliding door at its end, making it entirely safe where combustible material is kept. The combination of hand and power is very convenient where power is not ready for use at all times, which is often the case in sawmills, etc., as the brazing of saws is often done after the regular working hours. The combination of hand and power attachments are independent of each other, either being ready for operation when called upon without a single change in the forge. The forge is supplied with a blast gate, for regulating the blast when run by power.

PRICE

No. 4¾. With full hood. Hearth, 23 x 35 inches; height, 30 inches; fan, 12½ inches; weight, 200 lbs.
Each..... $55 00

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PORTABLE FORGES

STANDARD MACHINISTS' LEVER FORGES

WITH HALF HOOD



FIG. 4580

PRICE, FIG. 4580

No. 3 Standard Machinists' Portable Lever Forge is specially designed and constructed for machinists, plumbers, miners, marble workers, millers, railroad repair shops, locksmiths, planters and manufacturers in general. It is guaranteed to produce a welding heat on 3 inch iron in five minutes. This forge is made with ball Tuyere iron. The ball joint brass oscillating journal bearings used on this forge require oiling but once in 6 months.

No. 3, with half hood, hearth, 23 x 35 inches, height, 30 inches, fan, 12½ inches, weight, 130 pounds $40 00

WITH FULL HOOD



FIG. 4581

PRICE, FIG. 4581

No. 4 Standard Machinists' Lever Forge with full hood is precisely in lever motion; hearth and fan like forge No. 3, Fig. 4580. The closed hood has two doors, one in front and one in the rear, thus preventing escape of sparks, fumes or smoke, and is used in furniture factories, saw and planing mills, oil refineries, by jewelers, dentists, in varnish works, etc. The ball joint brass oscillating journal bearings used on this forge require oiling but once in 6 months. No. 4, with full hood, hearth, 23 x 35 in., height, 30 in., fan, 12½ in., weight, 140 lbs.....$42 00

STANDARD RIVET FORGE

WITH SHIELD

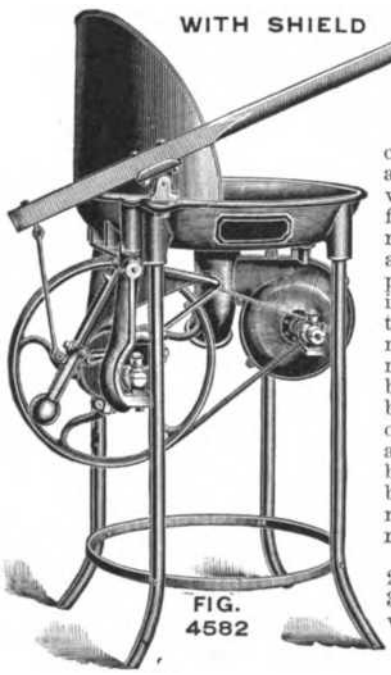


FIG. 4582

PRICE, FIG. 4582

This rivet forge is a strong, compact and light forge for all kinds of light, portable work; is a very desirable forge for inside use where noise is an objection, such as jewelers', bicycle repairers', heating and tempering tools, in connection for the use of tank builders, miners and prospectors, making repairs on boilers, bridges, by elevated railroad builders, etc. It is easily carried, being light, strong and compact. The ball joint brass oscillating journal bearings used on this forge require oiling but once in 6 months.

No. 5, with shield, hearth, 22 inches in diameter, height, 33 inches, fan, 10 inches, weight, 80 pounds ...$24 00

STANDARD TOOLMAKERS' FORGE

WITH HALF HOOD

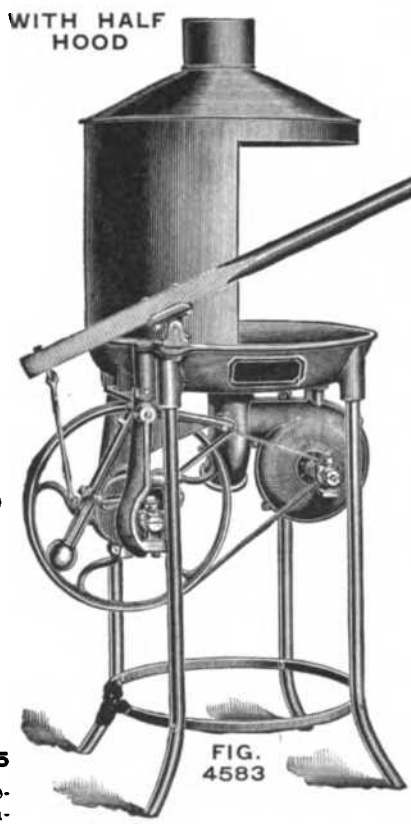


FIG. 4583

STANDARD JEWELERS' FORGE

WITH CLOSED HOOD

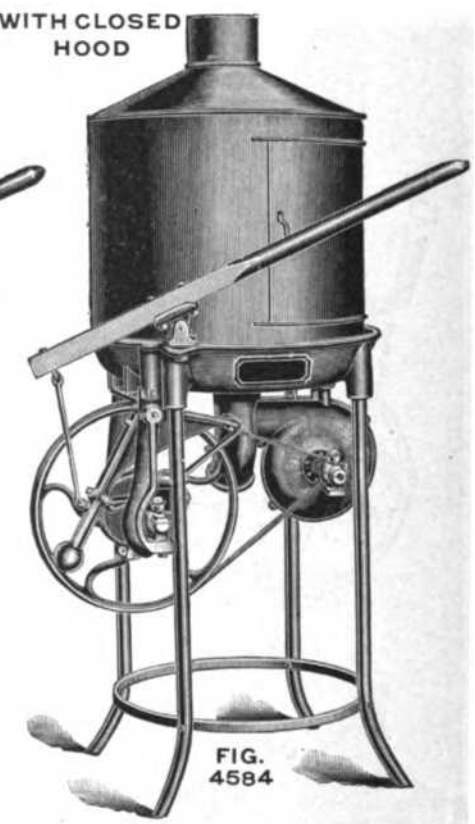


FIG. 4584

PRICE, FIG. 4583

This forge is a strong and light forge for all kinds of light, portable work; a very desirable forge for inside use where noise is an objection, such as jewelers', bicycle repairers', tempering tools, bridge and tank builders, miners, elevated railroads, etc. The ball joint brass oscillating bearings used on this forge require oiling but once in 6 months.

No. 6, with half hood, hearth, 22 inches in diameter, height, 33 inches, fan, 10 inches, weight, 85 pounds.....$27 00

PRICE, FIG. 4584

This forge is used where combustible material is kept, also by jewelers, locksmiths and pattern makers. The ball joint brass oscillating bearings used on this forge require oiling but once in 6 months.

No. 7, with closed hood, hearth, 22 inches in diameter, height, 33 inches, fan, 10 inches, weight, 90 pounds.....$30 00

NEW MODEL FORGE

FOR BRIDGE, BOILER AND ELEVATED RAILROAD BUILDERS, ETC.

WITH SHIELD

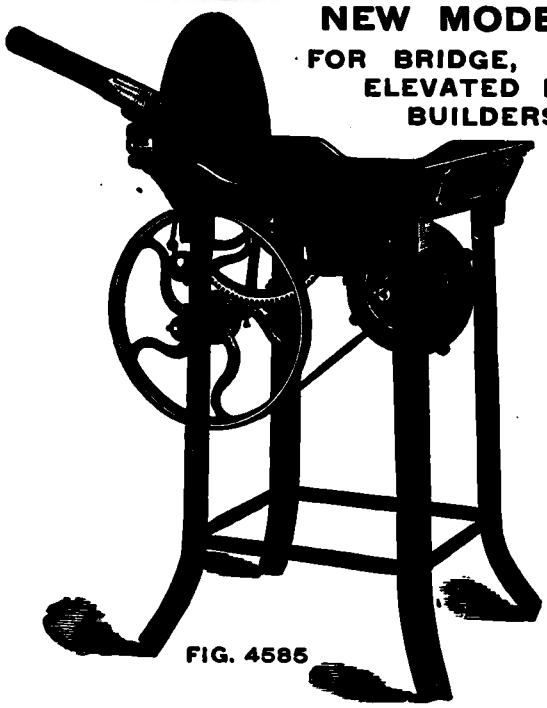


FIG. 4585

PRICES, FIG. 4585

This forge is especially designed for miners, prospectors, farmers, bridge, boiler, tank and elevated railroad builders, etc. The motion is a very simple device. It is a self acting ratchet; no springs or anything to get out of order. It is made from the very best material. The lever is connected with a segment of gears, which speeds the driving wheel up to a very high speed. It requires a very slight movement of the lever to get the strongest blast.

No. 103, with shield, hearth, 18 x 20 inches, height, 30 inches, fan, 9 inches, weight, 80 pounds, $24 00

No. 104, with half hood, hearth, 18 x 20 inches, height, 30 inches, fan, 9 inches, weight, 85 lbs., $27 00

NEW YORK, 83, 85, 87, AND 89 LIBERTY STREET, MANNING, MAXWELL & MOORE,

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PORTABLE FORGES

IMPERIAL BLACKSMITH'S FORGE
WITH HALF HOOD ONLY



FIG. 4586

This Blacksmith's Forge has a self-acting ratchet on the lever motion. No springs nor anything to get out of order. The three self-acting pawls or ratchet dogs are made of hardened tool steel, which will stand years of hard work without showing wear. The hearth of this forge is made large and commodious. The fan has a direct blast into the fire and will produce a large and steady blast for heavy and all kinds of blacksmith work.

All the bearings have oil cups, and in every respect it is a well finished forge.

PRICES

No. 81. Hearth, 32 x 45 in.; height, 30 in.; fan, 14½ in.:
Without water tank, weight 250 pounds.....$50 00
With water tank, weight 275 pounds 55 00

AGRICULTURAL LEVER FORGES
WITH SHIELD

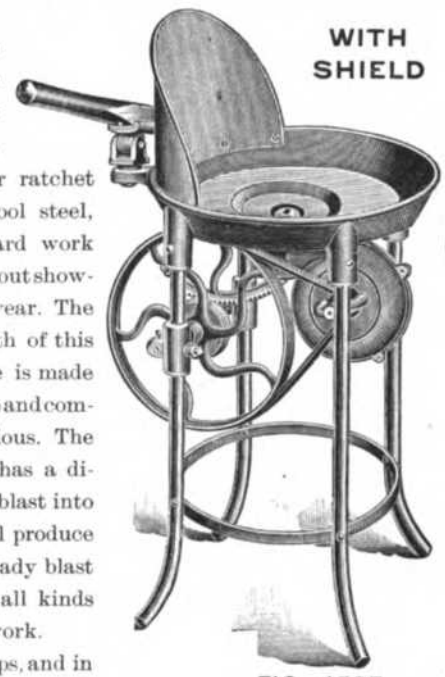


FIG. 4587

DESCRIPTION

This forge fully meets the demands of farmers and all kinds of light repairing work.

PRICE

No. 150, with shield. Size of hearth, 18 in. diam., 4 in. deep; weight, 65 pounds.; height, 30 in..... .....$14 00

WITH HALF HOOD

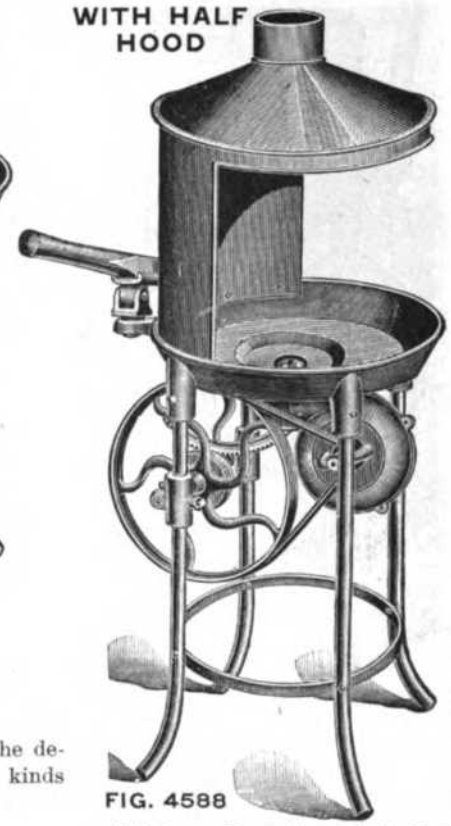


FIG. 4588

This Lever Forge is precisely like No. 150, Fig. 4587, with the exception of the half hood.

PRICE

No. 151, with half hood. Size of hearth, 18 in. diam.; fan, 8 in. diam.; weight, 65 lbs.; height, 30 in.....$16 00

IMPERIAL BOILER-MAKER'S FORGE
WITH SHIELD



FIG. 4589

This forge has the same lever motion as No. 81. Fig. 4586. The bearings all have oil cups, and in every respect is a well finished forge, with large size hearth and fan.

This forge is especially adapted for boilermakers, iron bridge and shipbuilders, railroad contractors, miners, tank builders, etc.

PRICE

No. 82, with shield. Hearth, 23 x 35 in.; height, 30 in.; fan, 12½ in.; weight, 120 pounds.....$36 00

IMPERIAL MACHINIST'S FORGE
WITH HALF HOOD



FIG. 4590

PRICE, FIG. 4590

The bearings all have oil cups, and in every respect it is a well finished forge, with large hearth and fan. This forge is adapted for machinists, plumbers, miners, marble workers, millers, railroad repair shops, locksmiths, planters, etc.

No. 83, with half hood. Hearth, 23 x 35 in.; height, 30 in.; fan, 12½ in ; weight, 130 pounds.....$40 00

IMPERIAL FORGE
WITH FULL HOOD

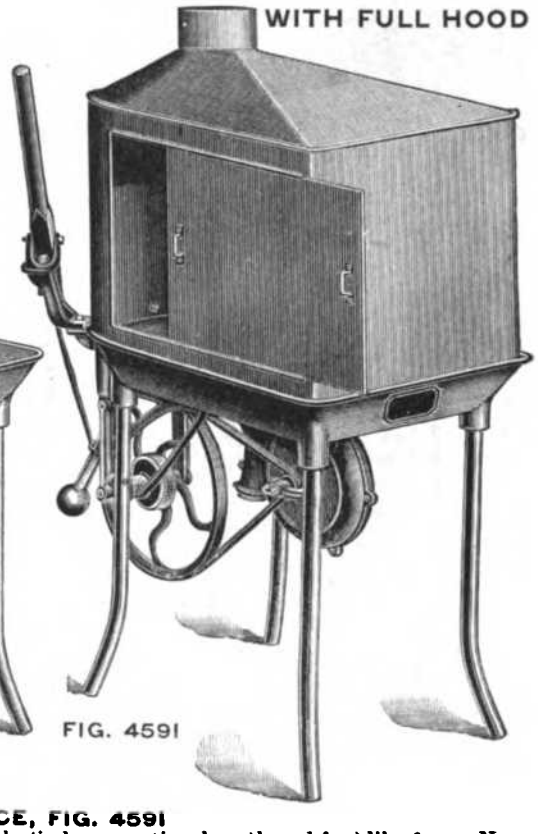


FIG. 4591

PRICE, FIG. 4591

This forge, with full hood, is precisely (in lever motion, hearth and fan) like forges Nos. 82 and 83, Figs. 4589 and 4590. The closed hood has two doors, one in front and one in the rear, thus preventing escape of sparks, fumes or smoke, and is used in furniture factories, saw and planing mills, oil refineries, jewelers', dentists', varnish works, etc.

No. 84, with full hood. Hearth, 23x35 in.; height, 30 in.; fan, 12½ in.; weight, 140 lbs.; $42.00

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IMPERIAL TOOLMAKERS' FORGES

IMPERIAL RIVET FORGE WITH SHIELD

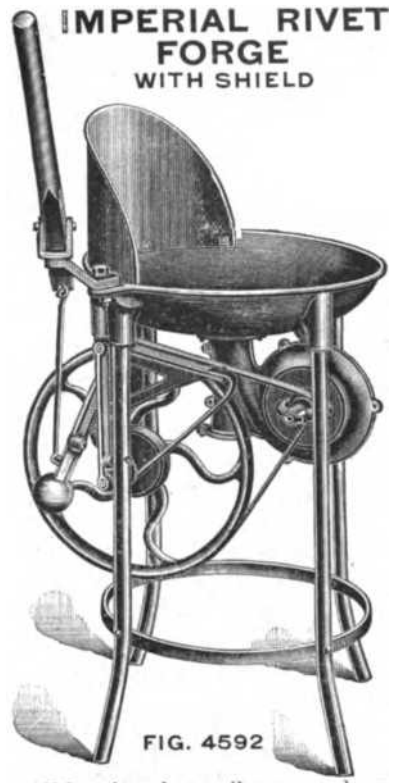


FIG. 4592

All bearings have oil cups, and are handsomely finished. It is a strong and light forge for all kinds of light portable work, also is a very desirable forge for inside use, such as jewelers, bicycle repairers, heating and tempering tools in connection for the use of tankbuilders, miners and prospectors, making repairs on boilers, bridges, by elevated railroad builders, farmers, etc. It is easily carried about, being light, strong and compact.

PRICE

No. 85, with shield. Hearth 22 in. diameter, height 33 in., fan 9½ in. diameter, weight 80 lbs.....$24 00

WITH HALF HOOD

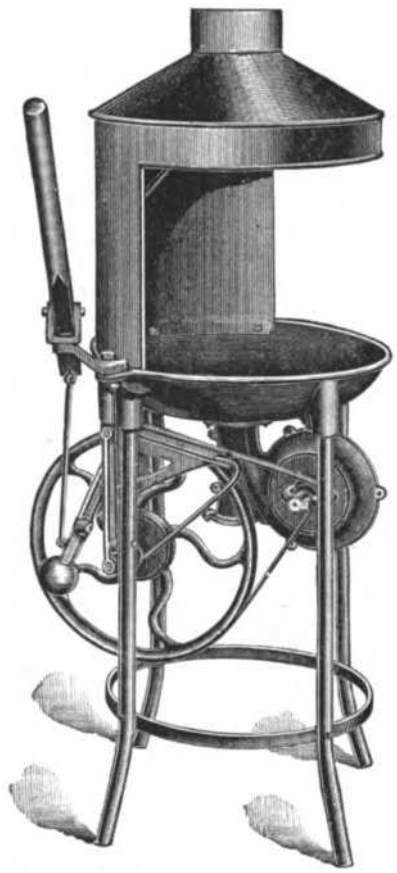


FIG. 4593

DESCRIPTION, FIG. 4593

This toolmakers' forge with half hood is precisely the same in lever motion, construction and finish as Fig. 4592. It is adapted for tempering tools, for elevated railroads, tank and bridge builders, miners, prospectors, boiler repairing, farmers, etc.

PRICE

No. 86, with half hood. Hearth 22 inches diameter, height 33 inches, fan 9½ inches diameter, weight 90 lbs.....$27 00

DESCRIPTION, FIG. 4594

This forge with full hood is precisely like Nos. 85 and 86, Figs. 4592 and 4593, with the addition of a full hood, making it a very desirable forge for use where combustible material is kept or preventing the escape of sparks or fumes.

PRICE

No. 87, with closed hood. Hearth 22 in. diameter, height 33 inches, fan 9½ inches, weight 90 lbs.....$30 00

WITH FULL HOOD

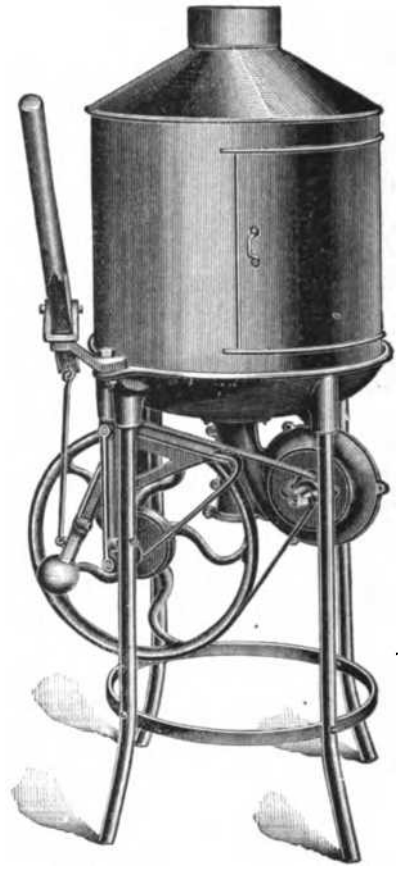


FIG. 4594

UNIVERSAL FORGES

WITHOUT GEARS. WITH BELTS

BLACKSMITHS' WITH HALF HOOD

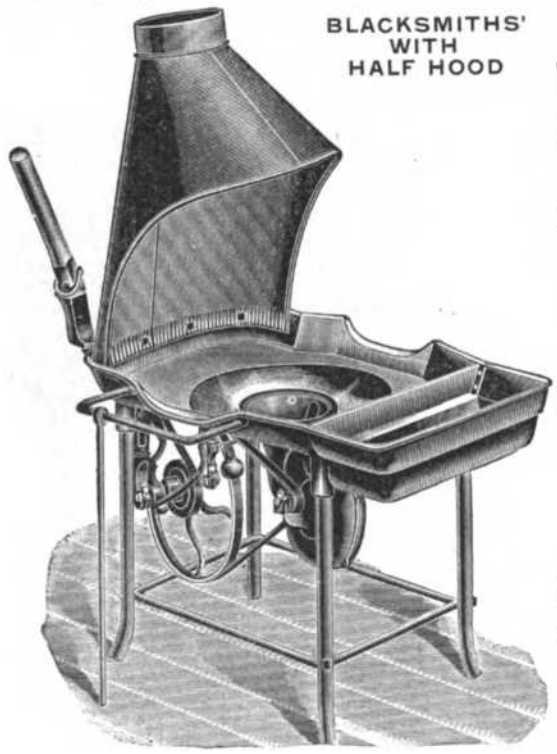


FIG. 4595

This forge is especially adapted for all kinds of heavy carriage and blacksmith work, having a large fire pan with sufficient blast for the heaviest kind of work. It will make welding heat on 3½ inch iron in ten minutes.

PRICES

No. 130, with half hood. With water tank complete. Height 30 in., fan 14 in., fire pan 33x46 in., weight 325 lbs., $50 00. Extra water tank, $5 00.

MACHINISTS' WITH HALF HOOD

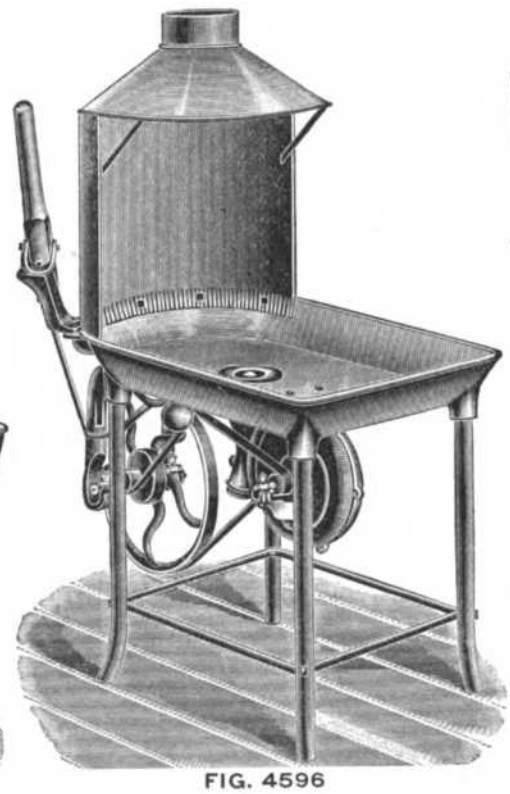


FIG. 4596

PRICES, FIG. 4596

No. 131, with half hood. Height 30 inches, fan 12 inches, fire pan 23x35 inches, weight 145 lbs.....$40 00

No. 132, with closed hood. Height 30 inches, fan 12 inches, fire pan 23x35 inches, weight 160 lbs.....$42 00

With water tank, $4 00 extra.

BOILERMAKERS' WITH SASH



FIG. 4597

This forge was designed especially for boilermakers, ship builders, and railroad construction.

PRICES

No. 133, without hood. Height 30 inches, fan 12 inches, fire pan 23x35 inches, weight 135 lbs.....$36 00

With water tank, $4 00 extra.

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PORTABLE FORGES

UNIVERSAL TOOLMAKER'S FORGE

Without Gears.
With Belts.



FIG. 4598

PRICES
FIG. 4598

No. 134. Half hood, height 33 inches, fire pan 18 inches diam., weight 75 lbs., each..$27.00

No. 136. Closed hood, height 33 inches, fire pan 18 inches diam., weight 85 lbs., each.....$30.00

Will make a welding heat on 1½ inch iron in five minutes.

UNIVERSAL RIVETER'S FORGE

Without Gears. With Belts and Dash.



FIG. 4599

Especially adapted for all light outdoor work.

For boilermakers, bridge builders, miners, farmers, etc.

Will make a welding heat on 1½ inch iron in five minutes.

PRICE
FIG. 4599

No. 135. Height 33 inches, fire pan 18 in. diameter, weight 70 lbs.. each.....$24.00

RIVET FORGE

Without Belts. With Dash.



FIG. 4600

For bridge, boiler and railroad work.

PRICES
FIG. 4600

No. 10. Fire pan 17x19 in., height 29 in., fan 8 in., weight 90 lbs., each.....$27.00

No. 9. Fire pan 21x27 in., 5½ in. deep, fan 10 in., height 29 inches, weight 150 lbs. each.....$36.00

With Iron Fire Ring around Tuyere, $1.00 extra.

Water Tank, $4.00 extra.

FOR BRIDGE, BOILER AND RAILROAD WORK

With Hood.



FIG. 4601

PRICES
FIG. 4601

No. 10. Fire pan 17x19 inches, fan 8 inches, height 29 in., weight 110 lbs., each.....$30.00

No. 9. Fire pan 21x27 in., 5½ in. deep, fan 10 in., height 29 inches, weight 160 lbs., each.....$40.00

With Iron Fire Ring around Tuyere, $1.00 extra.

Water Tank, $4.00 extra.

FOR MACHINE SHOPS, BLACKSMITHS AND JEWELERS

With Hood.



FIG. 4602

PRICES
FIG. 4602

No. 0. Fan 8 inches, diameter 22 inches, height 46 inches, weight 160 lbs., each..$35.00

No. 1. Fan 8 inches, diameter 25 inches, height 48 inches, weight 170 lbs., each..$40.00

No. 2. Fan 10 inches, diameter 27 inches, height 51 inches, weight 270 lbs., each..$50.00

No. 3. Fan 10 inches, diameter 31 inches, height 54 inches, weight 285 lbs., each..$60.00

PRICES, FIG. 4603

No. 2. Fan 10 inches, diameter 27 inches, height 51 inches, weight 290 lbs., each..$55.00

No. 3. Fan 10 inches, diameter 31 inches, height 54 inches, weight 300 lbs., each..$65.00

For Hand or Power.

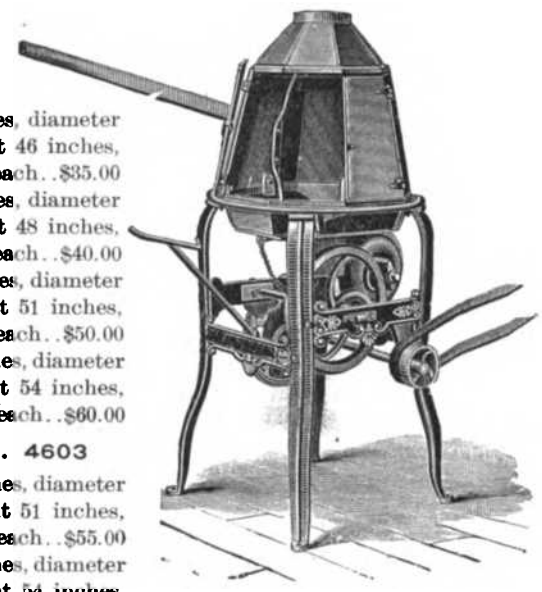


FIG. 4603

BOILERMAKER'S FORGE

With Back.



FIG. 4604

PRICE
FIG. 4604

No. 1. Height 30 in., fire pan 17x20 inches, weight 88 lbs., fan 6 inches, each....$25.00

It will produce a quick welding heat on iron one inch diameter. Heavier work can be done on it. This forge is used by tank builders, elevated railroads, miners, boilermakers, etc. Being light and strong and compact, it is easily carried about.

BOILERMAKER'S FORGE

With Hood.



FIG. 4605

PRICE
FIG. 4605

No. 2. Height 30 inches, fire pan 20x24 in., weight 104 lbs., fan 8 in., each.....$35.00

It will produce a quick welding heat on iron 1½ inch diameter. Heavier work can be done on it. It is used by boilermakers, bridge builders, contractors, on board ships, etc. We furnish a back on this forge, same as on Forge No. 1, Fig. 4604, when desired.

POWER FORGE

With Hood.

PRICES, FIG. 4606

No. 2½. Height 25 in., fire pan 21x27 inches, weight 140 pounds, diameter of fan 9 inches, each..$45.00

No. 3. Height 25 in., fire pan 24x30 inches, weight 150 pounds, diameter of fan 10 inches, each..$55.00

No. 4. Height 25 in., fire pan 30x40 inches, weight 200 pounds, diameter of fan 12 inches, each..$65.00

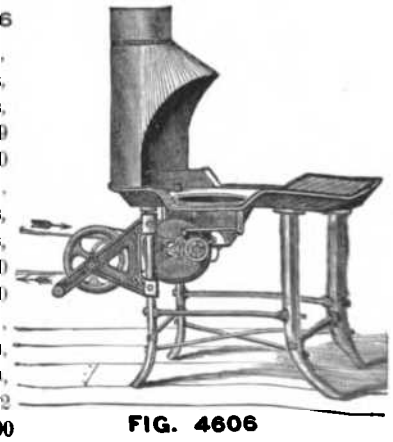


FIG. 4606

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PORTABLE FORGES

BLACKSMITH'S FORGE, WITH HOOD

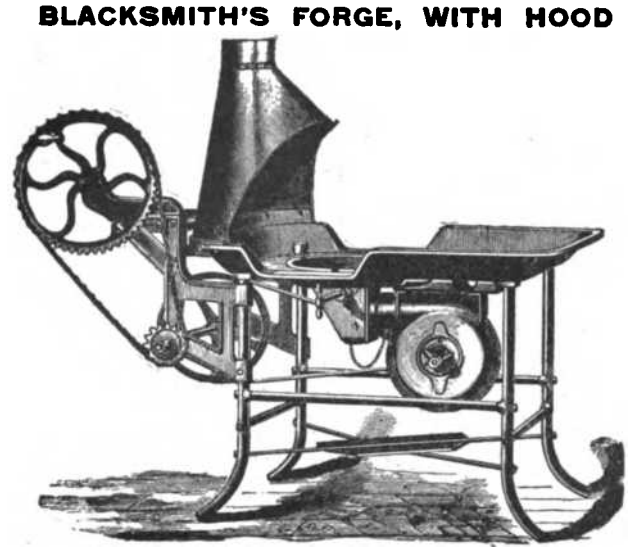


FIG. 4608

PRICE

No. 4. Height, 25 inches; fire pan, 30 x 40; weight, 200 pounds; fan, 16 inches. Each, $60.00.

It has an Improved Revolving Ball Tuyere.

MACHINIST'S AND TOOL FORGE, WITH HOOD

No. 2½. Height, 25 inches; fire pan, 21 x 27; weight, 150 pounds; fan, 10 inches; each, $40.00.

This forge will produce a quick welding heat on iron two inches in diameter, and on heavier iron if required. It is used for all kinds of tool work, machinists, marble works, millers, and repairs for manufacturers in general.

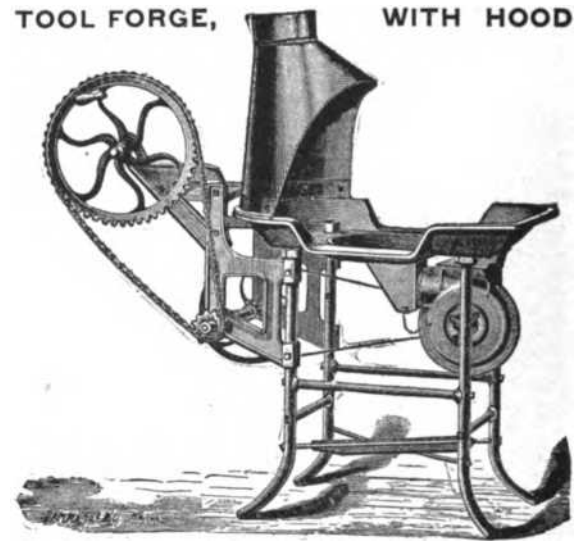


FIG. 4609

HEAVY MACHINIST'S AND TOOL FORGE, WITH HOOD

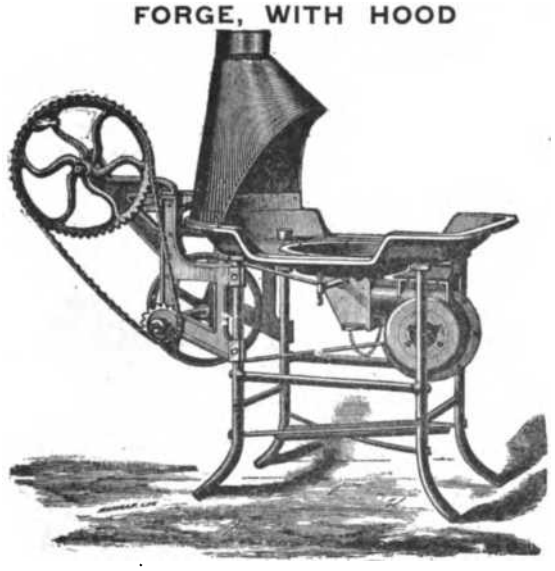


FIG. 4610

No. 3. Height, 25 inches; fire pan, 24 x 30; weight, 160 pounds; fan, 12 inches; each, $50.00.

This forge will produce a quick welding heat on iron three inches in diameter, or on heavier iron if desired. It has an Improved Revolving Ball Tuyere.

TOOLMAKER'S FORGE CLOSED HOOD

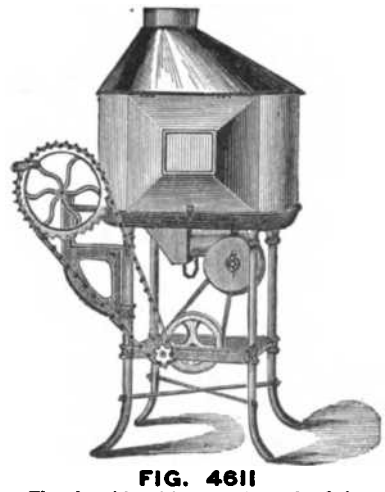


FIG. 4611

The closed hood is strongly made of sheet iron, completely inclosing the fireplace, and having at the sides large double doors. The closed hood prevents the escape of sparks and smoke. Is used in planing mills, furniture factories, saw mills, oil refineries, sugar works, jewelers, tinsmiths, locksmiths, etc., and annealing and refining metals.

PRICE

No. 2. Height, 30 inches; fire pan, 30 x 24; weight, 104 pounds; fan, 8 inches; each, $40.00.

ACME FORGE



FIG. 4612

PRICES

Nos.		Each.
1	Without hood, 21½ x 13 inches, blast equal to 30 inch bellows	$33 00
2	With hood, 24 x 16 inches, blast equal to 40 inch bellows	37 00
3	With hood, 20 x 30 inches, blast equal to 50 inch bellows	41 00
4	With hood, 37½ x 25 inches, blast equal to 60 inch bellows	45 00
5	With hood, 46½ x 31 inches, blast much stronger than largest size bellows made	58 00

BLACKSMITH'S FORGE, WITH HOOD

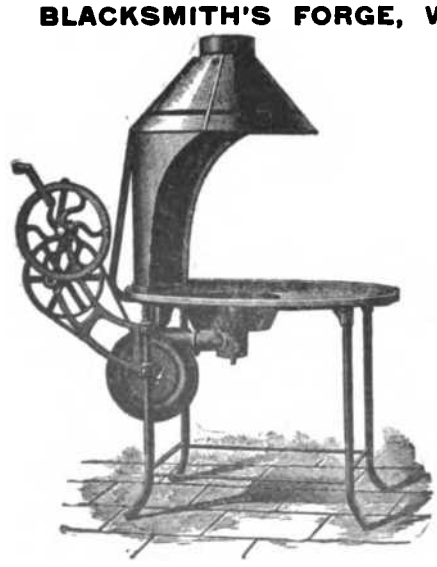


FIG. 4613

DESCRIPTION
FIG. 4613

This forge is large enough for any common blacksmithing. The fan is 11½ inches: fire pan, 30 x 40 inches; height, 28 inches, and weight, 163 pounds.

We can furnish the above size forge with or without hood.

PRICES

No. 4 With hood..$45 00
" 4 Without " .. 40 00

DESCRIPTION
FIG. 4614

These forges are made with steel shafts, which run in brass bushings. The crane containing all the machinery can be swung under the center of forge while being transported.

Size of fan, No. 1 forge, 7½ inches. Size of fan, No. 2 forge, 8½ inches.

PRICES

Nos.		Each.
1	With hood...	$25 00
1	Without hood.	23 00
2	With " .	30 00
2	Without " .	28 00

FORGE—FOR BOILERMAKERS ETC.

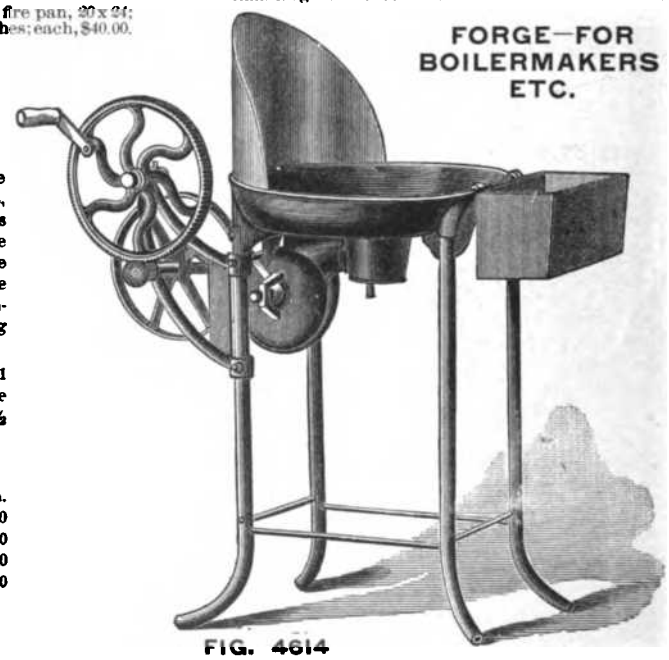


FIG. 4614

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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PORTABLE FORGES

BLACKSMITH'S CRANK FORGE

PRICES, FIG. 4615

This forge is strong and well made. The blast is produced by turning the crank either way, giving the operator a chance to change positions at will, and where a helper is used he can be placed entirely out of the way of the blacksmith. It makes a very strong blast; will put a welding heat on 4 inch iron in ten minutes. It is supplied with a patent sloped bottom coal box, placed beneath the level of the bottom of the hearth, entirely out of the way. This forge is made with a ball tuyere iron.

No. 14. Hearth, 32 x 45 in.; height, 30 in.; fan, 14 in.; weight 250 lbs., without water tank..$50 00
With water tank, complete, weight, 275 lbs.. 55 00

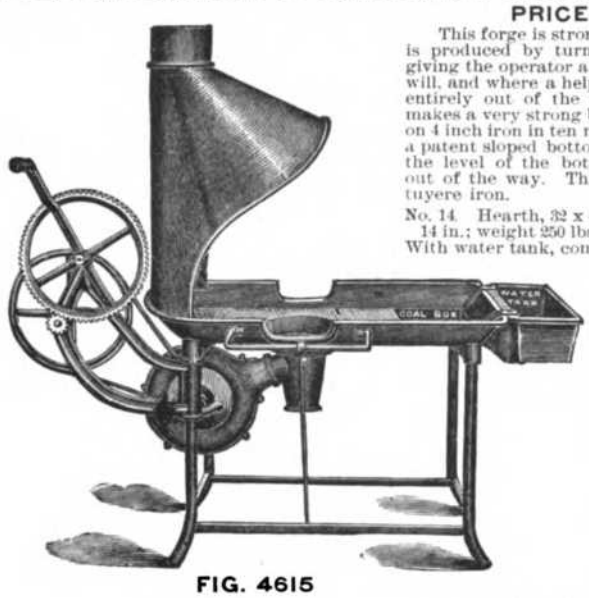


FIG. 4615

CENTENNIAL CRANK BLACKSMITH FORGE

PRICES, FIG. 4616

The forge is strong and well made; has a deep and large fire box with ball tuyere iron, and is adapted for heavy carriage and blacksmith work. It produces a strong and powerful blast.

No. 14½. Hearth, 30 x 40 in.; height, 30 in.; fan, 14 in.; weight, 250 lbs.....$50 00
With water tank..... 55 00

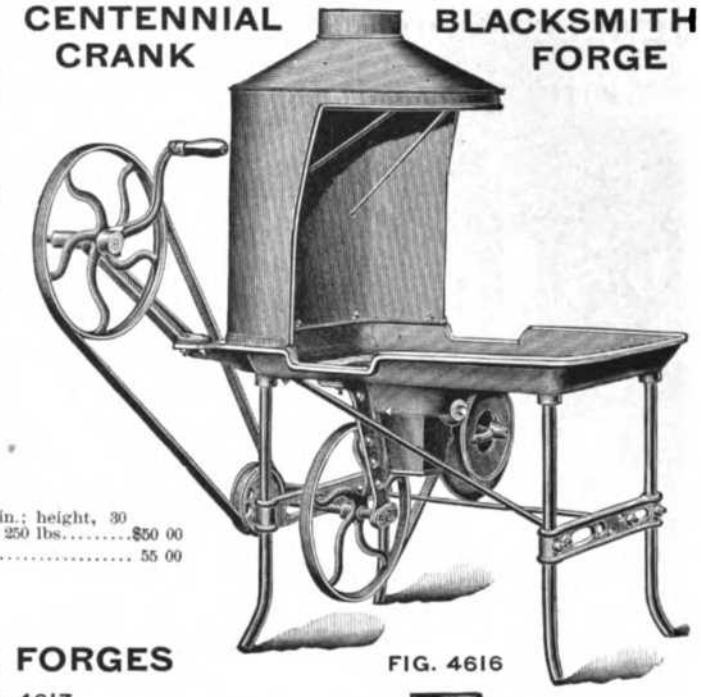


FIG. 4616

MACHINISTS' CRANK FORGES

With Half Hood.

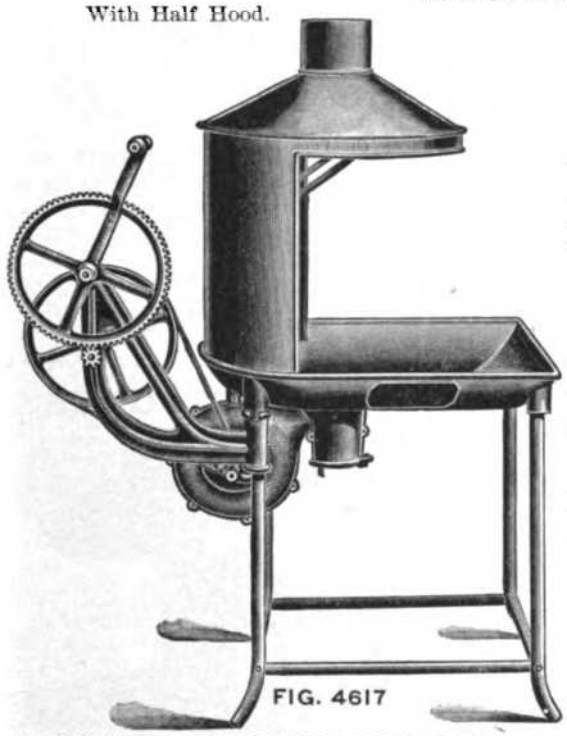


FIG. 4617

DESCRIPTION, FIG. 4617

This forge with half hood is especially designed for machinists, boilermakers, plumbers, marble workers, millers, railroad repair shops, locksmiths, planters, and manufacturers, who will find this a very convenient and handy forge, with a good, strong blast, made by turning the crank either way. This forge is made with ball tuyere iron. The arm and gearing are turned under the hearth for transportation.

PRICE

No. 16. With half hood; hearth, 22 x 28 inches; height, 30 inches; fan, 10 inches; weight, 130 pounds.....$33 00

DESCRIPTION, FIG. 4618

This forge has closed hood with two doors, front and rear, preventing escape of sparks, fumes, or smoke; is used in furniture factories, saw and planing mills, oil refineries, by jewelers, etc. Gearing can be turned underneath the hearth. This forge is made with ball tuyere iron.

PRICE

No. 17. With closed hood; hearth, 22 x 28 inches; height, 30 inches; fan, 10 inches; weight, 140 pounds.....$35 00

With Closed Hood.

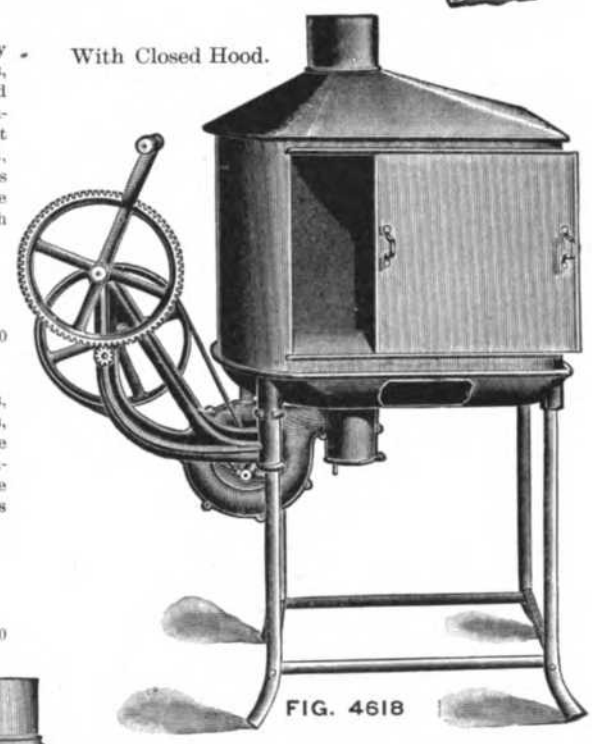


FIG. 4618

RIVET CRANK FORGE

With Shield.



FIG. 4619

DESCRIPTION, FIG. 4619

This forge with shield is adapted for tank builders, elevated railroad builders, miners and prospectors, for making repairs on boilers, bridges, etc. It is very light and compact. The crank can be turned either way to produce the blast. The gearing also turns under the pan, as shown in Fig. 4621.

PRICE

No. 18. With shield; hearth, 18 inches diameter; height, 33 inches; fan, 9 inches; weight, 80 pounds.....$20 00

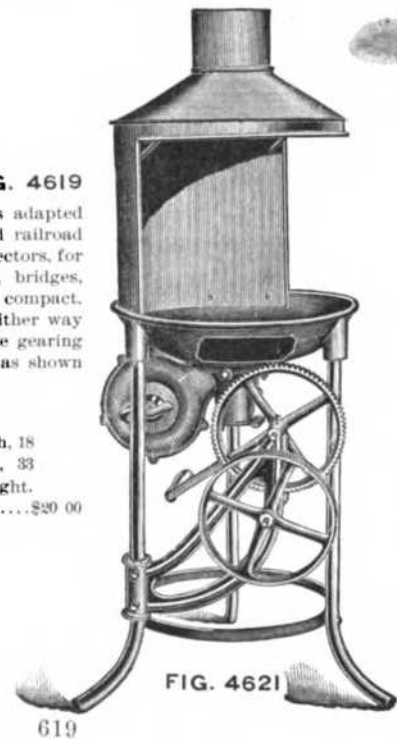


FIG. 4621

TOOLMAKER'S CRANK FORGE

With Half Hood.

Showing Gearing Turned Under.

DESCRIPTION, FIG. 4621

This forge is very convenient, compact, and strong, and very desirable for transporting, as will be seen in the illustration; all gearing turned under the pan out of the way. It produces a strong blast, which is made by turning the crank either direction. It is a very convenient forge for jewelers, bicycle repairers, tempering tools, tank-builders, miners, prospectors, repairs on boilers, bridges, elevated railroads, farmers, etc.

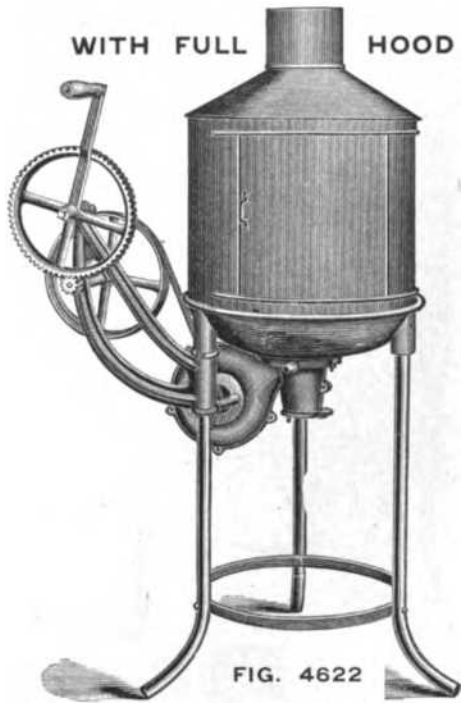
PRICE

No. 19. With half hood; hearth, 18 inches in diameter; fan, 9 inches; height, 33 inches; weight, 85 pounds..$23 00

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PORTABLE FORGES

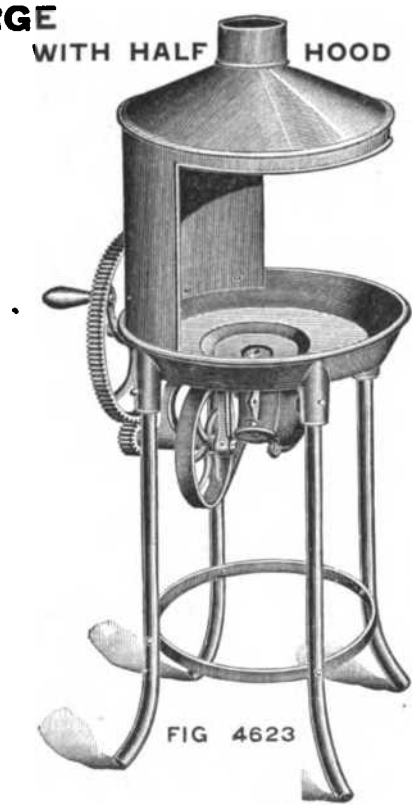
JEWELER'S CRANK FORGE



This forge has a closed hood with sliding door in front, used for tempering tools in factories where combustible material is used, and also by jewelers, locksmiths, cabinet and pattern makers. The crank can be turned either way to produce the blast. The gearing can be turned under the pan.

PRICE

No. 20. With full hood. Hearth, 18 inches in diameter; fan, 9 inches; height, 33 inches; weight, 90 pounds.. .....$26 00



DESCRIPTION

This forge is especially built for farmer's use or light repairing work of any kind. Size of hearth is 18 inches in diameter and 4 inches deep; weight, 65 pounds; height, 30 inches.

PRICES

No. 152. With shield.....$14 00
No. 153. With half hood..... 16 00

HERO FORGE

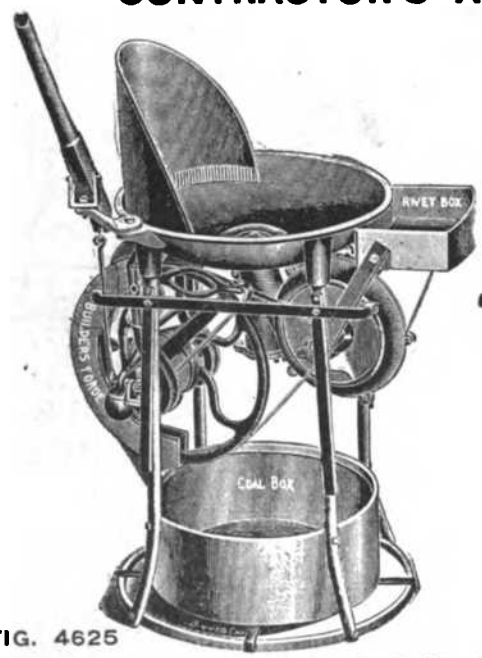


This forge has a capacity to heat iron 1½ inches through. It has a shelf, as shown above, and is very convenient to move about from place to place, being light, strong and durable. Suitable for mines, quarries, prospectors, bridges and outdoor work.

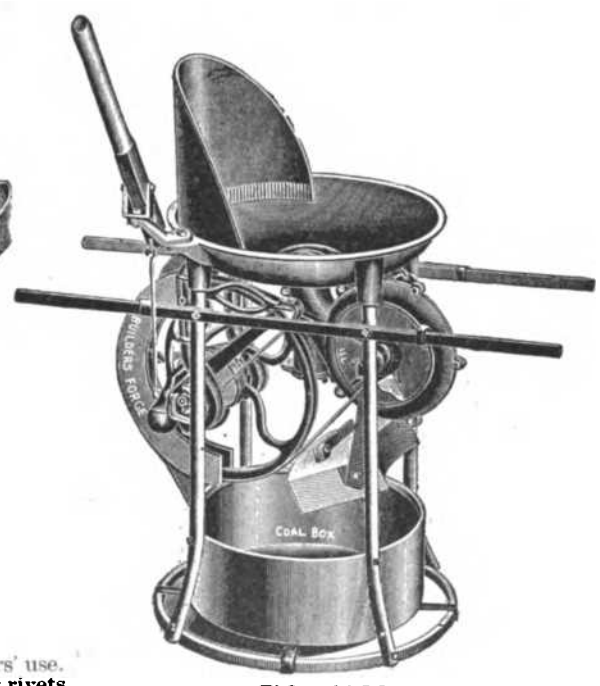
PRICE

No. 6. With dash and shelf. Fan, 7½ inches; height, 30 inches: hearth, 18 inches; weight, 70 pounds.....$20 00

CONTRACTOR'S AND BUILDER'S FORGE



This forge is designed especially for builders' use. It is equipped with adjustable box for holding rivets to be heated, and also coal box conveniently located, though out of the way. The belts are protected against damage from weather by shields which cover them. It has adjustable handles for carrying or moving the forge from one place to another, which, when forge is in use, are dropped down out of the way. Its operation is extremely easy, as it is equipped with brass boxes and oil cups and noiseless adjustable steel friction clutch. For use in all kinds of building and construction work, elevated railroads, bridges, boilermaking, etc. Fan, 12 inches; hearth, 22 in.; height, 33 in.; weight, 125 pounds. $40.00.



This cut, Fig. 4626, shows the manner in which the contractor's and builder's forge is arranged for moving from one place to another. The rivet box is made to swing down underneath the hearth, if desired, and the handles to raise so that it can be very easily carried. The frequent necessity for moving the position of the forge in building and construction work makes these features most valuable.

HERO FORGE



This forge is adapted for toolmakers, tin shops, farmers, jewelers, small repair shops, etc. Has a capacity to heat iron 1½ inches through. It is furnished with shelf, as shown, and so arranged that all gas, smoke and sparks are conducted away.

PRICE

No. 7. With half hood and shelf. Fan, 7½ inches; hearth, 18 inches; height, 30 inches; weight, 75 pounds $23 00

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PORTABLE FORGES

RIVET FORGES FOR BOILERMAKERS, BRIDGE BUILDERS, ETC.

NO. A



FIG. 4628

Can be easily taken apart and put together again as shown in cut. When taken apart, heaviest part weighs 28 pounds and largest part is basin, 18 inches diameter. Can be taken in sections down a mine, into fire room of a steamship, etc., or easily packed on mule back over mountain roads. No chains, leather belts or bellows. Nothing breakable or affected by weather. Basin and pipe are wrought iron. Gas pipe legs. Strong, steady blast, equal to 42 inch bellows. Basin can be slipped off and hose attached to pipe for ventilating, expelling powder smoke in mines, etc.

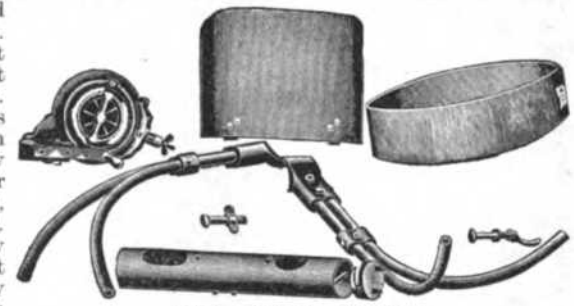


FIG. 4628, APART

PRICES, FIG. 4628

No. A Forge.....Each, $35 00
Weight 90 lbs.; height of basin from ground 30 inches, basin 18 inches in diameter, 5 inches high.

NO. B

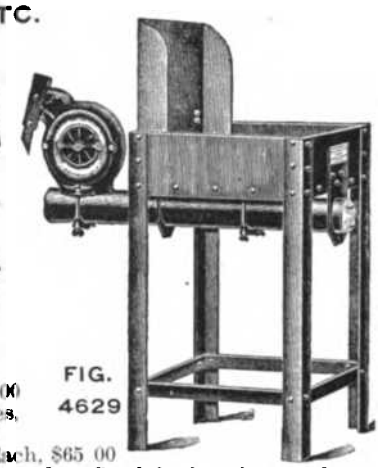


FIG. 4629

No. E Forge.....Each, $65 00
Is the same style but has larger blower, basin 24 inches diameter, weight 180 pounds. Good for heaviest work.

PRICES, FIG. 4629

No. B Hearth 18x18 inches, 130 pounds.....Each, $40 00
Used for rivet forge by boilermakers, bridge builders, etc.

No. C Forge.....Each, $45 00
Is similar, hearth 24x24 inches, weight 155 pounds. It is a good portable forge for all ordinary blacksmithing.

No. D Forge.....Each, $75 00
Is similar to Nos. B and C. Hearth 30 inches square, weight 220 pounds; has large blower and will do the very heaviest work.
Blower and pipe on all these forges are readily detached.

STEEL RIVET FORGE

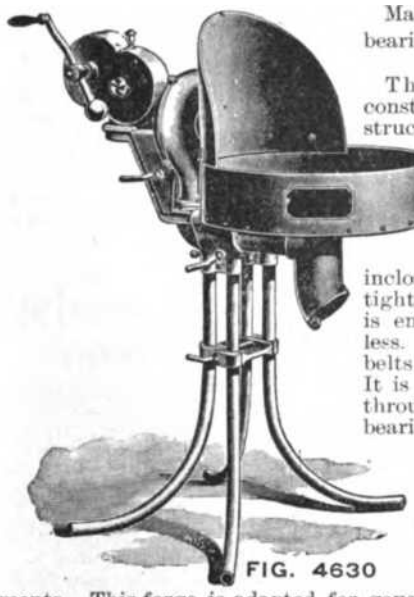


FIG. 4630

Made with ball bearings only.

The forge is constructed from structural steel, making it strong, stiff and light. The machinery is all inclosed in an oil-tight casing, and is entirely noiseless. It has no belts or friction. It is fitted up all through with ball bearings. It can be taken apart for transportation and again set up for use in several moments. This forge is adapted for government use, elevated and steam railroads, bridge and tank builders, miners and prospectors, boiler repairers or any portable work requiring compactness and lightness, with a strong blast. If necessary, it will produce blast to weld 3½ to 4 inch iron in ten minutes. The crank to produce the blast can be turned either way.

No. 401.....Each, $35 00
With shield. Hearth 18 inches in diameter, height 30 inches, pan 9 inches in diameter, weight 90 pounds.

STEEL TOOLMAKER'S FORGE

Made with ball bearings only, with half hood.

DESCRIPTION FIG. 4631

This Steel Toolmakers' Forge is precisely like No. 401, Fig. 4630, the only difference being the half hood, which makes this a forge for inside work for toolmakers, jewelers, bicycle repairers, tempering, tank builders, miners, prospectors and for making repairs on boilers, steam and elevated railroads. The ease in taking this forge apart and in again setting it up makes it especially desirable for government work, or for any work that requires moving from place to place, as the space required knocked down is small.

PRICES FIG. 4631

No. 402, each. $38 00

With half hood. Hearth 18 inches in diameter, height 30 inches, fan 9 inches in diameter, weight 90 pounds.

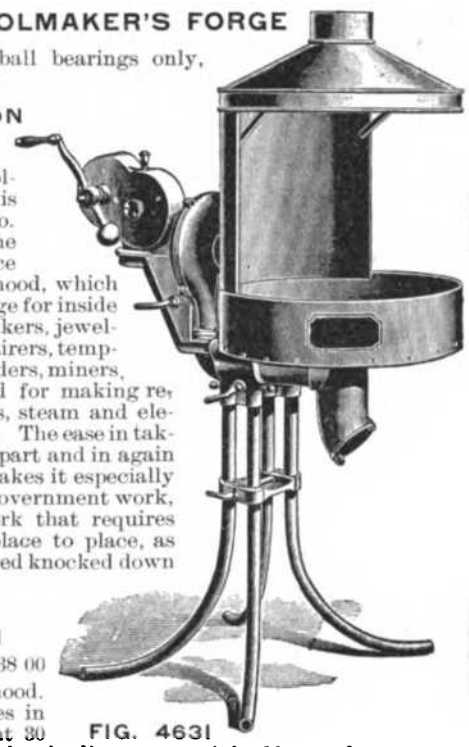


FIG. 4631

No. 403.....Each, $40 00
With closed hood. For use where combustible material is kept. Hearth and fan are same as above. Weight 100 pounds.

OUT DOOR FORGE



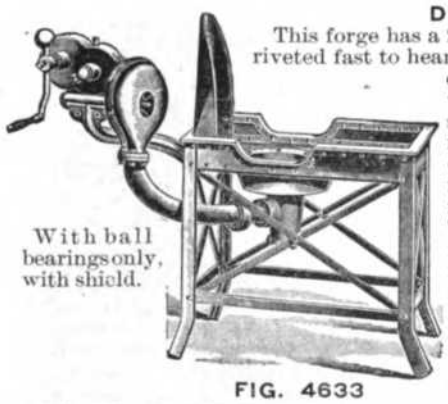
FIG. 4632

PRICE

Each.....$35 00

STEEL RIVET FORGE

DESCRIPTION, FIG. 4633



With ball bearings only, with shield.

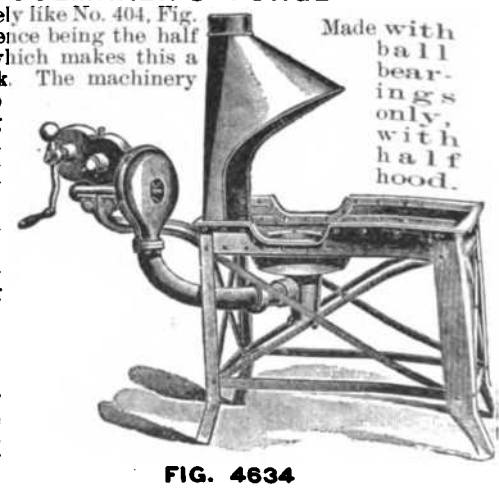
FIG. 4633

This forge has a 24 in. square hearth with angle steel legs riveted fast to hearth, as cut shows. In construction of machinery for operating the blower in connection with size of fan, this forge is precisely the same as No. 401, Fig. 4630, the only difference in the forges being that the hearth on No. 401 is 18 in. in diameter and on this forge 24 in. square. For many kinds of work this 24 in. square forge may be more preferable. The hearth being larger naturally affords more surface for fire, coal, tools, &c., the machinery and blower being large enough in blast to cover the entire hearth with a hot fire if so desired. It is a very practical forge for government use, elevated and steam railroads, bridge and tank builders, boiler work of any kind or for any use requiring a hearth of this size. This forge is light and stiff. The blower and all machinery is taken off for transportation, making it compact and easy to handle. The forge runs entirely noiseless and the blast is produced by turning the crank in either direction.

No. 404.....Price, each, $45 00
Hearth 24x24 inches, height 30 inches, fan 9 inches diameter, weight 110 lbs.

STEEL TOOLMAKER'S FORGE

This forge is precisely like No. 404, Fig. 4633, the only difference being the half hood on this forge, which makes this a forge for inside work. The machinery for operating the blower for producing the blast in connection with the general construction is precisely the same as Fig. 4633. It is especially adapted for toolmakers, jewelers, bicycle repairers, tempering tools, tank builders, miners, prospectors, making repairs on boilers, steam and elevated railroads, or any inside or outside work desiring a forge of this size with a half hood.



Made with ball bearings only, with half hood.

FIG. 4634

No. 405.....Price, each, $49 00
Hearth 24x24 inches, height 30 inches, fan 9 inches in diameter, weight 120 pounds.

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PORTABLE FORGES

MACHINIST'S STEEL FORGE

Made with Ball Bearings only.

WITH HALF HOOD



FIG. 4635

DESCRIPTION FIG. 4635

This forge is precisely like No. 406, Fig. 4636, the only difference being the half hood, which makes this a forge for inside work. Machinists, plumbers, miners, marble workers, millers, railroad repair shops, locksmiths, planters and manufacturers in general find this a very convenient and economical forge.

PRICES

No. 407 with half hood. Hearth, 30 x 30 in.; height, 30 in; fan, 10 in. diam; weight, 175 pounds... ...$60 00
With water tank, extra..... 5 00

BOILERMAKER'S STEEL FORGE

Made with Ball Bearings Only.

WITH SHIELD

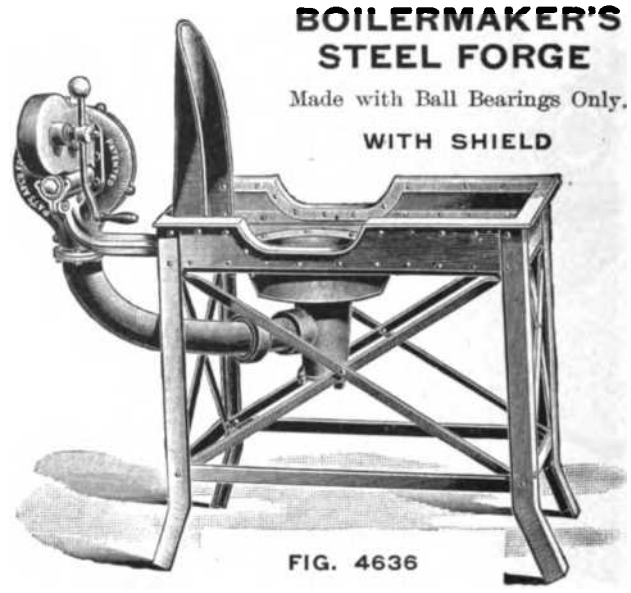


FIG. 4636

DESCRIPTION, FIG. 4636

This forge has a 30 inch square hearth and fan 10 inches in diameter. The light running and noiseless machinery for operating the blower for producing the blast is a 3 piece mechanical construction. It produces a powerful blast, with lightness in operation. There are no belts or friction. All machinery is closed in an oil tight casing and every journal is fitted with ball bearings. This forge is intended for all kinds of medium work, such as boiler shops, contractors, miners, tank builders, railroads, steam or elevated, or a regular all purpose forge. The increased size of both fan and hearth makes it an ample forge for all ordinary blacksmithing, it having blast sufficient for putting a welding heat on 4 inch iron in 10 minutes with great ease. Its structural steel construction is designed for lightness, stiffness and durability. The crank turns either direction to produce the blast.

PRICES

No. 406. With shield. Hearth, 30 x 30 inches; height, 30 inches; fan, 10 inches in diameter; weight 160 pounds.....$55 00
With water tank, extra..... ..... 5 00

HORSESHOER'S AND BLACKSMITH'S STEEL FORGE

Made with Ball Bearings Only.

WITH HALF HOOD

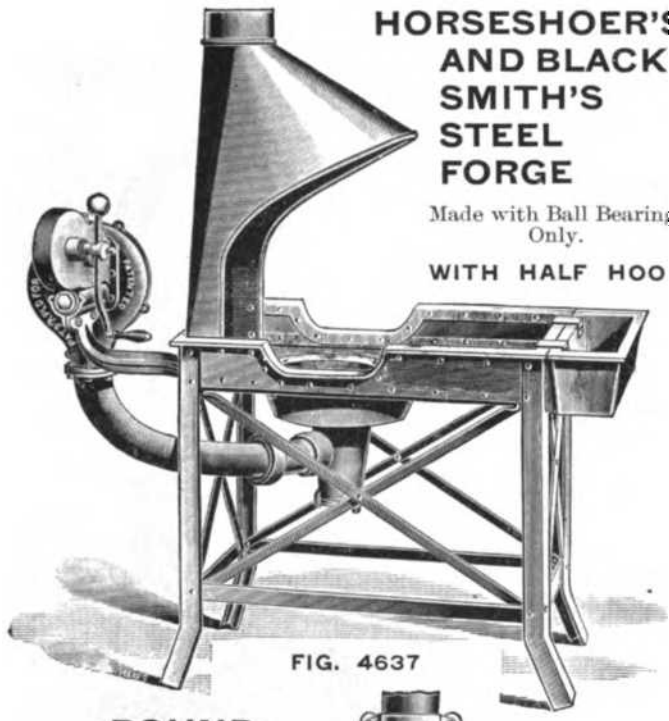


FIG. 4637

DESCRIPTION, FIG. 4637. HORSESHOER'S FORGE

This forge has been designed and substantially constructed for horseshoers' blacksmith fires. It has a strong, regular and positive blast. This blast, in connection with the ease for operating, is accomplished by the simple 3 piece mechanical construction which gives the blower a positive drive at a high speed. The machinery is all made from the best tool steel and phosphorus bronze, machined and cut from the solid metal and fitted with precision, and is all inclosed in an oil tight casing. It has no belts or friction, and is fitted up all through with ball bearings. The cranks being turned in either direction for producing the blast give the operator any desired position. The general construction of the forge is from structural steel, making it stiff and substantial. The blast is powerful enough for all kinds of light and heavy blacksmith work, including the heaviest railroad work.

PRICES

No. 408. Horseshoer's Forge, with half hood. Hearth, 30 x 36 inches; height. 30 inches; fan 12 inches in diameter; weight, 225 pounds..$65 00
With water tank, extra.... .... 5 00

DESCRIPTION, FIG. 4637. BLACKSMITH'S FORGE

The Blacksmith's Steel Forge has been designed and substantially constructed from structural steel to comply with any demand that can be made for a forge to meet any requirements that a blacksmith fire can be called on to perform, in railroad shops, large and heavy wagon shops, plow works, country shops, doing all kinds of heavy work, as well as any other shop where a blacksmith fire is wanted. The easy running and noiseless 3 piece mechanical construction produces a blast that is regular and positive. The machinery is all made of tool steel and phosphorus bronze, machined and cut from the solid metal, all being inclosed in an oil tight case, there being no belts or friction. It is fitted all through with ball bearings.

PRICES

No. 409. Blacksmith's Steel Forge, half hood. Hearth, 30 x 40 inches; height. 30 inches; fan, 12 inches in diameter; weight 250 pounds.....$70 00
With water tank, extra..... ..... 5 00

ROUND HEARTH STEEL FORGE

Made with Ball Bearings Only.

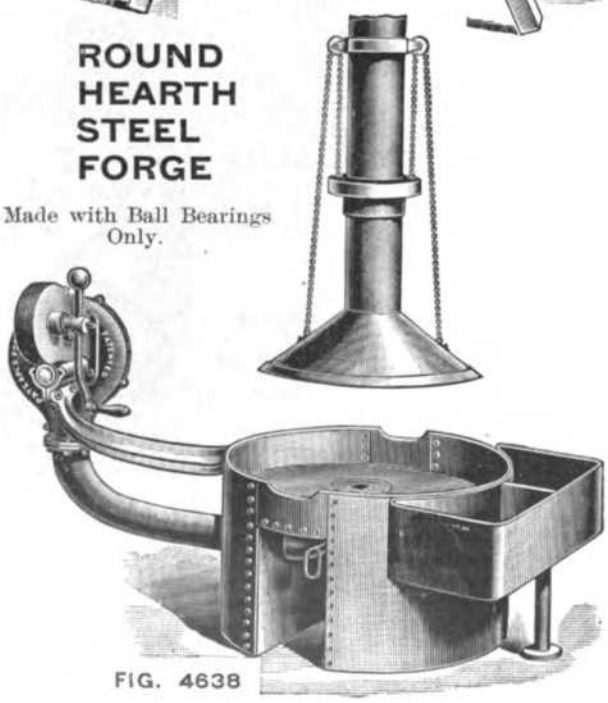


FIG. 4638

DESCRIPTION, FIG. 4638

This forge has a round hearth 36 inches in diameter, constructed from steel plate. The telescopic canopy hood is a new improvement. It is used in railroad shops, carriage or wagon shops, or any place where a large variety of work is done, as it can be raised high enough to place a large tire under it in the fire for welding, or lowered to the pleasing of any operator. The hoods being counterbalanced by a cast iron ring around the pipe make it easy to raise or lower, and it will remain, without fastening, at any height desired by the mechanic. The machinery to produce the blast for this forge is the same as in the Nos. 408 and 409 forges, Fig. 4637. It has no belts or friction, and is fitted up all through with ball bearings.

No 410. Hearth, 36 inches in diameter; height, 30 inches; fan, 12 inches in diameter; weight, 425 pounds. With telescopic canopy hood, water tank and coal box, complete, each.....$100 00

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PORTABLE FORGES

MINER'S AND PROSPECTOR'S FORGE

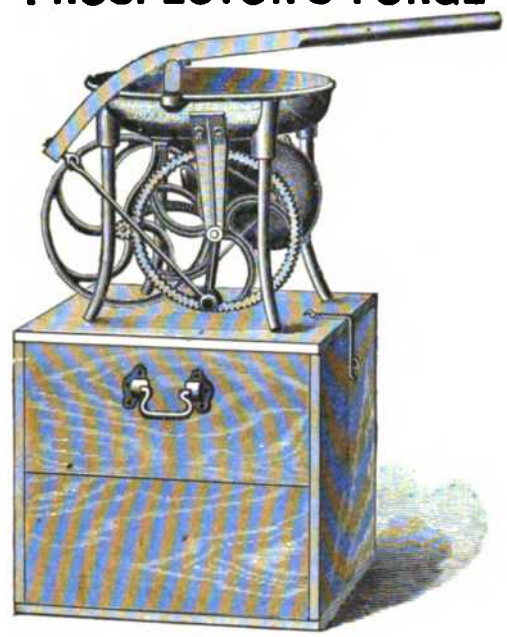


FIG. 4639

It is especially adapted for prospectors for carrying on mule back. The case has sufficient room for a full line of blacksmith's tools.

PRICE

No. 11 Forge: Size of hearth, 18 inches diameter; height to top of bowl, 17½ inches; weight, 65 pounds. Each, with case..... $26 00

MINER'S FORGE WITHOUT BELT

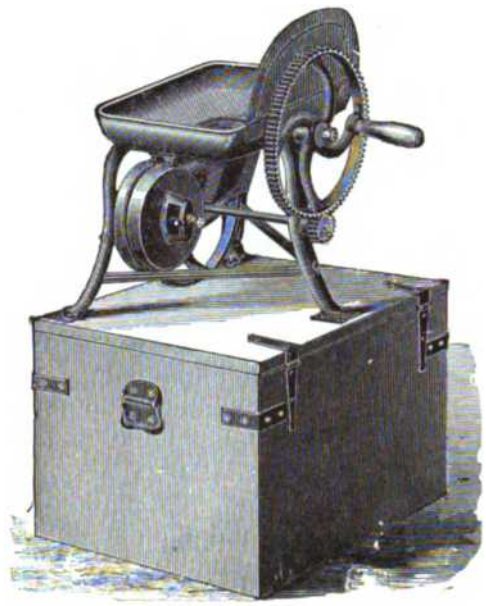


FIG. 4640

Legs and braces made of the best malleable iron. It is light, compact and strong, and easily transported from place to place. It can be taken out of the case, set up on the lid and ready for use in one minute. It will heat a two inch bar, if necessary, to a welding heat.

PRICES

Forge: Fan, 7 inches; size, 12 x 17 inches; height, 15 inches; weight, 50 pounds. Each..... $20 00

Case: 23 inches long, 19 inches wide, 16 inches deep; weight, 20 pounds. Each.. 4 00

STANDARD MINER'S AND PROSPECTOR'S LEVER FORGE

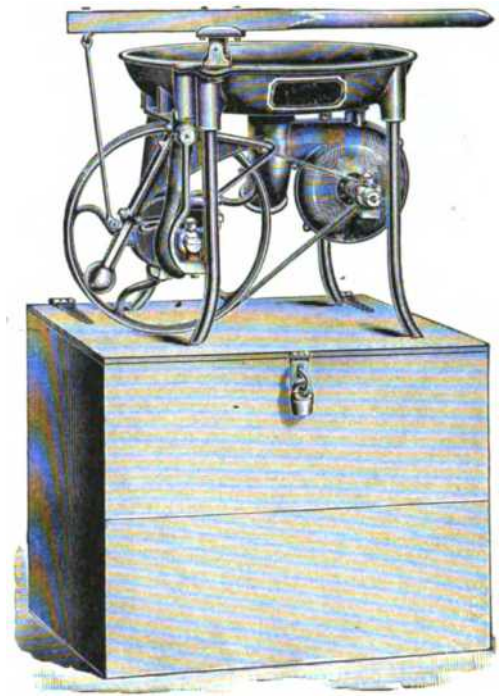


FIG. 4641

Size of hearth is 23 inches. Diameter of the fan, 10 inches. It is made with short legs and placed in a case, making it very handy for transportation. The case has ample room for a full line of blacksmith's tools. The patented ball joint brass oscillating bearings used on this forge require oiling but once in 6 months.

PRICES

No. 8, complete with case..... $26 00
Complete without case..... 23 00

MINER'S AND FARMER'S PORTABLE FORGE

This forge is intended especially for light work. It is very compact and light and can be easily moved about. It has short legs, being designed, when in use, to be set on a box or bench. It has a very strong blast in proportion to its size, being capable of putting a welding heat on one inch iron in ten minutes.



FIG. 4642

PRICES

No. 7 Forge: With dash; height, 15 inches; hearth, 15 inches; fan, 6 inches diameter; weight, 40 pounds; with case, 55 pounds. Each..... $16 00
With case..... 20 00

BENCH FORGES



FIG. 4643

PRICE, FIG. 4643

No. 8 Forge: Half open hood; height, 15 inches; hearth, 15 inches; fan, 6 inches diameter; weight, 50 pounds. Each..... $18 00

PRICE, FIG. 4644

No. 9 Forge: Closed hood; size and capacity same as No. 8 Forge, Fig. 4643; weight, 55 pounds. Each..... $20 00

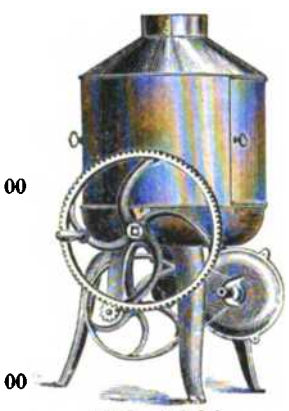


FIG. 4644

RIVETING FORGE

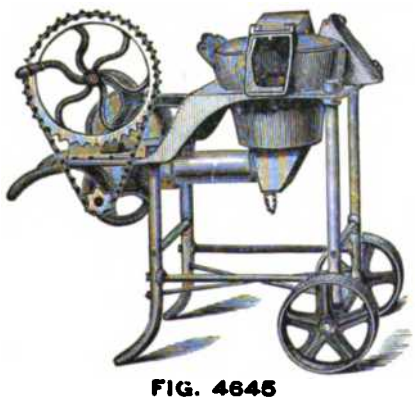


FIG. 4645

This forge has been designed for boilermakers, ship builders, etc. It is run by chain gear, adapting it to outdoor use in all sorts of weather. The frame is strong and firmly braced to stand rough usage. The pot has three doors, giving employment either to one, two or three rivet boys, as desired. The doors, or openings, when not in use, are closed by a falling lid. The top of the pot is covered with a heavy lid, which is thrown open to kindle the fire and closed when heating rivets.

PRICE

Each..... $50 00

FARRIER'S FORGE

This forge is very compact and durable. It consists of a hearth and base of cast iron connected by a substantial wrought iron body. The tuyere is simple and indestructible. No water is required to keep it from burning out, and it is so arranged as to be lowered to clear the fire or to allow of a large volume of blast for special occasions. The ashes are dropped into the body of the forge and afterwards removed through a door at the base.

PRICES

No. 3, without canopy..... $23 00
" with canopy..... 30 00

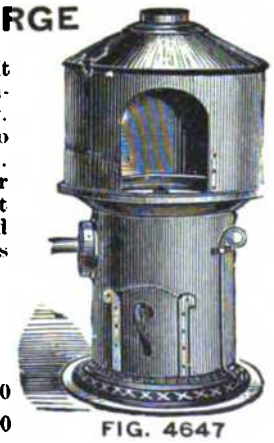


FIG. 4647

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PORTABLE FORGES

OPEN FIRE JOBBING FORGES

NOS. 0, 1 AND 2

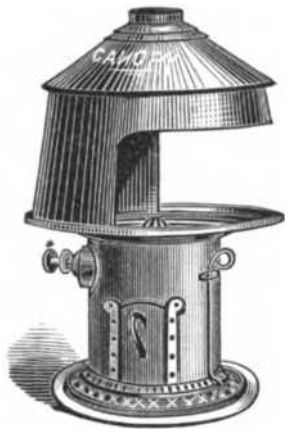


FIG. 4648

NOS. 4, 4 1/2

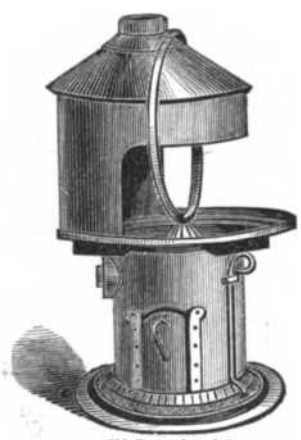


FIG. 4649

NOS. 5, 5 1/2 AND 6



FIG. 4650

These forges are very compact and durable. They consist of a hearth and base of cast iron connected by a substantial wrought iron body. The tuyere is simple and indestructible. No water is required to keep it from burning out, and it is so arranged as to be lowered to clear the fire or to allow of a large volume of blast for special occasions. The ashes are dropped into the body of the forge and afterwards removed through a door at the base. Nos. 1 and 2 are furnished with a patent blower consisting of a single brass wheel which discharges into the body of the forge, which serves as a reservoir for the air, or a piston iron cased bellows. The tuyere is perforated and is made adjustable so that the blast reaches the fire either through the tuyere or around it, as desired.

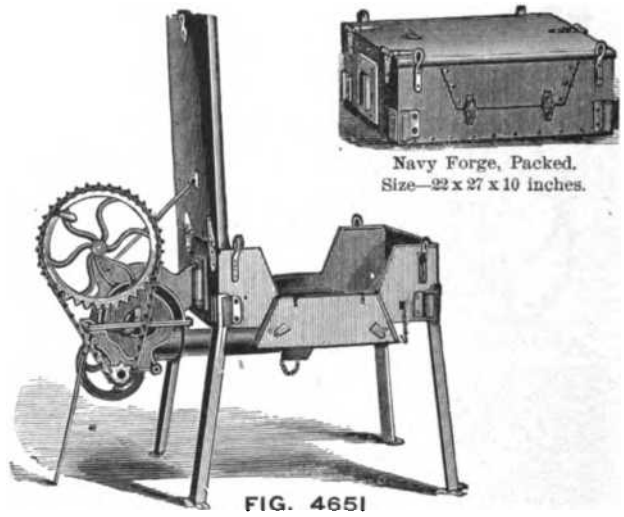
PRICES, FIGS. 4648 TO 4650

Nos.		Weight, Pounds.	Without Canopy.	With Canopy.
0	Small rivet fire	80	$12 00	$14 00
1	Boilermaker's rivet fire	100	12 00	15 00
2	Tool repairer's fire	150	15 00	23 00
4	Carriagemaker's fire	250	28 00	35 00
4½	For machine shops	500	34 00	45 00
5	Capacity for heavy work	500	45 00	55 00
5½	Forge for railroads	650	50 00	60 00
6	Superior capacity	750	55 00	65 00

PRICES OF ATTACHMENTS TO NO. 1, FIG. 4648

Blower.....Each, $8 00
Attached belt wheel..... " 6 00
Detached belt wheel.....Each, $6 00
Countershaft..... " 6 00

NAVY AND ARMY FORGE



Navy Forge, Packed.
Size—22 x 27 x 10 inches.

FIG. 4651

The firepan is made of wrought iron, and is 10 inches deep, containing all other parts of the forge when packed for transportation. The blower and gearing are compactly framed together, and fit into a slot on the end of the forge when in use. It has the chain gear. The legs, made of angle iron, fit into slots at the corners of the firepan. The tuyere box fits into a slot under the hearth. The hearth is made of heavy cast iron, and is bolted to the bottom of the firepan. This forge will produce a quick welding heat on iron three inches diameter, and on larger iron if required, as there is plenty of spare blast. For use on ships and steamers, and on land for army purposes, miners, wagon trains, circus companies, lumber camps, etc., wherever exposed to rough handling and use in transportation, by land or sea.

Navy Forge. Price, each.....$60 00

Height, 22 inches; size of firepan, 22 x 27 inches; weight, 200 pounds; diameter of fan, 9 inches.

ARMY FORGE

WITHOUT BELTS.



FIG. 4652

This forge has removable pipe legs. Supplementary flanges for deepening firepan. All shaft bearings made of bronze. Fan operated without belts. Blast and fan capacity sufficient to weld 2 inch iron or steel.

No. 100, without hood: Fan, 7 inches; size, 13½ x 18½ in. and 4¼ inches deep; height, 27½ inches; weight, 62 lbs. Each, $42.00.

N. B.—When desired we will pack them in iron bound case, 20½ inches long, 17½ inches wide, 12¼ inches deep; weight, 82 pounds. Extra, $4.00.

RAILROAD AND BRIDGE BUILDER'S DRUM FORGE



FIG. 4654

This forge is especially designed for bridge and tank builders, all the working parts being inclosed in a galvanized drum made of wrought iron. The shield is also made of galvanized iron. The working parts are easy of access, simply by drawing a small slide to one side. This forge is made of the best material, and capable of the roughest kind of handling.

No. 9: Hearth, 18 inches diameter; height, 30 inches; fan, 9 inches; weight, 115 pounds. Price, each, $32.00.

PORTABLE BELLOWS FORGE

For Railroad, Bridge, Tank and Boiler Work.



FIG. 4653

This Bellows Forge gives a continuous blast by a double acting bellows. It is very simple in construction and easily operated, and without legs, gears, or rotary blower. It is always ready for use, and can be placed anywhere on any part of the structure, and can be upset with difficulty. The tuyere is the old "duck nest" pattern with an additional tube extending through the side of the drum downward, through which it can be cleaned of cinders. And the windpipe is provided with safety valves so the gas cannot be drawn into the bellows and cause an explosion.

PRICES

No. 45, with shield: Height of firepan, 30 inches; diameter, 19 inches; weight, 100 pounds. Each, $40.00; hood, $5.00 extra. The bellows are beneath the firepan and inside of the sheet iron drum.

PORTABLE BELLOWS FORGE

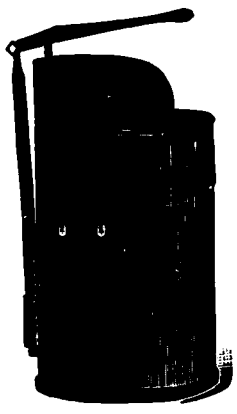


FIG. 4655

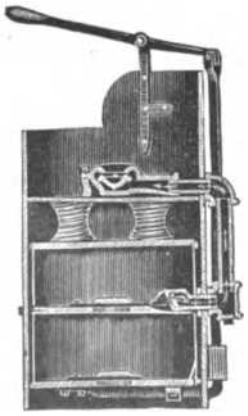


FIG. 4655. SECTION

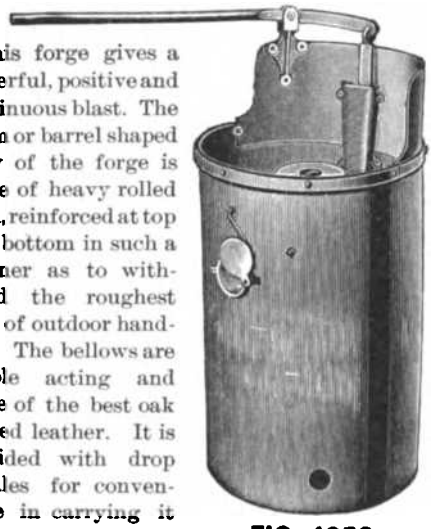
DESCRIPTION, FIG. 4655

This rivet heating forge is made especially for iron shipbuilders, boilermakers, iron bridge and tank builders, and for use where forges are required to be carried from place to place or left exposed to the weather. Its construction is simple: the bellows can not be injured in the least. The blast is upright, continuous and positive. The gas is effectually prevented from being drawn into the bellows by means of a check valve (as shown in Fig. 4655); the ball rests in an inclined groove or way which slopes toward the end of the pipe sections, so that the ball will tend to move against the end of pipe by gravity. Upon forcing the air through the blast pipe the ball is moved away from the end of the pipe and permits the blast to pass onward through the tuyere, but as the blast ceases the ball rolls down the incline against the open end of the pipe and closes the latter, thereby preventing the suction.

Size of hearth, 19 inches diameter; height of fireplace, 30 inches; weight, 100 pounds. Each, $40.00.

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RIVETER'S BELLOWS FORGE



This forge gives a powerful, positive and continuous blast. The drum or barrel shaped body of the forge is made of heavy rolled steel, reinforced at top and bottom in such a manner as to withstand the roughest kind of outdoor handling. The bellows are double acting and made of the best oak tanned leather. It is provided with drop handles for convenience in carrying it about.

FIG. 4656

No. 12 Forge—Size of hearth, 19 in. diameter; height to top of hearth, 30 in.; weight, 140 lbs. Price..... $30 00

MACHINIST'S HAND AND POWER FORGE COMBINED

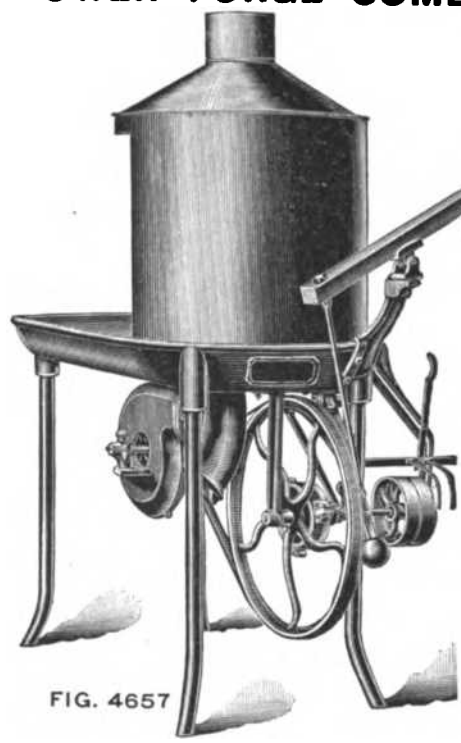


FIG. 4657

DESCRIPTION AND PRICES, FIG. 4657

This Hand and Power Forge is constructed for a combination lever attachment and power combined; can be worked either by power or hand, and is very convenient where power is not ready for use at all times.

No. 10—Hearth, 23 x 35 in.; height, 30 in.; fan, 12½ in.; weight, 160 lbs. Complete, with half hood, $48.00. Complete, with full hood, $50.00.

BLACKSMITH'S FORGE

For Hand and Power.

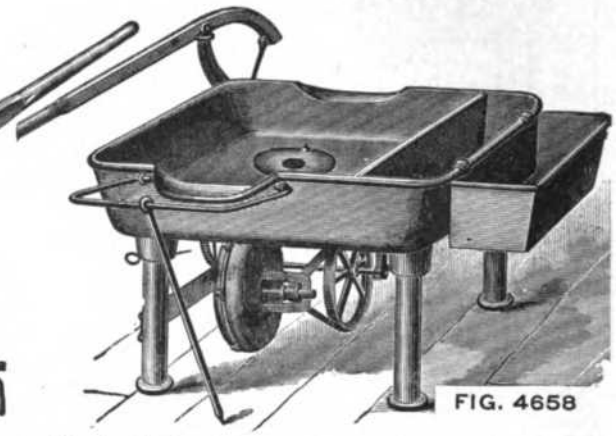


FIG. 4658

No. 5—Without hood; heavy pipe legs; has adjustable tuyere and water and coal boxes; height, 26 in.; fire pan, 38 x 51 in.; weight, 500 lbs. Price, $65.00.

No. 6—For power blast; without hood; heavy pipe legs; has adjustable tuyere and water and coal boxes; height, 26 in.; fire pan, 38 x 51 in.; weight, 400 lbs. Price, $55.00.

Stationary blast forge, same as above, but without blower or gearing. Designed especially for heavy work. Completely furnished with coal box, water tank and blast gate in tuyere.

These forges are made without hoods. A canopy can be suspended over them, if so desired. We will furnish a canopy for $5.00 extra. They will do heavy work and readily produce welding heat on three or four inch iron.

STATIONARY BLAST FORGE

With Hood.



FIG. 4660

DESCRIPTION AND PRICES, FIG. 4660

This forge is intended for use in shops supplied with fan blast. It is well made, and can be easily moved when desired. It is provided with a coal box, with a sloped bottom extending underneath the level of the bottom of the hearth, entirely out of the way, and is supplied with a blast gate.

No. 11—Hearth, 32 x 45 in.; height, 30 in. Each..... $30 00
Less hood and water tank..... 20 00

DESCRIPTION AND PRICES FIG. 4659

These blast forges are made extra heavy for all kinds of blacksmith fires; for power; but can be used for hand blower or bellows as well. They are supplied with blast gates.

STATIONARY BLAST FORGE NO. 12

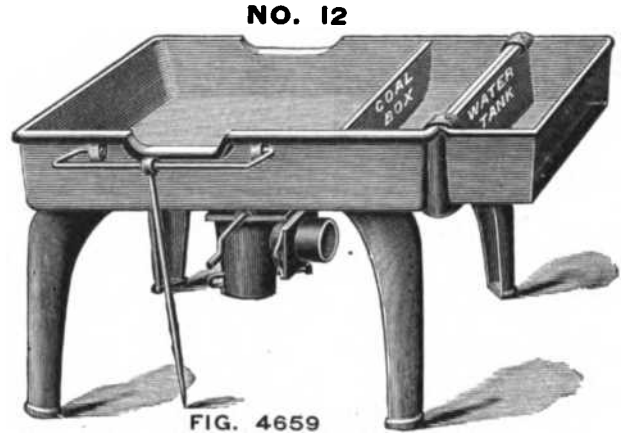


FIG. 4659

No. 12	Size of hearth, over all, with water tank,	38 x 52	in.; height,	26	in.	Each.	$35	00
" 12½	" " " "	39 x 63	" "	26	"	"	40	00
" 13½	" " " "	48 x 73	" "	26	"	"	70	00
	Canopy hood, extra						3	75
	Regular half hood, extra						5	00

STATIONARY COLUMN BLAST FORGE

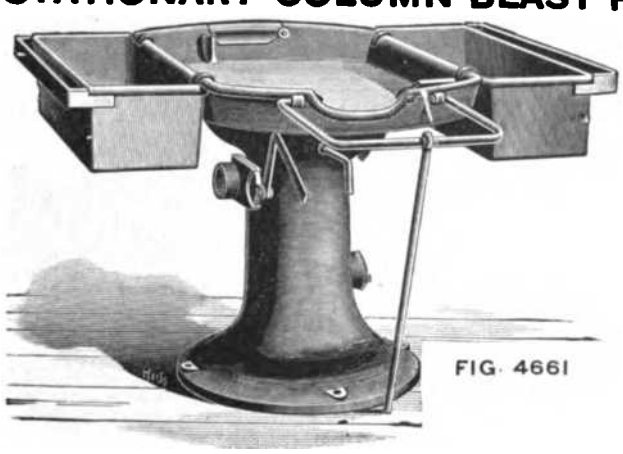


FIG. 4661

PRICES, FIG. 4661

No. 11¼—Forge, with tanks; hearth, 24 x 36½ in.; weight, 330 lbs. Each, $34.00. Canopy hood, extra, $4.00.

PRICE, FIG. 4662

No. 11½—Forge, with tanks; hearth, 24 x 36½ in.; weight, 465 lbs. Each, $65.00.

DOWN DRAFT STATIONARY COLUMN FORGE



FIG. 4662

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STATIONARY BLAST FORGE



FIG. 4663

Suitable for the Requirements of Ordinary Medium Sized Work.

This forge has no blast machinery, and is intended for use in shops where power blast is furnished, or can be used with ordinary blower or bellows. It has blast gate in its pipe connections and is well adapted to all ordinary medium sized work.

PRICES

Hearth, 28 x 35 inches; height, 30 inches; weight, 100 pounds.

Plain, as illustrated (no hood).....$20 00
With half hood..... 24 00

STATIONARY BLAST FORGE

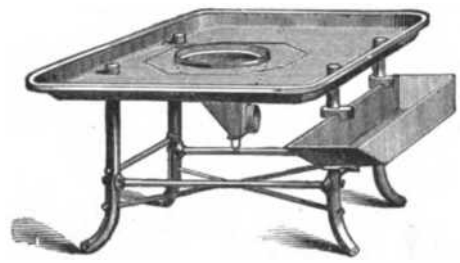


FIG. 4664

This forge is for use in shops supplied with blast from a stationary blower. It has a heavy fire pan, deep hearth, and heavy ball tuyere. It is very strong, resting on a tubular iron frame. It is easily moved when desired. We do not furnish a hood with this forge unless specially ordered extra.

Height, 25 inches; size of fire pan, 40 x 40 inches.

PRICE

With slack tub, each.....$35 00

COMBINATION FIRE BOX AND FORGE

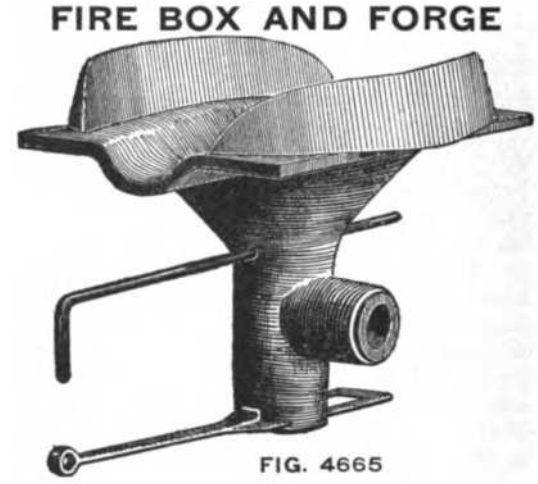


FIG. 4665

The object of this box is to do away with brick and other unnecessary expense in their construction. The box can be adjusted on any forge, with small expense, and can be used with either light or heavy fire.

DIRECTIONS FOR SETTING

Construct forge with inside cross walls 12½ inches in the clear for No. 3, and 16 inches in the clear for No. 4. The space below fire bed must be left entirely open to permit free circulation of air. After fire bed is placed, the hearth should be joined up to it on all sides as high as the top.

No. 3. For blacksmiths, horseshoers, and wagon manufacturers. Length, 20 inches; width, 15 inches; fire bed width, 13 inches; horn, 3 inches diameter. Price, $7.35.

No. 4. Especially adapted for heavy work, car shops, shipbuilders, etc. Length, 24 inches; width, 20 inches; fire bed width, 16 inches; horn, 3 inches diameter. Price, $9.00.

COMBINED FORGE AND BLOWER

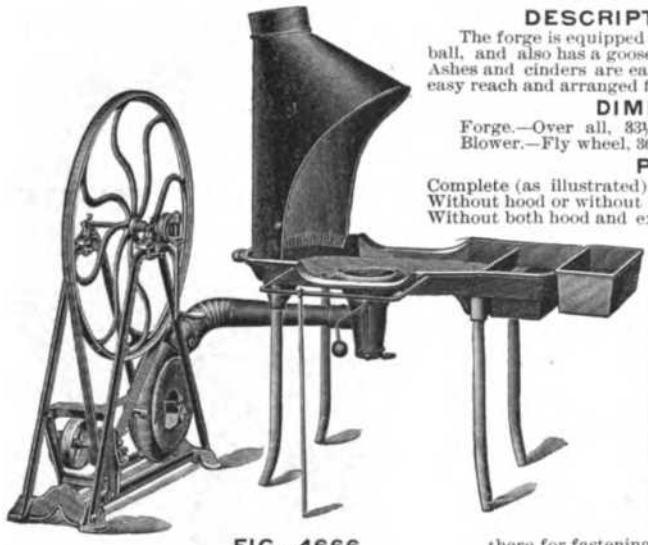


FIG. 4666

DESCRIPTION, FIG. 4666

The forge is equipped with side and center blasts, tuyere ball, and also has a goose nest for securely holding clay. Ashes and cinders are easily removed. Everything within easy reach and arranged for the convenience of the smith.

DIMENSIONS

Forge.—Over all, 33½ x 54 inches; height, 30 inches.
Blower.—Fly wheel, 36 inches; fan, 16½ inches.

PRICES

Complete (as illustrated).....$70 00
Without hood or without extra tank..... 65 00
Without both hood and extra tank..... 60 00

DESCRIPTION FIG. 4667

This forge is supplied with a hearth 39 x 52 inches, and 6 inches deep for building up with fire brick. The blower attached is 16 inches in diameter inside, and the fly wheel 48 inches in diameter. The crank is made with a three-catch ratchet, allowing the momentum of the wheel to continue after the operator stops working; also, the crank always drops back into place in position for starting. Should the operator, however, wish a stationary crank, the same can be fastened to the shaft with two set screws, which are placed there for fastening the same if desired.

Ball joint brass oscillating bearings are used on this forge. Requires oiling but once in six months. Hearth, 39 x 52 inches; height, 26 inches; fan, 16 inches; wheel, 48 inches.

PRICE

With hood and water tank, complete.....$85 00

LARGE COMBINATION FORGE

With 48 Inch Wheel.

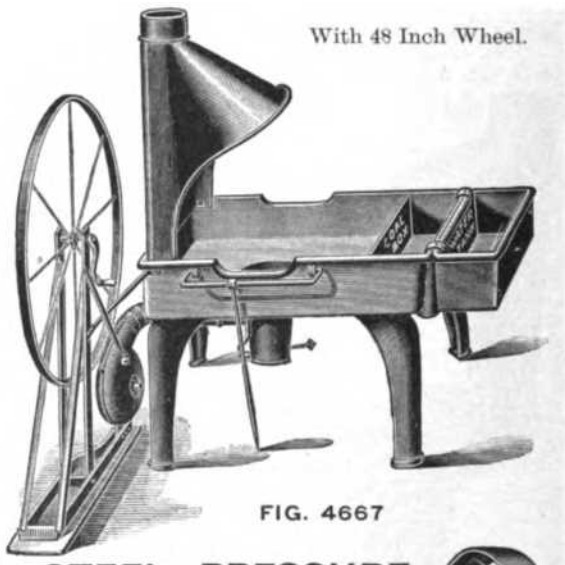


FIG. 4667

SMALL POWER BLOWER

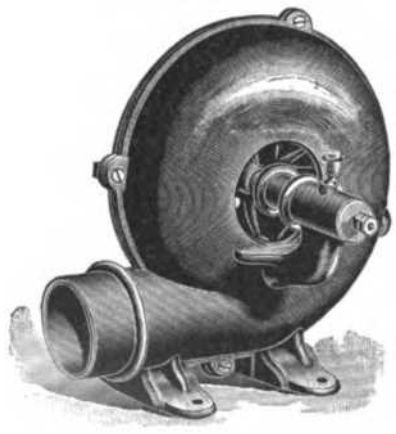


FIG. 4668

This blower is intended for blowing fires in portable and small stationary boilers, also for forge fires and various purposes where a small current of air is desired.

PRICES

Nos.	Height, Inches.	Will Blow	Each.
0	10	1 fire	$8 00
00	14	2 ordinary fires	10 00
000	16½	3 " "	12 00

Arranged for exhaust purposes, extra..... 2 00

ACME POWER BLOWER

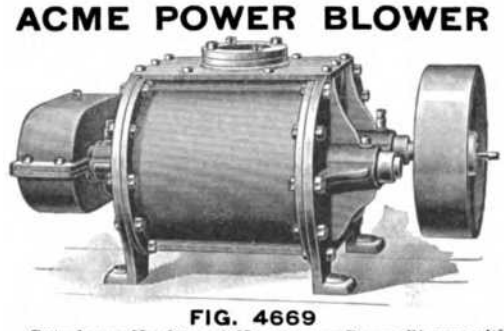


FIG. 4669

Cut shows No. 3½ and No. 4 Acme Power Blower with top discharge. This blower is made for power, and is used for a great variety of purposes, such as blowpipes, gas furnaces, forges, sand blast, etc., where a force blast is required.

PRICES

Nos.	Capacity per Revolution, Cubic Inches.	Diameters of Outlet, Inches.	Sizes of Pulley, Inches.	Medium Speed.	Each.
3	172	1¼	5½ x 1¾	450	$19 00
3½	325	2	8 x 2	400	42 00
4	648	3	10 x 3	350	75 00

No. 3 made with top discharge only. No. 3½ and No. 4 with top or side discharge.

Nos.	Dimensions of Blowers, Inches.	Weight, Pounds. Net.	Gross.
3	10 x 10½ x 16	55	75
3½	11 x 13 x 23	85	110
4	12 x 16 x 26	188	215

STEEL PRESSURE BLOWER

With Countershaft Cast to Shell of Case.

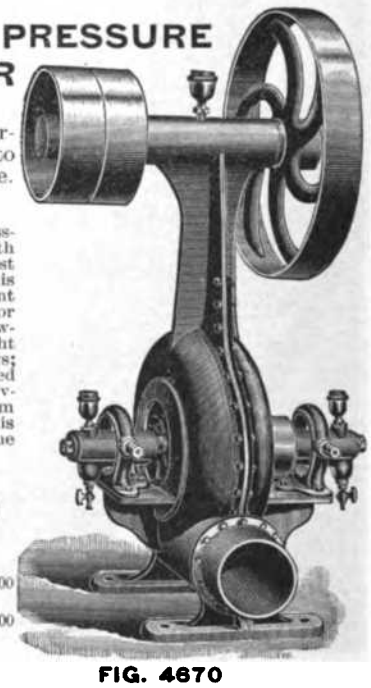


FIG. 4670

This Steel Pressure Blower, with countershaft cast to blower case, is very convenient and practical for small sized blowers. It has tight and loose pulleys; is also provided with a main driving pulley, from which motion is transmitted to the blower.

PRICES FIG. 4670

No. ½, 12 inches in diameter, with countershaft.....$20 00

No. 1, 15 in. in diameter .. $28 00

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MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

ACME HAND BLOWERS

NO. 3

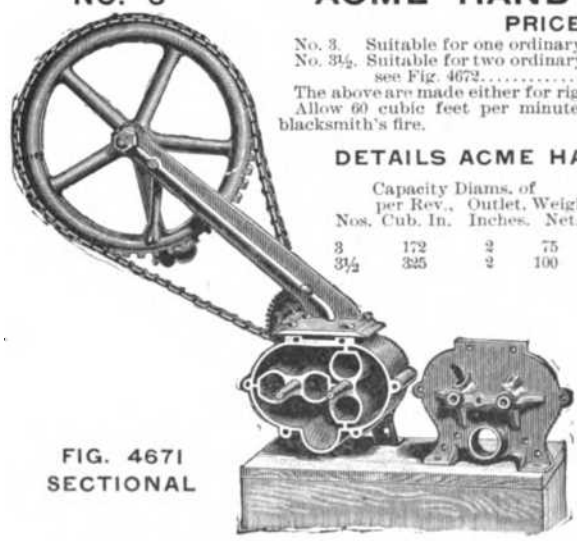


FIG. 4671
SECTIONAL

NO. 3

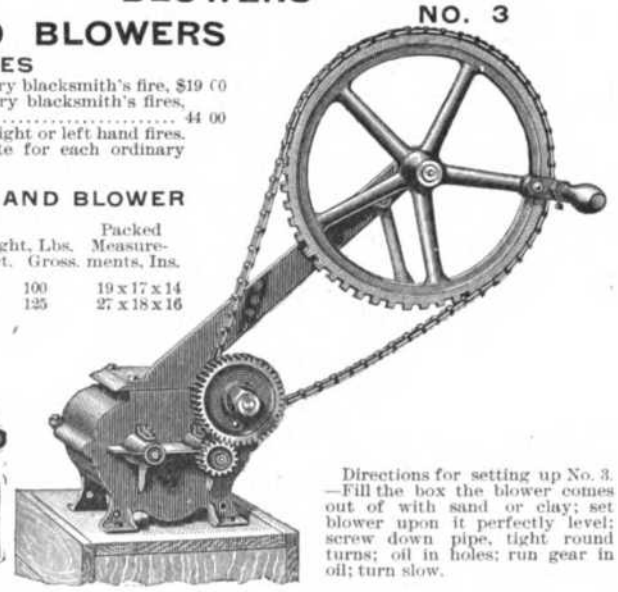


FIG. 4671

PRICES

No. 3. Suitable for one ordinary blacksmith's fire, $19 00
No. 3½. Suitable for two ordinary blacksmith's fires, see Fig. 4672..... 44 00

The above are made either for right or left hand fires. Allow 60 cubic feet per minute for each ordinary blacksmith's fire.

DETAILS ACME HAND BLOWER

Nos.	Capacity per Rev., Cub. In.	Diams. of Outlet, Inches.	Weight, Lbs. Net.	Gross.	Packed Measurements, Ins.
3	172	2	75	100	19 x 17 x 14
3½	325	2	100	125	27 x 18 x 16

Directions for setting up No. 3.—Fill the box the blower comes out of with sand or clay; set blower upon it perfectly level; screw down pipe, tight round turns; oil in holes; run gear in oil; turn slow.

NO. 3½

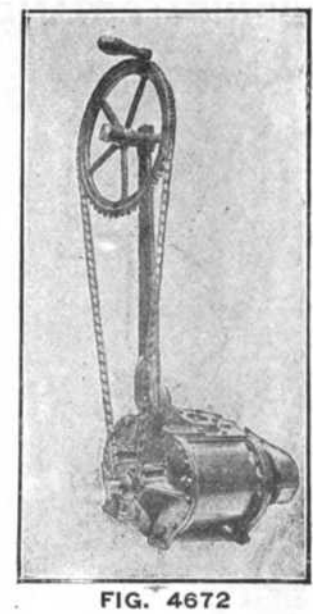


FIG. 4672

KEYSTONE HAND BLOWER

DESCRIPTION, FIG. 4673

Hand blower No. 5. Diameter of fan, 16 inches. Price, $30.00.

For attaching to brick forge, with chain gear or leather belt, equal to largest bellows.

Hand blower No. 4. Diameter of fan, 12 inches.

Price, $25.00.

Hand blower No. 4 is same style as No. 5, above; has 12 inch driving wheel; is equal to 36 inch bellows. Improved ball tuyere and plate.

Price, $2.50 extra.



FIG. 4673

FORGE BLOWER

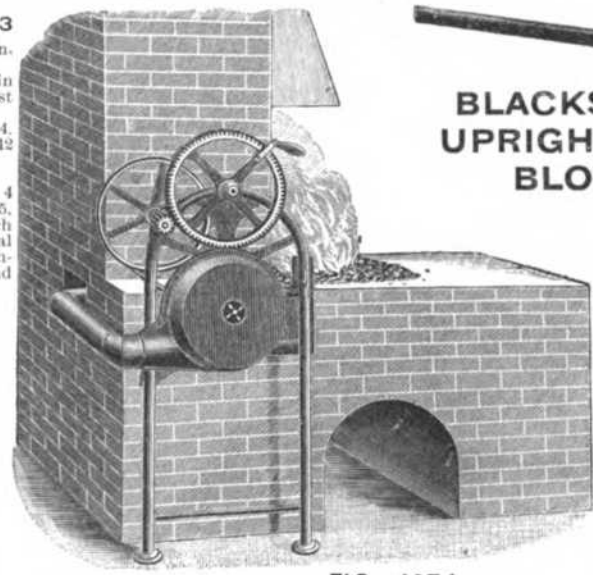


FIG. 4674

Price, $23.00; with tuyere, $25.00

PRICES, FIG. 4675

No. 3X, with tuyere, $27.00. No. 3X, without tuyere, $25.00. Tuyeres, each, $3.50.

BLACKSMITH'S UPRIGHT HAND BLOWER

Size of fan, 14 inches diameter; height, 46 inches; weight, 150 lbs.; with tuyere, 170 lbs.



FIG. 4675

BLACKSMITH'S CRANK HAND BLOWER

This blower has a steel frame on cast iron bases. The entire blower is made extra stiff and strong to withstand the wear and tear incident to heavy and outdoor service.



FIG. 4676

PRICES, FIG. 4676

Made either right or left hand.

Cut shows right hand.

Hand blower, No. 5X, with tuyere, $22.00.

Hand blower, No. 5X, without tuyere, $20.00.

Tuyeres, each, $3.50.

Size of fan, 14 inches diameter; height, 44 inches; weight, 140 lbs; with tuyere, 160 lbs.

DOUBLE CRANK HAND BLOWER

FOR TWO OPERATORS

This blower was designed especially for ventilating mines, drifts and tunnels, for dispelling smoke and fumes resulting from blasting operations. It can be operated by either one or two men, and has a specially large fan with gearing in proportion. For special heavy blacksmithing or emergency work it is specially adapted. The frame is of iron throughout and capable of withstanding any possible strain.

PRICES

No. 7. Height, 46 inches; fan, 17 inches; weight, 195 lbs. With tuyere, $32.00.

No. 7. Height, 46 inches; fan, 17 inches; weight, 175 lbs. Without tuyere, $30.00.

Tuyeres, each, $3.50

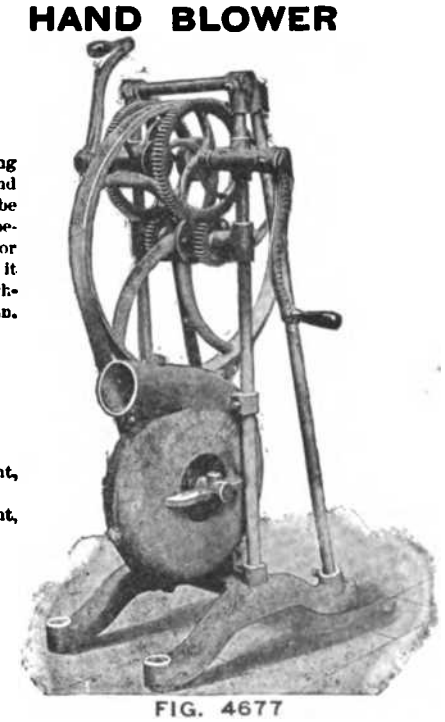


FIG. 4677

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HAND BLOWERS

UPRIGHT HAND BLOWER

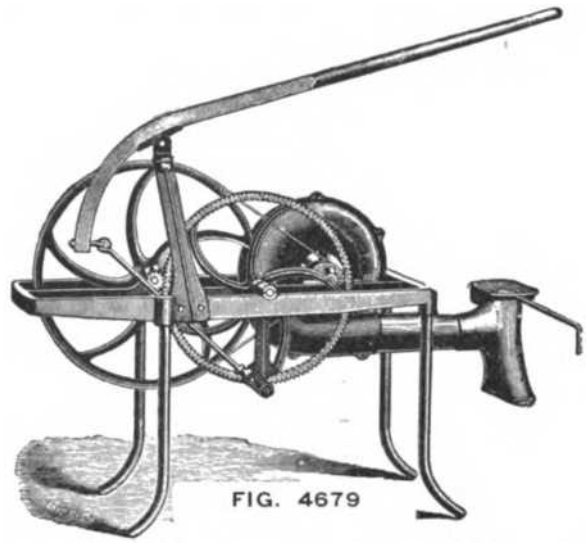

FIG. 4678

Made either right or left hand. Cut shows right hand. Size of fan, 14 inches diameter; height, 47 inches; weight, 115 pounds; with tuyere, 130 pounds.

PRICES

No. 3. With tuyere complete	$25 00
No. 3. without tuyere	23 00
Tuyeres, each	3 50

HORIZONTAL HAND BLOWER


FIG. 4679

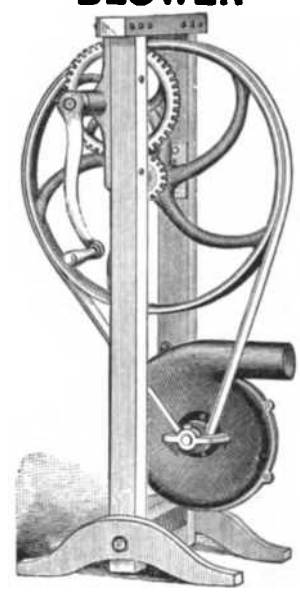
Blower No. 2. Size of fan, 14 inches; height, 35 inches; length, 32 inches; weight, 130 pounds; with tuyere, 150 pounds. This blower is designed for all ordinary blacksmithing.

Blower No. 4. Size of fan, 17 inches; height, 35 inches; length, 35 inches; weight, 200 pounds; with tuyere, 225 pounds. This blower is designed for extra heavy work, as boilermaker's flange fires, heavy ship smithing, etc.

PRICES

No. 2. With tuyere complete	$32 00
No. 2. Without tuyere	30 00
No. 4. With tuyere complete	36 00
No. 4. Without tuyere	34 00
Tuyeres, each	3 50

CRANK HAND BLOWER

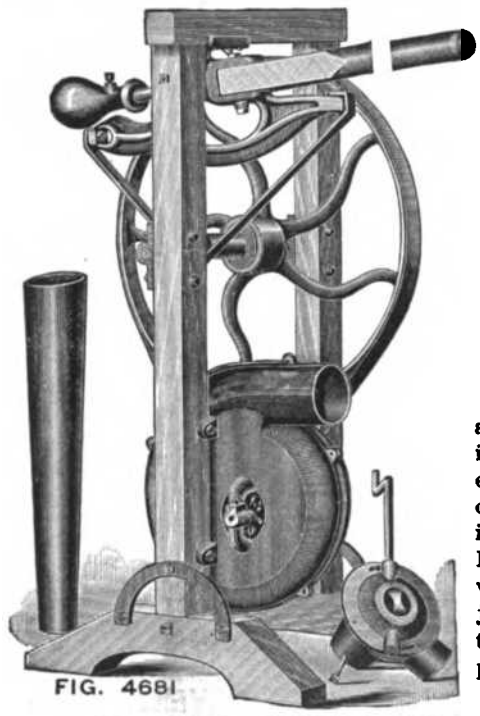

FIG. 4680

Size of fan, 14 inches; height, 47 inches; weight, 105 pounds; with tuyere, 125 pounds.

At 80 turns of crank per minute, this blower will blow strong enough to heat 3 to 4 inch iron in from 5 to 10 minutes. Made only right hand.

No. 5. With tuyere, each	$20 00
No. 5. Without tuyere, each	18 00
Tuyeres, each	3 50

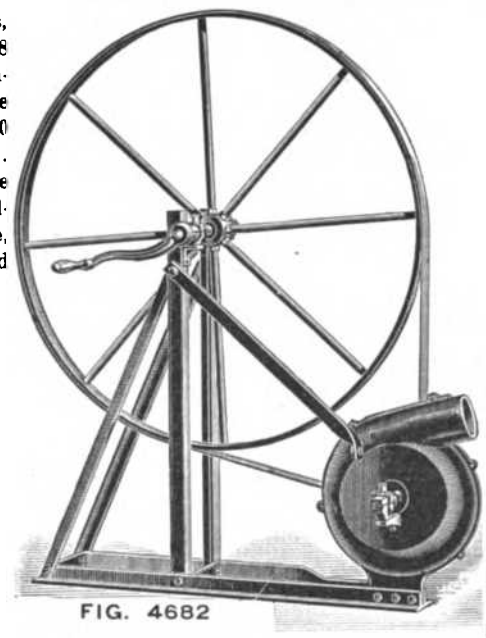
LEVER BLACKSMITH BLOWER


FIG. 4681

DESCRIPTION FIG. 4681

Fan 16 inches, and fly wheel 28 inches in diameter. Has the capacity of a 50 inch bellows. Price, complete with patent adjustable nozzle, tuyere iron and piping, $12.00.

48 INCH WHEEL CRANK BLOWER

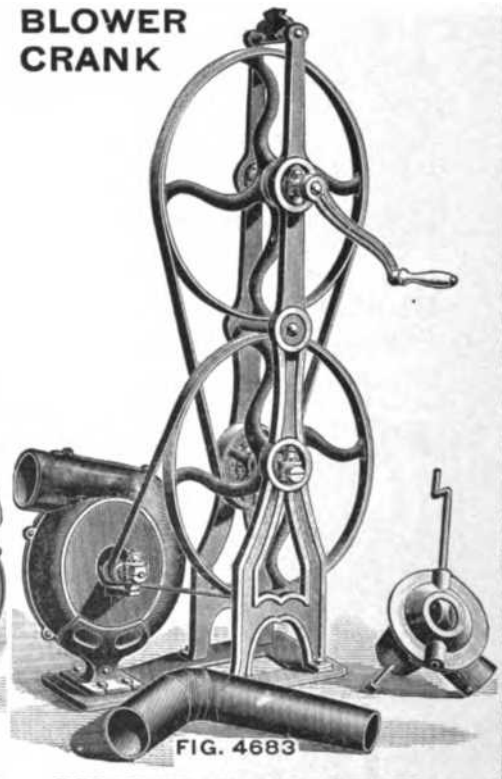

FIG. 4682

DESCRIPTION AND PRICE

The wheel is 48 inches in diameter, and of solid wrought iron. Frame is made of angle steel, making it perfectly strong and rigid. The blower has a ratchet and stationary crank. The ratchet crank or handle always drops back to one place in one position for starting. Either can be used as desired by the operator, by a single adjusting device. It can also be used to a right and left hand fire, simply by placing the crank on the opposite end of the shaft. The ball joint brass oscillating journal bearings used on this blower require oiling but once in six months.

Fan, 16 inches; fly wheel, 48 inches diameter; complete with tuyere and piping, $25.00.

CENTENNIAL BLOWER CRANK


FIG. 4683

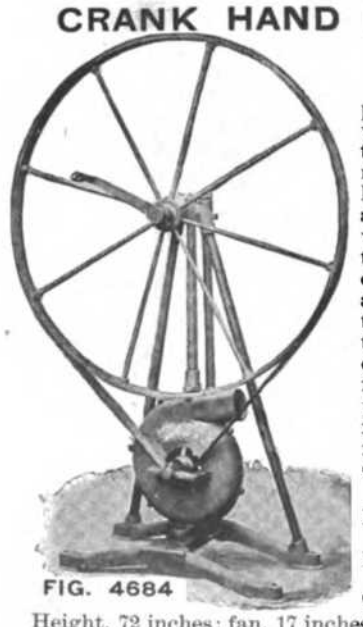
DESCRIPTION AND PRICES

This crank blower is built with the ball joint brass oscillating journal bearings which take up all vibration and twist of the frame, reducing the friction and power to operate the blower one-half, besides requiring oiling but once in six months. It is made with 16 inch fan and with blast wheel closed on both sides with sheet steel.

The new improved Centennial Crank Blower, complete with tuyere iron and piping; weight, 180 pounds, $20.00.

The old style Centennial Crank Blower with 16 inch fan and ball tuyere iron and piping; weight, 165 pounds; $15.00.

CRANK HAND BLOWER


FIG. 4684

DESCRIPTION FIG. 4684

It is furnished with patent ratchet crank, which always drops to the same position and remains there motionless on being released, although the fly wheel may continue to revolve. The fan is of extra large size, and the frame is of tubular steel, securing the greatest degree of combination of rigidity, durability and power. Perfectly noiseless. Made either right or left hand. Cut shows right hand.

PRICES

No. 6. With tuyere complete	$28 00
No. 6. Without tuyere	26 00
Tuyeres, each	3 50

Height, 72 inches; fan, 17 inches; fly wheel, 48 inches diameter; weight, 210 pounds, with tuyere; 198 pounds without tuyere.

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ANGLE STEEL FRAME BLACKSMITH BLOWER

MADE WITH LEVER MOTION, ALSO CRANK AND LEVER MOTION COMBINED

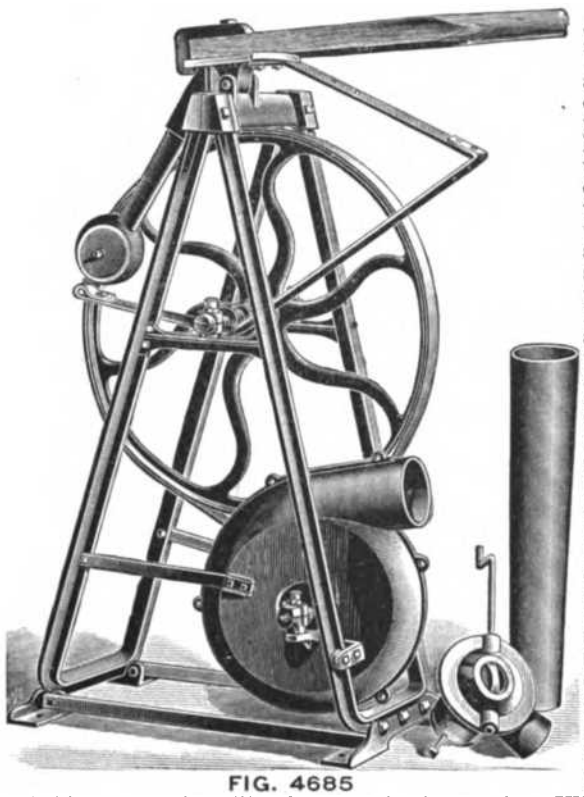


FIG. 4685

This Angle Steel Frame Blacksmith Lever, or lever and crank blower combined, is built precisely like the No. 4½, Fig. 4686, with the exception of the lever motion, which is a very simple self acting rachet, no spring or anything to get out of order, having three self acting pawls made from hardened tool steel, and is practical and durable. The angle steel frame is stiff and rigid, the bent part of the steel being at the lower end, where the fan is fastened and most stiffness is, required. The four ends are brought together at the top, then clamped by bolts and fittings substantially. The Patented Ball Joint Brass Oscillating Journal Bearings used on this blower require oiling but once in six months. Will produce a welding heat on 3½ to 4 inch iron in ten minutes.

Fan, 16 inches; flywheel, 26½ inches, with Tuyere and piping.....$20 00
Blower, same as above, with lever and crank motion combined..... 25 00

STEEL BLACKSMITH BLOWER

MADE WITH BALL BEARINGS ONLY

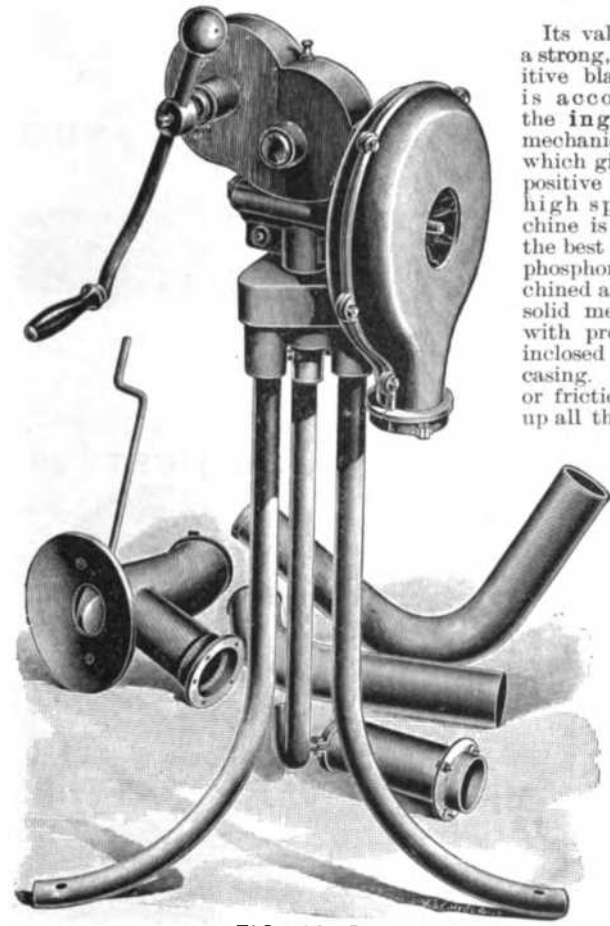


FIG. 4687

Its valuable feature is a strong, regular and positive blast. This blast is accomplished by the ingenious 3 piece mechanical construction, which gives the blower a positive drive, and at a high speed. The machine is all made from the best of tool steel and phosphor bronze, machined and cut from the solid metal and fitted with precision, and all inclosed in an oil-tight casing. It has no belts or friction, and is fitted up all through with ball bearings. The blower is very compact, can be taken apart for transportation and again set up in a very few moments. It has an adjustment whereby it can be raised or lowered to suit the height of all size mechanics. The blast is produced by turning the crank in either direction.

No. 400. Fan, 12 inches in diameter; weight, 100 lbs., with Tuyere iron and piping, complete.....$37 00

STANDARD ANGLE STEEL FRAME LEVER BLOWER

MADE WITH LEVER MOTION, ALSO LEVER AND CRANK MOTION COMBINED

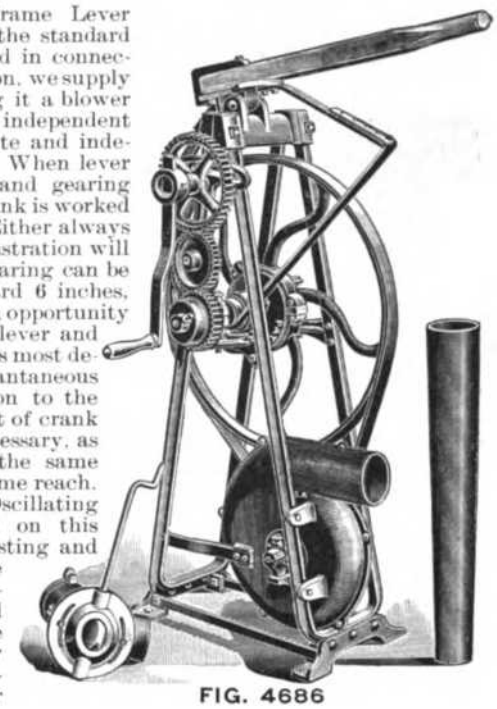


FIG. 4686

This Angle Steel Frame Lever Blower is supplied with the standard lever motion. If desired in connection with the lever motion, we supply a crank motion, making it a blower with a complete and independent lever motion, or complete and independent crank motion. When lever is worked the crank and gearing stand still, and when crank is worked the lever stands still. Either always ready to work. As illustration will show, the crank and gearing can be adjusted back or forward 6 inches, giving the blacksmith an opportunity to adjust, so that both lever and crank motion come to his most desired reach for an instantaneous change from one motion to the other. This adjustment of crank and gearing is very necessary, as all operators are not the same height or have not the same reach. The Ball Joint Brass Oscillating Journal Bearings used on this blower prevent all twisting and binding of bearings. The oil chambers or reservoirs, when filled, hold oil for lubricating the bearings automatically six months, or 150 working days, without further attention. The brass bearings are adjustable over the entire length of the bearing, and have hardened steel end screws with lock nut for taking up all end wear on the fan. The angle steel frame is stiff and rigid, the bent part of the steel being at the lower end, where the fan is fastened and most stiffness is required. The four ends are brought together at the top, then clamped by bolts and fittings substantially. Will produce a welding heat on 3½ to 4 inch iron in ten minutes.

No. 4½. Fan, 16 inches; flywheel, 25 inches, with Tuyere iron piping.....$22 00
No. 4½. Blower, same as above, with lever and crank motion combined, complete 27 00

HAND BELLOWS

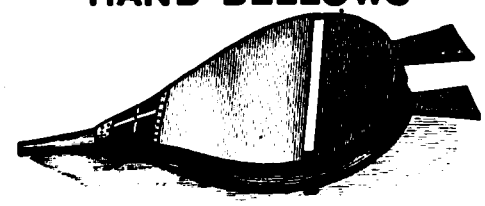


FIG. 4688

5	inch; per dozen.....	$7 00		9	inch; per dozen.....	$11 00
6	" "	8 00		10	" "	12 00
7	" "	9 00		12	" "	14 00
8	" "	10 00				

STANDARD BLACKSMITH BELLOWS

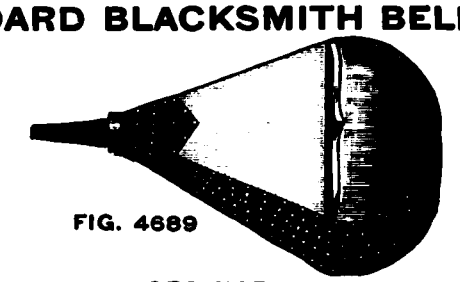


FIG. 4689

ORDINARY

18	inch to 23 inch.....	$10 00
24	"	10 00
26	"	11 00
28	"	12 00
30	"	13 00
32	"	14 00
34	"	16 00
36	"	18 00
38	"	20 00
40	"	23 00
42	"	27 00
44	"	32 00

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TUYERE IRONS

FIRE BED AND TUYERE
FOR USE IN BRICK FORGE



FIG. 4690

PRICES

No. 3, 14¼ in. square x 11½ in. deep, weight, 63 lbs $6 50

No. 4, 18 in. square x 12 in. deep, weight, 80 lbs... 9 50

Directions for setting: Construct forge with inside cross walls 12½ inches in the clear for No. 3, and 16 inches in the clear for No. 4. The space below fire bed must be left entirely open to permit free circulation of air. After fire bed is placed, the hearth should be joined up to it on all sides as high as the top.

HARRIS TUYERE

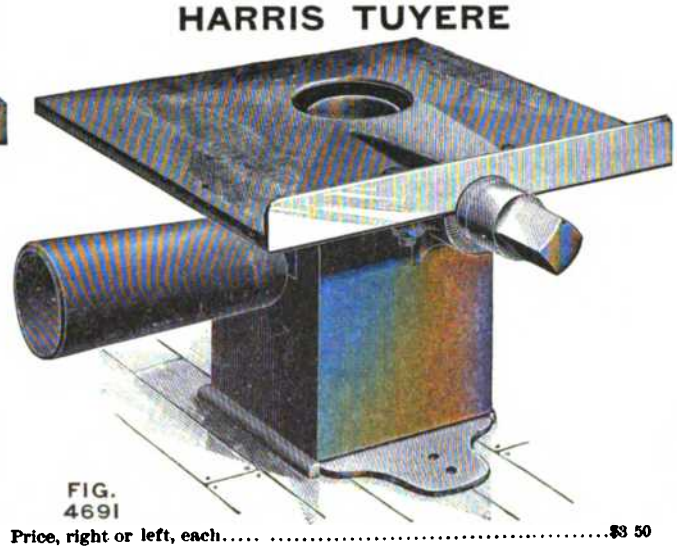


FIG. 4691

Price, right or left, each..... $3 50

BURBRIDGE

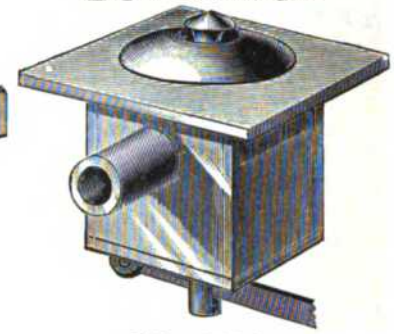


FIG. 4692

PRICES

Nos.		Each.
1	For light forging	$4 00
2	For general work up to 150 lbs.,	6 00
3	" " " 300 "	12 00
4	For extra heavy work up to 700 lbs.	25 00

ADJUSTABLE NOZZLE TUYERE

WESTERN



FIG. 4693

With revolving center.

For cleaning fire or changing size and direction of blast.

Price..... $2 00

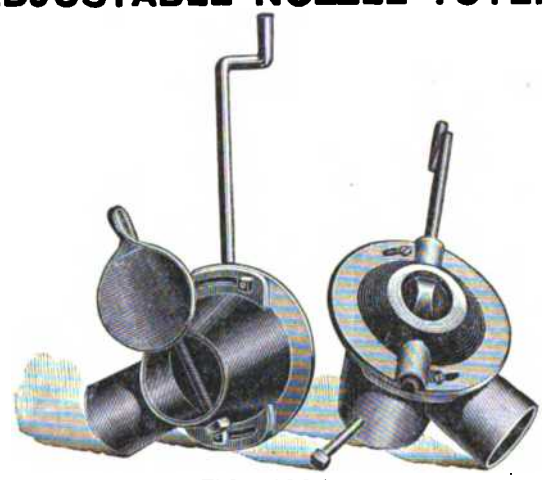


FIG. 4694

Price..... $2 00

BALL TUYERE IRONS

OLD STYLE

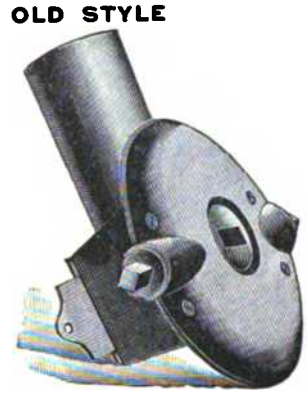


FIG. 4695

Price..... $2 00

NEW STYLE



FIG. 4696

Price..... $2 00

3 CORNERED BALL

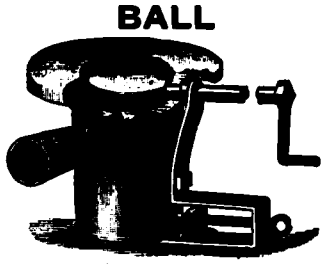


FIG. 4697

Price..... $6 00

CLARK'S TUYERE



FIG. 4698

These tuyere irons are made with ball valves and are convenient and durable.

Nos.	Weight, Lbs.	Prices.
1	18	$1 30
2	21	1 55
3	26	1 80
4	45	2 00

DESCRIPTION

FIG. 4699

This tuyere iron is especially adapted for heavy work. It produces a broad, uniform fire when all three passages are opened, while the fire can be easily reduced for ordinary work by shutting off the outside passages.

By replacing the loose upper plate occasionally this tuyere iron will last a long time. Full printed directions for setting furnished with each.

M'CLELLAND'S

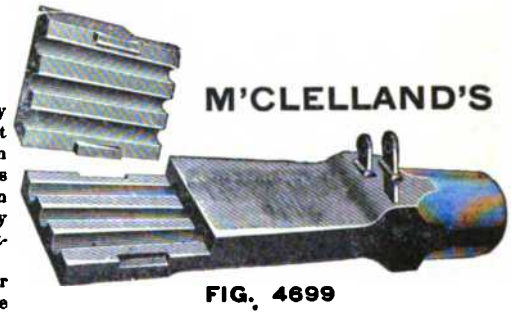


FIG. 4699

PRICES

Length, 22 inches.

Weight complete, about 55 lbs., each..... $6 00

Weight of loose upper plate, about 18 lbs., each.... 1 50

EMPIRE ADJUSTABLE



FIG. 4700

This tuyere is rendered adjustable by the action of a rod connected with the arbor supporting the valve, which closes or opens it to any desired extent, without disturbing the fire, enabling the operator to adjust it without labor or delay.

Price..... $3 50

WARREN'S ADJUSTABLE

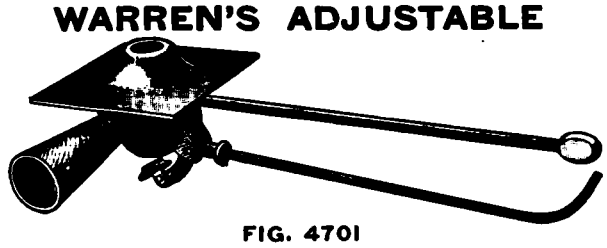


FIG. 4701

The blast is regulated by simply revolving the ball, which has three unequal sides. Open the bottom valve, and all cinders and ashes drop out. Weight about 31 lbs. Each..... $2 20

DUCK NEST

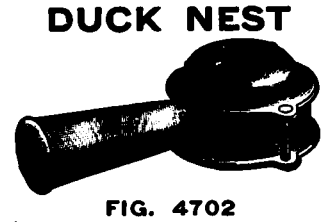


FIG. 4702

PRICES

				Per Doz.
No. 1	Single,	weight,	11 lbs.	$8 00
" 2	"	"	15 "	10 00
" 3	"	"	18 "	12 00
" 2	Double,	"	17 "	12 00

BIRD NEST OR DUCK PATTERN TUYERES

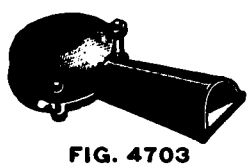


FIG. 4703

Price..... $0 90

Round Nozzle.



FIG. 4704

Price..... $0 90

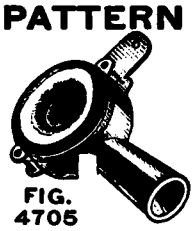


FIG. 4705

Price..... $1 25

Square with Round Nozzle



FIG. 4706

Price..... $0 90

PORTER PATTERN



FIG. 4707

Price..... $3 00

BERRY PATTERN



FIG. 4708

PRICES

No. 1 Small..... $6 00

" 2 Large..... 7 00

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GLOBE TUYERE

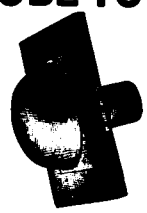


FIG. 4709

Without plate, weight 24 pounds, $13.00 per dozen.
With plate, weight 26 pounds, $14.00 per dozen.

BOX TUYERE

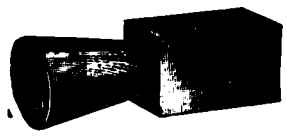


FIG. 4710

No. 1. Weight 16 pounds, $9.00 per dozen.
No. 2. Weight 21 pounds, $12.00 per dozen.
No. 3 Weight 25 pounds, $14.00 per dozen.

WATER TUYERE



FIG. 4711
PRICE, $9.00

WATER TUYERE IRON
DUCK NEST PATTERN

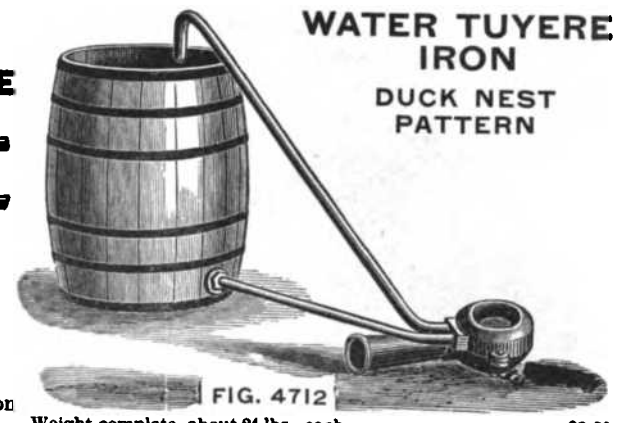


FIG. 4712

Weight complete, about 24 lbs., each.....$3 50
Price does not include barrel.

BLAST GATES
SLIDE AND LEVER PATTERNS

For opening, closing and regulating blast in air pipes.

Prices are the same for Lever Pattern and Slide Pattern.

Slide Pattern, Cast Iron Shell, Slide of Heavy Steel Plate.

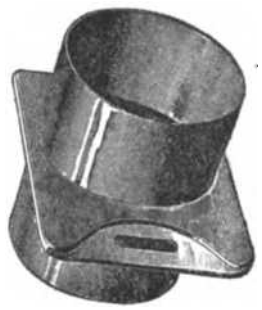


FIG. 4713

PRICES

Sizes, Inches.	Material.	Each.
2	Cast iron with steel slide	$1 00
2½	" " "	1 25
3	" " "	1 50
4	" " "	2 00
5	" " "	2 25
6	" " "	2 50
8	" " "	3 50
10	" " "	5 00
12	" " "	6 50
14	" " "	8 00
16	" " "	12 00
18	" " "	16 00
20	" " "	18 00
24	" " "	21 00

Lever Pattern, Cast Iron Shell, Slide of Heavy Steel Plate.



FIG. 4714

EMPIRE VENTILATOR

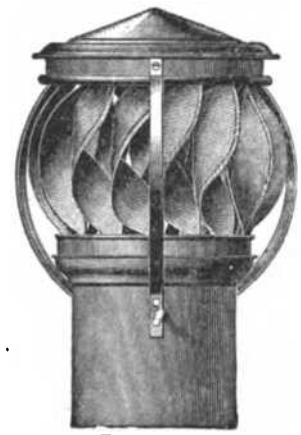


FIG. 4715

PRICES, FIG. 4715

Inches.	Each.
4	$3 00
5	3 50
6	4 00
7	4 50
8	5 00
10	10 00
12	14 00

STAR VENTILATORS

COMBINATION GLASS TOP



FIG. 4716

REGULAR PATTERN



FIG. 4717

GALVANIZED IRON

PRICES, FIG. 4717

Inches.	Each.	Inches.	Each.
2	$1 00	10	$5 75
2½	1 00	12	6 75
3	1 50	14	13 00
3½	1 50	16	20 00
4	1 75	18	27 00
4½	2 00	20	33 00
5	2 50	24	40 00
5½	2 85	30	65 00
6	3 40	36	120 00
7	4 00	40	180 00
8	4 65	48	240 00
9	5 20	60	360 00

Special prices on the Combination Skylight Star Ventilators, Fig. 4716, named on application.

Regular Pattern Star Ventilators, Fig. 4717, made of copper, or other material than galvanized iron.

Bases can be made to fit any roof or chimney, either square or oblong. The price of the base is extra, according to size and quantity. We furnish dampers, if wanted, thereby regulating the draught.

General estimates and further information gladly given.

Prices on application.

SELF LUBRICATING ROTARY SCREW VENTILATOR

This rotary ventilator is made of galvanized iron and painted. It consists of a head, cylinder and propeller. The head revolving on a spindle (to which the propeller is attached), works noiselessly in protected self lubricating oil cups. By the rotation of the head and propeller, which is in the cylinder, the air in the flue (on the top of which the ventilator is placed) is lifted up and forced out of the flue, producing a partial vacuum below, which can only be supplied from beneath, whereby an upper current is certainly maintained. This being a purely mechanical power, its action is in no degree dependent upon temperature, or any other modification of the atmosphere; and at whatever time the wind suffices to rotate the ventilator (and its freedom from friction renders the slightest breeze operative), the exhausting action of the propeller is inevitable. For houses, churches, factories, breweries, and all large buildings, and is a sure cure for a smoky chimney.

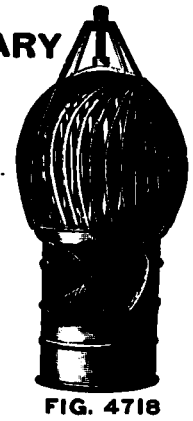


FIG. 4718

Diams. of Cylinder, Inches.	Each.	Diams. of Cylinder, Inches.	Each.	Diams. of Cylinder, Inches.	Each.
6	$8 00	15	$30 00	30	$90 00
8	10 00	18	40 00	36	120 00
10	12 00	20	50 00	42	175 00
12	16 00	24	70 00		

VENTILATOR AND CHIMNEY COWL

ABSOLUTELY STORM PROOF

COMPLETE VIEW



FIG. 4719

Contains Inches.	Square Inches.	Each.
2	4	$1 00
4	16	1 75
5	19	2 50
6	28	3 40
7	40	4 00
8	50	4 65
9	64	5 20
10	78	5 75
12	113	6 75
13	134	10 00
14	164	13 00
15	177	$16 00
16	201	20 00
18	255	27 00
20	314	33 00
22	380	36 00
24	453	40 00
26	521	50 00
28	615	56 00
30	707	65 00
32	804	80 00
34	908	100 00

SECTIONAL VIEW

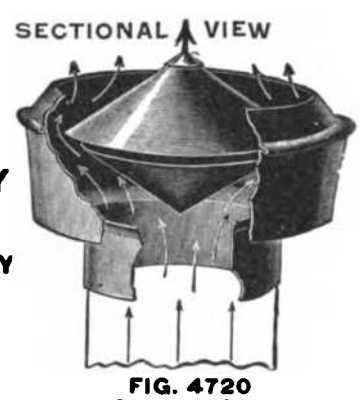


FIG. 4720

Contains Inches.	Square Inches.	Each.
36	1017	$120 00
40	1257	180 00
44	1620	200 00
48	1809	240 00
54	2290	300 00
60	2907	360 00
5 ft. 6	3456	420 00
6 "	4071	480 00
7 "	5539	600 00
7 " 6	6361	660 00
8 "	7238	720 00

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EXHAUST DISK WHEELS AND VENTILATING FANS

DISK WHEEL, WITH OVERHUNG PULLEY

Especially Suited for Cooling, Ventilating and Drying.

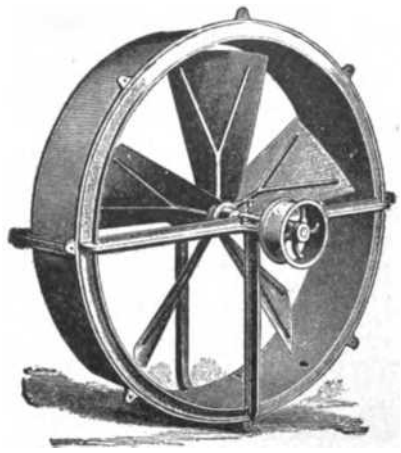


FIG. 4721

PRICES, FIG. 4721

Diams. of Wheel, Inches.	Diams. of Pulley, Inches.	Face of Pulley, Inches.	Each.
18	4	2	$40 00
24	4	2	50 00
30	6	2	65 00
36	7	3	85 00
42	8	3½	110 00
48	9	4	125 00
54	9	4	175 00
60	10	5	250 00
72	12	5½	300 00
84	14	6	350 00

The efficiency of a ventilating wheel for all uses largely depends upon its being properly applied. We are therefore always pleased to give patrons the benefit of our experience in installing these machines to various uses, if furnished with complete data as to conditions under which the fan is to be used. Full details should accompany all inquiries, and these are best embodied in a drawing.

SHOWING POSITION OF WHEEL IN A WINDOW

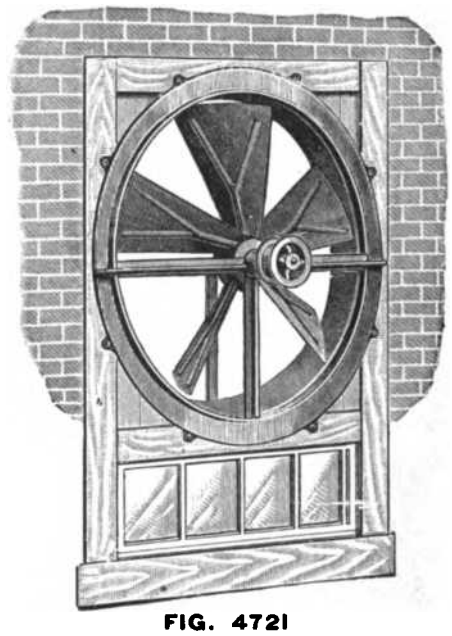


FIG. 4721

DISK WHEEL, WITH DIRECT ATTACHED ENGINE

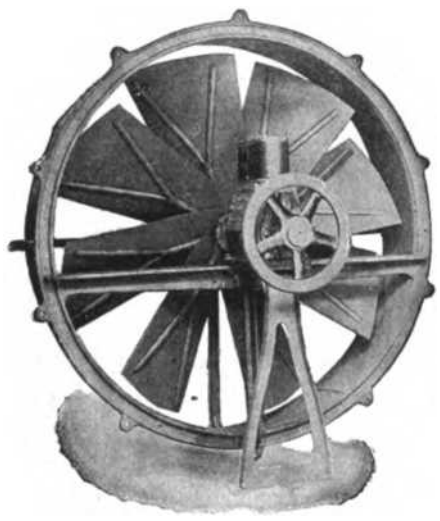


FIG. 4722

PRICES, FIG. 4722

Engine Inclosed, Running in Oil, Double Single Acting Type.

Sizes of Fan, Inches.	Sizes of Engine, O. S. A.	Sizes Steam, Inches.	Sizes Ex. Inches.	Weight Packed.	Weight Not Packed.	Each.
36	2 x 3	1	1¼	580	530	$175
42	2½ x 3	1	1¼	725	675	210
48	3 x 3	1	1¼	845	795	230
54	3½ x 4	1¼	1½	1010	960	355
60	4 x 4	1¼	1½	1080	1030	415
72	4½ x 5	1½	2	1895	1820	500
84	5 x 5	1½	2	2065	1990	540

DESCRIPTION AND PRICES, FIG. 4723

Electric Disk Wheel, Motor Connected Direct to the Fan Shaft.

In the dynamo rooms of electric light plants, the electric fans are naturally preferred to any other means of ventilation, and render most efficient service. For various ventilating uses on ships they are also particularly suited. Where ventilating wheels are desired with the motor connected directly to the shaft of fan, full data must be given of the work to be performed. Motors are ordinarily wound for 115, 230 and 500 volt circuits. An extra charge is made for small motors for 500 volt circuits. Invariably state voltage of current in all correspondence.

Sizes of Fan, Inches.	Speed.	Motor H. P.	Amperes.	Voltage.	Each.
18	1000	¼	1.5	115	$220 00
24	775	½	3.	115	300 00
30	650	1	5.	115	360 00
36	600	2	10.	115	490 00
42	550	4	20.	115	650 00
48	500	5	25.	115	750 00
54	450	7½	27.5	115	975 00
60	400	10	30.	115	1200 00
72	350	15	30.	115	1500 00

DISK WHEEL, WITH DIRECT ATTACHED ELECTRIC MOTOR



FIG. 4723

BLACKMAN POWER VENTILATING WHEEL

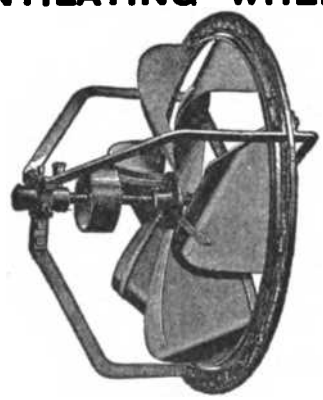


FIG. 4724

We can furnish Blackman wheels with Kalamem iron, brass or copper blades when desired. Prices on application.

PRICES, FIG. 4724, WITH FRAMES

Sizes, Inches.	Area of Circle, Sq. Feet.	Pulleys, Inches.	Each.
12	0.78	3 x ½	$30 00
18	1.77	4 x 1½	40 00
24	3.14	5 x 2	60 00
30	4.90	6 x 2½	80 00
36	7.06	7 x 3	100 00
42	9.62	8 x 3	125 00
48	12.56	9 x 4	150 00
54	15.90	10 x 5	200 00
60	19.63	12 x 6	250 00
72	28.27	15 x 6	375 00
84	38.48	18 x 6	500 00

PRICES, FIG. 4725

Nos.	Diameters, Inches.	Width, Inches.	Pulleys, Inches.	Each.
1	12	8	2 x 1¼	$30 00
2	18	10	3 x 1½	40 00
3	24	12	4 x 2	50 00
4	30	13	5 x 3	65 00
5	36	14	6 x 3	85 00
6	42	15	7 x 4	105 00
7	48	16	8 x 4	125 00
8	54	17	9 x 5	160 00
9	60	18	10 x 6	200 00

PRICES, FIG. 4725

SKELETON FANS.

Nos.	Diameters, Inches.	Pulleys, Inches.	Each.
10	72	12 x 7	$200 00
11	84	14 x 8	250 00
12	96	16 x 10	300 00
13	108	20 x 12	400 00
14	120	24 x 12	500 00

Prices for extra sizes given on application. Fans fitted to run horizontally from $6.00 to $15.00 extra.

DISK FAN

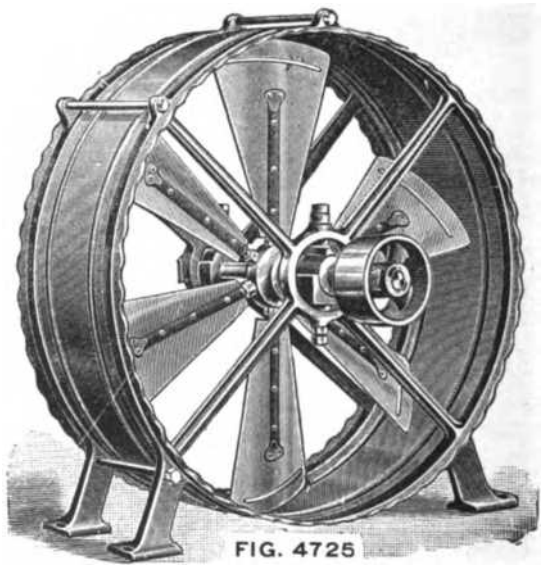


FIG. 4725

PRICES, FIG. 4725

DISK FAN AND HIGH SPEED ENGINE COMBINATION.

36	inch	fan,	with	engine	and	lubricator..... $225 00
42	"	"	"	"	"	..... 265 00
48	"	"	"	"	"	..... 310 00
54	"	"	"	"	"	..... 420 00
60	"	"	"	"	"	..... 500 00

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PERKINS VENTILATING FANS

VENTILATING AND EXHAUST FAN
STYLE A

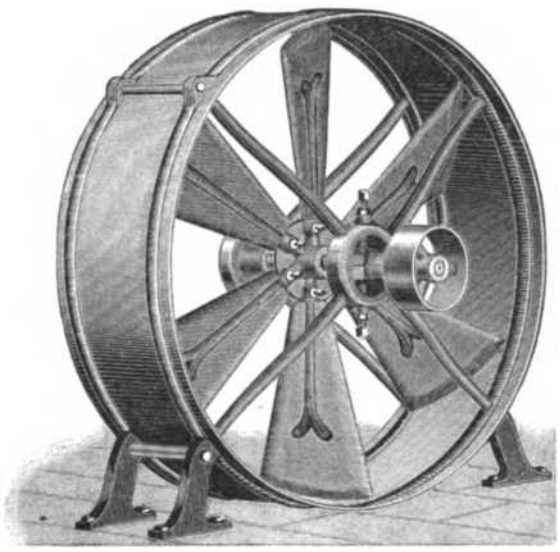


FIG. 4728

HORIZONTAL FAN
STYLE C

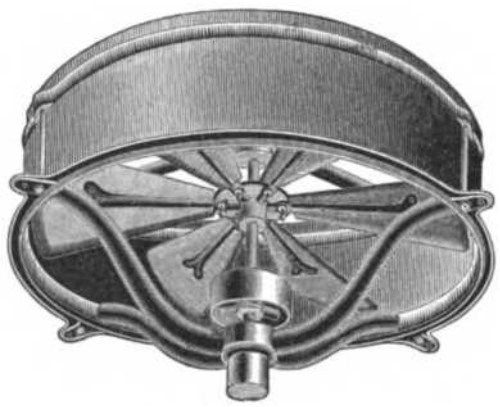


FIG. 4729

This fan has self-oiling bearings so arranged that the oil can not run down the shaft and drip, and it will run for months without oiling. It has flange projection, same as wall fan, Fig. 4730, to admit of fastening to ceiling, pipes, etc. We also furnish this fan with a flange frame on the opposite side from pulley, so that it may be fastened to the ceiling by means of it, leaving the body of the fan projecting down into the room. State when ordering whether flange wanted on pulley end or opposite end, as explained above. These fans have galvanized iron cases and steel blades.

WALL FAN
STYLE B

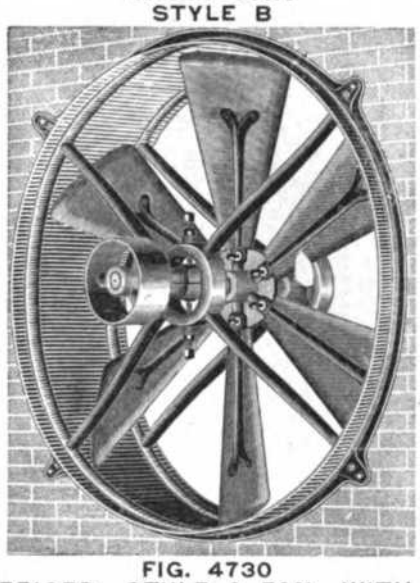


FIG. 4730

PRICES, STYLE A FAN, WITH ENGINE CONNECTED

Fan with Engine, Inches.	Each.	Fan with Engine, Inches.	Each.
42	$240 00	54	$340 00
48	290 00	60	450 00

PRICES FOR STYLES A, B AND C, FIGS. 4728, 4729 AND 4730

Diameters, Inches.	Width, Inches.	Pulley, Inches.	Each.	Diameters, Inches.	Width, Inches.	Pulley, Inches.	Each.	Diameters, Inches.	Width, Inches.	Pulley, Inches.	Each.
12	9	3 x 2	$25 00	30	12	6 x 3	$55 00	48	16	8 x 4	$110 00
18	10	4 x 2	35 00	36	13	6 x 3	70 00	54	18	9 x 4	135 00
24	11	5 x 3	45 00	42	14	8 x 4	85 00	60	20	10 x 6	175 00

Prices for larger sizes furnished upon application.

PORTABLE FURNACES AND CALDRONS

FOR HARD OR SOFT COAL



FIG. 4731

The fire box is round and lined with heavy fire brick. The fire door is large enough to feed with an ordinary coal scoop. The grate shakes laterally and dumps. The ash pit is large and deep. It can be set either on legs, as shown, or on a brick base.

PRICES, FIG. 4731

Sizes in Gallons.	Furnace and Caldron Complete, Each.	Caldron Only, Each.
22	$24 25	$5 00
30	30 00	6 75
45	37 50	9 00
60	48 50	11 00

SIZES OF CALDRONS FOR THESE FURNACES

Sizes, Gallons.	Outside Diameters, Including Rim, Inches.	Inside Diameters, Inches.	Inside Depth, Inches.
22	27	23	15
30	30	26	17
45	33	29	18
60	36	32	19

FOR COAL OR WOOD



FIG. 4732

WITH RAISED CURB FOR COAL OR WOOD



FIG. 4733

PRICES, FIGS. 4732 AND 4733

Capacity, Gallons.	Furnace and Caldron for Wood, Each.	Furnace and Caldron for Coal, Each.	Caldron Only, Each.	Extra when Caldron is Enameled, Each.	Prices for Covers, Each.
10	$11 00	$13 25	$2 75	$10 00	$1 50
15	13 25	15 75	4 00	13 25	2 25
22	16 50	19 50	5 00	16 50	2 75
30	22 00	26 00	6 75	20 00	3 00
45	27 50	32 50	9 00	22 00	4 00
60	33 00	39 50	11 00	27 50	5 00
90	49 50	58 50	17 50	33 00	6 50
120	66 00	79 50	26 50	.....	9 00
140	78 00	92 00	38 50	.....	10 00
170	84 00	97 00	44 00	.....	10 00
200	96 00	108 00	55 00	.....	10 00

DIMENSIONS OF CALDRONS

Outside Diameters, Inches.	Inside Diameters, Inches.	Inside Depth, Inches.
22	18½	11½
24½	20½	13
27	23	15
30	26	17
33	29	18
36	32	19
43	39	23
48	44	24
48	44	28
48	44	32
48	44	36

The 140 gallon has a 4 inch curb, the 170 gallon an 8 inch curb and the 200 gallon a 12 inch curb.

We can furnish copper caldrons for use in above furnaces instead of iron caldrons; also copper caldrons for use inside the iron caldrons, i. e., when double caldrons are wanted. Prices on application.

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WROUGHT IRON FURNACES AND CALDRONS

FOR MELTING METAL



FIG. 4734

The body of this furnace is made of heavy wrought iron lined with fire brick. The caldron is fitted with sliding cast iron cover, as shown, having vent pipe for fumes.

Height of furnace, 29 inches; diameter of furnace, 18 inches.

PRICES

One size, 8 gallons.

Complete, as shown	$22 00
Caldron only	4 00

FOR MELTING METAL

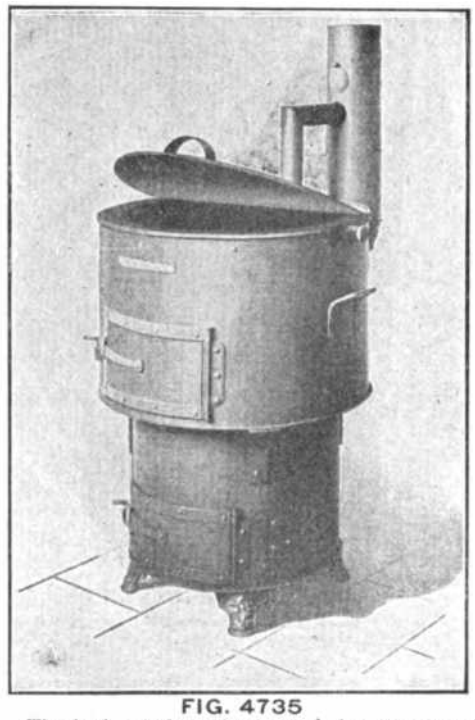


FIG. 4735

The body of these furnaces is heavy wrought iron lined with fire brick. The caldrons are fitted with galvanized iron hinged cover, as shown, having vent pipe for fumes.

Sizes in Gallons.	Height of Furnaces, Inches.	Diameters of Furnaces, Inches.	Prices Complete, as Shown.	Prices of Caldrons Only.
10	33½	22	$27 50	$4 50
15	34	24	33 00	5 50
20	35	26	38 00	6 50

CAST IRON FURNACE AND CALDRON

FOR MELTING LEAD



FIG. 4736

Made with cast iron top with slide cover to open when taking out the melted metal.

The small pipe attached to the conical top conveys the offensive odor from the scrap lead into the smoke pipe.

PRICES

One size, 8 gallons.

With regular caldron	$15 50
" heavy "	17 00
Extra caldron, regular	4 00
" " heavy	5 50

PIPE LINE LEAD FURNACES AND POTS

FOR MELTING LEAD FOR CALKING WATER AND GAS MAINS

These furnaces are made of very heavy boiler iron, hot riveted, and fitted with a heavy wrought iron notched frame for holding the bar on which the pot hangs at the three different heights.

The pots are made of extra heavy cast iron and fitted with a wrought iron bail, and are so shaped that the remelting of a pot full of solid lead will not burst the pot.

The furnace on legs is fitted with wrought iron sockets to receive carrying bars.

The furnace on wheels is fitted with a tongue and cross bar of wrought iron for drawing, and an upright support for balancing furnace in proper position.

The wheels are furnished with wrought iron spokes and very heavy wrought iron tires.

This furnace is in every way made to stand hard usage. Coal, coke or wood can be used as fuel.

DIMENSIONS

Sizes, Inches.	Diameters of Furnaces, Inches.	Diameters of Pots, Inches.	Depth of Pots, Inches.	Diameters of Ladles, Inches.
18	18	14	7	8
24	24	17	8½	9
30	30	20	10	10

PRICES, FIG. 4737

Include one pot and one ladle.

18 inch, $33.00 24 inch, $38.50 30 inch, $45.00

PRICES, FIG. 4738

Include one pot and one ladle.

18 inch, $45.00 24 inch, $50.00 30 inch, $55.00

ON LEGS



FIG. 4737

ON WHEELS

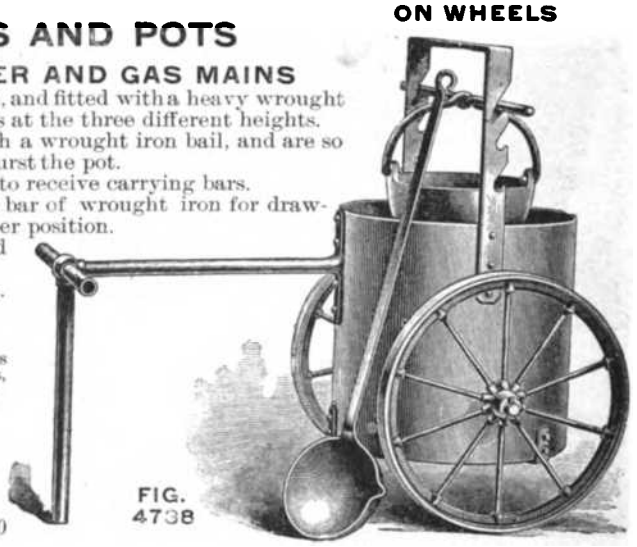


FIG. 4738

The pots and ladles listed with the furnaces are the sizes generally used, but any other size pot and ladle may be selected to meet special requirements.

CALDRON MOUNTED ON WHEELS

FOR COAL OR WOOD



FIG. 4739

PRICES, EXTRA POTS

Diameters of Pots, Inches.	Depth of Pots, Inches.	Each.
12	6	$4 00
14	7	5 00
17	8½	6 00
20	10	7 75
23	11½	9 50

PRICES, EXTRA LADLES

Diameters, Inches.	Each.	Diameters, Inches.	Each.
3	$0 40	7	$1 90
4	55	8	2 35
5	75	9	3 75
6	85	10	4 50

PRICES, FIG. 4739

Sizes, gallons	15	20	30	45	60	75	90
Without covers, for wood	$12 00	$15 00	$20 00	$30 00	$40 00	$50 00	$60 00

PRICES, EXTRAS

Covers, each	$2 50	$3 00	$4 00	$5 00	$6 00	$7 50	$9 00
Coal fixtures, per set	3 00	3 00	3 75	4 50	5 50	5 50	5 50
Wheels, per set of four (will fit any size)							4 00

HEAVY DEEP BRICK SET CALDRON

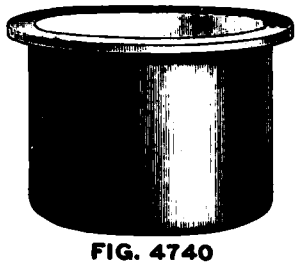


FIG. 4740

PRICES, FIG. 4740

Capacity, Gallons.	Outside Diameters, Inches.	Inside Diameters, Inches.	Inside Depth, Inches.	Each.	Capacity, Gallons.	Outside Diameters, Inches.	Inside Diameters, Inches.	Inside Depth, Inches.	Each.
5	19½	12⅛	12	$7 25	47	34½	26¾	21¾	28 50
8	21½	14¼	14	9 50	76	40	31¾	24½	43 00
11	23	15½	15⅛	10 00	130	46¼	38	30¼	67 00
18	26	18¾	17¼	12 75	180	52¼	44¼	30	80 00
28	29½	23¾	19⅝	21 00					

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CALDRON TO SET IN BRICK WORK

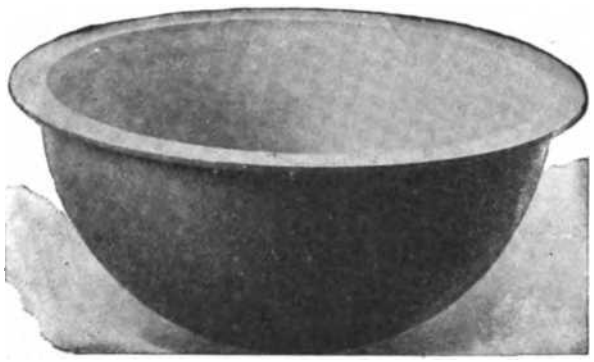


FIG. 4741

PRICES, FIG. 4741

Capacity, Gallons.	Diameters, Including Rim, Inches.	Inside Diameters, Inches.	Inside Depth, Inches.	Each.	Capacity, Gallons.	Diameters, Including Rim, Inches.	Inside Diameters, Inches.	Inside Depth, Inches.	Each.
5	17	14	9½	$2 75	69	39½	36	21	23 00
7	18	16	10	3 25	88	42½	39	21½	24 00
9	20½	18	11	4 00	105	45½	42	23¼	30 00
11	22½	19¼	12¼	5 00	135	49	45¼	24½	42 00
15	25½	21¾	14½	5 50	158	51½	48	26	44 00
21	27½	23¾	16	7 00	190	55½	51	27½	52 00
27	29½	25¼	17	11 00	222	58	54	29¼	60 00
32	31	27⅜	17	12 00	250	61	57	30½	71 50
43	34	30¼	18¾	13 75	300	59	55	40	
54	36½	32¾	20	15 00	500	74	69	47½	

We can furnish quickly the caldrons as shown, excepting the 300 and 500 gallon sizes, which we only furnish to order. We are prepared to furnish to order kettles with outlets drilled and tapped for any size iron pipe. We can furnish them with movable legs to order. We can also furnish to order caldrons of any special shape or size from sketches furnished.

JACKETED STEAM KETTLES



FIG. 4742

With heavy galvanized wrought iron cover.



FIG. 4743

With extension or raised curb.



FIG. 4744

DESCRIPTION, FIGS. 4742 TO 4744

The construction of these jacketed steam kettles consists of two very heavy cast iron kettles, one securely bolted inside of the other, leaving space for steam to circulate between the inner and outer kettles. There is no packing used between the flanges excepting a thin oiled paper gasket. The flanges, being very finely faced, insure a perfectly tight steam joint. Up to and including the 28 gallon size the kettles are tested to 100 pounds steam pressure per square inch and the larger sizes to 80 pounds. The tapping for steam inlet and exhaust is suitable for ½ inch iron pipe. If the steam supply is of lower pressure than 25 pounds, the tapping should be larger, which can be done to order; in the large size kettles there should be two or more inlets for steam if the pressure is light.

We can substitute a copper inside kettle for the regular iron kettle to order for special uses, prices for which will be made on application. Enameled inside kettles: The enamel lining, which we furnish on sizes up to and including the 76 gallon, is the best white enamel known to the trade, but it can not be guaranteed by us. The purchaser must assume all responsibility as to its durability. The legs can be cut off to reduce kettles to any desired height. Outlet for contents: Can be put in at slight extra cost to order. The covers, as shown in Fig. 4743, are made of heavy galvanized iron with wrought iron frame, hinges and handle.

PRICES, FIGS. 4742 AND 4743

Actual Capacity, Gallons.	Outside Diameters, Inches.	Inside Diameters, Inches.	Inside Depth, Inches.	Extreme Height, Inches.	Plain Iron.	Enameled.	Covers Extra, Each.
5	19½	12⅛	12	29	$22 00	$33 00	$5 50
8	21½	14¼	14	31½	27 50	42 00	6 75
11	23	15½	15⅛	33½	33 00	50 00	9 00
18	26	18¾	17¼	33¾	42 00	64 00	10 00
28	29½	23¾	19⅝	36½	49 50	76 00	11 00
47	34½	26¾	21¾	38	71 50	105 00	13 50
76	40	31¾	24½	39½	100 00	143 00	16 50
130	46¼	38	30¼	40½	155 00		20 00
180	52¼	44¼	30	43¾	230 00		22 00

PRICES, FIG. 4744

Actual Capacity.	Extreme Height, Inches.	Plain Iron.	Enameled.
37 gals. same as 28 gals. with 6½ in. curb	36	$61 00	$94 00
60 " " 47 " " 6¼ "	38	85 00	124 00
100 " " 76 " " 8 "	40½	126 00	
150 " " 130 " " 5 "	39½	187 00	
208 " " 180 " " 5 "	42¾	258 00	
230 " " 180 " " 8½ "	47¾	270 00	
250 " " 180 " " 11½ "	52¾	280 00	
268 " " 180 " " 13¾ "	57¾	297 00	
286 " " 180 " " 16½ "	62¾	308 00	
300 " " 180 " " 19 "	67¾	319 00	

STEAM PAN



FIG. 4745

PRICES, FIG. 4745

Nos.	Length, Inches.	Width, Inches.	Depth, Inches.	Each.
1	33	27½	9	$48 00
2	33	33	9	55 00
3	45	27	9	65 00

PRICES, FIG. 4746

Nos.	Length, Inches.	Width, Inches.	Depth, Inches.	Each.
1	17¾	11¾	10	$20 00
2	18	13	11¼	25 00
3	23	17	13	30 00

STEAM TANK

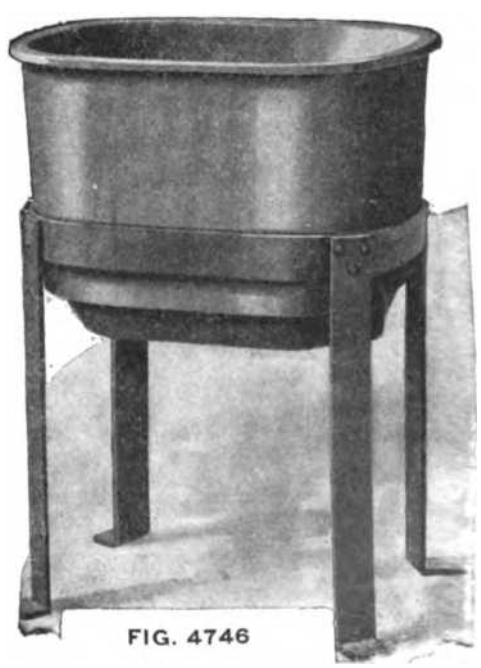


FIG. 4746

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STEAM GLUE POT HEATER.

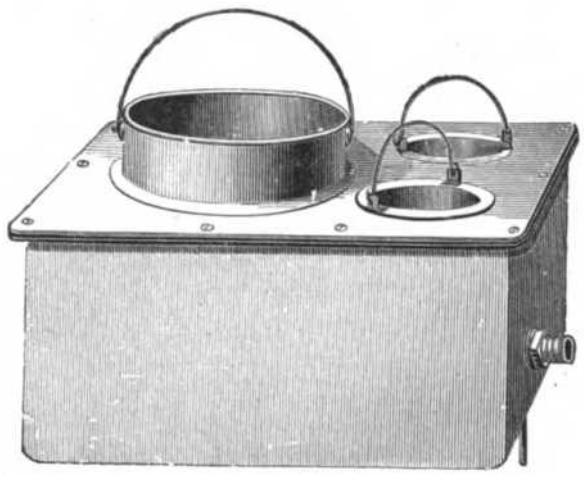


FIG. 4747

As shown in cut, the heater consists of a cast iron box with cover, in which there are holes of suitable size to receive such pots as may be desired. The heating surface consists of horizontal tubes screwed into a header, each of which has a smaller tube within it through which the steam enters, and a positive circulation—even under low pressure—is insured. Exhaust steam being frequently used for heating purposes, the tubular form of the heating surface gives abundant heating area, and its efficiency is so greatly increased thereby that as good results are reached as if high pressure steam were connected to the heater.

PRICES, FIG. 4747

Numbers	1	2	3
Sizes of covers, ins.	11 x 15½	16 x 22½	16 x 28¾
Depth, inches	7	9	9
Sizes and Nos. of pots fitted up for each size.	2 5-in. only, or 1 8-in. only, or 1 9-inch.	6 5-in. only, or 1 10-in., and 2 5-in.	2 12-in. only, or, 1 12-in., and 4 5-in., or 8 5-inch.
Without pots	$8 00	$16 00	$20 00

PRICES, COPPER POTS FOR GLUE HEATERS

Diameter, ins.	5	6	7	8	9	10	12
Depth, inches.	5	5⅜	7¼	7½	7½	8	8
Each	$2 00	$2 25	$2 50	$3 50	$4 00	$4 50	$5 50

Galvanized cast iron pots, 5 inches, 75 cents, each.

We can furnish a number of additional sizes of covers for above heaters.

SINGLE GLUE POT



FIG. 4748

PRICES, TINNED, FIG. 4748

Numbers	000	00	0	1	2	3	4	5	6
Capacity, in pints.	½	¾	1	1¼	2	2½	4	4½	5
Per dozen	$5 00	5 50	6 00	6 75	8 40	10 26	12 42	14 58	16 94

PRICES, ENAMELED

Numbers	000	00	0	1	2	3	4	5	6
Capacity, in pints.	½	¾	1	1¼	2	2½	4	4½	5
Per dozen	$5 00	5 50	6 00	6 75	8 40	10 26	12 42	14 58	16 94

STEAM JACKETED GLUE HEATERS

Tested to 150 Pounds Per Square Inch.

NO. 5



FIG. 4749

NO. 6

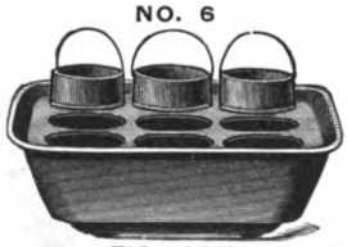


FIG. 4751

PRICES, FIGS. 4749 TO 4751

Nos.	Dimensions.	Style.	Each.
5	16 x 8 x 6	with top for 2 kettles, 7 in. diam.	$6 25
6	22 x 22 x 6	with top for 5 kettles, 7 in. diam.	13 00
6	22 x 22 x 6	with top for 9 kettles, 5 in. diam.	13 00
7	8½ in. diam. and 7 in. deep		5 00
8	6 in. diam. and 6 in. deep		4 00
9	8 in. diam. and 8 in. deep		4 50

NO. 7



FIG. 4750

PRICES, CAST IRON GLUE KETTLES AND STANDS FOR FIGS. 4749 TO 4751

	Each.
7 inches diameter and 6 inches deep	$1 00
5 " " 6 "	75
Stand for No. 5, cast iron	2 60
" 7, wrought iron	3 50

STEAM GLUE POTS



FIG. 4752

Each pot rests in a separate heater; these are cast steam chambers through which the steam circulates, keeping the glue at an even heat. These steam chambers also avoid all escaping steam. The heaters are fitted with upright arms to support wheel while "setting up" with glue. This allows surplus glue to drop back into the glue pot instead of on the floor.

Prices include steam fittings, as shown.

PRICES

	Each.		Each.
No. 1, holding 1 pot	$8 00	No. 4, holding 4 pots	$25 00
No. 2, " 2 pots	15 00	No. 5, " 5 "	30 00
No. 3, " 3 pots	20 00	No. 6, " 6 "	35 00

IMPROVED STEAM GLUE HEATERS, WITHOUT JOINTS

SIZES, A, B, C

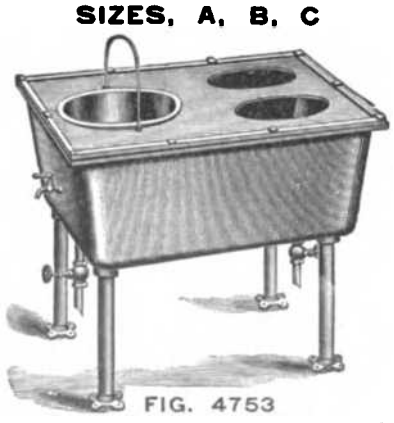


FIG. 4753

PRICES, FIG. 4753

Size A, 14 inches x 14 inches x 13 inches deep. No. 1 takes two 5 inch pots; No. 2 takes one 5 inch and one 6 inch pot; No. 3 takes one 8 inch pot; No. 4 takes one 10 inch pot. Each, $10.00.

Size B, 20 inches x 14 inches x 10 inches deep. No. 1 takes three 5 inch pots; No. 2 takes one 8 inch and one 6 inch pot; No. 3 takes three 6 inch pots; No. 4 takes one 8 inch and one 5 inch pot; No. 5 takes two 6 inch pots. Each, $15.00.

Size C, 24 inches x 20 inches x 12 inches deep. No. 1 takes six 5 inch pots; No. 2 takes six 6 inch pots; No. 3 takes one 10 inch and three 6 inch pots; No. 4 takes one 10 inch and three 5 inch pots; No. 5 takes one 10 inch and one 8 inch pot; No. 6 takes one 8 inch and four 5 inch pots. Each, $20.00.

NOTE.—When ordering heaters, please be careful to state whether or not pots are wanted to accompany them.

PRICES OF POTS FIG. 4753 TO 4755

	5 Inches.	6 Inches.	8 Inches	10 Inches.
Copper. Each	$1 00	$1 50	$2 25	$3 00
Plain iron, "	60	80	1 20	1 75
Enameled, "	80	1 20	1 75	2 75

WITH STAND

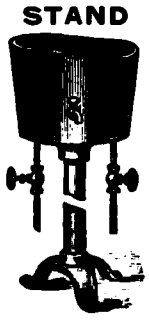


FIG. 4754

DESCRIPTION, FIG. 4755

The single heaters, sizes 00, 0, are intended for use on bench where each man has his private supply of glue, or they can be arranged with stand, as shown in Fig. 4754, when desired. They can be connected either through opposite sides for feed and waste pipes or both pipes may enter from below by removing the plugs from bottom outlets, and closing outlets in sides.

PRICES, WITHOUT POTS FIGS. 4754 TO 4755

SIZES, 00, 0



FIG. 4755

Valves shown in cuts are not included in prices, but are illustrated to show method of connecting heaters. All sizes, with stand or feet, are made of the same height, viz.: 30 inches. Size 00 takes single pot, either 5 inch or 6 inch, each, $5.50; extra for stand, Fig. 4754, each, 40 cents. Size 0 takes single pot, either 8 inch or 10 inch, each, $8.50; extra for stand, Fig. 4754, each, 60 cents.

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STOVE OR STEAM SAND DRYER

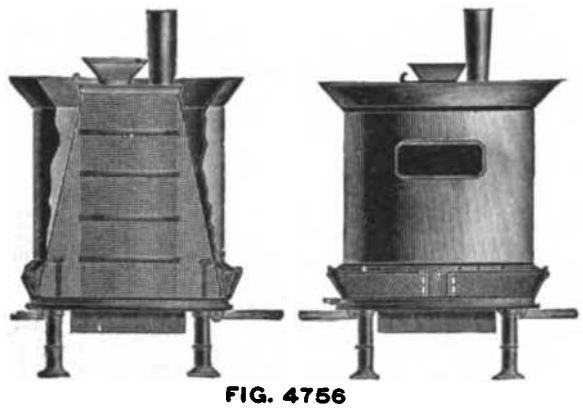


FIG. 4756

The arrangement of netting around stove is its chief feature. The sand escapes through the meshes of netting as quickly as it dries, presenting a constantly changing surface, and the gravel or other screenings pass to a separate compartment where they can not clog dryer. The air space around stove formed by netting materially prolongs life of stove and permits free escape of all moisture or vapors. Netting is securely braced and can not buckle or get out of shape. Another important feature of dryer is in construction of stove, which is so made that any foundryman can repair or renew it.

Stove dryer.....$80 00
Steam " 110 00

PERFECT SAND DRYER



FIG. 4757

PRICES

Capacity: No. 1 dries 10 tons, and No. 2 dries 5 tons per day, according to conditions.

No. 1, each $75 00
" 2, " 45 00

CHAMPION SAND DRYER

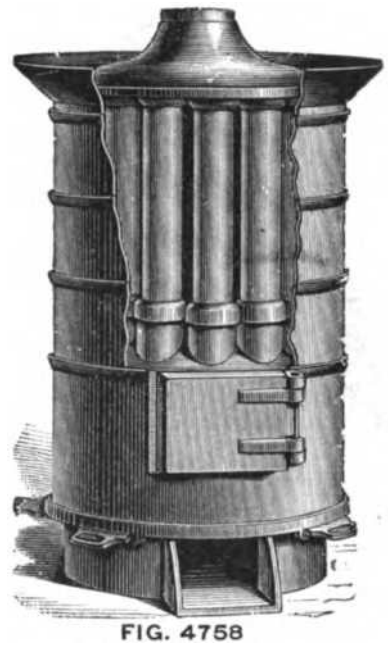


FIG. 4758

Capacity, 20 tons daily. Each, $90.00.

PORTABLE ASPHALT AND TAR MELTING FURNACE

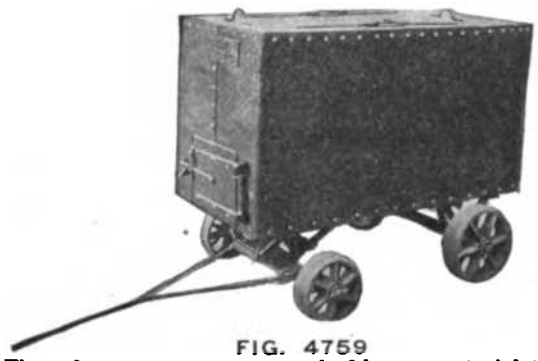


FIG. 4759

These furnaces are constructed of heavy material throughout. They are provided with grates for burning either wood or coke, and are built with or without ash boxes. The bowl extends the full width, and to within six inches of the length of the body. The side and bottom are made of one piece of metal, and shaped to the form of the letter U, which strengthens and stiffens the bottom, increases the heating surface and facilitates the discharge of the contents. The wheels are large in diameter, wide on the face, and are generally reinforced with a wrought iron band. The front axle is made of heavy square steel, to which a neatly designed and strong fifth wheel is attached.

Capacities: No. 425, 100 gallons; No. 426, 150 gallons; No. 427, 200 gallons; No. 428, 250 gallons; No. 429, 300 gallons. Prices on application.

GRAVEL HEATER



FIG. 4760

This heater is thoroughly well made and will stand the hardest usage. The body is constructed of No. 10 gauge steel. The top plate forming the bowl is made of stock ⅜ of an inch in thickness, and is inclined from the sides to the center to a depth of 10 inches and securely riveted to heavy angle iron bars placed on the sides and ends of the fire box. The front axle is made of three inch square steel and is provided with a heavy wrought iron fifth wheel to facilitate turning sharp corners.

DIMENSIONS

Length, 9 feet; width, 5 feet; height, 3 feet 9 inches; grate area, 6 x 5 feet. Rear wheels, 24 inches diameter. Front wheels, 12 inches diameter. All wheels reinforced with a heavy wrought iron tire 4 inches wide. Size of fire door, 18 x 15 inches. Size of smoke outlet, 6 inches. Price, $175.00. For heaters of cheaper design, constructed of lighter material and different dimensions, estimates will be furnished.

TAR BOILING POT

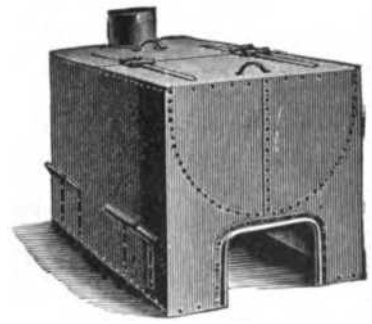


FIG. 4761

This tar boiling pot is made entirely of steel. It is light, strong and durable. We can furnish both round and square or any other shape, and of any capacity desired.

Prices on application.

ASPHALT AND TAR KETTLES

Prices on application.

ASPHALT HEATER AND LIGHT

Size of hood or heater varies according to number of burners and area covered.

Price, with hood 30 x 30 inches, $175.00.



FIG. 4762

PORTABLE ASPHALT BOILER

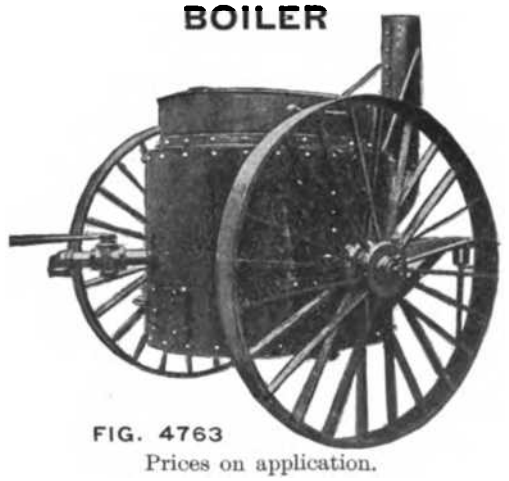


FIG. 4763

Prices on application.

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LOCK WASHER

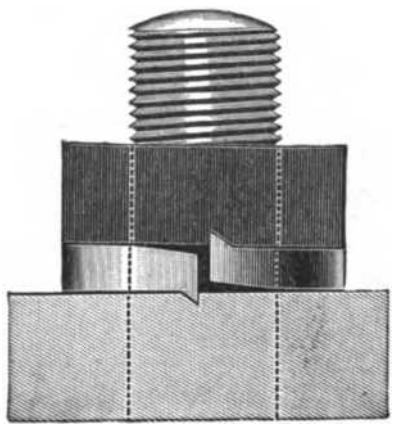


FIG. 4764

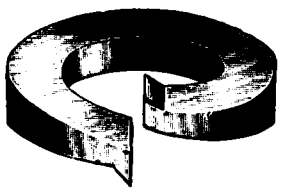


FIG. 4765

POSITIVE LOCK WASHERS

The body of the washer carries the load of compression and the spring is not affected by use. Through the vibration, the engaging points gradually embed themselves, through the washer preventing the nut from working backward. The washer can be used many times. It is reversible and does not injure the nut, its threads, or the threads of the bolt.

PRICES, FIG. 4765

For Bolts.

Diameters.	Per M.
¼	$10 00
5/16	10 50
⅜	10 50
½	11 00
⅝	11 50
¾	12 00
¾	(¼x5/16) 13 00
⅞	14 50
1	19 00
1⅛	28 00
1¼	36 00
1⅜	40 00
1½	46 00
1⅝	55 00
1¾	65 00
1⅞	75 00
2	90 00
2¼	110 00

DESCRIPTION, FIG. 4769

A perfect self-locking nut. Always grips the bolt firmly. Requires no nut lock or spring washer. For use of railroads, machinery builders, bridge contractors, car builders, mechanical engineers, etc.

Directions.—These nuts are made of a flat bar of steel bent around into a ring, and then pressed into a hexagon nut with an elastic opening on the side. They are tapped scant 1/128 from U. S. Standard, so that, when wrenched on the regular U. S. Standard bolt, the split side is forced open a trifle, thereby gripping the bolt, which holds them from ever working loose. Simply see that bolts are true to U. S. Standard, and proper grip will be obtained.

LOCK

Showing Washer Applied to Joint.

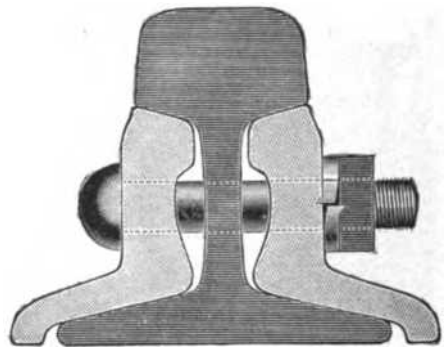


FIG. 4766

ELASTIC SELF LOCKING STEEL NUT



FIG. 4769

PRICES

Sizes, U. S. Std., Hex. Inches.	Hex. U. S. Std. Tapped, per 100 Lbs.	Sizes, U. S. Std., Square Inches.	Square, U. S. Std., Tapped, per 100 Lbs.
⅝	$11 20	⅝	$9 20
¾	10 60	¾	8 90
⅞	10 50	⅞	8 80
1	10 30	1	8 60
1⅛	10 30	1⅛	8 60
1¼	10 50	1¼	8 80

Above prices per 100 pounds in 200 pound kegs.

For less than keg lots extra will be charged.

VERONA NUT LOCK

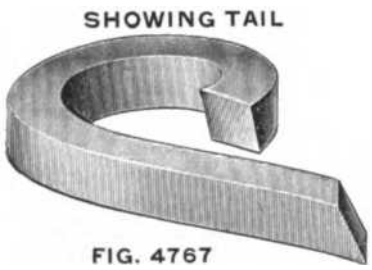


FIG. 4767

LOCK



FIG. 4768

Prices of different sizes quoted on application.

EXCELSIOR NUT LOCKS OR FISH PLATE SPRINGS



FIG. 4773

NATIONAL LOCK WASHERS

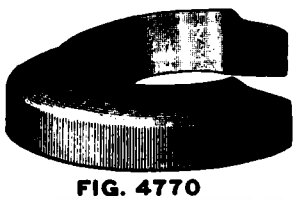


FIG. 4770

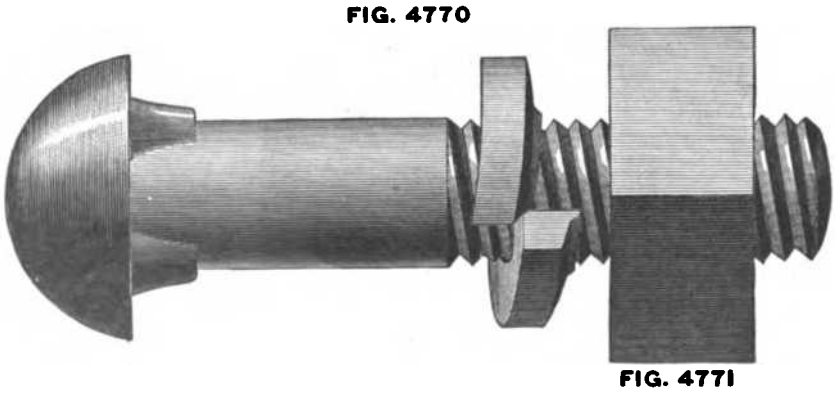


FIG. 4771

Prices, per 1000, from ⅜ to 2¼ inches, on application.

SINGLE



FIG. 4772

DOUBLE

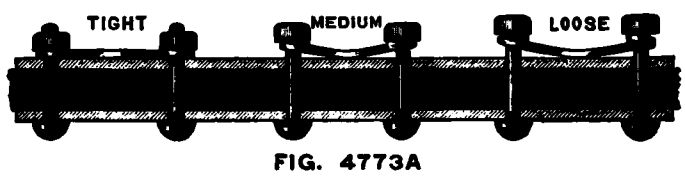


FIG. 4773A

PRICES ON APPLICATION

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RAILWAY JOINTS

STANDARD T RAIL JOINT

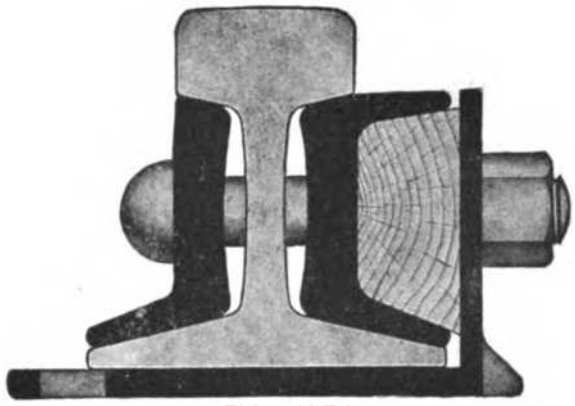


FIG. 4774

GIRDER RAIL JOINT

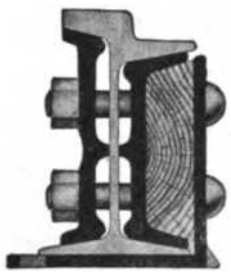


FIG. 4775

INSULATED JOINT FOR TRACK CIRCUITS

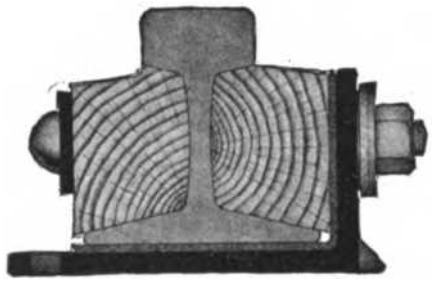


FIG 4776

DESCRIPTION, FIGS. 4774, 4775 AND 4776

Track experience on trunk lines and trolley roads has demonstrated that angle bars as Joints often lack the strength for the ultimate duty expected. In those cases where the maker has designed an angle bar of great strength, or some other special Joint, in the attempt to overcome the effect of ordinary angle bars, the result has been excessive rigidity and stiffness in trying to secure the desired strength. Such Joints are anvils or unequally hard spots in the track as compared with the rail under rolling loads. The results are the abrupt stopping of the rail's wave vibration, which frequently results in the fracture of the Joint or the rail; lost motion, or wear between the parts of the Joint and rail, and the increased wear of the rolling stock. The construction of these Joints provides for both the necessary strength and elasticity. It has as few parts as are consistent with the results of experience in track and in the rolling of steel, and in view of the fact that steel varies in rolling, the fits are made simple, and not compound. The wood filler lasts. It does not decay. It is a practical nut lock. On new rail the Joint will maintain, from the day it is applied, excellent surface and alignment until the rail is released from the track.

PLAIN AND ANGLE SPLICE BARS

For all Sizes of Rails and in Great Variety of Patterns.

Splice Plates and Bolts required for one mile single track.

Lengths of Rail.	Complete Joints.	Spliced Plates.	Bolts 4 to a Joint.
All 21 feet	503	1006	2012
" 24 "	440	880	1760
" 26 "	406	812	1624
" 28 "	377	754	1508
" 30 "	352	704	1408
90 per cent. 30 feet 10 " shorter	355	710	1420

PRICES ON APPLICATION

STANDARD TRACK BOLTS

Of all Sizes and Shapes.

TRACK BOLT



FIG. 4778

TRACK BOLTS WITH U. S. SQUARE NUTS

Rails Used, Lbs.	Bolts.	Nuts.	No. in Keg of 200 Lbs.	Kegs per Mile.
45 to 85	¾x4¼	1¼	224	7.
45 " 85	¾x4	1¼	231	6.3
45 " 85	¾x3¾	1¼	239	6.
45 " 85	¾x3½	1¼	240	6.
45 " 85	¾x3¼	1¼	250	5.7
45 " 85	¾x3	1¼	268	5.4
30 " 40	⅝x3½	1 1/16	360	4.
30 " 40	⅝x3	1 1/16	395	3.5
30 " 40	⅝x2¾	1 1/16	420	3.4
30 " 40	⅝x2½	1 1/16	445	3.3
20 " 30	½x3	⅞	665	2.2
20 " 30	½x2½	⅞	715	2.
20 " 30	½x2¼	⅞	750	2.
20 " 30	½x2	⅞	775	2.
8 " 16	⅜x2	11/16	1560	1.
8 " 16	⅜x1¾	11/16	1680	1.
8 " 16	⅜x1½	11/16	1800	1.
8 " 16	⅜x1¼	11/16	1975	1.

PRICES ON APPLICATION

TRACK BOLTS WITH U. S. HEXAGON NUTS

Rails Used, Lbs.	Bolts.	Nuts.	No. in Keg of 200 Lbs.	Kegs per Mile.
45 to 85	¾x4¼	1¼	230	6.3
45 " 85	¾x4	1¼	240	6.
45 " 85	¾x3¾	1¼	254	5.7
45 " 85	¾x3½	1¼	260	5.5
45 " 85	¾x3¼	1¼	266	5.4
45 " 85	¾x3	1¼	283	5.1
30 " 40	⅝x3½	1 1/16	375	4.
30 " 40	⅝x3	1 1/16	410	3.7
30 " 40	⅝x2¾	1 1/16	435	3.3
30 " 40	⅝x2½	1 1/16	465	3.1
20 " 30	½x3	⅞	715	2.
20 " 30	½x2½	⅞	760	2.
20 " 30	½x2¼	⅞	800	2.
20 " 30	½x2	⅞	820	2.

PRICES ON APPLICATION

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STEEL TIE PLATE

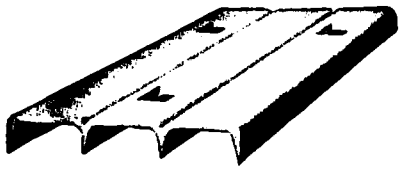


FIG. 4780

Made in two widths, 4¼ and 5 inches.

PRICES ON APPLICATION

THE GOLDIE CLAW TIE PLATE

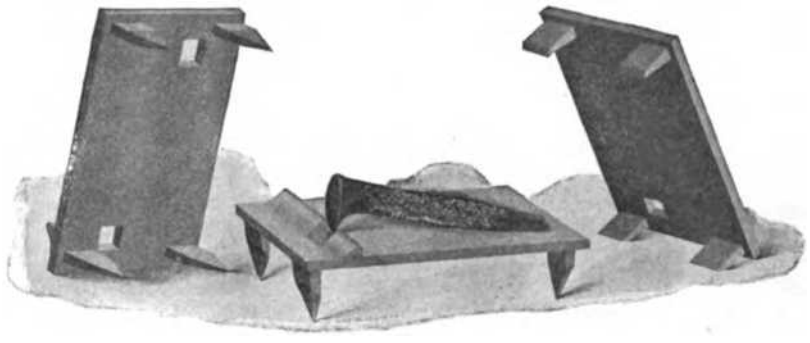


FIG. 4781

The above cut shows the latest improvement in the Goldie Claw Tie Plate, consisting of rolling the claw in under the body of plate. This was done to protect the opened fiber from the destructive effects of the weather and to secure a stronger claw, by forming a fillet along the outer as well as the inner base of claw. All Goldie Plates are provided with triangular claws, unless otherwise specially ordered. Their embediment with this kind of claw is more effective.

PRICES ON APPLICATION

GLENDON LONGITUDINAL FLANGE TIE PLATE

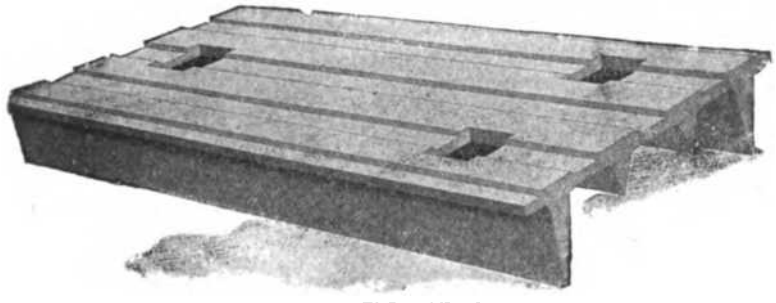


FIG. 4782

The Glendon Longitudinal Flange Tie Plate is designed for use in soft wood ties.

We furnish the Glendon Longitudinal Flange Plates, 6 inches, 5 inches, and 4¼ inches wide, and 3/16 to ⅜ inch thick, in any length desired.

Also plates for switch leads, frogs, guard rails, crossings and gauntlets.

PRICES ON APPLICATION

WOLHAUPTER ARCH GIRDER TIE PLATE

FOUR RIB

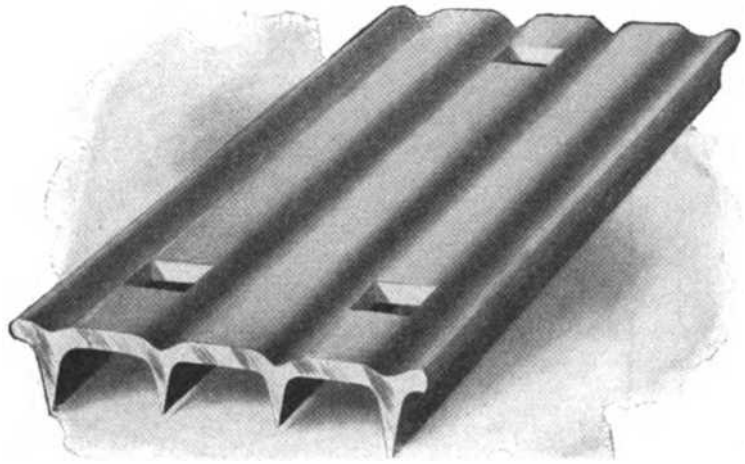


FIG. 4783

SIZES, FIG. 4783

3/16 of an inch thick, made in 4 inch, 4¼ inch, 5 inch, 5¾ inch and 6 inch widths.

Lengths, inches,	6	6⅛	6¼	6⅜	6½	6⅝	6¾	6⅞	7	7⅛	7¼	7⅜	7½	7⅝	7¾	7⅞	8	8⅛	8¼	8⅜	8½	8⅝	8¾	8⅞	9
" "	9⅛	9¼	9⅜	9½	9⅝	9¾	9⅞	10	10⅛	10¼	10⅜	10½	10⅝	10¾	10⅞	11	11⅛	11¼	11⅜	11½	11⅝	11¾	11⅞	12	

¼ of an inch thick, made in 4 inch, 4¼ inch, 5 inch, 5¾ inch and 6 inch widths.

Lengths, inches,	6	6⅛	6¼	6⅜	6½	6⅝	6¾	6⅞	7	7⅛	7¼	7⅜	7½	7⅝	7¾	7⅞	8	8⅛	8¼	8⅜	8½	8⅝	8¾	8⅞	9
" "	9⅛	9¼	9⅜	9½	9⅝	9¾	9⅞	10	10⅛	10¼	10⅜	10½	10⅝	10¾	10⅞	11	11⅛	11¼	11⅜	11½	11⅝	11¾	11⅞	12	

5/16 of an inch thick, made in 4 inch, 4¼ inch, 5 inch, 5¾ inch and 6 inch widths.

Lengths, inches,	6	6⅛	6¼	6⅜	6½	6⅝	6¾	6⅞	7	7⅛	7¼	7⅜	7½	7⅝	7¾	7⅞	8	8⅛	8¼	8⅜	8½	8⅝	8¾	8⅞	9
" "	9⅛	9¼	9⅜	9½	9⅝	9¾	9⅞	10	10⅛	10¼	10⅜	10½	10⅝	10¾	10⅞	11	11⅛	11¼	11⅜	11½	11⅝	11¾	11⅞	12	

PRICES ON APPLICATION

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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RAILROAD TRACK DRILLS

IXL TRACK DRILL

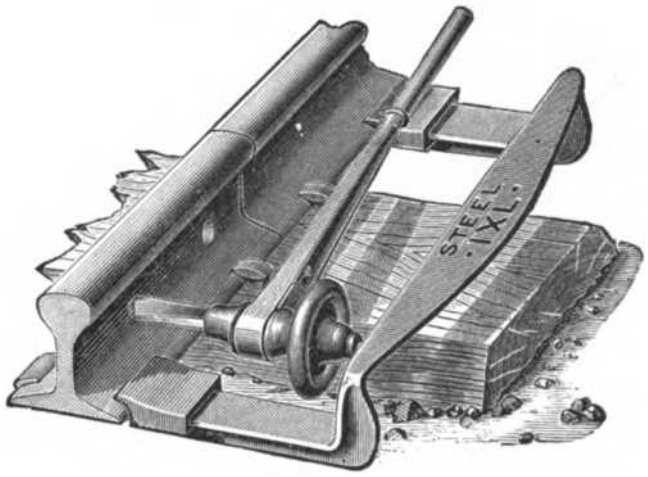


FIG. 4786
PRICE, COMPLETE, $8.00

UNDERWOOD TRACK DRILL

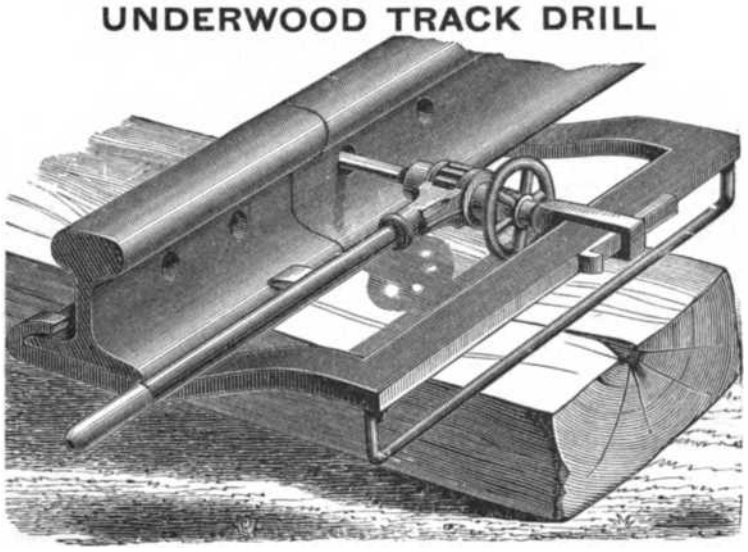


FIG. 4788
PRICE

Complete, with 2 bits.....$10 00

NOBLE SELF FEED TRACK DRILL



FIG. 4790
PRICE

Complete, with 2 bits.....$10 00

BELAND TRACK DRILL

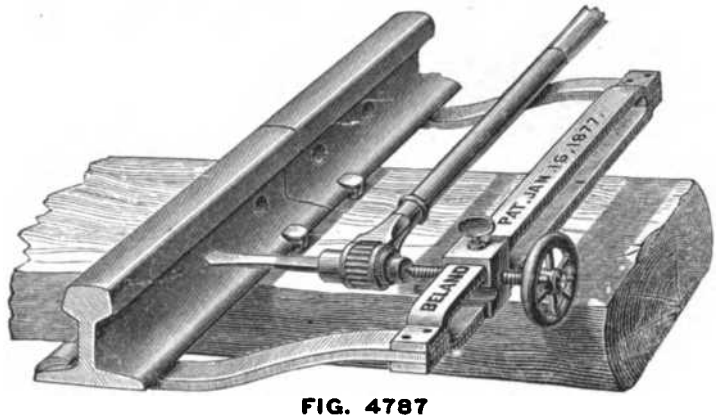


FIG. 4787
PRICE

Complete, with 2 bits.....$10 00

UNION TRACK DRILL

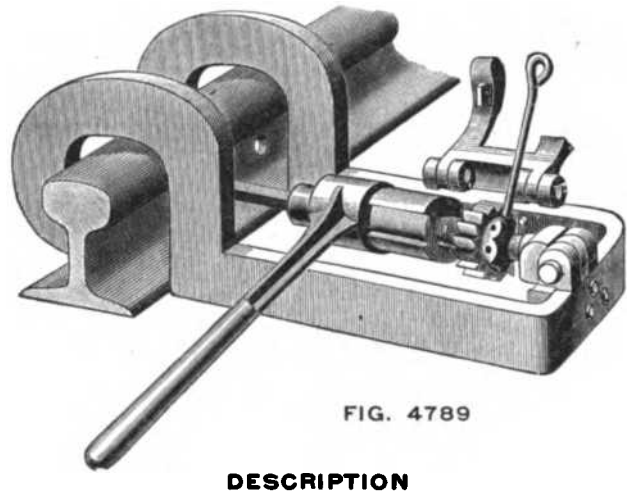


FIG. 4789

DESCRIPTION

Automatic and Hand Feed.

The drill frame is made of wrought iron, and simply hooks over the head of rail, and will fit any weight of rail from 40 to 80 pounds. The drill stock is made of steel, wrought iron and best air furnace malleable iron. The ratchet, being encased in the handle, is perfectly protected from sand and dirt. The two dogs which operate ratchet are so placed that they work together, opposite each other, giving great power and making it impossible to break teeth of ratchet. Dogs and ratchet are forged from steel. The automatic feed is so arranged that it feeds positively and regularly without strain on any part and without breaking bits, and enables one man to drill rails, easily, quickly and correctly. In case it becomes necessary to remove drill from track suddenly on account of approaching trains, use bar, pick, or track wrench as a pry under feed drum or feed wheel. The drill will be at once thrown out of center, the center working automatically. The drill is quick, simple, strong, and durable.

PRICE

Complete, with two bits.....$12 00

BALL TRACK DRILL

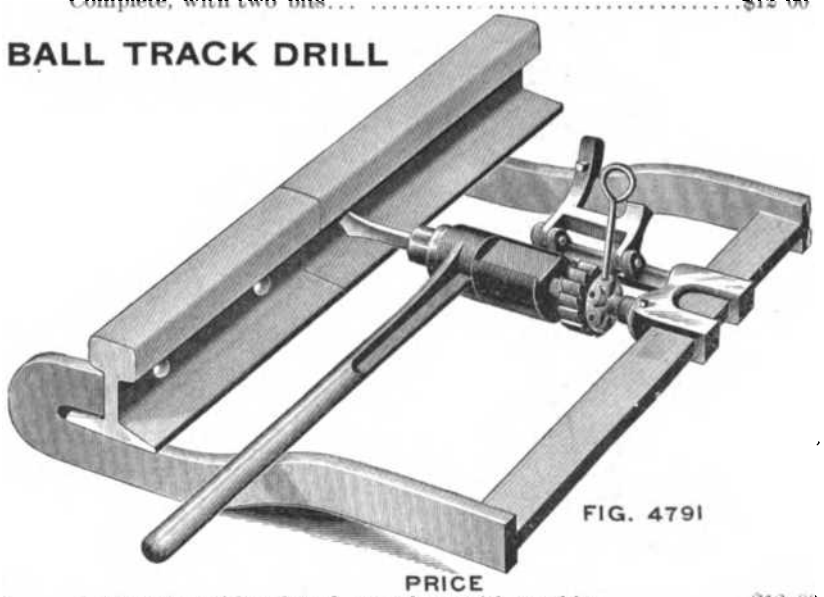


FIG. 4791

PRICE

Automatic and hand feed, complete, with two bits.....$12 00

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SCHUTTLER CONTINUOUS MOVEMENT RATCHET RAIL DRILL

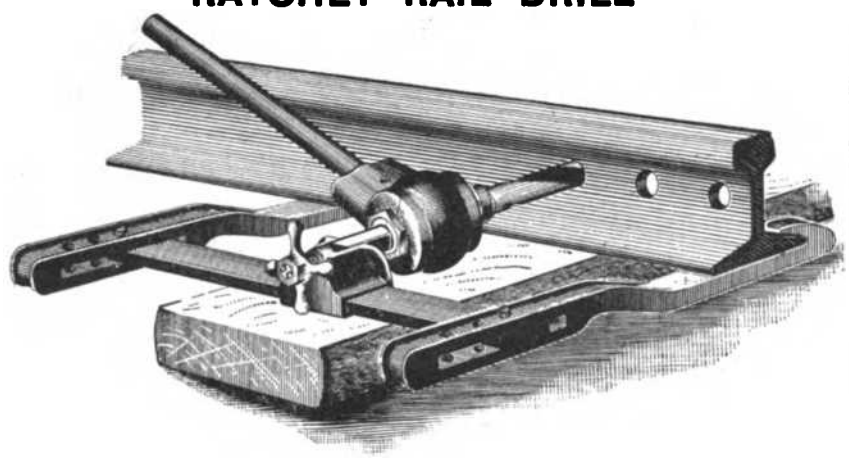


FIG. 4792

This is a double acting Ratchet Drill, strong and durable, and of the best possible material, with ball bearings. The above cut illustrates the drill with curved frame for drilling high or low rails, with improved carriage and feed screw. The feed screw is also provided with a wrench hold. The working parts of the drill are incased in a close fitting shell and thoroughly protected from dirt, sand and water. The shell is provided with an outside self-closing oil feed, which enables the inclosed parts to be readily and thoroughly oiled without exposing them. The double acting ratchet insures very rapid work. The frame is adjustable to almost any position required in drilling. The under clutch admits of a train passing without removing or readjusting the drill or frame, and also insures absolute safety.

Price, without Bits..... $16 00

THE ECLIPSE TRACK DRILL

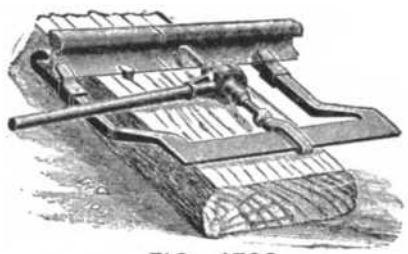


FIG. 4793

Price..... $10 00

DOYLE AND WILLIAMSON

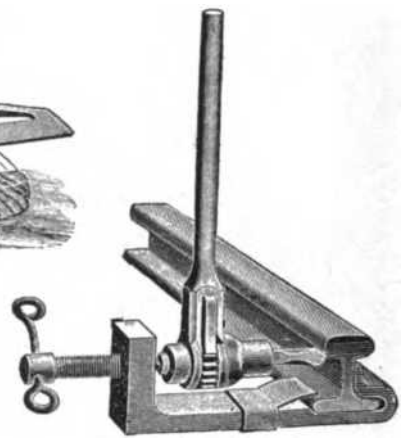


FIG. 4794

Price.....$10 00

CHAMPION DRILL

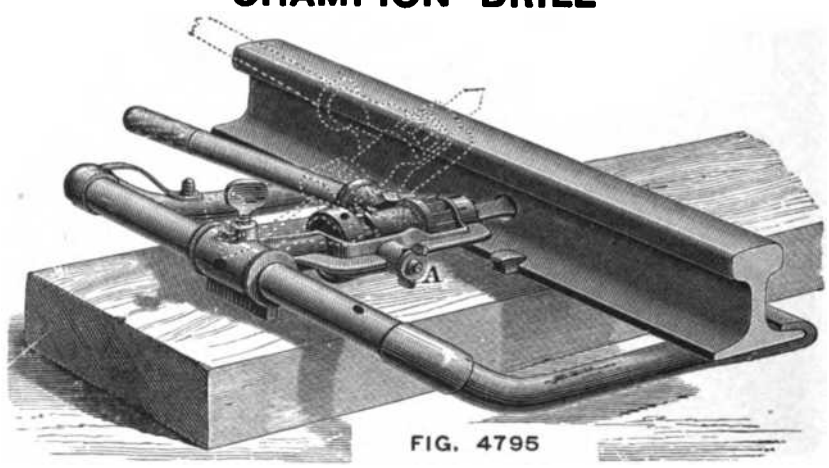


FIG. 4795

Used with either ordinary Flat Drill or Twist Drill, with Shank.
Price, with two Flat Drills or one Twist Drill, each.....$10 00

PAULUS TRACK DRILL

SPECIAL PATTERN FOR GIRDER RAILS

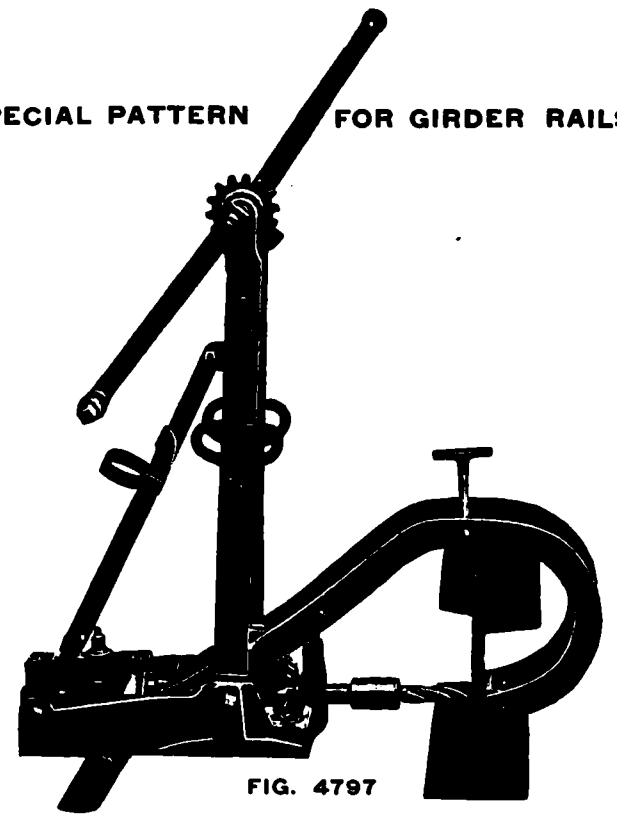


FIG. 4797

Price, each.....$25 00

WILSON DRILL

IN POSITION FOR WORK



FIG. 4798

THROWN BACK TO DETACH FROM RAIL

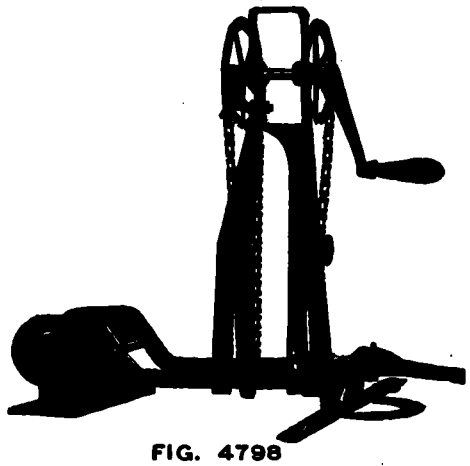


FIG. 4798

This Rail Drilling Machine, Fig. 4798, is especially adapted to the use of railroad and street car companies where it is necessary to drill holes from ¼ to ⅜ inch for bond wires. Weight, 20 pounds.

Price, each.....$25 00

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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PAULUS TRACK DRILL

Thrown Back for Passing Train.

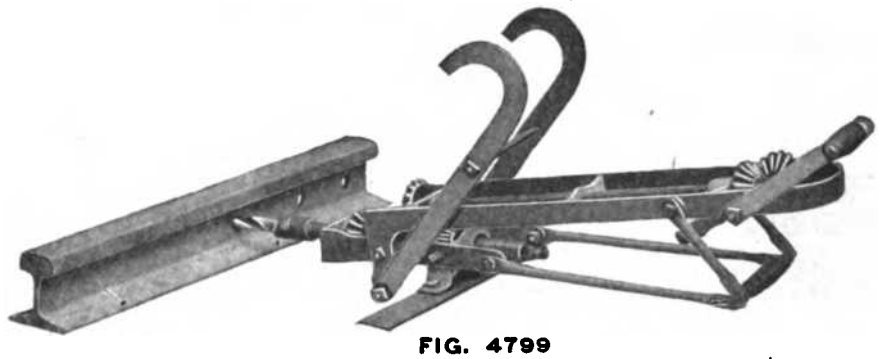


FIG. 4799

PAULUS HEAVY BASE TRACK DRILL

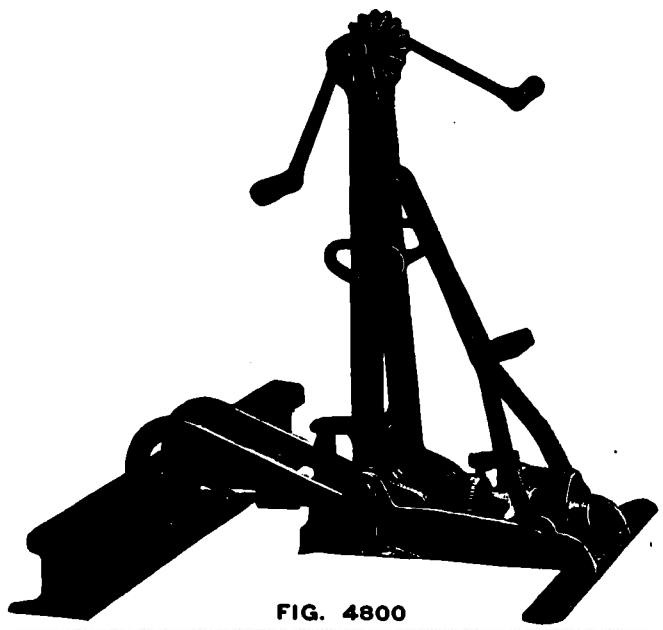


FIG. 4800

SELF FEEDING RAIL DRILL

No. 3—For Heavy Work, with Under Rail Clamps.

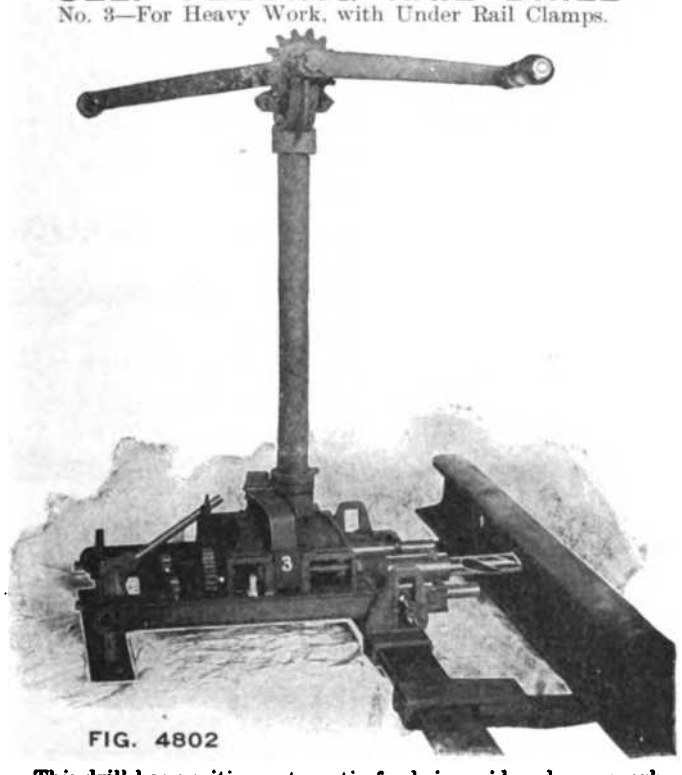


FIG. 4802

This drill has positive automatic feed; is rapid and easy working. We can furnish it with either over or under rail clamps.

No. 3	With Under Rail Clamps: approximate weight, 87 lbs.		$20 00
" 4	" Over " " " "	87 "	20 00

PAULUS TRACK DRILL

For use on roads where it is objectionable to have the hooks go over the top of the rail. We furnish them to fit under the flange.

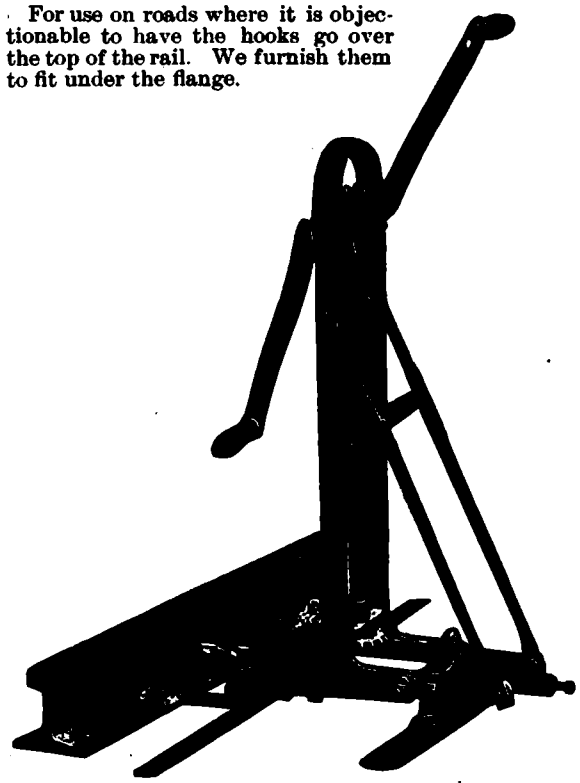


FIG. 4801

DESCRIPTION AND PRICES, FIGS. 4799 TO 4801

These automatic feed track drills require no adjustment, are always ready for instant use, and it takes but a few seconds to collapse the drill and throw back the hooks to enable a train to pass. The automatic feed enables the operator to drill through the web of the heaviest rail section without stopping. Especial attention has been given in the construction of these drills to both strength and durability. The frames are made of malleable iron.

Fig. 4799	Including one bit; weight	60	pounds.	Each		$20 00
" 4800	" " "	90	"	"		20 00
" 4801	" " "	70	"	"		20 00

Repair parts furnished promptly.

SELF FEEDING BALL BEARING RAIL DRILL

No. 4—Drill with Over Rail Clamps.

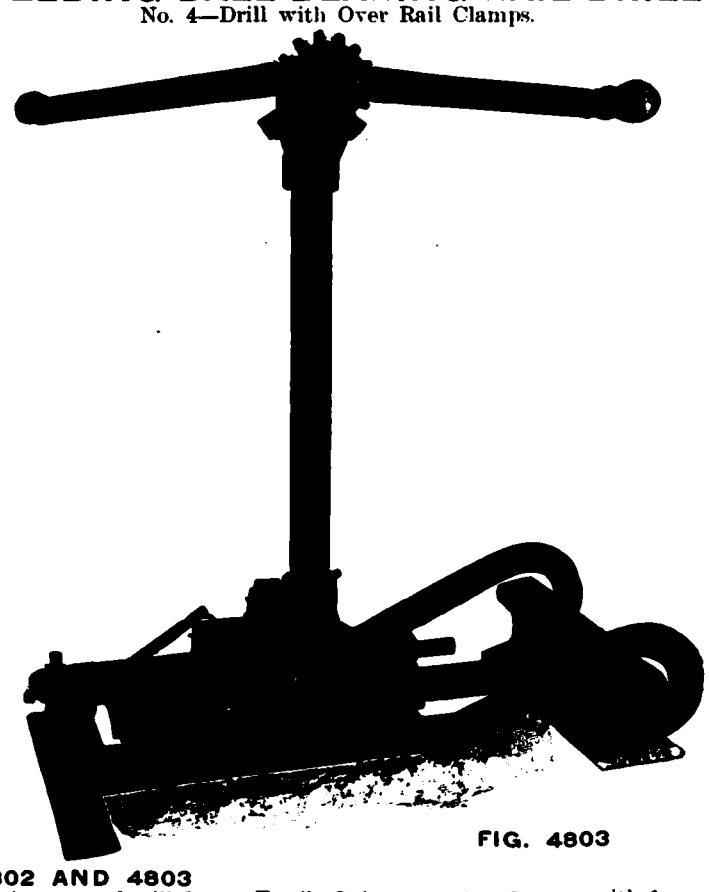


FIG. 4803

DESCRIPTION, FIGS. 4802 AND 4803

This drill has ball bearings, and is provided with either over or under rail clamps, and will fit any T rail. It is compact and light, with frame well braced, securing firmness in action. The ball bearings reduce friction to a minimum, insuring greatest life and service. The cam motion gives almost continuous feed, and is positive and durable. The drill is quickly returned after boring hole by turning cranks in same direction. The crank in rear releases over rail clamps or withdraws drill when under rail clamps are used.

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COMBINED TRACK LEVEL AND GAUGE

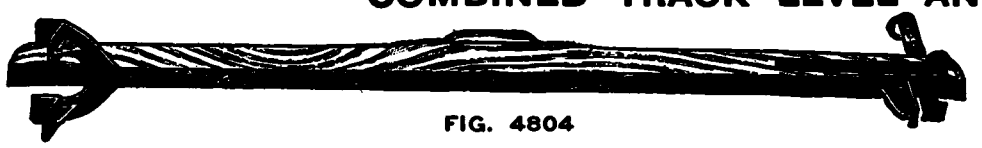


FIG. 4804

PRICES, FIG. 4804

The stick is of ash, and the ends malleable iron. The glass is securely set in elastic packing. The ratchet for elevation is accurate and convenient.

Any length of gauge, each..... $4 00

RAILROAD TRACK LEVEL



FIG. 4805

No. 100. Price, per dozen..... $36 00

STREET ROAD TRACK LEVEL



FIG. 4806

The leveling glass can be seen from either side, and 10 or 15 feet distant. Track levels and gauge four feet eight and one half inch gauge, unless otherwise ordered.

No. 110. Price, per dozen..... $33 00

COMMON TRACK LEVEL



FIG. 4808

Price, per dozen..... $36 00

McHENRY INVOLUTE TRACK LEVEL

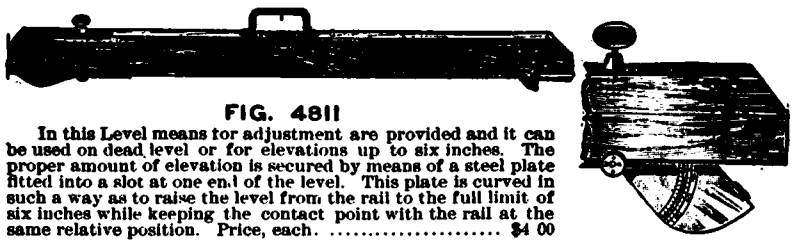


FIG. 4811

In this Level means for adjustment are provided and it can be used on dead level or for elevations up to six inches. The proper amount of elevation is secured by means of a steel plate fitted into a slot at one end of the level. This plate is curved in such a way as to raise the level from the rail to the full limit of six inches while keeping the contact point with the rail at the same relative position. Price, each..... $4 00

LIGHT TRACK GAUGE



FIG. 4813

Price, per dozen..... $13 50

CIRCULAR TRACK GAUGES

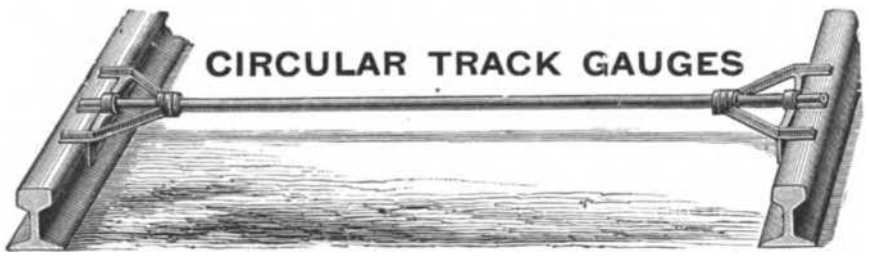


FIG. 4814

Price, any gauge, each..... $2 50

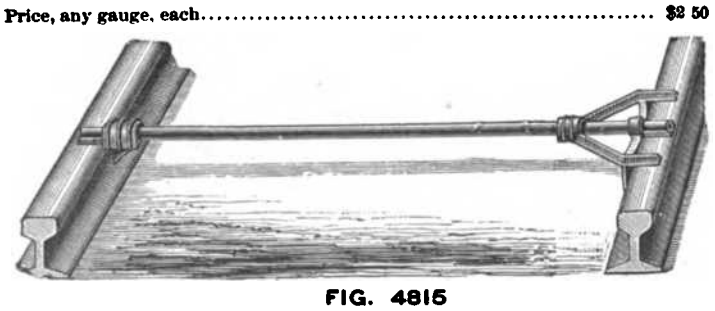


FIG. 4815

Price, any gauge, each..... $2 50

CIRCULAR TRACK GAUGE

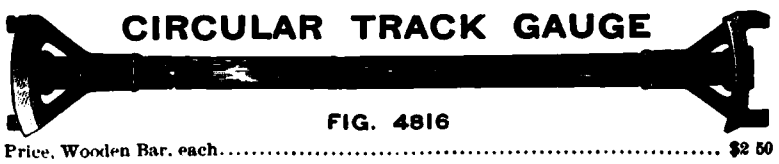


FIG. 4816

Price, Wooden Bar, each..... $2 50

THE HUNTINGTON TRACK GAUGE



FIG. 4807

These gauges are made of a piece of iron pipe with the malleable iron ends securely screwed and pinned on. The peculiar form of the left hand end brings the cross bar exactly at a right angle to the rail and insures an accuracy of gauge on either curves or straight rails. In orders, state gauge of road.

Price, each..... $3 00

McHENRY TRACK GAUGE



FIG. 4809

It is similar to the Huntington Gauge shown above, the special feature being the arrangement for accurately gauging curves. Five steel shims, each 1/8 inch thick, shown in Fig. 4810, each representing 3 degrees of curvature, provided for properly gauging curves up to 15 degrees. For straight track the shims are pushed up out of the way. The change is easily and quickly made. Price, each..... $2 00

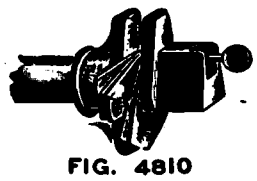


FIG. 4810

DUPLEX TRACK LEVEL



FIG. 4812

Contains two level glasses: one fixed in the board, the other attached to a movable indicator arm. By moving the indicator arm until the level glass attached to it comes true, it will show on the scale exactly how much out of level the track is. For use on curves, it can be set at the proper elevation for the outside rail, which can then be raised until the bubble indicates level position. It is convenient and accurate. This Level can be arranged to serve also as a track gauge. Price, each, $4.00; arranged as Level and Gauge, $5.00.

PRESSED STEEL TRACK GAUGE

No. 1.

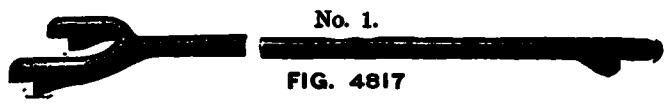


FIG. 4817

Reversed View of No. 1 Gauge, Showing Construction.



FIG. 4818

PRICES

No. 1	Huntington Pattern, each	$1 50
" 2	With One Circular Head and Knife Edge at Reverse End, each	1 75
" 3	" Circular Head on each End, each	2 00

TRACK LEVEL

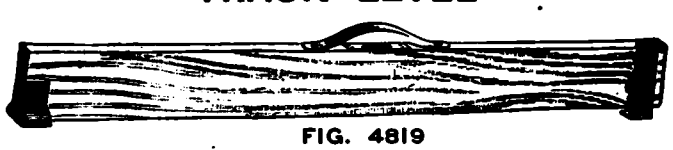


FIG. 4819

This is a wooden bar, the ends shod with steel plates, and a spirit glass in the middle protected by a leather handle. On the right hand end is a sliding scale and stop thumb screw to set the level by to obtain any desired elevation of rail.

Price, each..... $8 00

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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COMBINATION TRACK LEVELS AND GAUGES

DESCRIPTION, FIGS. 4820 AND 4821

These levels are made of well seasoned white pine of a uniform thickness of 1½ by 8½ inches at center and 2 inches at ends; these ends are protected by straps 5/16 inch thick; the standard ½ inch square steel passes through the center of strap, is graduated on two sides to ¼ inch and are held in place by a ½ inch thumb screw, pointed to engage holes spaced ¼ inch apart; these standards have a base of 3 by 1½ inches, which rests on the rails; an adjustable spirit level, of large size, is used and protected by an iron handle; if desired, a guard rail lug can be substituted for one of the other lugs in the Combination Level and Gauge.

NO. 1



FIG. 4820

Each..... $7 75

NO. 2

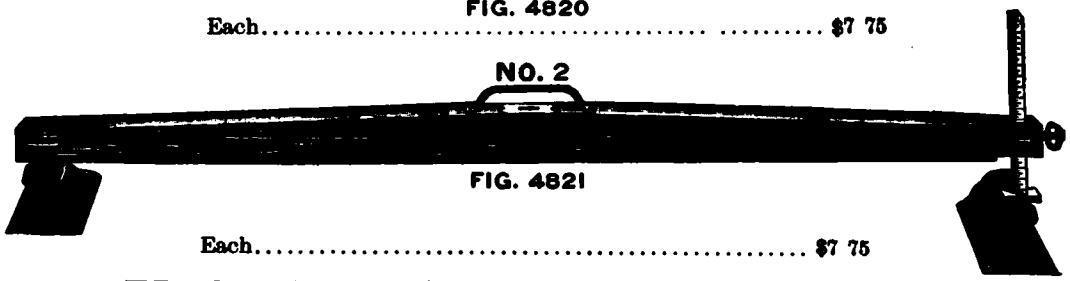


FIG. 4821

Each..... $7 75

TRACK GAUGES

WOOD BAR

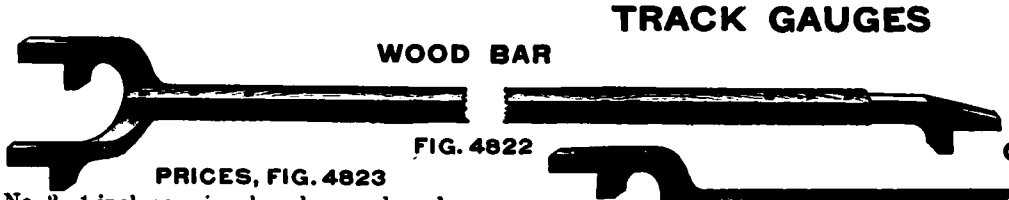


FIG. 4822

PRICES, FIG. 4822

No 4. White Oak, 1¾ x 1¼ in., per dozen.. $25 00
Weight, 8½ pounds.

PRICES, FIG. 4823

No. 3. 1 inch gas pipe shrunk on ends and riveted, per dozen..... $28 00

Weight, 12 pounds.

GAS PIPE

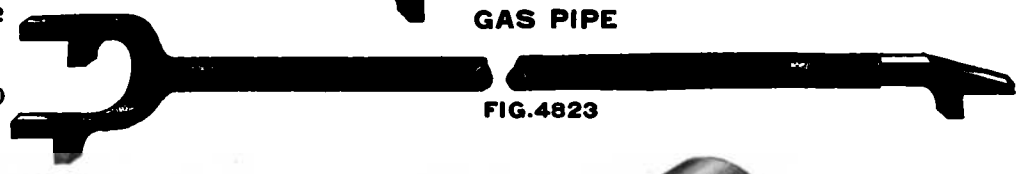


FIG. 4823

SCREW RAIL BENDER, OR JIM CROW

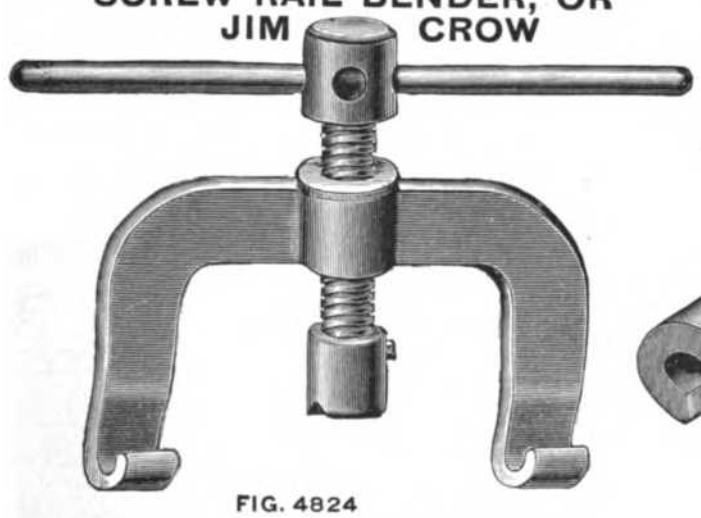


FIG. 4824

RAIL BENDER

Will bend 56 to 90 pound rail.

Each..... $50 00

Weight, 80 pounds.

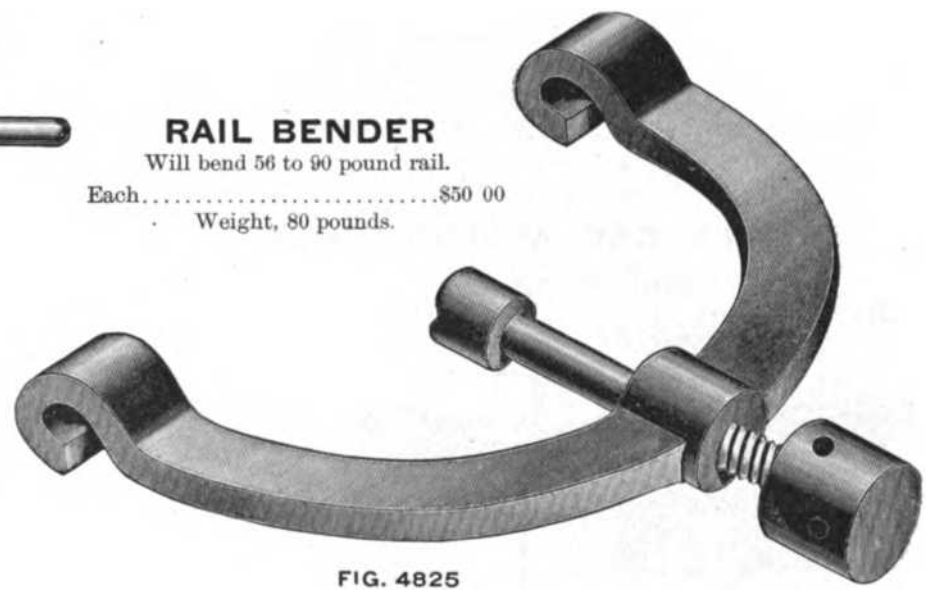


FIG. 4825

DESCRIPTION

Best Wrought Iron, with Machine Cut, Square Thread Screw.

Size numbers.....	1	2	3	8½	4
For steel rails, up to, pounds per yard.....	20	45	65	75	90
For iron rails, up to, " "	30	55	75	85	100
Prices, each.....	$21 00	$30 00	$42 00	$50 00	$59 00
Weight, with lever, pounds.....	65	100	140	155	185
Span to center of claws, inches.....	16	20	24	24	24
Diameters of screw, inches.....	2	2¼	2½	2⅝	2¾

HYDRAULIC RAIL BENDER

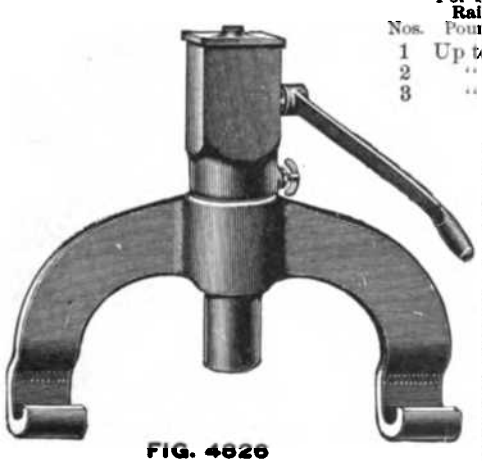


FIG. 4826

PRICES, FIG. 4826

Nos.	For Steel Rails, Pounds.	Span to Center of Claws, Inches.	Weight, Pounds	Pressure, Tons.	Each.
1	Up to 45	20	120	10	$55 00
2	" 65	22	160	20	78 00
3	" 90	24	214	30	95 00

These benders can be made to suit any section of street rail, and when ordering, a sectional drawing of the rail should be sent.

DESCRIPTION, FIG. 4826

By working the long lever, the ram is forced upon the rail. One turn of the lowering key, shown in the side of the head, allows the ram to be run back to its original position, ready for use again. It can be worked in any position without loss of liquid.

RAIL BENDER FOR HEAVY SECTIONS

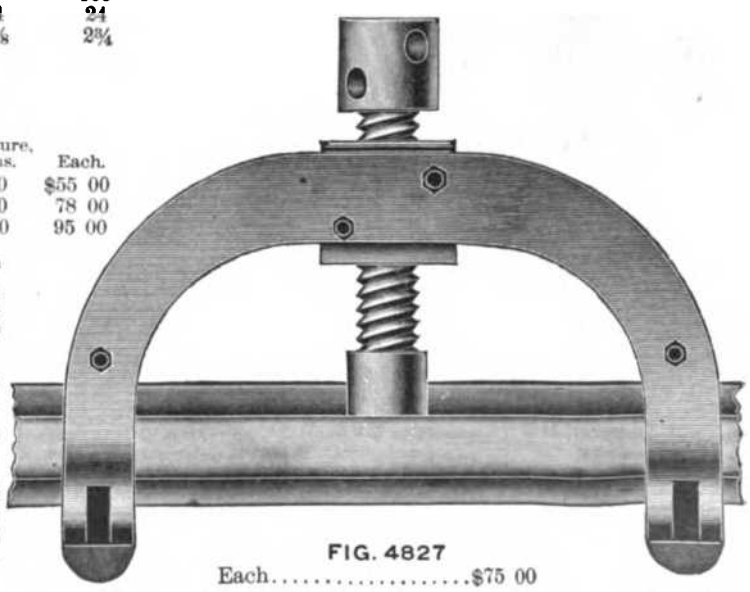


FIG. 4827

Each..... $75 00

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GIRDER RAIL BENDER

MOUNTED 10 INCH HINGED YOKE

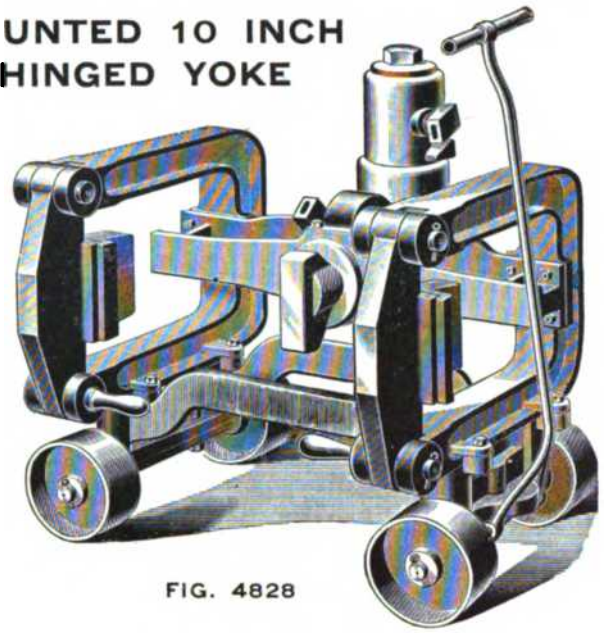


FIG. 4828

This tool has improved bending blocks. The yoke swings back for the rail to be inserted sideways. One set of blocks is necessary for each shape or rail to be bent. The ram has a motion of 2¾ inches, and is graduated to assist in making regular bends. The outer blocks are 26 inches apart.

The construction of the working parts is similar to that of hydraulic punches. The ram can be thrown out against the work or withdrawn by rack and pinion, and there is easy accessibility of working parts. The truck is made of iron; the rest of the tool, except the head, is steel. One set of three bending blocks only is furnished with the tool.

Nos.	Power.	Weight.	Prices.
3	75 ton	890 lbs.	$330 00
4	120 "	1075 " for heavy 10 inch guard rail,	425 00

10 INCH OPEN YOKE

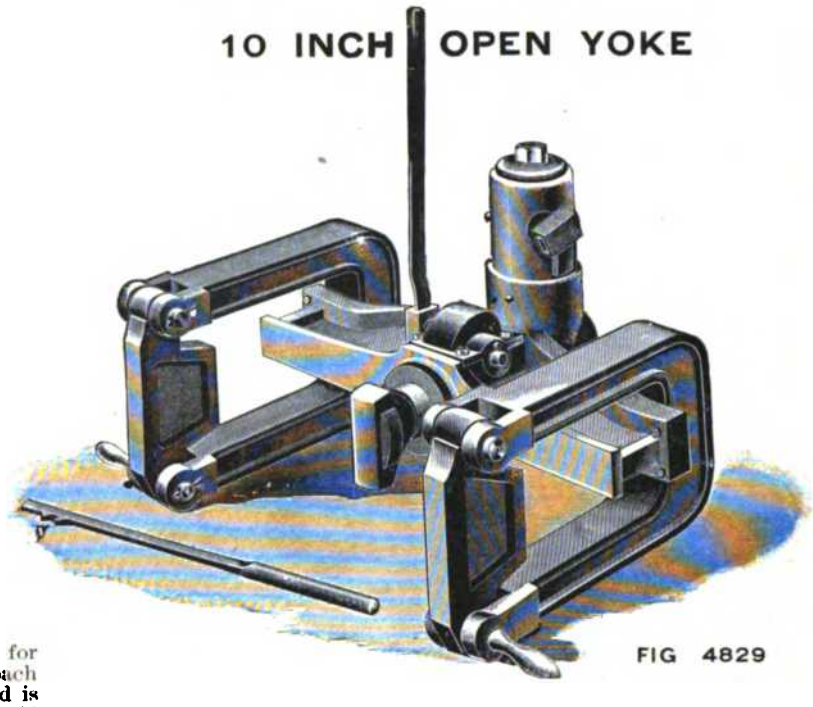


FIG 4829

In this type the ends of the yoke open for the insertion of the rail, the swinging blocks being made to suit the section of rail. The vertical lever throws the ram up to or back from the rail. The ram is graduated on its upper side, so that, the proper bend being once determined, it can be bent to the proper position to retain the required curve without further trial.

This tool is all steel of an extra quality.

Nos.		Weight.	Prices.
3	Power,	675 lbs.	$300 00
4	For extra heavy guard rail,	900 "	390 00

STREET CAR MOTOR LIFTS

EXTRA LONG STROKE



FIG. 4830

This tool is in most respects like Fig. 4831, but varies in the lift and the truck on which it rests, the lift of this tool being 34 inches and the total height from rail to head 45½ inches. The ram diameter is 2¾ inches, with a good bearing when extended. There is a side adjustment of 2 inches. The tool will raise 3,000 pounds at the rate of 24 inches per minute. The pump is made of bronze, with bronze pistons and valves and metal valve seats.

Weight, 500 lbs. Price.....$160 00



FIG. 4831

This tool is designed for use in the pit of the car house for dropping the motor down and rolling it out from underneath the car. The ram has a diameter of 2¾ inches and a lift of 22 inches, with a good bearing when extended. The jack is mounted so that there is a side adjustment of 2 inches. The pump will raise 3,000 pounds 12 inches high in 30 seconds. The total height of jack from floor to ram cap is 34 inches in the regular pattern. The pump is bronze, with bronze piston 1¼ inches diameter and 2½ inches stroke, which gives a motion of nearly ½ inch per full stroke of the lever. The valves are metal seated and easily reached. The outside square body is the reservoir containing the liquid, the cylinder being inside of it.

Weight, 340 lbs. Price.....$140 00

HYDRAULIC T RAIL BENDER

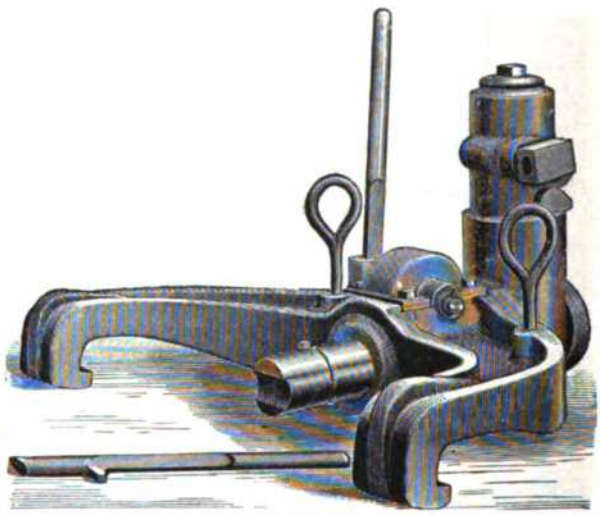


FIG. 4832

In this tool the ram may be run in and out without pumping for a distance of 3½ inches. This allows the tool to be placed over the rail and the ram brought up to its work on the rail head, when a few strokes will bend the rail to the desired curvature; it may then be slid along easily and another pressure given. The ram is graduated to show the spring of rail and has a loose steel head which fits the rail head. In a recent test in service two men bent forty 30 ft. 90 lb. steel rails in one day, and one rail was bent perfectly flat on 45 feet radius in 1½ minutes on 16 inch centers of application.

Nos.	Weights.	Prices.
1	200 for 70 lb. 40 carbon rail,	$160 00
2	275 " 90 " 40 " "	200 00
3	425 " 100 " 70 " "	250 00

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PLAIN HAND POWER

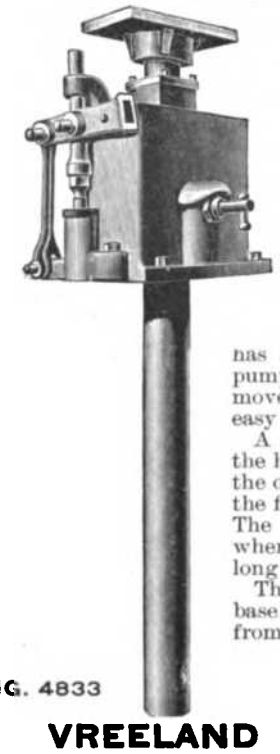


FIG. 4833

DESCRIPTION
FIG. 4833

This tool is adapted for electric railroad companies for lowering the motors from underneath the cars, and when the car is out of the way, raising it to the floor level. It has a single plunger pump with power of 4 tons and a movement of 3 feet, and is a reliable, easy worked tool.

A small four wheel truck rests on the head of the ram, which enables the operator to roll the motor off on the floor and to any part of the shop. The lift is also mounted on wheels when it is desired to use the tool in a long pit.

The length of cylinder below the base is 4 feet 3 inches, and distance from base to cap 24 inches.

PRICE, $175.00

VREELAND PIT MOTOR LIFT

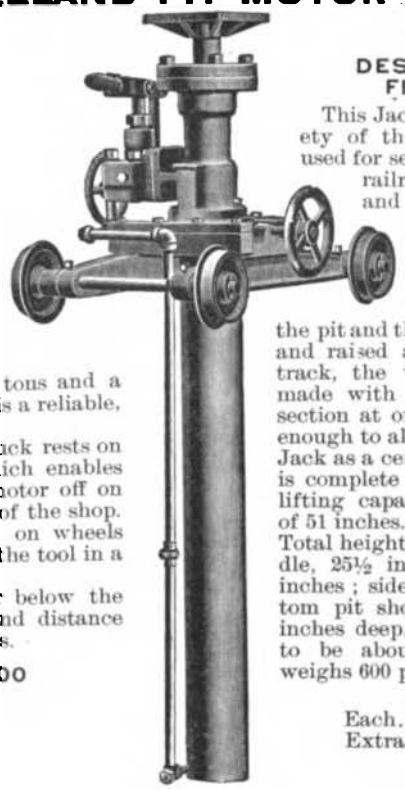


FIG. 4834

DESCRIPTION
FIG. 4834

This Jack is a small variety of the traveling jack used for several years in the railroad roundhouses and repair shops, by the use of which the axles and wheels may be dropped down into the pit and then run back and raised again to the track, the track being made with a removable section at one point, and the pit widened enough to allow of turning the axle on the Jack as a center of revolution.. The Jack is complete with cistern, and has an easy lifting capacity of one ton and a motion of 51 inches. The track gauge is 18 inches. Total height from track to bottom of saddle, 25½ inches; length below track, 42 inches; side traverse, 2 inches. The bottom pit should be 7 inches wide and 45 inches deep, the upper pit being supposed to be about 25 inches deep. The tool weighs 600 pounds.

PRICES

Each..... ..... $175 00
Extra lift, per 3 inches 5 00

TRANSFER PIT JACK
VREELAND STANDARD

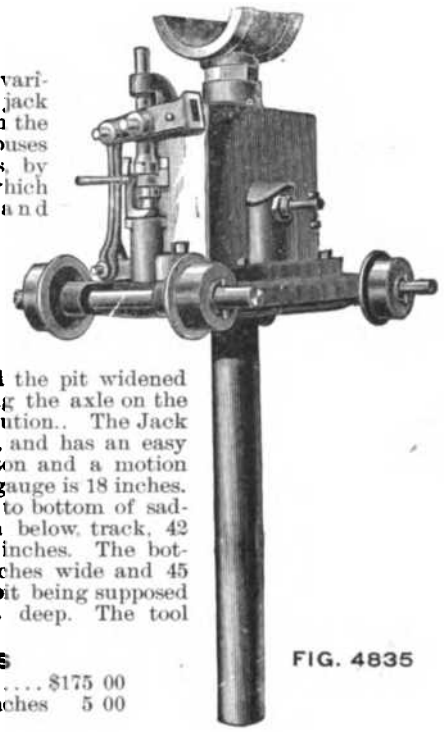


FIG. 4835

DESCRIPTION, FIG. 4835

Power	15 tons.
Lift	54 inches.
Ram	3 "
Height from rail to center of saddle	25 "
Length below rail	44 "
Gauge	14 "
Wheels	6 "

New York Central Standard is same as above, except 5 feet lift and pit 6 inches deeper.

PRICE $350.00

VREELAND TRANSFER PIT JACK
N. & W. OR P. & R. STANDARD

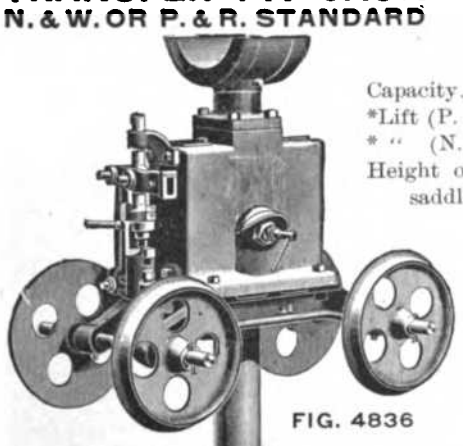


FIG. 4836

DESCRIPTION, FIG. 4836

Capacity	15 tons.
*Lift (P. & R. standard)	60 inches.
* " (N. & W. standard)	54 "
Height of ram from rail to center of saddle	2 feet 11 "
Length below rail	3 feet 3 "
Gauge	18 "
Wheels	13½ "

PRICE, $350.00

* These types are both built of 30 tons capacity on special order.

PRICE, $75.00 EXTRA

VREELAND PIT JACK FOR ENGINE TRUCKS

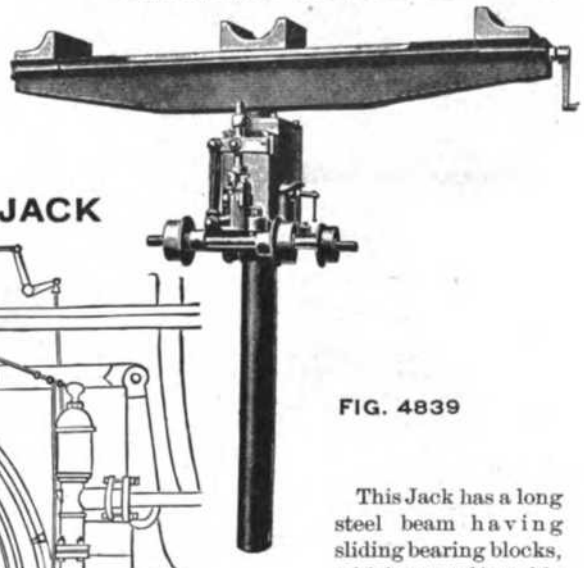


FIG. 4839

This Jack has a long steel beam having sliding bearing blocks, which are adjustable by a right and left screw, to take trucks with axle centers varying from 4 feet 8 inches to 6 feet 8 inches. The height from rail to cap is 3 feet ¼ inch; the length from rail to the end of cylinder, 3 feet 10½ inches; the gauge, 18 inches, and the wheels 6 inches in diameter.

PRICE, $500.00

HYDRAULIC PISTON ROD JACK



FIG. 4837

This little tool has been designed to put in between crosshead pin and the end of piston rod of locomotives, for the purpose of forcing the latter out. It has a pushing capacity of over 15 tons, easily applied, and without excessive friction of a wedge, and a motion of ⅝ inch to the rams, and weighs complete 12 pounds.

PRICE, $25.00

FARRINGTON DRIVING WHEEL JACK

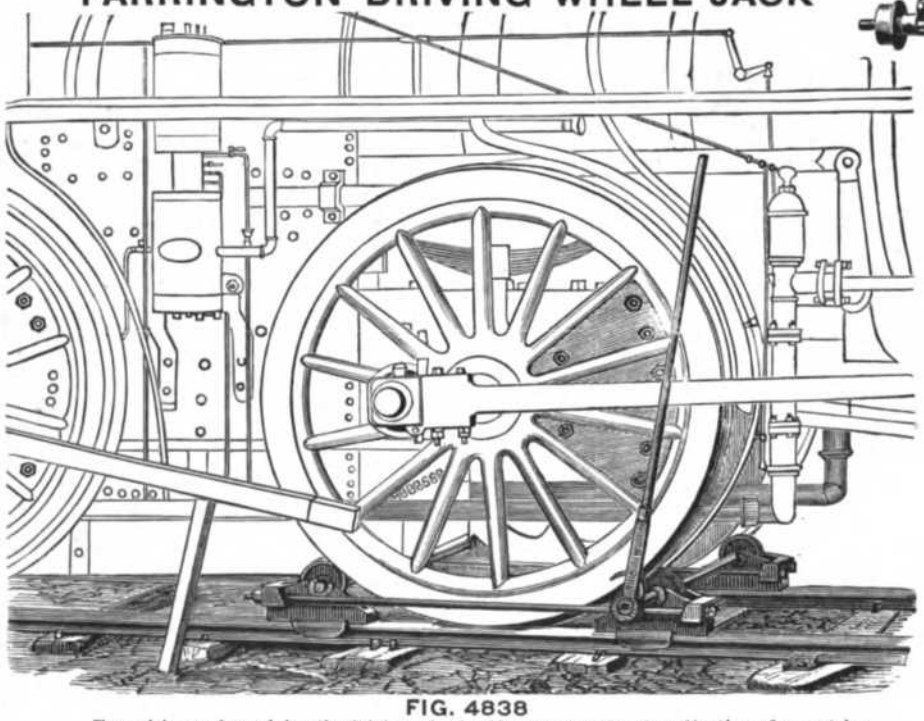


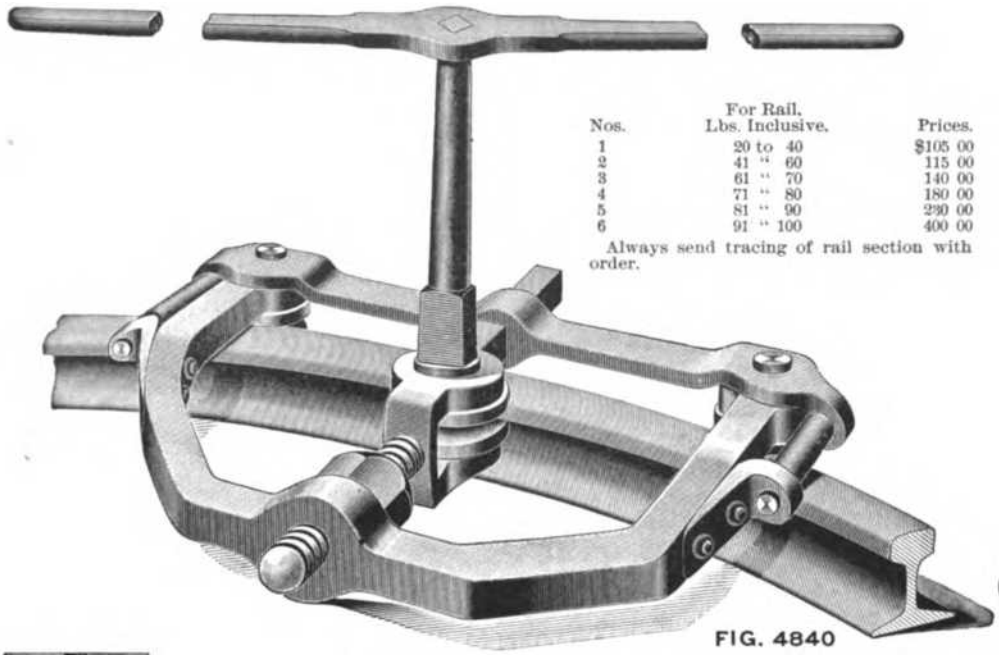
FIG. 4838

For raising and revolving the driving wheels of locomotives for the adjusting of eccentrics and valves. Weight, 380 lbs.

PRICE, $100.00

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ROLLER RAIL BENDER AND STRAIGHTENER



Nos.	For Rail, Lbs. Inclusive.	Prices.
1	20 to 40	$105 00
2	41 " 60	115 00
3	61 " 70	140 00
4	71 " 80	180 00
5	81 " 90	230 00
6	91 " 100	400 00

Always send tracing of rail section with order.

FIG. 4840

RAIL STRAIGHTENER

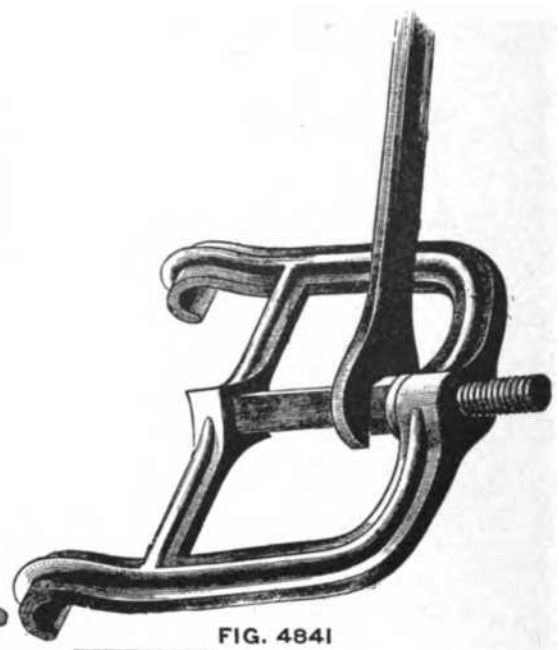


FIG. 4841

EMERSON RAIL BENDING AND STRAIGHTENING MACHINES

FOR GIRDER, CENTER BEARING, TEE AND OTHER RAILS

This is a portable tool for bending and straightening girder and other rails. It is operated by a loosely fitting wooden lever 9 feet long. It may be used on any level ground on which a rail can lie. A graded track affords an excellent place, and hence, in laying curves, the rails are distributed to their proper place, and curved upon the spot; the machine being so much lighter, and more conveniently handled than the rail, it is moved to the required point while the latter is undisturbed.

METHOD OF OPERATING

To operate the machine the hooks are dropped over the rail, and drawn so that the points press upon the web while the eccentric end lies upon the ground. The wooden lever is then raised to such an angle as the experience of the workman will indicate to be necessary for producing the proper curvature. (Care should be exercised in placing the lever at a proper height, for the reason that if the eccentric is placed beyond the proper angle, it prevents the easy or free action of the plunger; whereas if the lever is raised at about an angle of about 45° there is no undue strain on any of the parts of machine. A block of iron is supplied with each machine; it is placed between the end of the ram and the web of the rail. This is to protect the point of the ram, as well as to give room for the free movement of the machine when the lever is raised. To prevent the outer ram from going too far out of sleeve, thereby weakening its hold, the iron block should always be used.) The screw sleeve is then turned, so as to bring the ram into hard contact against the web of the rail, with the block of iron interposed. The lever is then pressed down to the horizontal position, and the rail is bent.

In adapting rails to curves, they should be bent at regular intervals, commencing at one half the interval from the end. The screw sleeve is not moved at each point, but the machine is released from the rail by raising the lever. The workman may bend as often as he thinks proper, but it is not necessary to bend at many points to make an unexceptional curve of ordinary radius.



FIG. 4842

Machine Showing Jaws before Dies are Applied.

PRICE, MACHINES, FIGS. 4842 AND 4843

With jaws ready to receive steel dies, each.....$175 00

PRICE OF DIES

The steel dies fit in and form part of jaws; they are shaped so as to properly embrace the rail which is to be bent or straightened. The dies cost, in addition to price of bender (for half set, or two dies for one side of rail).....$7 50

Additional dies at same price. Tracings or blue prints of rails should accompany orders.

MADE OF STEEL

The larger size for heavy rails. The smaller size for light rails, not exceeding 50 pounds weight.

PRICES, FIG. 4841

Large size, including wrench..$40 00
Small " " " .. 32 00



FIG. 4843

Machine Showing Dies in Jaws and additional Dies ready to apply.

HYDRAULIC PUNCH

For Web of Johnson Street Girder Rails.

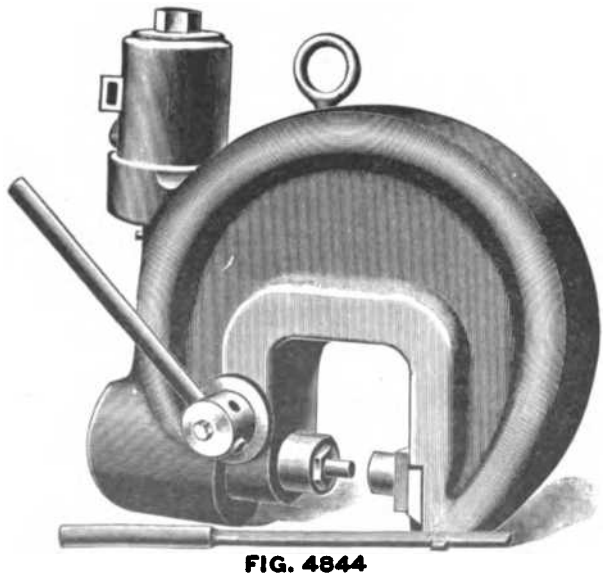


FIG. 4844

PRICES, FIG. 4844

No. 2 fitted with gland No. 5, punch No. 5. The die is special.

Sizes.	Diams. of Hole, Inches.	Thickness, Inches.
2	1	½ iron
3	1	½ steel
4	1¼	½ "

Depth of Jaw. Inches.	Weight, Pounds.	Each.
5	290	$225 00
8¼	350	250 00
8¼	650	325 00

PRICES, FIG. 4845

One round punch and die furnished with each tool.

Sizes.	Diams. of Hole, Inches.	Weight of Rail, Pounds.	Nos. of Gland.	Nos. of Punch.
2	⅞	60	5	5
3	⅞	80	5	5
4	⅞	90	6	6

Nos. of Die.	Weight, Pounds.	Jaw and Depth.	Each.
Special	200	....	$150 00
"	375	....	200 00
"	400	....	225 00

HYDRAULIC PUNCH

For Web of Railroad Tee Rail.

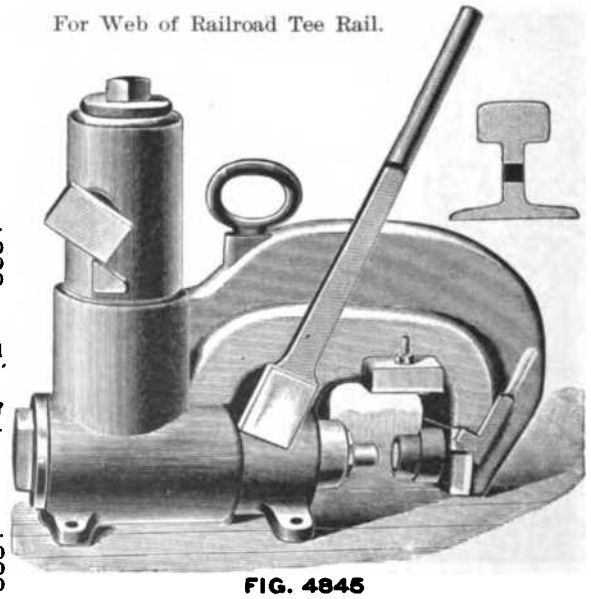


FIG. 4845

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HYDRAULIC RAIL PUNCHES

FOR WEB OF CABLE SLOT RAIL

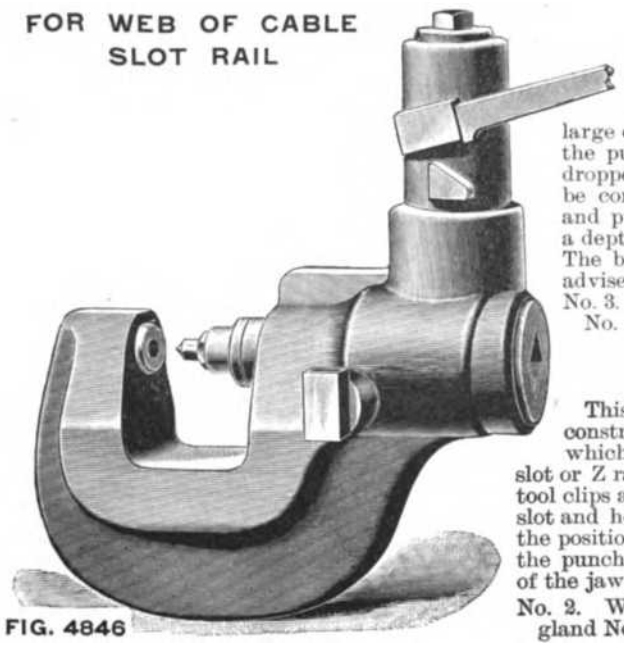


FIG. 4846

DESCRIPTION, FIG. 4846

This punch will punch the hole for the tie bolt in the web of the slot rail (Z bars) when both slot rails are in place and the track laid. The jaws of the punch are raised from below, have an opening large enough to let the base of the rail pass the die and the punch; also to have the punch short enough to be dropped down between the slot and wheel rails and yet be convenient for operation. The position of the head and pump opening are on jaw side of the punch. It has a depth of jaw of 5 inches and an opening of 7 inches. The body is of steel. For steel rails a shearing punch is advised.

No. 3. Weight about 300 pounds; fitted with gland No. 5, punch No. 5, die No. 5. Price..... $200 00

DESCRIPTION, FIG. 4847

This punch is especially adapted for cable railroad construction. It is a special form of spike slot punch by which the bolt holes can be punched in the base of the slot or Z rails before or after being laid in position. On this tool clips are placed upon the front which drop into the cable slot and hold the tool up, while gauges on the sides determine the position of the hole and act as strippers when withdrawing the punch. The center of the hole is regulated from the rear of the jaw.

No. 2. Weight, 145 pounds; fitted with new standard gland No. 5, punch No. 5, die No. 4. Price..... $150 00

FOR BASE OF CABLE SLOT RAIL

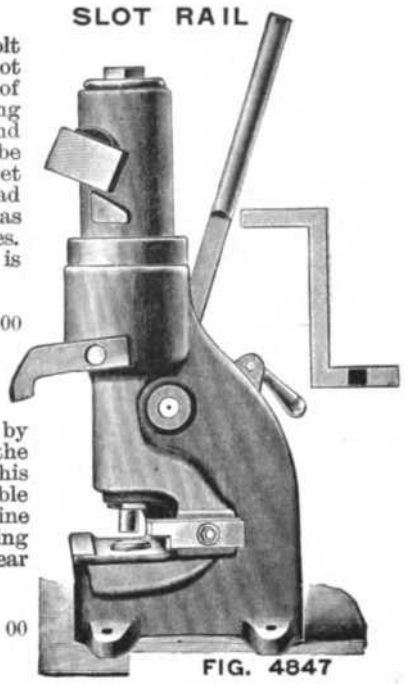


FIG. 4847

TRUCK FOR STREET RAILROAD PUNCHES

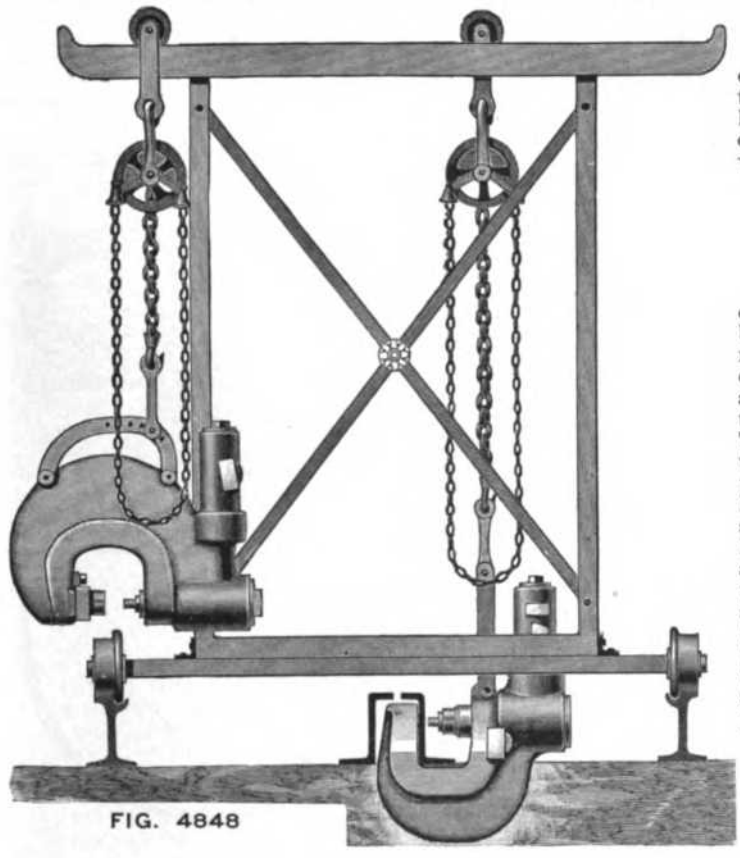


FIG. 4848

DESCRIPTION, FIG. 4848

This truck was designed for the purpose of handling two punches with ease and steadiness. It runs on the rails and allows the proper position of the punches upon either side of the track to be quickly obtained and surely held. The two punches are hung from trolleys by chain hoists of light capacity, trolley tracks crossing from side to side.

Without punches or hoists. Price $85 00

FOR SPIKE SLOT OF RAILROAD RAIL

DESCRIPTION, FIG. 4849

This punch is for the purpose of punching the spike slots in the base of heavy rails for regular railroad service, as is frequently desired on switches and curves, and is convenient and expeditious, making a cleancut slot. The punch may be brought down to the work without the labor of pumping, being both raised and lowered by the lower lever shown in the illustration. The No. 2, with 1½ inch jaw, weighing about 90 pounds, has sufficient power to punch the $1\frac{1}{16}$ x $1\frac{1}{16}$ slot in the side of the base of 90 pounds steel rail. Guides are placed on the side for determining the depth; they also act as strippers.

Punch and die specially fitted with standard gland No. 7; weight, 160 pounds. Price ... $150 00

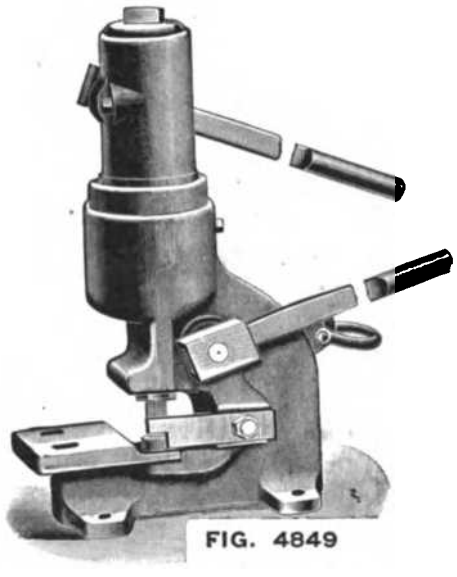


FIG. 4849

SPIKE PUNCH

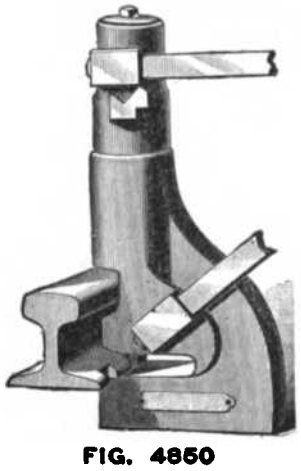


FIG. 4850

Prices on application.

FISH PLATE PUNCH

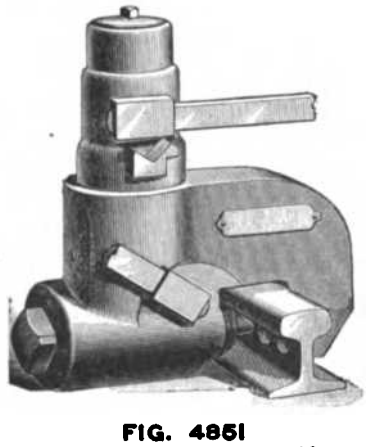


FIG. 4851

HYDRAULIC CONDUCTOR RAIL PUNCH

DESCRIPTION FIG. 4852

This punch has a special bolster and a lower jaw which permits of placing the rail close. It also has an oval punch and die instead of round.

No. 2. Weight about 135 pounds. Price.. $160 00

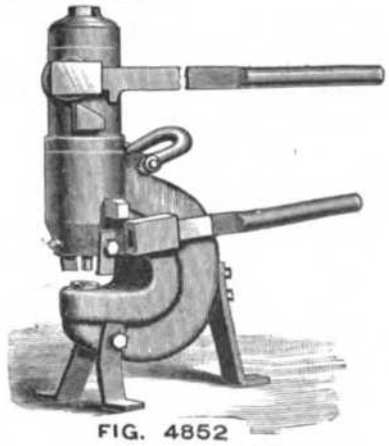


FIG. 4852

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HYDRAULIC RAIL PUNCHES AND RAIL BOND COMPRESSORS

GIRDER RAIL FLANGE PUNCH

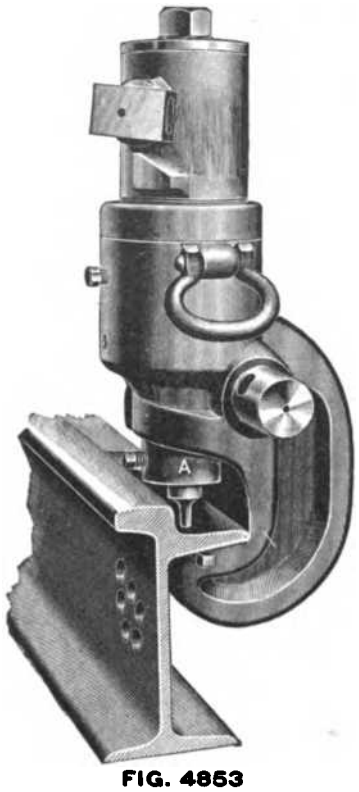


FIG. 4853

DESCRIPTION, FIG. 4853

This punch was designed for the punching of the flange of the girder rail in repair work without having to take the rail up or make large excavations. It has the same general features as the regular hydraulic punches. The tool weighs about 140 pounds. Prices on application.

CLOSED JAW

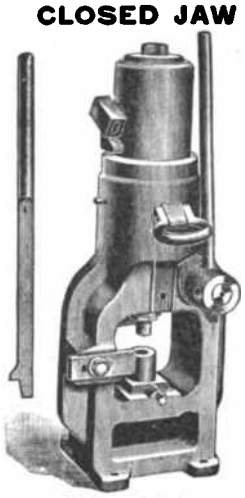


FIG. 4854

DESCRIPTION, FIG. 4854

This punch was made for punching bolt holes in 90 pound steel rails. The rail must be punched before laying.

The die is in a removable bolster, which can be changed to suit the rail being punched. The die is special.

It stands 32½ inches high. No. 4. Weight, 300 pounds.

PRICE

Each.....$200 00

T RAIL BASE HYDRAULIC PUNCH

DESCRIPTION FIG. 4855

In order to preserve the dies, the rail, when being punched, is inverted and rolls through the tool on the rollers shown in front.

The four punches are held against the ram by one punch holder. The dies for the purpose for which this tool was designed have fixed centers.

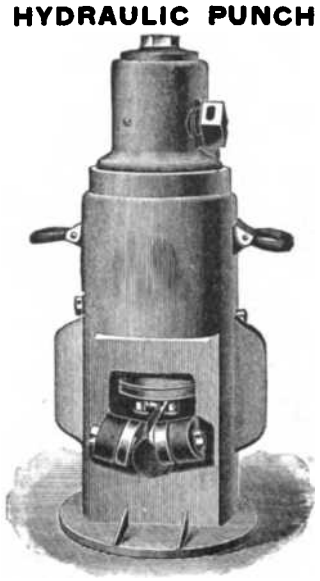


FIG. 4855

The tool has a power of 160 tons. The ram is seven inches in diameter, and is raised and lowered by the rack and pinion motion, which does not show on the cut. No. 5. Weight, 475 pounds.

PRICE

Each.....$350 00

HYDRAULIC SCREW T RAIL WEB BOND COMPRESSOR

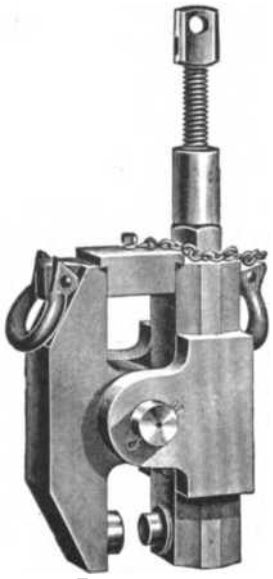


FIG. 4856

DESCRIPTION, FIG. 4856

This tool has a swiveling jaw, which is opened wide to pass over a rail head or other obstructions by taking out a block at the back end. The placing of the compressor die in the ram secures the maximum power when needed.

The power of the tool is 25 tons. The depth of the jaw is 3 inches. The movement of the riveter die is 1 inch under hydraulic action. The swing of the die is 2¼ inches.

The tool is all steel and weighs about 90 pounds.

PRICE

Each.....$125 00

SMALL HAND POWER HYDRAULIC RIVETER



FIG. 4858

DESCRIPTION, FIG. 4858

This tool is used for riveting the connections in the commutators of large dynamos, and has worked in cases where the ends of the jaws and riveting tools had each less than ¾ inch of room to work. Is used also in heading the copper bonding wires in holes in rails. It has a power of about 15 tons, a stroke of ⅝ inch and a depth of jaw of 3⅛ inch to center of rivet.

Weight, 35 pounds.

PRICE

Each.....$70 00

INDEPENDENT PUMP HYDRAULIC PUNCH

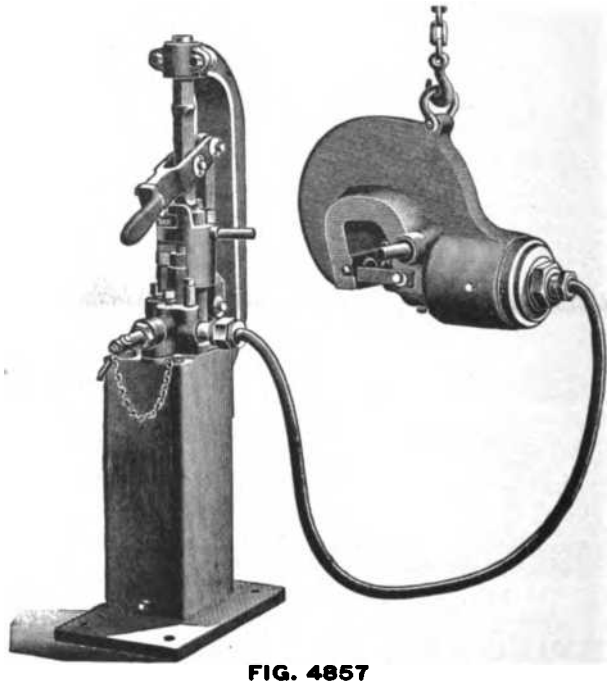


FIG. 4857

DESCRIPTION

There are many situations especially in structural work where it is not convenient or even possible to work a punch by lever or bar. By this combination of tools the punch is adaptable to any position, and is lighter than when pump is part of the tool. The pump is connected to the punch by any desired length of flexible pipe.

The ram of the punch can be worked in and out without pressure by a pinion shaft. The tank holds about 1,200 cubic inches.

No. 3 punch. Depth of jaw, 3⅞ inches. Weight, 200 pounds.

PRICE

With Pump and 10 feet of tube.....$250 00

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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RAIL HACK SAWS

UNIVERSAL RAILROAD TRACK HACK SAW FRAMES

NO. 1

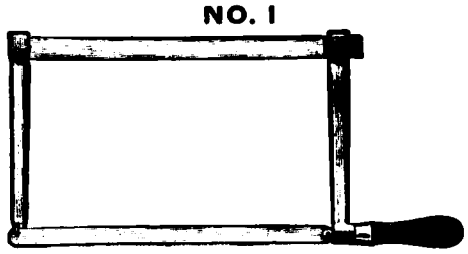


FIG. 4861

Price.....$1 75

NO. 2

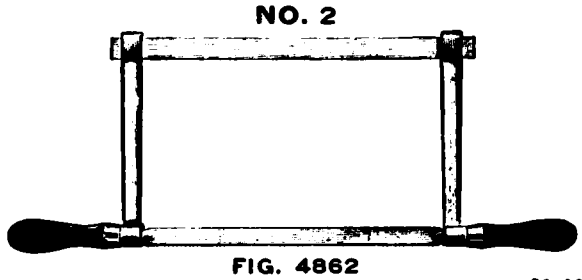


FIG. 4862

Price.....$2 00

DESCRIPTION, FIGS. 4861 AND 4862

These frames have been designed for the use of electric railroads in cutting rails. They are made of steel and are very strong. They are adjustable, taking saws from 10 to 14 inches. The latter size is the most practical.

RAIL HACK SAW

NO. 30

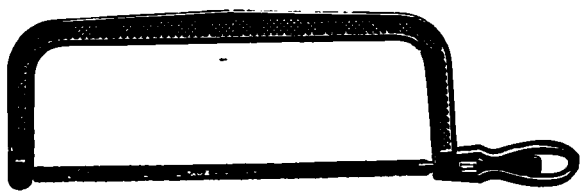
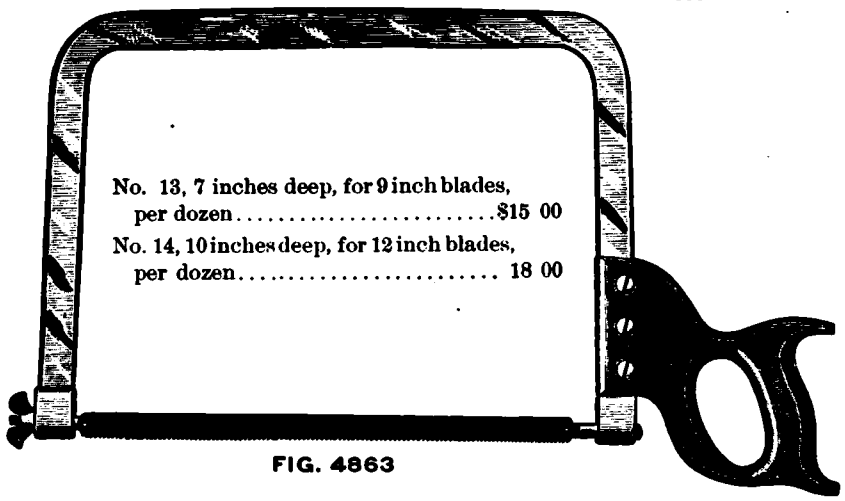


FIG. 4864

Used for cutting steel beams and steel rails for trolley and cable roads.

14 inches, with one dozen blades, per dozen..$24 00
Extra blades, per gross..... 15 00
Depth of cut, 4¾ inches.

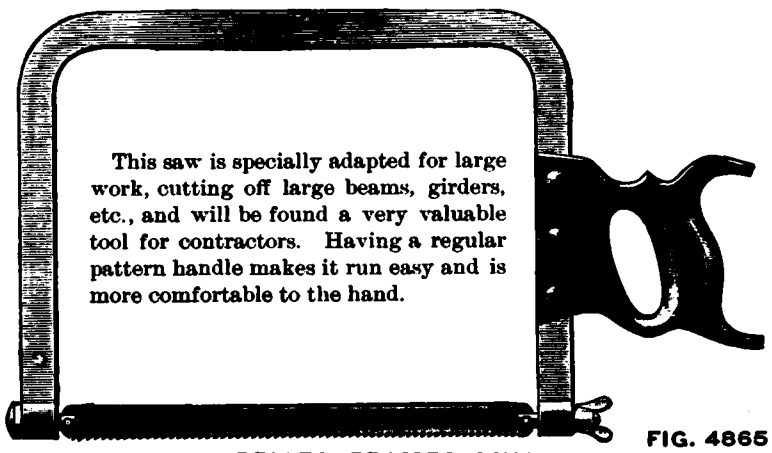
STAR RAIL HACK SAW FRAME



No. 13, 7 inches deep, for 9 inch blades, per dozen.....$15 00
No. 14, 10 inches deep, for 12 inch blades, per dozen..... 18 00

FIG. 4863

RAIL HACK SAW FRAME



This saw is specially adapted for large work, cutting off large beams, girders, etc., and will be found a very valuable tool for contractors. Having a regular pattern handle makes it run easy and is more comfortable to the hand.

FIG. 4865

PRICES, FRAMES ONLY

No. 6,	7	inches under back,	suitable for	9	inch blades, per dozen...	$15	00
" 7,	10	" "	"	12	" " "	18	00
" 8,	10	" "	"	14	" " "	19	00
" 9,	10	" "	"	16	" " "	23	00
" 10,	10	" "	"	18	" " "	28	00

Nos. 9 and 10 have handles on each end.

No. 5A PORTABLE SAWING MACHINE

16 INCH BLADE, WITH AUTOMATIC FEED

DESCRIPTION, FIG. 4866

The cut represents the No. 5A Portable Rail Saw. This machine is designed especially for steam and street railroads; it will cut rails, beams, channels, etc., up to 7 inches in height, and at an angle of 45 degrees or less. It is generally operated by two men, but can be worked by one, as the great decrease of power required is explained by the fact that the power is applied directly to the periphery of the saw blade, which enables the operator to get the greatest amount of power possible with the least exertion. Continuous cutting can be done with little effort, owing to its ease of action. Steam rails can be cut in from 6 to 12 minutes. The saw blade is hollow ground and acts as a rotary planing cutter, leaving the rail perfectly smooth and true. An accuracy of $\frac{1}{100}$ of an inch can be obtained. It is especially valuable in cutting off rail ends. It is of great value in making crossings and switch layouts on account of its ability to cut angles. It is well and strongly built, all feed gears, etc., being cut from solid steel; it is equipped with automatic feed and quick release, and can be attached to any rail in 30 seconds. Furnished complete with two saw blades and grinder, ready for work. Weight of machine, 260 pounds; boxed, 300 pounds. Price.....$125 00

No. 6A. A SPECIAL SIZE MADE FOR 9 INCH STREET RAIL

20 1-2 INCH BLADE, WITH AUTOMATIC FEED

This machine is an exact duplicate of the No. 5A, but is larger, and uses a 20½ inch instead of a 16 inch saw blade. It is especially designed to meet the wants of street railroads and contractors where it is necessary to cut rails, etc., up to and including 9 inches in height and up to a 45 degree angle. The machine is arranged so as to be carried easily by two men. Furnished with two saw blades and grinder complete. Weight, 285 pounds; boxed, 330 pounds. Price.....$150 00

PORTABLE RAIL SAW

NOS. 5A AND 6A

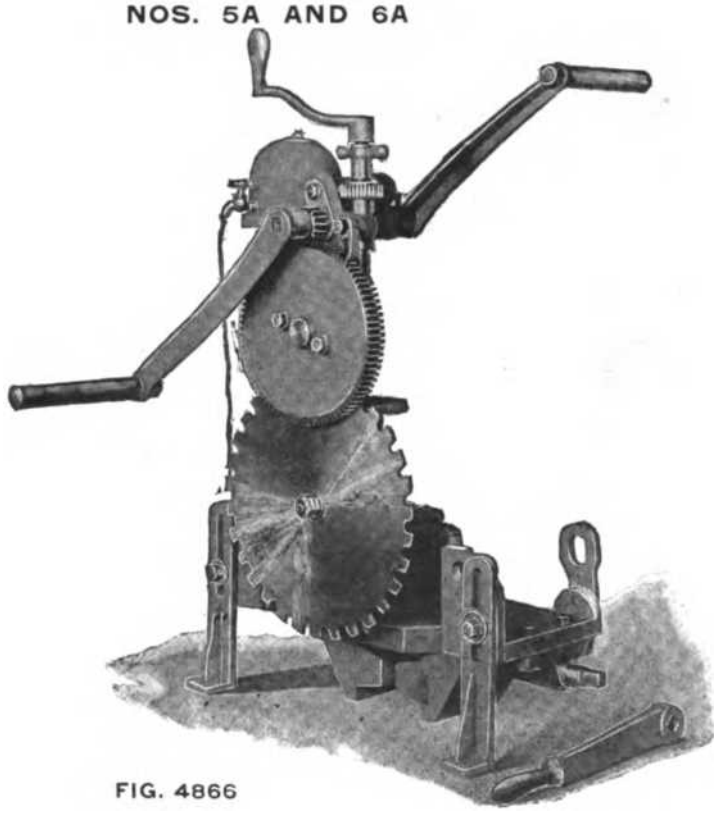


FIG. 4866

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SMITH'S PORTABLE RAIL SAW

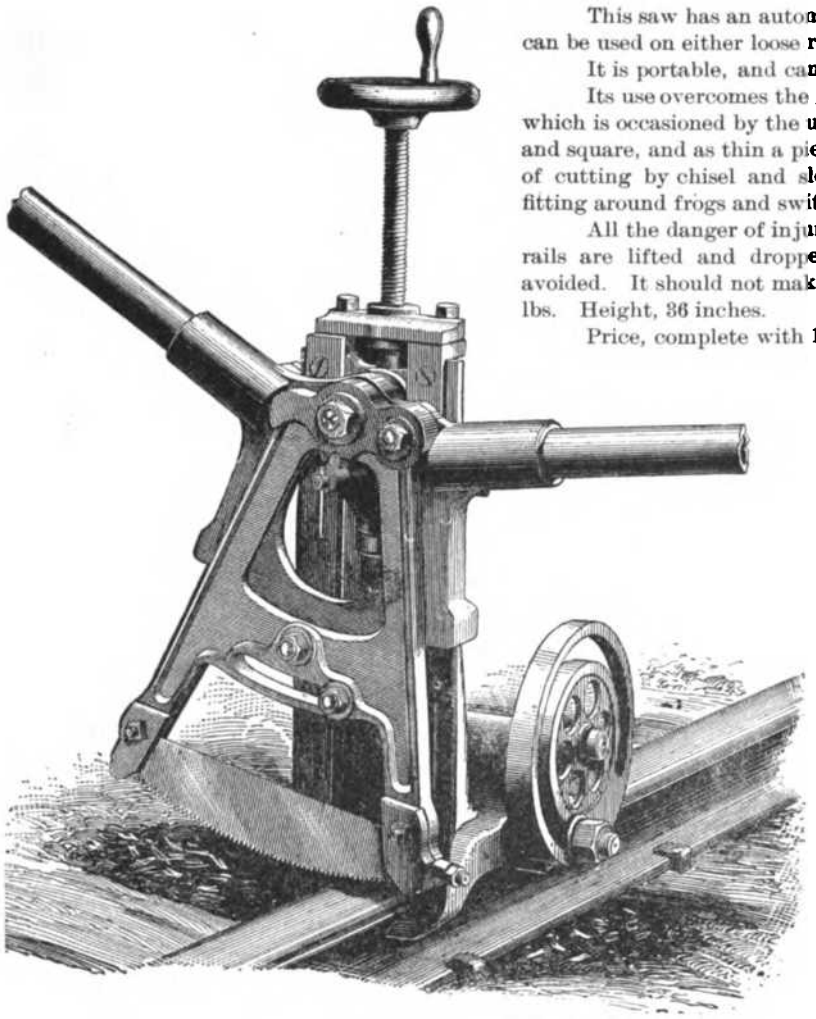


FIG. 4867

This saw has an automatic feed and will cut a 70 lb. steel rail in from 10 to 12 minutes, and can be used on either loose rails or on rails fastened in position on ties.

It is portable, and can be transported without fear of injury.

Its use overcomes the generally conceded danger of crystallization of the material in rail, which is occasioned by the use of the chisel and sledge, and, in addition, the ends are left smooth and square, and as thin a piece as ⅛ inch can be cut off, which is impossible with the old method of cutting by chisel and sledge. This latter feature is very desirable where rails buckle or in fitting around frogs and switches.

All the danger of injury to trackmen, which has been so common where rails are lifted and dropped after nicking with chisel to break them, is avoided. It should not make over 70 to 80 strokes per minute, and weighs 120 lbs. Height, 36 inches.

Price, complete with 10 saws, $160.00. Extra saws, each, $1.00.



FIG. 4868

PORTABLE RAIL SAWS NOS. 5 AND 6

DESCRIPTION, FIG. 4869

The Nos. 5 and 6 portable rail saws are designed for cutting rails off at right angles to their length only. The No. 5 saw has sufficient capacity for sawing all steam rails up to and including 100 lbs. per yard. The No. 6 saw will cut a 9 inch girder rail of any regular section. The saw is secured to the rail by adjustable clamp jaws in the base, which are tightened by a screw and lever.

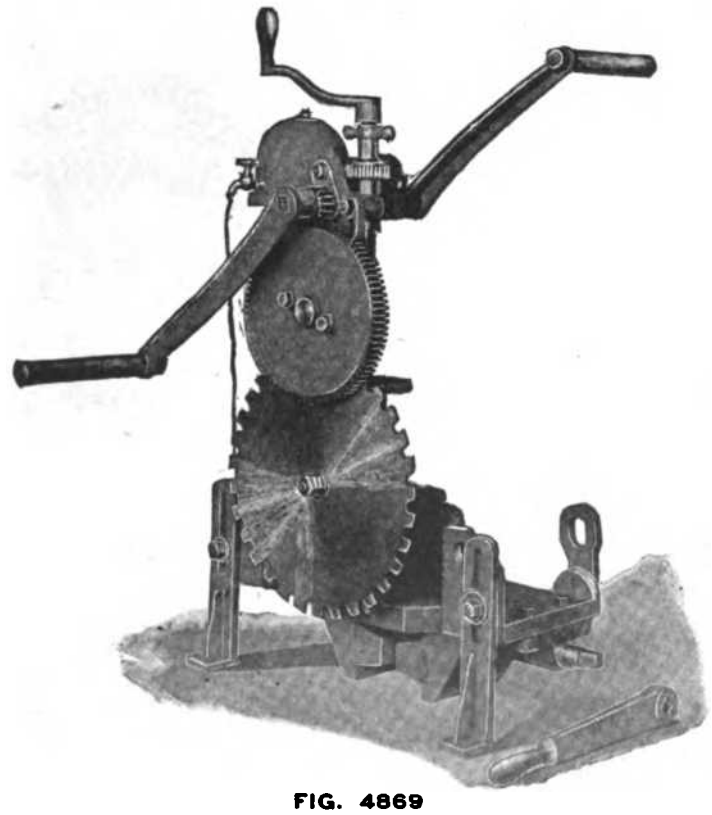


FIG. 4869

The reducing gearing is arranged on the slide supporting the saw blade, and a simple form of automatic feed lowers the saw at the proper speed for cutting the head or base of the rail. The feed screw is driven by a friction nut, which can be quickly released to feed the saw by hand through the web of the rail or return the slide.

A pawl prevents the saw blade from being turned backwards, which must never be done when in a cut.

Furnished complete with saw grinder, two saw blades, and all necessary wrenches.

DESCRIPTION, FIG. 4868

The blade is driven by a steel sprocket engaging the holes in the blade as shown. If the teeth are in any way broken out the saw does not have to be reground on that account. Diameter saw blade, 16 inches. Travel of blade, 8 inches. Height of driving shaft, 25 inches. Range of angle cut, 90 degrees, 45 degrees on both sides of straight line. Weight, 225 lbs. Price, $140.00.

NO. 5

Diameter of saw blade	16 inches
Thickness of saw blade	5/16 "
Capacity, steam rails	100 lbs.
Weight	256 "
Price	$100 00

NO. 6

Diameter of saw blade	20½ inches
Thickness of saw blade	¼ inch
Capacity, street rails	9-inch girder
Weight	310 lbs.
Price	$125 00

KNOX MEN 'JEWELS LIGHTLY 68 AND '87, MOORE & WHEELWRIGHT, MANNING,

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TRACK TOOLS

TRACK WRENCH

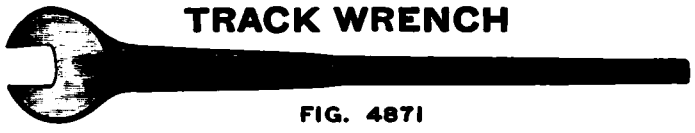


FIG. 4871

These wrenches are forged with round handles, from stiff, strong steel that will not bend in use, and are made any length down to 24 inches over all. Furnished unfinished and semi-finished only; with openings broached—not milled—in both conditions.

Milled to special sizes when required.

PRICES

Nos.	Outside Diameters of Nuts.	Openings.	Extreme Lengths.	Thickness Head.	Weight, Each.	Unfinished.	Semi-finished.
194	1¼	15/16	30	25/32	5 lbs., 5 oz.	$0 60	$0 90
195	1⅜	1 7/16	30	13/16	5 " 7 "	60	90
196	1½	1 9/16	30	13/16	5 " 9 "	60	90

DOUBLE HEAD CAR WRENCH

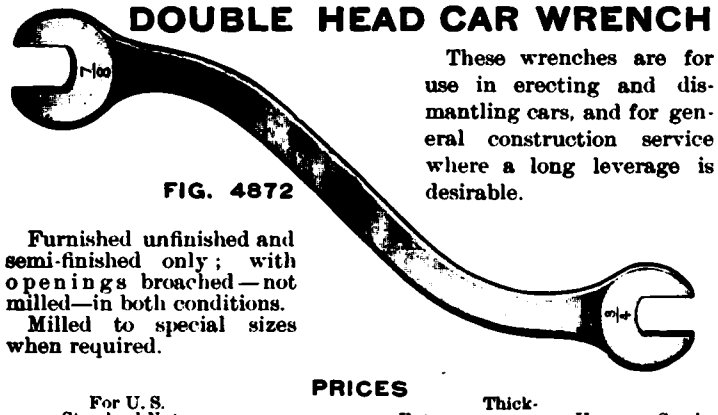


FIG. 4872

These wrenches are for use in erecting and dismantling cars, and for general construction service where a long leverage is desirable.

Furnished unfinished and semi-finished only; with openings broached—not milled—in both conditions.

Milled to special sizes when required.

PRICES

Nos.	For U. S. Standard Nuts: Size Bolts.	Openings.	Extreme Length.	Thickness Head.	Unfinished.	Semi-finished.
370	½ and ⅝	15/16 and 1⅛	19	½	$0 85	$1 28
371	½ " ¾	15/16 " 15/16	19	½	85	1 28
372	½ " ⅞	15/16 " 1½	20	½	92	1 38
373	⅝ " ¾	1⅛ " 15/16	20	½	92	1 38
374	⅝ " ⅞	1⅛ " 1½	21	½	1 00	1 50
375	⅝ " 1	1⅛ " 1 11/16	21	½	1 00	1 50
376	¾ " ⅞	15/16 " 1½	21	½	1 00	1 50
377	¾ " 1	15/16 " 1 11/16	22	½	1 10	1 65
378	¾ " 1⅛	15/16 " 1⅞	22	½	1 10	1 65
379	⅞ " 1	1½ " 1 11/16	22	½	1 10	1 65
380	⅞ " 1⅛	1½ " 1⅞	23	½	1 25	1 88
382	1 " 1⅛	1 11/16 " 1⅞	23	½	1 25	1 88

RAILROAD TRACK CHISEL

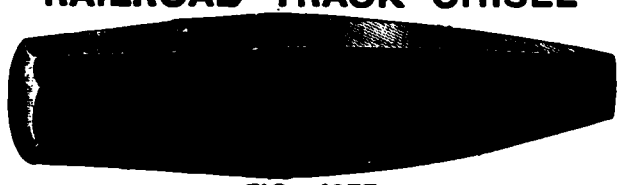


FIG. 4877

Highest Grade Tool Steel, weight 3 to 5 pounds; price per pound, 50c.

RAILROAD TRACK PUNCH



FIG. 4879

Highest Grade Tool Steel, weight 4 to 5 pounds; price per pound, 50c.

TAMPING BAR

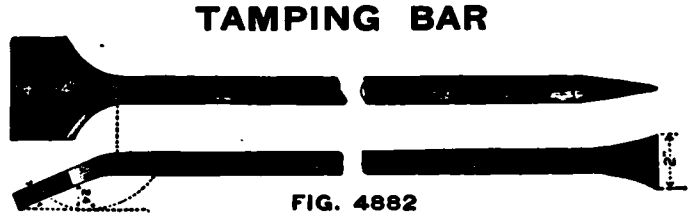


FIG. 4882

Length over all, 5 feet, 4½ inches; price, 12 cents per pound.

RAILROAD TRACK WRENCH

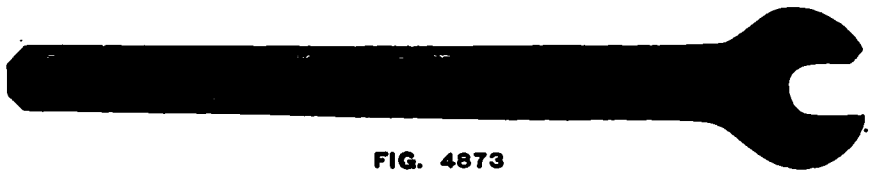


FIG. 4873

Solid Cast Steel, Flat or Round Handles, 20 inches; per pound, 25 cents.

DOUBLE END TRACK WRENCH

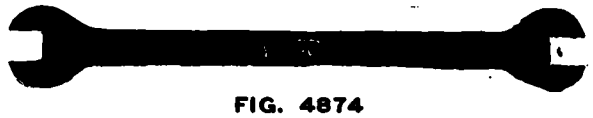


FIG. 4874

Weight of 24 inch, 6 pounds; per pound, 45 cents.

RAIL FORK

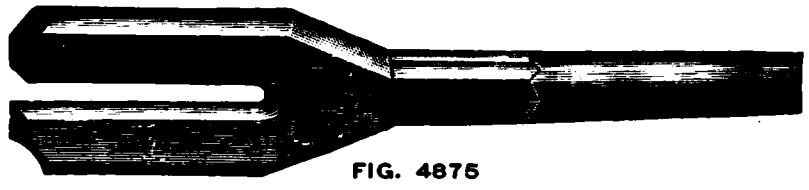


FIG. 4875

Solid Cast Steel; weight, 14 pounds; per pound, 30 cents.

RAILROAD MAUL
PITTSBURG PATTERN

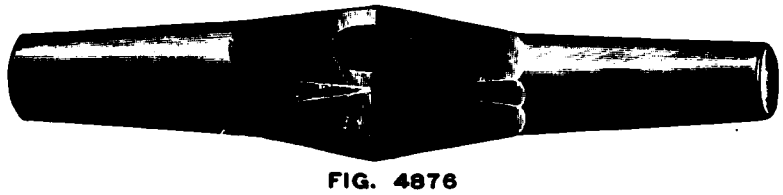


FIG. 4876

Painted Blue, Polished Ends; weight, 6 to 12 pounds; per pound, 40 cents,

TRACK PUNCH, ROUND POINT
FOR PUNCHING RAILS. SOLID STEEL

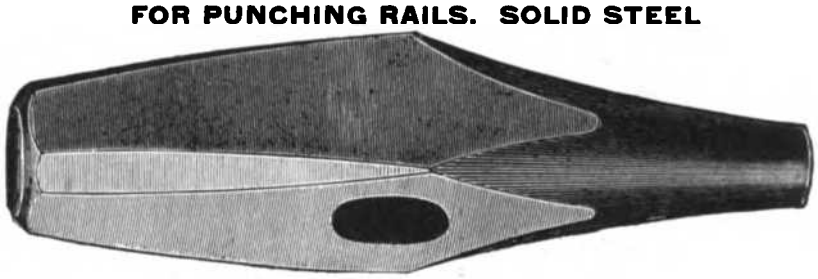


FIG. 4880

Made of Special Steel, carefully tempered and tested; per pound, 25 cents.

RAILROAD CLAW BAR

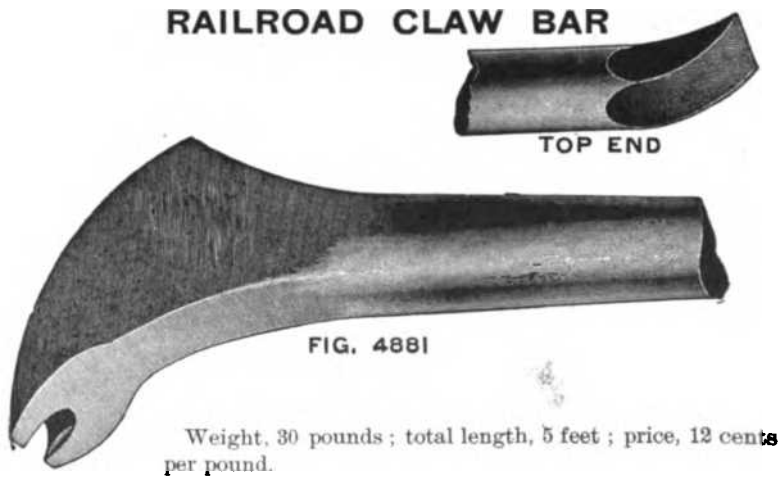


FIG. 4881

Weight, 30 pounds; total length, 5 feet; price, 12 cents per pound.

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RAILROAD CLAW BAR, WITH HEEL



FIG. 4883

Solid Cast Steel, per pound..... $0 22
Weight about 28 pounds.

CLAW BAR



FIG. 4884

Solid Cast Steel, weight 28 to 30 pounds, per pound..... $0 18

TAMPING BAR



FIG. 4886

Solid Cast Steel, per pound..... $0 16
Weight about 14 pounds.

CROWBARS. SOLID CAST STEEL

Pinch Point.



FIG 4888

Pinch Point, weight 10 to 40 pounds, per pound..... $0 12

Wedge Point.



FIG. 4889

Wedge Point, weight 10 to 40 pounds, per pound..... $0 12

GOOSE NECK CLAW BAR

Top End.



FIG. 4885A

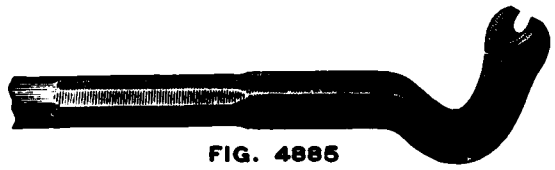


FIG. 4885

Solid Cast Steel, per pound..... $0 22
Weight about 25 pounds.

LINING BAR



FIG. 4887

Per pound..... $0 12
Weight, 18 to 25 pounds.

SHACKLE BAR



FIG. 4890

Size.....1½ inches in the square
Length.....5 feet
Each..... $6 00
Special sizes made to order.

RAIL TONGS

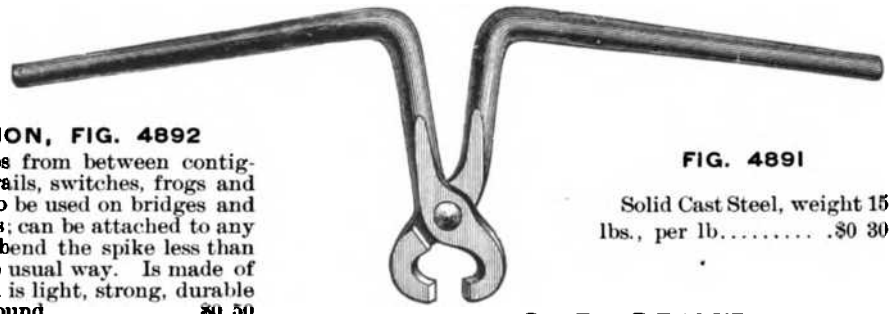


FIG. 4891

Solid Cast Steel, weight 15 lbs., per lb..... .$0 30

SPIKE PULLER

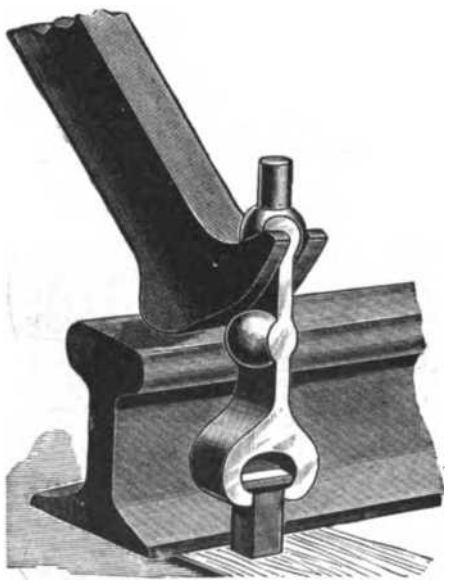


FIG. 4892

DESCRIPTION, FIG. 4892

Will draw spikes from between contiguous rails, guard rails, switches, frogs and platforms; can also be used on bridges and in tunnels and cuts; can be attached to any claw bar and will bend the spike less than when pulled in the usual way. Is made of tempered steel and is light, strong, durable and cheap. Per pound..... $0 50

FIG. 4894

SPIKES IN ONE MILE OF SINGLE TRACK.

Sizes.		With Ties 2 Feet Between Centers, 4 Spikes to a Tie.		Average No. in Kegs 200 Lbs.
6 x	9/16	6600 lbs. or 33	kegs.	320
5½	9/16	6212 "	31 "	340
5	9/16	5863 "	29⅓ "	360
6	½	5028 "	25¼ "	420
5½	½	4641 "	23¼ "	455
5	½	4267 "	21⅓ "	495
4½	½	3911 "	19½ "	540
4	½	3520 "	17⅔ "	600
5	7/16	3520 "	17⅔ "	600
4½	7/16	3224 "	16⅛ "	655
4	7/16	2933 "	14¾ "	720
3½	7/16	2600 "	13 "	810
5	⅜	2576 "	13 "	820
4½	⅜	2347 "	11¾ "	900
4	⅜	2112 "	10½ "	1000
3½	⅜	1885 "	9½ "	1120
3	⅜	1656 "	8¼ "	1275
2½	⅜	1426 "	7⅛ "	1480

Prices quoted on application. The Spikes we furnish regularly are with pressed point, as per cut.

RAILROAD SPIKE

Hook Head.

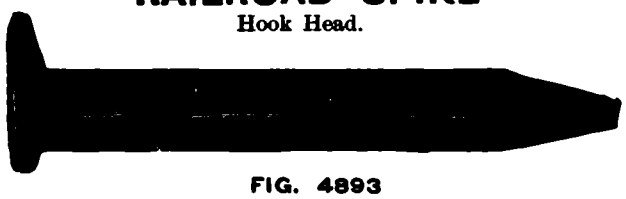


FIG. 4893

The following list is estimated and not guaranteed to be correct:

Sizes Measured Under Head, In.		Average No. per Keg of 200 Lbs.	Ties 2 Feet Between Centers, 4 Spikes per Tie, Makes per Mile—	Rail Used, Weight per Yard.
5½ x	9/16	360	5870 lbs.—29⅓ kegs.	45 to 70
5	9/16	400	5170 " —26 "	40 56
5	½	450	4660 " —23⅓ "	35 40
4½	½	530	3960 " —20 "	28 35
4	½	600	3520 " —17⅔ "	24 35
4½	7/16	680	3110 " —15½ "	20 30
4	7/16	720	2940 " —14¾ "	
3½	7/16	900	2350 " —11¾ "	16 25
4	⅜	1000	2090 " —10½ "	
3½	⅜	1190	1780 " — 9 "	16 20
3	⅜	1240	1710 " — 8— "	
2½	⅜	1342	1575 " — 7⅞ "	12 16

		Advances.
5/16 inch square,	2½ inches long.....	$0 45 per 100 lbs.
⅜ " "	2½ "	30 "
⅜ " "	3 to 4 inches long.....	20 "
7/16 " "	3½ to 4½ inches long....	05 "
½ " "	4 to 5 inches long.....base	"
9/16 " "	5½ inches long, Standard,	"

Packed in 200 pound kegs.

Reversed points, ¼c. per pound extra. Other than regular sizes shown above can be furnished at a slight extra charge. Base prices on application.

RAILROAD SPIKES WITH PRESSED OR ROLLED POINTS

For Steam and Electric Railways.

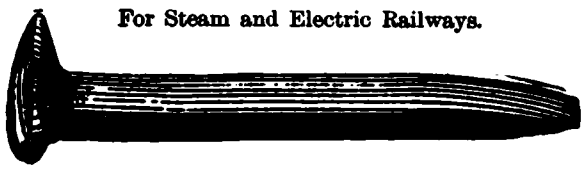


FIG. 4894

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TRACK JACKS

IMPROVED JENNE TRACK JACKS

FOR RAISING LOW JOINTS, AND LIGHT TRACK REPAIRS

FRONT NO. 0 REAR

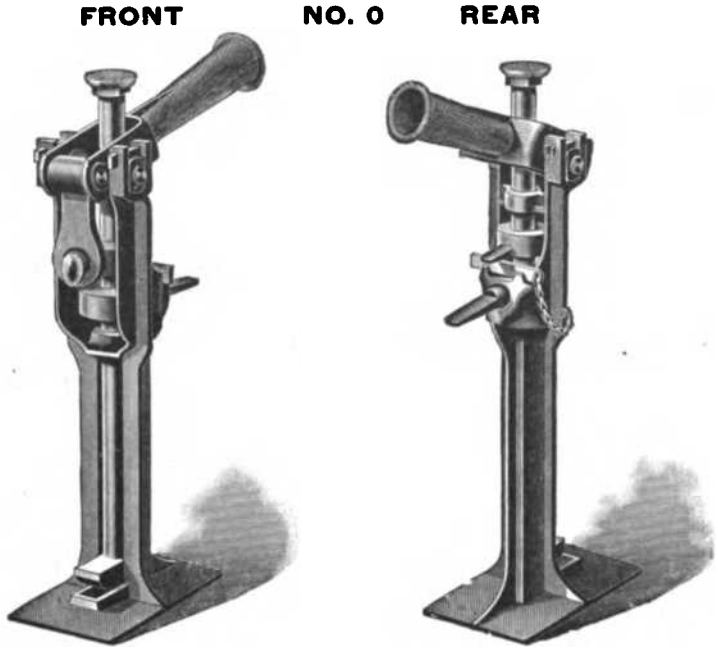


FIG. 4895

PRICE

Ten inch lift; weight, 42 pounds; 26 inches high with bar down. Frame and lever socket made of best air furnace malleable iron. Round lifting bar, 1¼ inches diameter; steel pivots; bronze boxes; rings, hanger and lifting bar made of best refined wrought iron.

With wooden, lever, complete, each..... $16 00

PRICE, FIG. 4896

Twelve inch lift; capacity, 5 tons; weight, 62 pounds; 29 inches high with bar down. Frame and lever socket made of best air furnace malleable iron; round lifting bar, 1½ inches diameter; steel pivots; bronze boxes; rings, hanger and lifting bar made of best refined wrought iron.

With wooden lever, complete, each..... $20 00

FOR SURFACING AND TRACK REPAIRS

NO. 1

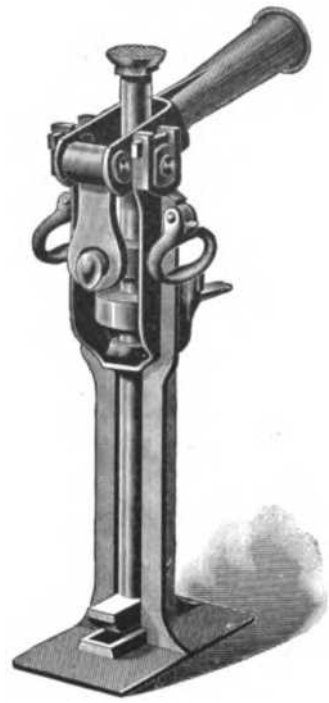


FIG. 4896

FOR HEAVY BALLASTING, SURFACING AND GENERAL TRACK REPAIRS

NO. 2

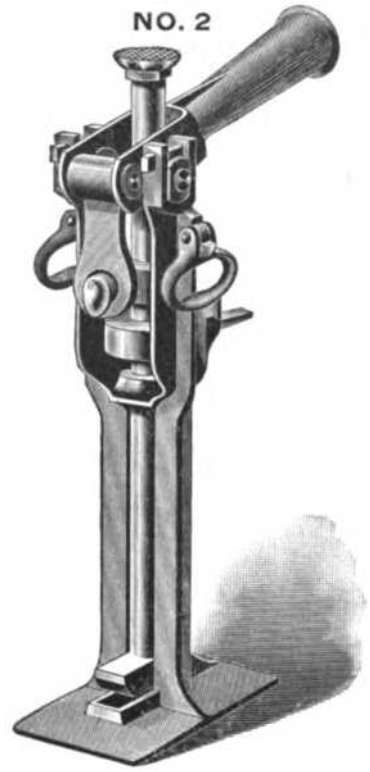


FIG. 4897

PRICE, FIG. 4897

Fifteen inch lift; capacity, 10 tons; weight, 85 pounds; 33 inches high with bar down. Frame and lever socket made of best air furnace malleable iron; round lifting bar, 1¾ inches diameter; steel pivots; bronze boxes; rings, hanger and lifting bar made of best refined wrought iron.

With wooden lever, complete, each..... $24 00

VERONA TRACK JACK



FIG. 4898

Frame, malleable iron; balance of jack best crucible steel. Size of base, 7 x 12 inches; size of rack bar equal to 1½ square section. All working parts strong and simple in construction. Load can be dropped instantly and with certainty by the lower pawl. No small "trip" necessary. Load can be let down one tooth at a time, when required. Lever also acts as a handle by which jack can be carried.

PRICES

No. 1. Weight, 51 pounds; height of bar when down, 21 in.; lift of rack bar, 12 inches; capacity, 10 tons.

Each..... $23 00

No. 2 Jack is same style as No. 1, excepting it is heavier. Weight, 90 pounds; lift of rack bar, 18 inches.

Each..... $28 00

FRICTION TRACK JACKS

Size A.



FIG. 4899

Size B.



FIG. 4900

DESCRIPTION
FIGS. 4899 AND 4900

This friction jack is light and can be tripped easily; it does not slip, and is strong and durable. The lever folds up close to the frame, and is out of the way. It does not require a special lever; the socket is made to take a regular lining bar. It will raise a joint or rail to the exact point required, and can be tripped without disturbing the track. The lifting bars are 1¾ inches diameter, and with the dogs are made of a special grade of iron which will not glaze over. The lever is supported in bronze bushings, which are easily replaceable when worn.

PRICES, FIGS. 4899 AND 4900

Sizes.	Capacity, Tons.	Lift, Inches.	Total Height Bar Down, Inches.	Total Height Bar Up, Inches.	Net Weight, Pounds.	Each.
A	10	6	17	23	55	$10 00
B	10	12	24	36	63	12 00
C	10	18	30	48	75	14 00

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TOGGLE TRIP TRACK JACK

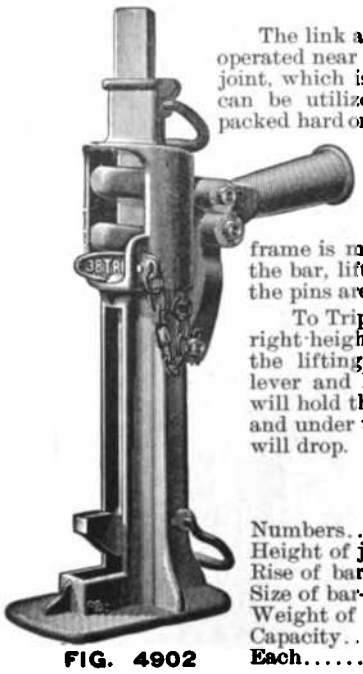


FIG. 4902

DESCRIPTION, FIG. 4902

The link and lever are so arranged that when the lever is operated near the lower limit of its stroke, the two form a toggle joint, which is a most powerful mechanical movement. This can be utilized in starting the track when the ground is packed hard or frozen.

The bar is square, and the collars grip the bar in a diagonal direction, thus getting full advantage of the four surfaces in a wedging manner, making the grip certain. These jacks are thoroughly and substantially made. The frame is malleable iron; the link and lever are cast steel; the bar, lifting collar and holding collar are forged steel, and the pins are machinery steel.

To Trip the Jack.—When the track has been raised to the right height, place the lever in a horizontal position, so that the lifting collar will take the load. In this position the lever and link will be locked by the toggle principle and will hold the track. Now slip the trip through the mortise and under the holding collar; raise the lever and the track will drop. The jack can then be removed.

PRICES, FIG. 4902

	Suitable for Line Work.	For Yard Duty.
Numbers	38	39
Height of jack when down	23½ inches.	25½ inches.
Rise of bar	11¼ "	12 "
Size of bar—square	1½ "	1¾ "
Weight of jack	62 lbs.	86 lbs.
Capacity	5 tons	10 tons
Each	$15 00	$20 00

COMPOUND LEVER TRACK JACK

DESCRIPTION, FIG. 4903 NO. 9

This jack is used for heavy track and yard work, and is provided with a trip, so that when liable to be caught by a train the jack can be relieved of its load in a moment and pulled out of the way. This is done as follows: Place the trip that is attached to the chain on the top of lifting pawl, then, by bearing down on the lever, it drives the upper pawl out, and the bar drops with track.

It is also provided with a square base in front, as most of the work is done on foot.

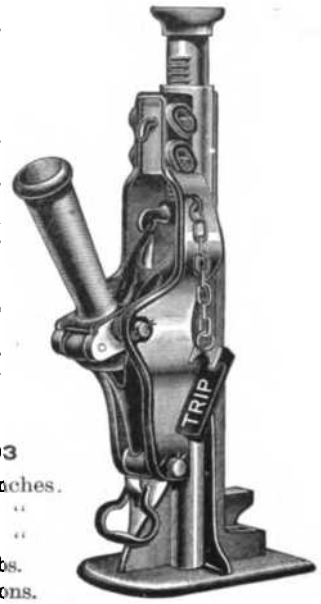


FIG. 4903

PRICES, FIG. 4903

Height when down	29 inches.
Rise of bar	14 "
Size of bar—round	2 "
Weight of jack	100 lbs.
Capacity	12 tons.
Each	$30 00

TOOTHED TRIP TRACK JACK

NO. 30


FIG. 4904

These track jacks can be used for other work as well as track. The teeth on the bar are ½ inch pitch. The lever is so adjusted that when the work is light the bar can be raised two teeth (one inch) per stroke, and when heavy it can be run up one-half inch per stroke.

The frame and lever are malleable iron. The lever has hard steel bearing for the pins on the lifting pawl. The lifting pawl, holding pawl, link and bar are forged high grade steel. The teeth on the bar and holding pawl are milled out.

To trip the jack, hold out the lever, and place the trip (which is attached to the chain) on top of the lifting pawl, with the plate part in front of the teeth; now place the lifting pawl as if in gear for lifting, bear down on the lever, and the rail will drop.

PRICES, FIG. 4904

	29	30
Numbers		
Height when down	22½ inches.	28½ inches.
Rise of bar	10½ "	16 "
Size of bar—round	1⅝ "	2 "
Weight of jack	44 lbs.	80 lbs.
Capacity	5 tons.	10 tons.
Each	$15 00	$20 00

LEVER TRACK JACK


FIG. 4906

PRICES, FIG. 4906

Used Generally for Freight Car Service and for Track Work.

No. 10	Height of jack when down	27 in.
	Rise of bar	16 "
	Size of bar—square	1¾ "
	Weight of jack	76 lbs.
	Capacity	10 tons.
	Each	$23 00

No. 10a.	Height of jack when down	22½ in.
	Rise of bar	11½ "
	Size of bar—square	1¾ "
	Weight of jack	68 lbs.
	Capacity	10 tons.
	Each	$23 00

LEVER TRACK JACK

DESCRIPTION, FIGS. 4905 AND 4907

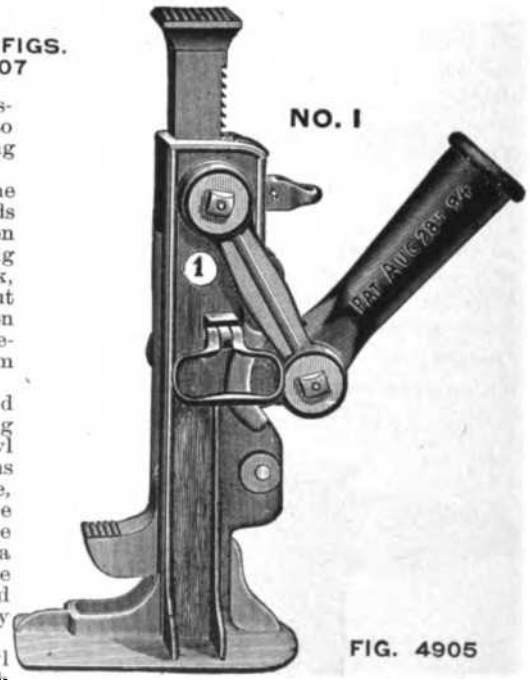


FIG. 4905

These jacks are especially adapted to railroad track laying and ballasting.

The base of the main stand extends forward, so that when the foot of the lifting bar is under the track, the weight is about centrally located on the base. This prevents the jack from tipping forward.

It is constructed with a steel bearing in the lifting pawl and with trunnions on the lever handle, which overlap the steel bearings in the pawl, thus forming a double eccentric. The trunnions are cored out and reinforced by bolts.

The lifting pawl has eight ⅞ inch teeth that engage the bar when lifting a load. The retaining pawl has the same number, which also engage the bar and hold the load when lifted.

The lifting bar is one and five-eighths inches square; is cored out, annealed and reinforced with a bolt. The lifting bar has a foot projecting forward for the purpose of lifting tracks and weights that are near the ground.

PRICES FIGS. 4905 AND 4907

No. 1. Capacity 8 tons, height 22 inches, rise 12 inches, weight 60 pounds. Each $22.00. Especially for heavy track work.

No. 3. Capacity 4 tons, height 20 inches, rise 11 inches, weight 45 pounds. Each $16.00. Well adapted for street railway use.

LEVER TRACK JACK

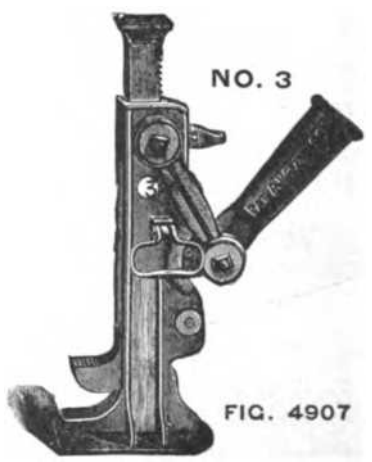


FIG. 4907

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SURE DROP TRACK JACKS

15 TON JACK, NO. 6

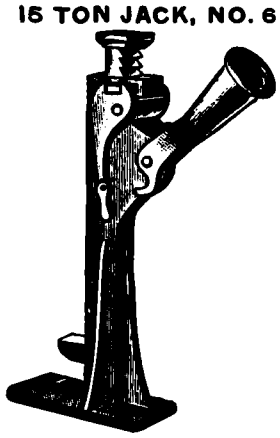


FIG. 4908

10 TON JACK
NO. 5

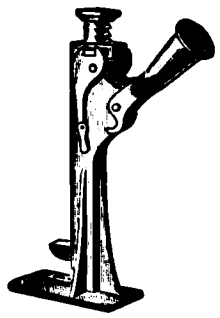


FIG. 4909

15 TON JACK
NO. 7



FIG. 4910

DESCRIPTION, FIGS. 4908 TO 4910

NO. 5, 10 TONS CAPACITY

The body of the Jack is malleable iron, with extra strong base. Lifting bar is made from best quality of forged steel, and the teeth are accurately milled. Pawls of forged steel. No springs to wear or break, and no loose pins. It is not necessary to lift the load before it can be dropped; all parts are interchangeable.

NO. 6, 15 TONS CAPACITY

This is the same construction and is made of same quality of material as No. 5, but is intended for ballast gangs, or where a powerful jack with long lift is required. Specially adapted to construction work.

NO. 7, 15 TONS CAPACITY

This Jack is designed for switch and yard service, where heavy rails are used, and where a short powerful Jack is required.

PRICES, FIGS. 4908 TO 4910

Style, Nos.	Capacity, Tons.	Raise of Bar, Inches.	Height Down, Inches.	Sizes Bar, Inches.	Weight, Lbs.	Sizes of Base, Inches.	Each.
5	10	15	24	1¾ x 1⅜	60	7½ x 10½	$14 25
6	15	20	30	2 1¾	95	8 13	24 00
7	15	10	22	1¾ 1¾	75	8 13	20 00

HAWKINS TRACK JACK



FIG. 4911

No. 4½ has a 12 inch lift; weighs 60 pounds, and is especially designed for section work.

Price.....$13 00

No. 4 has a 14 inch lift; weighs 110 pounds. It is very strong and is suitable for track, yard and construction work.

Price.....$16 00

TRIP JACK COMPOUND DOUBLE ACTING, NO. 12



FIG. 4916

This Jack is similar to No. 1, Fig. 4915, in every respect, but shorter, and is specially designed to meet the needs of those who require a small Jack with a limited raise, double acting, compound lever, raising half notch on both up and down strokes.

BARRETT LIFTING JACKS

TRIP BALLAST GANG JACK, DOUBLE ACTING NO. 6



FIG. 4913

Specially recommended for ballast gangs, or when Jacks of large proportion and great raise are needed. A trip is attached by means of which the load can be instantly dropped. Raises one-half notch at each stroke of lever, up or down.

TRIP JACK, SINGLE ACTING, NO. 20



FIG. 4914

This is a Single Acting Jack, specially designed for ballasting and heavy track work. It has precisely the same design, dimensions and capacity as Jack No. 6, Fig. 4913; the difference is that this Jack raises load on down stroke of lever only.

TRIP JACK COMPOUND DOUBLE ACTING, NO. 1



FIG. 4915

The leverage is compound double acting, lifting the load on both upward and downward strokes of lever; load can be instantaneously tripped from any elevation at will of operator.

PRICES, FIGS. 4913 TO 4917

Nos	Height with Bar Down, Inches.	Height with Bar Raised, Inches.	Sizes of Bar, Inches.	Raise of Bar, Inches.	Weight, Pounds.	Capacity, Tons.	Each.
1	24	37½	1½ x 1½	13½	60	10	$18 00
6	31	50	1⅞ 1⅝	19	95	15	32 00
12	17¾	25¾	1½ 1½	8	50	10	17 00
17	24	37¾	1½ 1½	13¾	60	10	18 00
20	31	50	1⅞ 1⅝	19	95	15	32 00

DESCRIPTION, FIG. 4917

Specially adapted for track work on steam, cable, electric or horse car lines. The shape of bottom flange enables this Jack to work in a small space. Is particularly adapted to roads with light ballast, and in slippery weather. Moves only on down stroke of lever; drops load from any elevation at will of operator

TRIP JACK, SINGLE ACTING, NO. 17

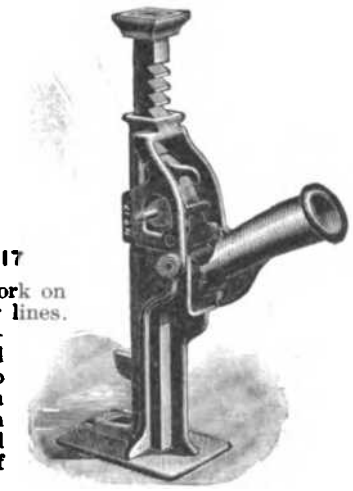


FIG. 4917

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BARRETT LIFTING JACKS

AUTOMATIC LOWERING DOUBLE ACTING JACK No. 2

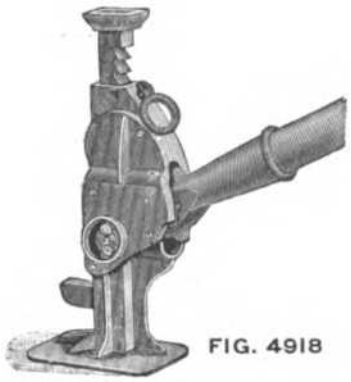


FIG. 4918

This jack is adapted for electric and cable car lines, as it is light, strong and convenient to handle. It takes little space on cars, is easily worked. The weight is moved up or down on both upward and downward movements of lever, a simple thumbscrew at side of frame controlling the direction of movement up or down.

AUTOMATIC LOWERING DOUBLE ACTING JACK No. 3

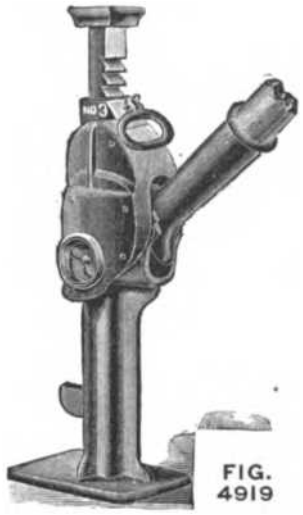


FIG. 4919

This jack is very similar to No. 2, Fig. 4918, excepting that it is more powerful and with higher raise.

AUTOMATIC LOWERING SINGLE ACTING JACK No. 18

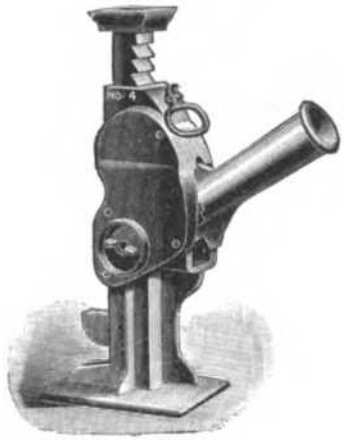


FIG. 4920

This jack is very similar to No. 2, Fig. 4918, excepting that it moves its load on downward strokes of lever only. Specially suitable for bridge and track workers. Moves load either up or down. This jack has no trip.

AUTOMATIC LOWERING DOUBLE ACTING JACK No. 4

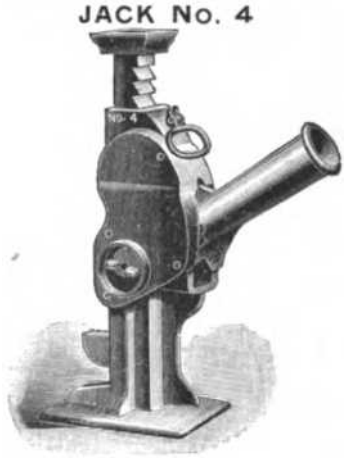


FIG. 4921

This is a most substantial and powerful jack, its lifting capacity being 15 tons. The lever raises or lowers load on both upward and downward stroke or at will of operator. The direction is controlled by simple movement of thumb piece at side of frame.

AUTOMATIC LOWERING DOUBLE ACTING JACK No. 5



FIG. 4922

DESCRIPTION, FIG. 4922

This jack raises 15 inches and will raise a load of 15 tons just that height. It has two pawls, one of which is always engaged, so there is no fear of accident from sudden precipitation. Its broad base, rigid standard and length enable it to reach high set loads as well as those on the ground. Double action lever, working on both upward and downward stroke; the direction in either lowering or raising load is controlled by thumb piece.

DESCRIPTION, FIG. 4923

This is a car repairing and working jack, especially adapted for use in car barns and repair shops of car lines, as it is staunch and tall and has a very high lift. It has forged steel rack for reaching under car beds and lifting same above obstructions. By means of its side lug, it can grapple low set loads with equal facility. Lifts and lowers on downward stroke of lever only. The direction can be quickly reversed at will of operator.

PRICES, FIGS. 4918 TO 4923

Nos.	Height with Bar Down, Inches.	Height with Bar Raised, Inches.	Sizes of Bar, Inches.	Raise of Bar, Inches.	Weight, Pounds.	Capacity, Tons.	Each.
2	20½	30½	1⅝ x 1¾	10	60	10	$25 00
3	26½	41½	2 1½	15	80	12	30 00
4	20¼	30½	2¼ 2	10	95	15	35 00
5	28	43	2¼ 2	15	110	15	40 00
18	21	31	1⅝ 1½	10	65	10	25 00
19	28	45½	2 1¾	17½	90	15	35 00

AUTOMATIC LOWERING SINGLE ACTING JACK No. 19



FIG. 4923

COMPOUND LEVER TOGGLE JACK No. 8

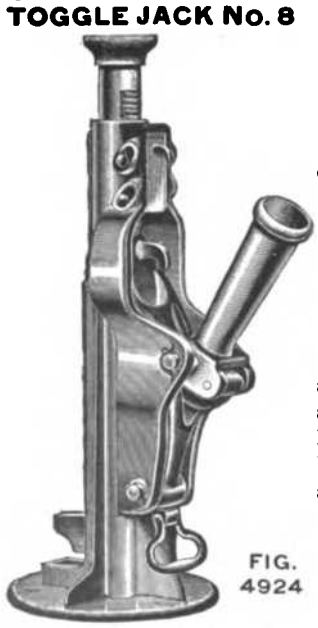


FIG. 4924

DESCRIPTION FIG. 4924

This jack is for car, locomotive and wrecking work. In this jack is used the toggle, which is a most powerful mechanical movement. The frame, lever, link, upper and lower toggles and pawls are malleable iron. The bar is forged steel, and the pins are machinery steel.

PRICE

Height of jack when down.. 29 in.
Rise of bar..... 14 "
Size of bar, round..... 2 "
Weight of jack, 100 lbs.
Capacity..... 12 tons.
Each..... $30 00

PRICES, FIG. 4925

No. 6 JACK.

A heavy car and wrecking jack, and used for other heavy work.

Height of jack when down..... 26½ inches.
Rise of bar..... 14 "
Size of bar, square, 2 "
Weight of jack... 94 lbs.
Capacity..... 15 tons.
Each.....$26 00

No. 7 JACK.

A heavy wrecking and car jack used where a long run of the bar is desired.

Height of jack when down..... 35 inches.
Rise of bar..... 25½ "
Size of bar, square.. 2 "
Weight of jack.... 113½ lbs.
Capacity ..... 15 tons.
Each.....$30 00

HEAVY WRECKING AND CAR JACK

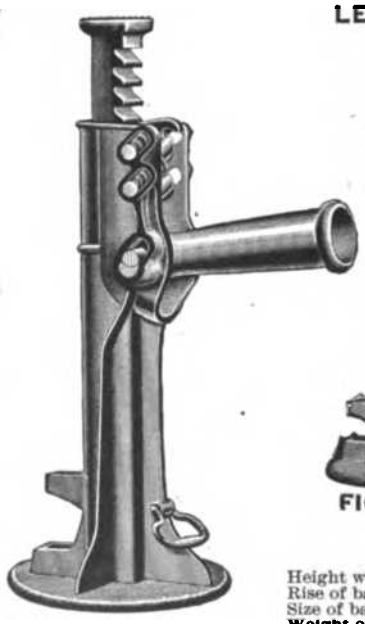


FIG. 4925

LEVER LIFTING JACK



FIG. 4926

DESCRIPTION FIG. 4926

No. 4 JACK.

Is used mainly as a railroad track jack, but has a great variety of uses, such as its dimensions and tonnage may suggest.

No. 4A JACK.

Is used for heavy traction engine work, and where a short, stiff jack is needed.

PRICES

	No. 4.	No. 4A.
Height when down	22½ inches.	18½ inches.
Rise of bar.....	14 "	10½ "
Size of bar, square,	1½ "	1½ "
Weight of jack....	46 lbs.	38 lbs.
Capacity.....	4 tons.	4 tons.
Each.....	$16 00	$16 00

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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LEVER LIFTING JACKS

No. 1A JACK



FIG. 4927

DESCRIPTION, FIG. 4927

Is made especially for use under portable engines and heavy wagons, but is handy for many other kinds of work.

PRICE

Height of jack when down, in.	16
Rise of bar, inches	8¼
Size " " square inches	1¼
Weight of jack, pounds	25
Capacity, tons	2
Each	$10 00

No. 2A JACK

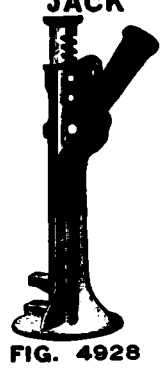


FIG. 4928

DESCRIPTION AND PRICE, FIG. 4928

Is used for light narrow gauge track work and under heavy wagons, and makes a very useful farm jack.

Height of jack when down, inches	18½
Rise of bar, inches	10
Size " " square inches	1¼
Weight of jack, pounds	27
Capacity, tons	2
Each	$10 00

GEARED WRECKING JACK

DESCRIPTION, FIG. 4929

This jack is for use in preparatory wrecking work, as it is light and more convenient to handle in clearing away the projecting parts of the wreckage than the heavier hydraulic jacks. Having a foot lift makes it especially adapted for this work. The lift is ¼ inch per stroke of lever. The jack is constructed entirely of steel and malleable iron, and is finished by machinery to exact gauges. All bearings are hardened. It is automatic in raising and lowering by simple and positive mechanism. To adjust for raising, turn the little crank at the side straight up; for lowering, turn the crank straight down.

PRICE

Height of jack when bar is down, inches	25
Rise of bar, inches	15
" " per stroke of lever, inch	¼
Size " inches	2¼ x 2
Weight of jack, pounds	120
Capacity, tons	15
Each	$40 00

No. 184



FIG. 4929

AUTOMATIC TRIP GEARED TRACK JACK



FIG. 4930

DESCRIPTION, FIG. 4930

This jack is designed as a track jack, to be used for the heavier yard duty. It is equipped with a gear wheel to multiply the power exerted on the lever. It has ¼ inch raise per stroke of lever, thus giving close adjustment of the track, in addition to the consequent power. The lever works parallel with the track, which is quite an advantage where work is done with cars standing on the adjoining tracks. The jack is constructed entirely of steel and malleable iron, and finished entirely by machinery to exact gauges. All bearings are hardened. It is automatic in raising and lowering, and has a perfect trip, which is operated as follows: When the track has been raised to the proper height, turn the crank at the right of the frame down as for lowering, and throw the pawl at the top of the frame forward over the lever. When it is desired to trip the jack, bear down on the lever to release the retaining pawl, then raise the lever and it will be forced out of gear, allowing the bar to drop.

PRICE, FIG. 4930

	No. 183.
Height of jack when bar is down, inches	25
Rise of bar, inches	15
" " per stroke of lever, inch	¼
Size of bar	2¼ x 2
Weight of jack, pounds	120
Capacity, tons	15
Each	$40 00

AUTOMATIC GEARED LOADED FREIGHT CAR JACK

DESCRIPTION, FIG. 4931

These jacks are designed for loaded freight car service. They are built of malleable iron and steel throughout. All parts are fitted by machinery to exact guages, and all bearings are hardened. They are automatic in raising and lowering by simple and positive mechanism. To adjust for raising, turn the little crank at the side straight up; for lowering, turn the crank straight down.

PRICES, FIG. 4931

	No. 194.	No. 195.
Height when down, inches	27	33
Rise of bar, inches	18	22½
" " per stroke of lever, inch	¼	¼
Size of bar, inches	2½ x 2¼	2½ x 2¼
Weight of jack, pounds	150	183
Capacity, tons	20	20
Each	$50 00	$55 00

No. 195



FIG. 4931

AUTOMATIC GEARED PALACE CAR JACK

DESCRIPTION, FIG. 4932

No. 201 jack is designed especially as a Palace Car Jack. A pair of these jacks placed one under each side of a palace coach or sleeper, back of the trucks, will easily and quickly raise the end of the car without blocking, so that the trucks can be run out without moving the steps or side bearings. The jack is built of malleable iron and steel throughout, all parts are fitted by machinery to exact gauges, and all bearings are hardened. It is automatic in raising and lowering by simple and positive mechanism. To adjust for raising, turn the small crank at the side of the frame straight up. For lowering, turn the crank straight down.

PRICE

Height when down, inches	36
Rise of bar, inches	24½
" " per stroke of lever, in.	¼
Size " inches	3 x 3½
Weight of jack, pounds	270
Capacity, tons	30
Each	$85 00

No. 201

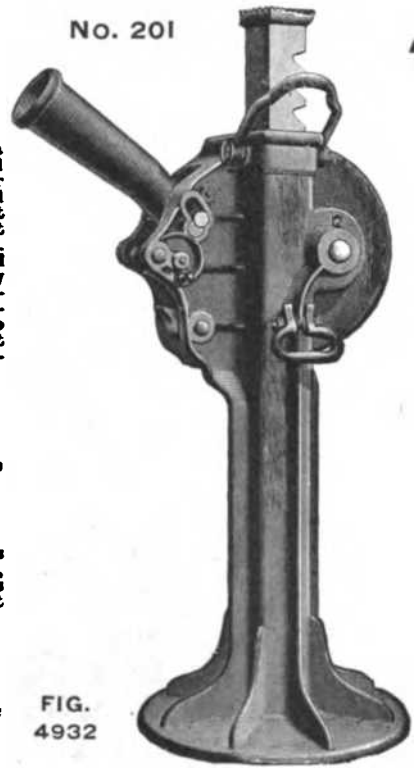


FIG. 4932

No. 202.

This jack is the same in construction as No. 201 jack, except that it is 5 inches shorter, to meet a demand for service where 31 inches is the tallest jack which can be used, and yet all the elevation possible is needed.

PRICE

Height when down, inches	31
Rise of bar	19½
" " per stroke of lever, in.	¼
Size " inches	3 x 2½
Weight of jack, pounds	250
Capacity, tons	30
Each	$85 00

AUTOMATIC GEARED CAR AND LOCOMOTIVE JACK

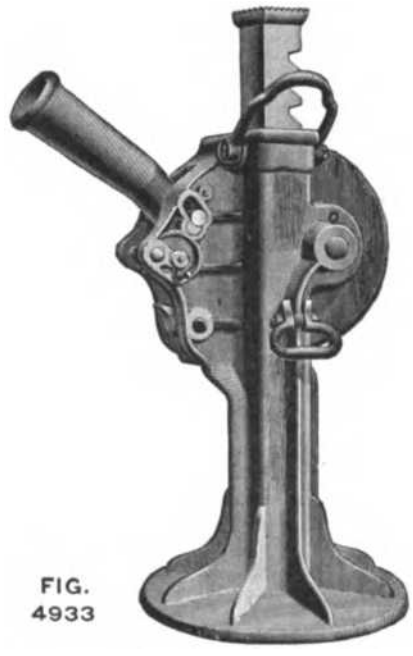


FIG. 4933

DESCRIPTION, FIG. 4933

This jack is used for the heaviest car service and for handling the heaviest locomotives, which it does with ease, speed and safety. It is built of malleable iron and steel throughout. All parts are fitted by machinery to exact gauges, and all bearings are hardened. It is automatic in raising and lowering by simple and positive mechanism. To adjust for raising, turn the small crank at the side of the frame straight up; for lowering, turn the crank straight down

PRICE

No. 200.

Height when down, inches	27
Rise of bar, inches	17
" " per stroke of lever, inch	¼
Size of bar, inches	3 x 2½
Weight of jack, pounds	237
Capacity, tons	30
Each	$75 00

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NO. 220. STREET CAR JACK

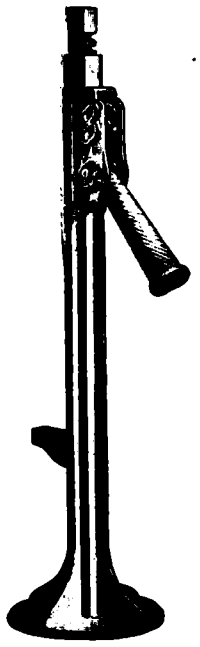


FIG. 4934

DESCRIPTION, FIG. 4934

This Car Jack is designed especially for raising street car bodies, for the purpose of changing trucks.

Two jacks are required. A beam is passed under the drawbar of car, and a jack is placed on each side of the car with the beam resting on the feet. The car is raised to a sufficient height and a trestle placed on each side to support it. The jacks are then removed to the other end, which is raised in the same manner and left on the jacks until it is desired to lower it, when the operation is reversed. The frame, lever, socket, and pawl are malleable iron. The bar and pinion are high grade machinery steel, with cut gear. The pins and bearings are machinery steel, and bearings are hardened.

Height of foot when down, 9½ inches; rise of bar, 36 inches; size of bar, square, 1¾ inches; weight of jack, 131 pounds; capacity, 6 tons.

PRICE, $40.00

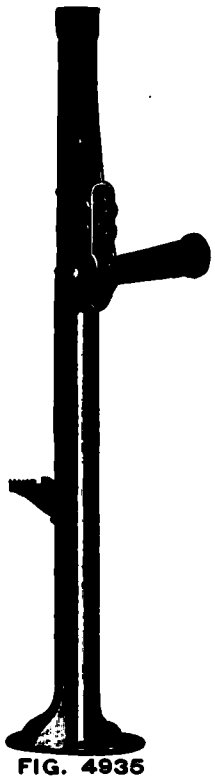


FIG. 4935

NO. 221. TRUCK JACK

DESCRIPTION, FIG. 4935

This Truck Jack is constructed to raise the trucks of palace and sleeping cars for the purpose of repairs or attention, after they have been run out from under the car.

Two jacks are required, one being placed on each side of the truck, just within the end pedestal, with the foot under the truck frame. The truck can now be raised without blocking to the full height required, and is safely supported on the jacks. The foot is of sufficient length so that the center pair of wheels can be rolled out between the jacks, and a groove, formed on top of the foot for the casing of the truck frame to rest in, holds the jacks the proper distance apart. The frame, pawl and lever socket are malleable iron. The bar and pinion are high grade machinery steel, with cut gear. The pins and bearings are machinery steel, and the bearings hardened.

Height of foot when down, 25 inches; rise of bar, 43 inches; size of bar, square, 2 inches; weight of jack, 270 pounds; capacity, 12 tons.

PRICE, $60.00

NO. 1 TRIPPING JACK



FIG 4937

LIFTING JACKS

DESCRIPTION, FIG. 4937

No. 1. Tripping Jack. For Light and Heavy Track Work, Ballasting, Track Elevations, Etc.

This Jack has rack 1½ x 1½ inches of forged steel with machine cut teeth; base, 6 x 9½ inches. In operation the tripper automatically primes and is operative from any height of raising bar—that is to say, the tripper need not be specially set before dropping of load is possible. Neither is the tripper of form to invite serious injury, as by persons overbalanced grasping the main handle or unwittingly pressing on same. A positive push or pull of the tripping lever itself is necessary. These jacks can be tripped only by intention.

DESCRIPTION, FIG. 4938

No. 6. Reversing Jack. For Handling Machinery, Cars, Wrecks, Bridge and Viaduct Work.

This Jack represents the class of Reversing Jacks, or those which lower the load, the change in direction of motion being effected by an externally located shifter at upper right side of frame. Size rack, 1½ x 1½ inches of forged steel with machine cut teeth; base, 6 x 9½ inches.

PRICES, FIGS. 4937 AND 4938

Made double or single acting. Special sizes on short notice.

		Height Standard, In.	Raises Load, In.	Weight, Pounds.	Capacity, Tons.	Each.
No. 1	Trip Jack.....	20	12	45	10	$18 00
" 2	Reversing Jack	22	13	50	10	25 00
" 3	Trip Jack.....	24	14	65	12	30 00
" 4	Reversing Jack	20	10	80	15	35 00
" 5	Trip Jack.....	30	16	90	15	30 00
" 6	Reversing Jack	28	16	85	15	35 00
" 7	Oilbox Jack...	..	..	..	10	20 00

NO. 6 REVERSING JACK



FIG. 4938

NO. 2 CAR AND WRECKING JACK

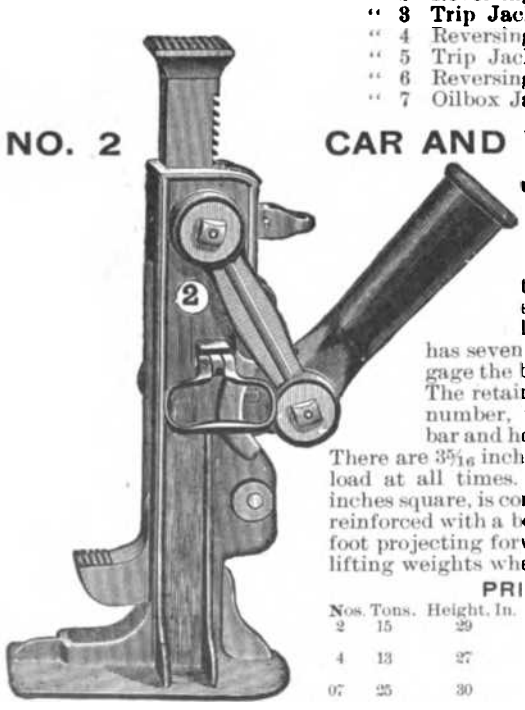


FIG. 4939

DESCRIPTION FIG. 4939

The load is raised one tooth or 9/16 of an inch at each movement of the lever. The lifting pawl has seven 9/16 inch teeth that engage the bar when lifting the load. The retaining pawl has the same number, which also engages the bar and holds the load when lifted. There are 3 5/16 inches of solid iron under the load at all times. The lifting bar is 2⅛ inches square, is cored out and annealed and reinforced with a bolt. The lifting bar has a foot projecting forward for the purpose of lifting weights when near the ground.

PRICES, FIGS. 4939 AND 4940

Nos.	Tons.	Height, In.	Rise, In.	Weight, Lbs.	Each.	Are Used For
2	15	29	15	120	$40 00	Handling loaded cars and wrecking.
4	13	27	14	90	35 00	Handling empty cars or general use around R.R. yards.
07	25	30	17	130	50 00	For heavy bridge work and heavy loaded R.R. cars.
08	30	30	17	160	60 00	For handling locomotives and heavy coaches.

NO. 08 LOCOMOTIVE AND CAR JACK

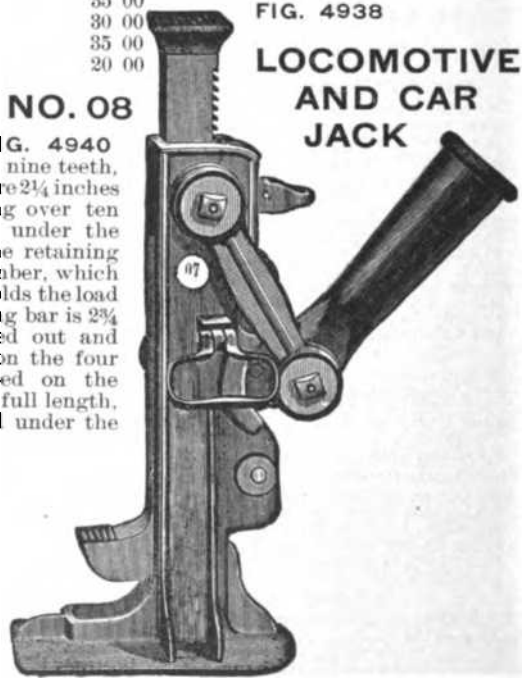


FIG. 4940

DESCRIPTION, FIG. 4940

The lifting pawl has nine teeth, 9/16 inch pitch, which are 2¼ inches across the face, having over ten square inches of iron under the load at all times. The retaining pawl has the same number, which engages the bar and holds the load when lifted. The lifting bar is 2¾ inches square, is cored out and annealed and ribbed on the four corners; also reinforced on the inside with a steel bar, full length, and extending forward under the toe or foot for the purpose of strengthening the foot when lifting a heavy load off the ground.

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MOSHER LIFTING JACKS

CAR AND LOCOMOTIVE JACK

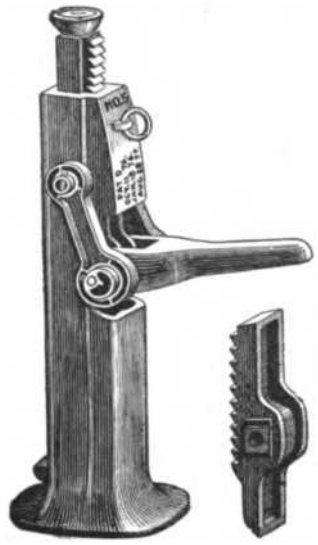


FIG. 4941

DESCRIPTION FIG. 4941

No. 5. Is 26 in. high; ½ in. notches; raises 15½ inches; weighs 90 pounds. It is intended for heavy car and locomotive work, and is extensively used for wrecking, bridge work, etc. Capacity 15 tons.
Price, $30.00.

CAR AND WRECKING JACK



FIG. 4942

DESCRIPTION, FIG. 4942

No. 6. Is 24 inches high; raises 13½ inches; ½ inch notches; weighs 120 lbs., and is designed for heavy car and locomotive work; also used extensively in wrecking. Capacity 18 tons.
Price, $36.00.

DESCRIPTION, FIG. 4943

No. 7. Is 34 inches high; raises 23 inches; ½ inch at a stroke; weighs 118 lbs.; base, 16 inches in diameter; is intended for car, coach or sleeper work. Capacity 15 tons.
Price, $38.00.

COACH JACK

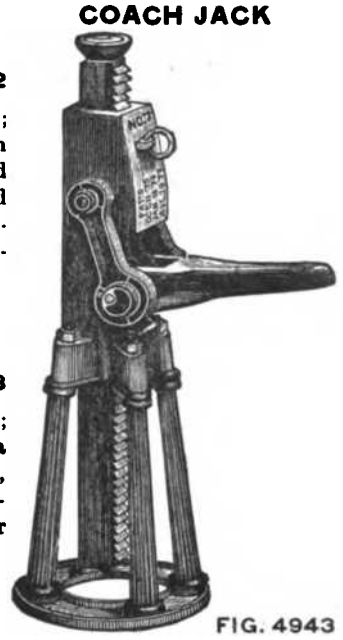


FIG. 4943

ALBANY LIFTING JACKS

Crowbar Top, with Long Toe for Stone Yard and Quarry Work.



FIG. 4944



FIG. 4945

These Jacks are generally used for lifting heavy boilers and machinery, and for handling safes and monumental work; also for truckmen, builders, steam and electric railways, track work, etc.

	No. 2.	No. 3.	No. 4.	No. 5.
Height of Jack with bar down, inches	16	21	30	30
Raise of bar, inches	10	10	20	20
Sizes " "	1	1½	1¾	2
Weight of Jack, pounds	23	35	60	85
Capacity of Jack, tons	2	4	6	10
Each	$7 00	12 00	15 00	18 00

STONE YARD JACK

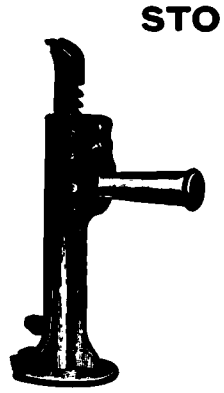


FIG. 4947

PRICES, FIG. 4947

Nos.	Height When Down, In.	Rise of Bar, In.	Sizes of Bar, In.	Weight, Lbs.	Capacity, Tons.	Each.
2	19	10	1¼	27	2	$10 00
4	23½	14	1½	42	4	16 00
10	28½	15½	1¾	77	10	23 00
6	28	14¼	2	94	15	26 00
7	37½	23	2	118	15	30 00
8*	29	14	2	90	12	30 00

* No. 8 is the Compound Lever Jack described in Fig. 4924.

LIFTING JACK

Lever and Toggle Joint Combined. For All Purposes.

No. 2. Capacity 10 tons; weight 85 lbs.; 20 inches high; raises 9 inches; ¼ at a stroke; is used as a builder's or contractor's Jack. Each.....$35 00
No. 3. Capacity 7 tons; weight 66 lbs.; 26 inches high; raises 14 inches; ⅜ at a stroke; is used as a railroad track Jack and for lifting frogs, switches, etc. Each 30 00
No. 5. Capacity 10 tons; weight 118 lbs.; 30 inches high; raises 18 inches; ¼ at a stroke; is used as a railroad car Jack for loaded freight cars. Each..... 40 00
No. 6. Capacity 15 tons: weight 138 lbs.; 38 inches high; raises 24 inches; ¼ at a stroke; is used as a railroad car Jack for passenger and sleeping cars. Each... 65 00
No. 8. Capacity 7 tons; weight 97 lbs.; 32 inches high; raises 20 inches; ⅜ or ½ at a stroke; is used as a railroad car Jack in repair shop. Each..... 35 00
No. 9. Capacity 15 tons; weight 118 lbs.; 30 inches high; raises 18 inches; ¼ at a stroke; is used as a railroad car Jack for heavy freight work. Each..... 60 00

All sizes furnished with ground lift when so specified, at an additional cost of $5.00.

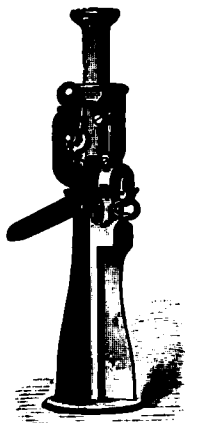


FIG. 4946

GEARED STONE JACK

These Jacks are Automatic in Raising and Lowering.

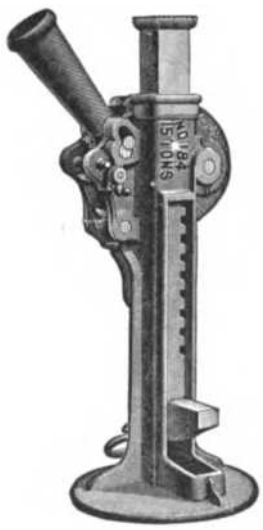


FIG. 4948

Nos.	Height of Jack when Bar is Down. In.	Rise of Bar. In.	Rise of Bar per Stroke of Lever, In.	Sizes of Bar, In.		Weight of Jack, Lbs.	Capacity, Tons.	Prices with Foot Lift.
171	35	23½	½	2¼	2	145	15	$40 00
183	25	15	¼	2¼	2	120	15	40 00

MINING JACK

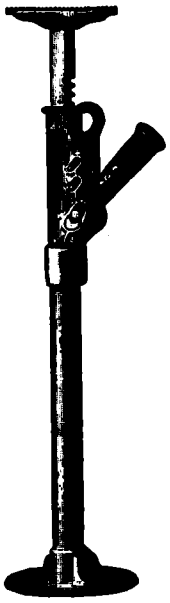


FIG. 4950

This Jack is constructed especially for use in raising the roof timbers in the tunnels and entries of mines. Two Jacks are used together, one being placed under where each end of the timber is to be. The timber is placed on top of the Jacks, and the Jacks run up until the timber is in position. Then the legs are placed and the Jacks removed ready for the next timber.

Height when down, inches,	44
Rise of bar, "	35
Size of bar, square "	1½
Weight of Jack, pounds	60
Capacity, tons	4
Each	$20 00
Extra run, per inch	10

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JOURNAL OR OIL BOX JACKS

MOSHER'S INSPECTOR'S JACK



FIG. 4952

No. 0. Weighs 19 lbs.; designed for car inspector's use; has socket lever, so that the steel bar or hook they use will act as an extension lever. Price.....$6 00

No. 1. Weighs 25 lbs., 11½ inches high; used as a journal or oil box jack; will raise six inches. Price.....$12 00

BARRETT AUTOMATIC JACK No. 8

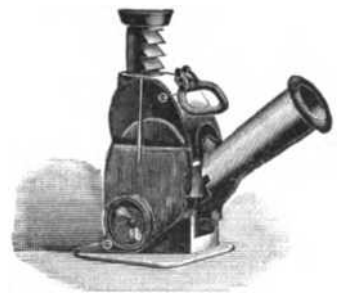


FIG. 4953

Lifts or lowers load half notch per stroke of lever, up or down. Height, with bar down, 11 inches; with bar raised, 16 inches; weight, 47 pounds; capacity, 10 tons; size of rack, 1⅝ x 1½ inches. Price.....$22 00

TRUCK BOX JACK, No. 3



FIG. 4954

Height when down.....11½ inches.
Rise of bar.....4 "
Size of bar—square.....1½ "
Weight of jack.....29 pounds.
Capacity.....4 tons.
Each.....$10 00

AUTOMATIC GEARED TRUCK BOX JACK

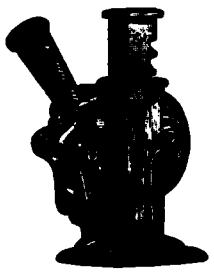


FIG. 4955

It is Automatic in Raising and Lowering.

PRICE, FIG. 4955

No.	Height of Jack when Bar is Down, Inches.	Rise of Bar, Inches.	Rise of Bar per Stroke of Lever, Inches.	Size of Bar, Inches.	Weight of Jack, Lbs.	Capacity, Tons.	Each, Without Foot Lift.
180	12	5	¼	2¼ x 2	90	15	$35 00

CONE BEARING CAR INSPECTORS' OR JOURNAL JACKS

Style K, 15 Tons.

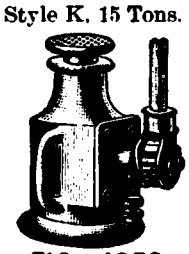


FIG. 4956

Style D, 10 Tons.

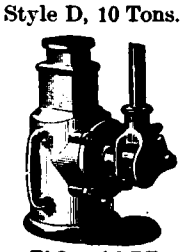


FIG. 4957

Style P, 8 Tons.



FIG. 4958

Style Q, 8 Tons.



FIG. 4959

PRICES

Figs.	Height, Inches.	Rise, Inches.	Weight, Lbs.	Capacity, Tons.	Each.
4956	11	5	45	15	22 00
4956	9½	4	43	10	22 00
4957	11	5	40	10	20 00
4958	10	5	21	8	18 00
4959	7	3	17	8	18 00

SCREW TRACK JACK

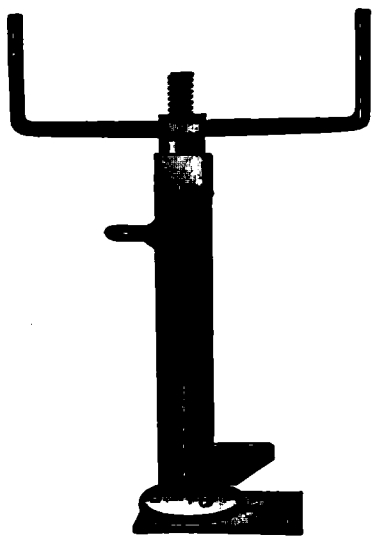


FIG. 4961

Will lift 12 tons. Diameter of screw, 1½ inches; lift, 18 inches. Price.....$13 00

SCREW TRACK JACK, No. 0

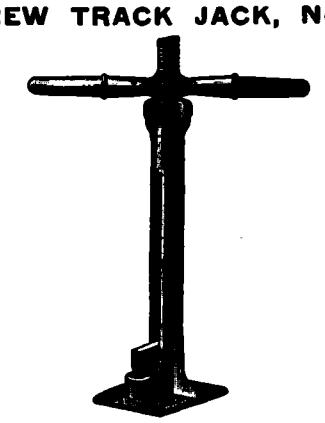


FIG. 4962

Diameter of screw.....1½ inches.
Rise of screw.....15 "
Weight, complete.....86 pounds.
Price.....$6 00

BALL BEARING CAR JACK

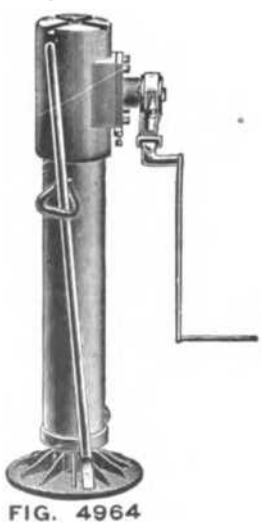


FIG. 4964

DESCRIPTION, FIG. 4964

These Jacks are intended for car work, where long lift is needed, and can be used with crank on empty cars or light load, which is much quicker than pumping up with lever. Another saving of time is, the car can be raised and left standing on the Jacks, without blocking, while trucks are changed.

PRICES, FIG. 4964

Style.	Height, Inches.	Rise, Inches.	Diams. of Base, Inches.	Weight, Lbs.	Capacity, Tons	Each.	Hook Extra, Each.
H	33	20	12	135	25	$95 00	$6 00
Z	33	20	12	135	15	75 00	6 00

Style Z is the same pattern as H, except it has large gear on ratchet shaft, giving it double speed.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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FOOT LIFT SCREW JACKS

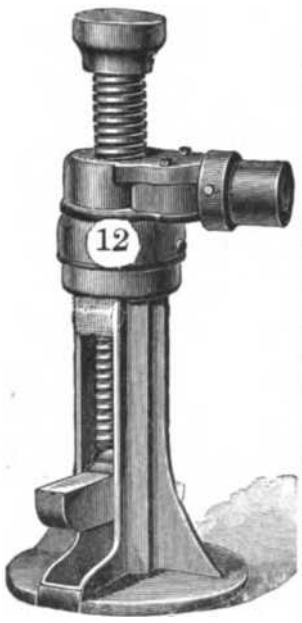


FIG. 4965

DESCRIPTION, FIG. 4965

No. 12—Height of jack, 31 inches; run of screw, 18 inches; diameter of screw, 2½ inches; weight, 115 pounds.

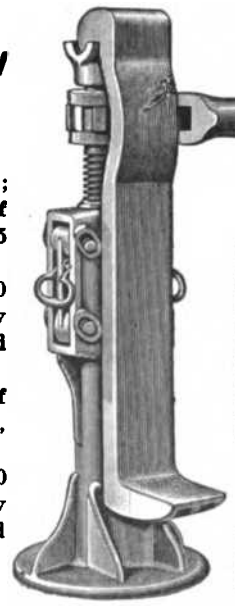
Capacity, 30 tons; foot lift, 10 tons; gun metal nut; steel screw and a malleable iron frame and ratchet. Price, $75.00.

No. 13—Height, 26 inches; run of screw, 13 inches; diameter of screw, 2½ inches; weight, 100 pounds.

Capacity, 30 tons; foot lift, 10 tons; gun metal nut; steel screw and malleable iron frame and ratchet. Price, $75.00.

RAPID MOVING SCREW JACK

NO. 26


FIG. 4966

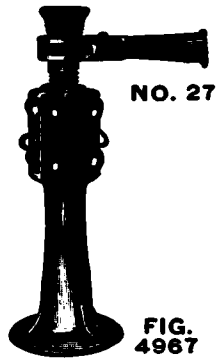
PRICES, FIG. 4966

This jack has a ground lift. For heavy bridge work.

Height of jack when down	29 ins.
Rise of screw	14 "
Diameter of screw	3 "
Weight of jack	164 lbs.
Weight of ground lift bar	60 "
Capacity	50 tons
Each	$78 00
Forged steel ground lift bar, extra	12 00

RAPID MOVING PASSENGER COACH SCREW JACK

NO. 27


FIG. 4967

PRICES, FIG. 4967

Height of jack when down	36¼ inches.
Rise of screw	24 "
Diameter of screw	2½ "
Weight of jack	137 pounds.
Capacity	25 tons.
With spring ratchet	$65 00
With six way head	57 00

RAPID MOVING LOCOMOTIVE SCREW JACK

NO. 25

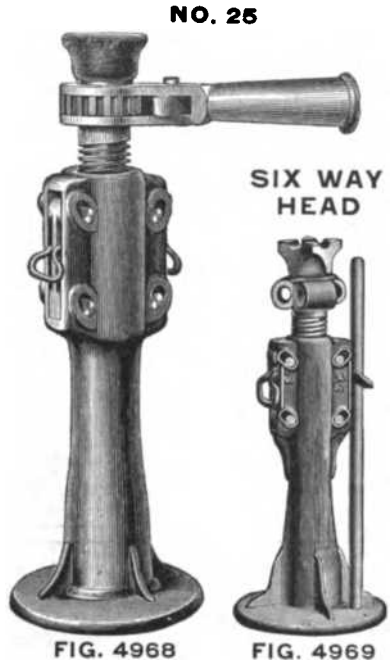


FIG. 4968 FIG. 4969

This jack is styled rapid moving because the screw, when the load is off, can be raised immediately to any desired point, and when up can be as quickly let down, thus saving the tedious operation of turning the screw up or down.

To raise the screw to any desired height for the work, it is only necessary to lift it by taking hold of the lever. To lower it, take hold of one of the handles with the left hand, and, inclining the jack to an angle of about 45 degrees, with the other hand holding the lever, let the screw down.

The frame, lever, ratchet wheel, cap and pawl are made of malleable iron, and the screw is forged steel.

PRICES, FIG. 4968

Height when down	27 inches.
Rise of screw	15 "
Diameter of screw	2½ "
Weight of jack	90 pounds.
Capacity	25 tons.
With six way head	$42 00
With spring ratchet	50 00
Forged steel ground lift, extra	10 00

NO. 9 COACH JACK

PRICE, FIG. 4970

Height, 31 inches; rise of 21 inches; weight, 100 pounds; capacity, 30 tons; gun metal nut, 4 inches deep; steel screw, 2½ inches diameter; closed ratchet. Head and stand made of the best air furnace malleable iron.

Each.....$60.00

NO. 24—NOT ILLUSTRATED

Generally Used for Narrow Gauge Locomotive Work.

PRICES, FIG. 4968

Height of jack when down	22 inches.
Rise of screw	11 "
Diameter of screw	2 "
Weight of jack	48 pounds.
Capacity	8 tons.
With forked lever ratchet	$30 00
" spring ratchet	35 00
" six way head	28 00


FIG. 4970

NO. 8 LOCOMOTIVE JACK



FIG. 4971

PRICE, FIG. 4971

Height, 12 inches; rise, 6 inches; weight, 27 pounds; capacity, 20 tons; gun metal nut; steel screw, 2 inches diameter, Ratchet box, head and stand of malleable iron.

Each.....$20.00

NO. 7 LOCOMOTIVE JACK

Same as No. 8, except that it has iron nut instead of gun metal nut.

Each.....$17.00

NO. 6 BUILDING AND BRIDGE JACK

PRICE, FIG. 4972

Height, 16 inches; rise, 9 inches; weight, 28 pounds; capacity, 20 tons; steel screw, 2 inches diameter; gun metal nut.

Each.....$22.00



FIG. 4972

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BELL BASE RATCHET JACK SCREW



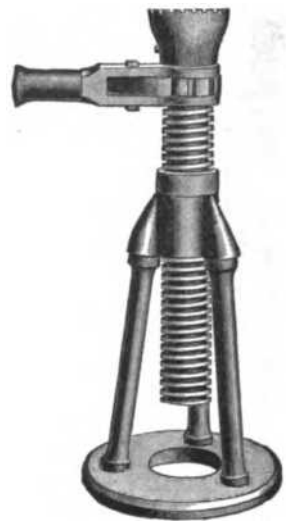
FIG. 4973

DESCRIPTION AND PRICES, FIG. 4973

This jack has wrought iron screw, cast iron stand and cap, and steel ratchet, pawl and handle.

Diameters of Screw, Inches.	Height Over All, Inches.	Lifting Capacity, Tons.	Each.
2	12	24	$16 00
2	14	24	16 75
2	16	24	17 50
2	18	24	18 25
2	20	24	19 00
2	22	24	19 75
2	24	24	20 50
2	26	24	21 50
2	28	24	22 50
2	30	24	23 50
2¼	18	28	21 00
2¼	20	28	22 00
2¼	22	28	23 00
2¼	24	28	24 00
2¼	26	28	25 00
2¼	28	28	26 00
2¼	30	28	27 00
2½	18	32	22 50
2½	20	32	23 50
2½	22	32	$24 50
2½	24	32	25 50
2½	26	32	26 50
2½	28	32	27 75
2½	30	32	29 00
2½	34	32	33 00
2½	36	32	35 00
2½	38	32	37 00
2¾	20	36	27 50
2¾	24	36	30 00
2¾	28	36	32 50
2¾	30	36	34 00
2¾	36	36	40 00
3	20	40	32 00
3	24	40	35 00
3	26	40	37 00
3	28	40	38 50
3	30	40	40 00
3	36	40	48 00

TRIPOD RATCHET JACK SCREW

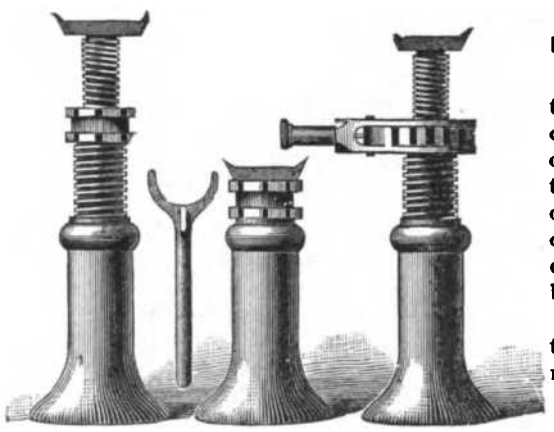

FIG. 4974

These Jack Screws have wrought iron screws, legs and bases, brass nuts and steel ratchets, pawls and handles.

PRICES

Diameters of Screw, Inches.	Height Over All, Inches.	Lifting Capacity, Tons.	Each.	Diameters of Screw, Inches.	Height Over All, Inches.	Lifting Capacity, Tons.	Each.
2¼	19	28	$50 00	2½	36	32	$67 00
2¼	20	28	51 00	2¾	24	36	65 00
2¼	22	28	52 00	2¾	26	36	66 25
2¼	24	28	53 00	2¾	28	36	67 50
2½	18	32	56 50	2¾	30	36	68 75
2½	20	32	57 50	2¾	36	36	73 00
2½	22	32	58 50	3	24	40	70 00
2½	24	32	59 50	3	26	40	71 50
2½	26	32	60 75	3	28	40	73 00
2½	28	32	62 00	3	30	40	74 50
2½	30	32	63 25	3	36	40	79 00

BALL'S TELESCOPIC JACK SCREW


FIG. 4975 FIG. 4976 FIG. 4977

DESCRIPTION FIGS. 4975 TO 4977

This jack consists of two wrought iron screws, one working within the other, operating simultaneously. By this method of construction the screws can be run out nearly double the height of the base.

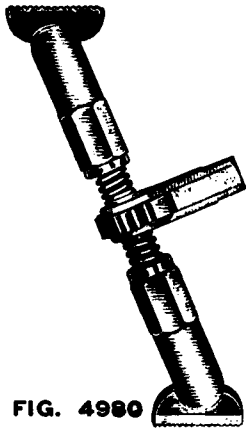
Fig. 4977 represents the telescopic jack with a rachet lever.

PRICES

Sizes, Nos.	Height of Base, Inches.	Height Closed, Inches.	Net Rise, Inches.	Total Height, Inches.	Fig. 4975, Each.	Fig. 4977, Each.
1	7½	10	11	21	$15 00	$25 00
2	10	14	16	30	18 00	30 00
3	13½	17	23	40	22 00	32 00
4	18	21	31	52	25 00	35 00
5	22	25	36	61	30 00	40 00

CAR REPLACING JACK

Jack at an Angle, Socket Bearing Head and Foot.


FIG. 4980

Specially adapted for street railways.

PRICES

Jacks in Pairs Will Raise, Tons.	Weight, Pounds.	Length Closed, Inches.	Holsts, Inches.	Diameters Screws, Inches.	Bar Jacks, per Pair, Each.	Ratchet Jacks, per Pair, Each.
25	60	24	12	2	$35 00	$45 00
15	30	24	14	1½	25 00	35 00
10	25	20	9	1½	22 50	32 50
10	22	18	8½	1½	20 00	30 00
8	20	16	6½	1½	18 00	28 00
8	18	14	4½	1½	18 00	28 00

RATCHET LIFTING JACKS

For Railroads, Mills, Lumbermen, Contractors, etc.

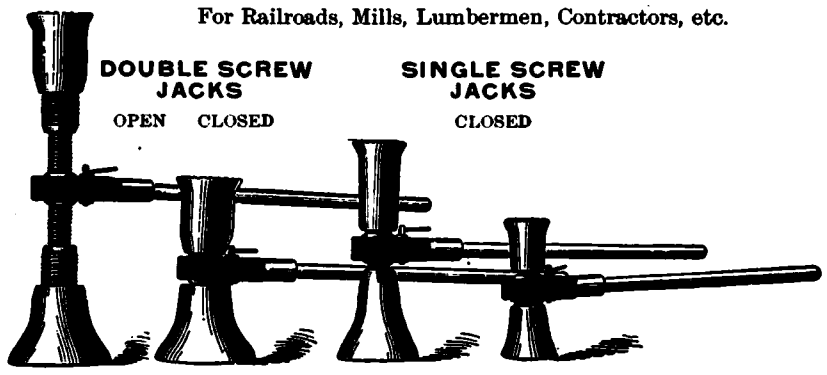


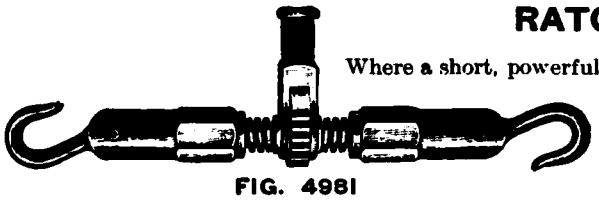
FIG. 4978 FIG. 4979

These jacks are quick working. No removing the lever in raising or lowering, and raising two threads at one revolution. They can be used in any position that the ordinary jacks can. The ratchet is divided into sixths, enabling it to be worked in a corner.

PRICES

Sizes of Jack.	Height, Closed.	Height, Opened.	Sizes of Screw.	Weight in Pounds.	Capacity in Tons.	Each.
9 inch single screw	9	12½	1¾	20	20	$5 00
12 " " "	12	18	1¾	25	20	6 00
15 " " "	15	24	1¾	30	20	7 00
4 " double "	4	7	1½	15	8	5 50
6 " " "	6	10	1½	20	10	7 50
8 " " "	8	16	1½	30	15	8 80
12 " " "	12	24	1¾	40	20	10 00
15 " " "	15	30	2	50	25	18 00

RATCHET PULLING JACK


FIG. 4981

Where a short, powerful pull is desired to bring joints and connections together, this device is of great value.

10 ton jack, weight, 50 pounds; length of jack when closed, 33 inches; run of screw, 12 inches. Price, each $22 50

7 ton jack, weight, 35 pounds; length of jack when closed, 33 inches; run of screw, 12 inches. Price, each 17 50

Special sizes made to order.

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RATCHET SCREW JACKS—DOUBLE MOVEMENT

NO. 12 TRUCK BOX SCREW JACK

FORKED LEVER RATCHET

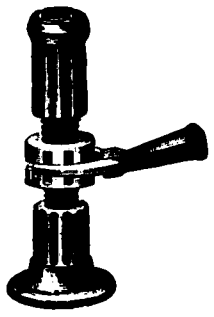


FIG. 4982

SIX WAY HEAD

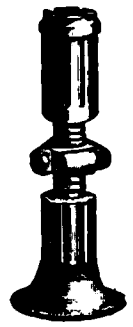


FIG. 4983

Is suitable for cars, tenders, etc., or any heavy service of the kind.

Height of jack when down, 10 inches, rise of screw, 4 inches; diam ter of screw, 2 inches; weight of jack, 20 pounds; capacity, 8 tons.

PRICES, FIGS. 4982 AND 4983

With forked lever ratchet.....$10 00
" six way head..... 8 00
" spring ratchet..... 15 00

NO. 13 TRUCK BOX SCREW JACK

FORKED LEVER RATCHET

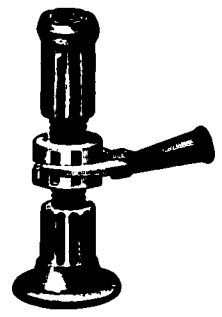


FIG. 4984

SIX WAY HEAD

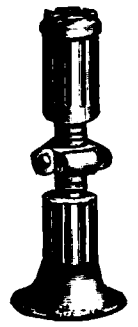


FIG. 4985

Is especially suitable for general car truck box work.

Height of jack when down, 13 inches; rise of screw, 6 inches: diameter of screw, 2 inches; weight of jack, 22 pounds; capacity, 8 tons.

PRICES, FIGS. 4984 AND 4985

With forked lever ratchet.....$10 00
" six way head..... 8 00
" spring ratchet..... 15 00

NO. 14 TRUCK BOX SCREW JACK

FORKED LEVER RATCHET

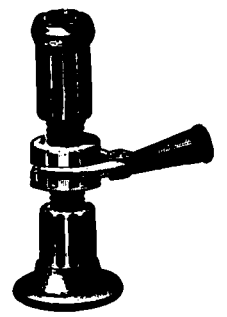


FIG. 4986

SIX WAY HEAD

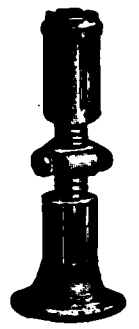


FIG. 4987

This jack is to carry on the engine for emergencies out on the road.

Height of jack when down, 13 inches; rise of screw, 7 inches; diameter of screw, 2 inches; weight of jack, 25 pounds; capacity, 8 tons.

PRICES, FIGS. 4986 AND 4987

With forked lever ratchet.....$10 00
" six way head..... 8 00
" spring ratchet..... 15 00

NO. 15 SCREW JACK WITH SMALL BASE

FORKED LEVER RATCHET

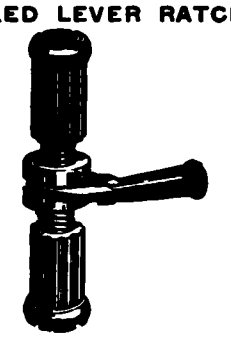


FIG. 4988

Is especially adapted to work in cramped places, but is applicable for many purposes.

Height of jack when down, 13 inches; rise of screw, 7 inches; diameter of screw, 2 inches; weight of jack, 20 pounds; capacity, 8 tons.

PRICES, FIG. 4988

With forked lever ratchet.....$10 00
" six way head..... 8 00
" spring ratchet..... 15 00

NO. 16 JACK

FORKED LEVER RATCHET



FIG. 4989

SIX WAY HEAD



FIG. 4990

Height of jack when down, 16 inches; rise of screw, 10 inches; diameter of screw, 2 inches; weight of jack, 33 pounds; capacity, 8 tons.

PRICES, FIGS. 4989 AND 4990

With forked lever ratchet.....$17 00
" spring ratchet 25 00
" six way head..... 15 00

NO. 17 JACK

SIX WAY HEAD

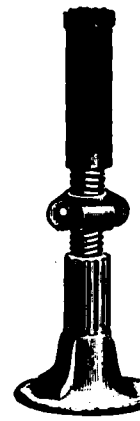


FIG. 4991

SPRING RATCHET

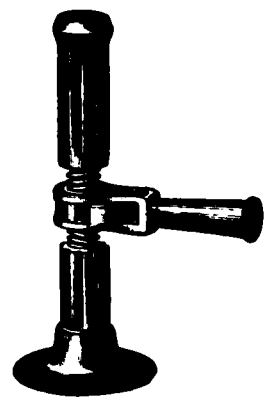


FIG. 4992

Height when jack is down, 20 inches; rise of screw, 13 inches; diameter of screw, 2 inches; weight of jack, 41 pounds: capacity, 8 tons,

PRICES, FIGS. 4991 AND 4992

With forked lever ratcnet.....$18 00
" spring ratchet..... 26 00
" six way head 16 00

NO. 19 JACK

SPRING RATCHET

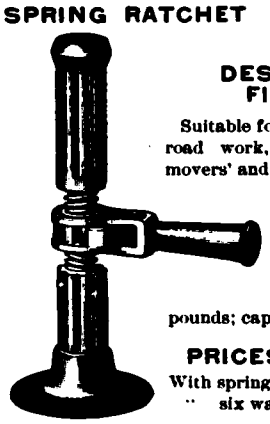


FIG. 4993

DESCRIPTION FIG. 4993

Suitable for many kinds of railroad work, as well as house movers' and builders' uses.

Height of jack when down, 16 inches; rise of screw, 9 inches; diameter of screw, 2½ inches; weight of jack, 47 pounds; capacity, 25 tons.

PRICES, FIG. 4993

With spring ratchet.....$25 00
" six way head..... 17 00

PRICES, FIG. 4994

We furnish different heights of this variety of jack to order.

Height of jack when down, 20 inches; rise of screw, 12 inches; diameter of screw, 2½ inches; weight of jack, 55 pounds; capacity, 25 tons.

With spring ratchet.....$30 00
" six way head..... 22 00

NO. 20 JACK

SPRING RATCHET

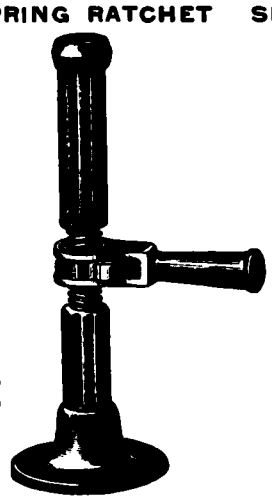
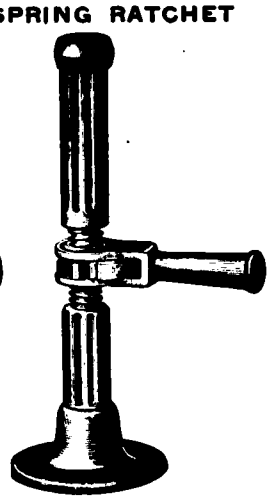


FIG. 4994

NO. 21 JACK

SPRING RATCHET



SIX WAY HEAD

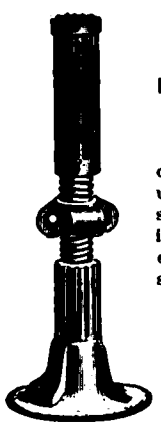


FIG. 4995

FIG. 4996

Adapted to any kind of car or locomotive work.

Height of jack when down, 24 inches: rise of screw, 16 inches; diameter of screw, 2½ inches; weight of jack, 65 pounds; capacity, 25 tons.

With spring ratchet.....$35 00
" six way head..... 27 00

PRICES, FIGS. 4995 AND 4996

NO. 21 1/2 JACK

SPRING RATCHET

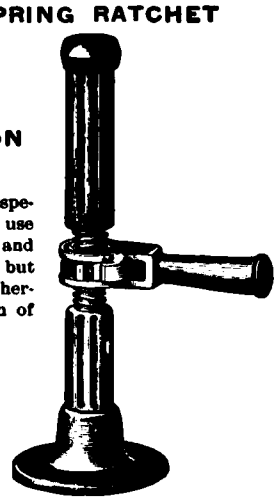


FIG 4997

DESCRIPTION FIG. 4997

This jack is especially adapted for use under palace and sleeping coaches, but is equally useful wherever a long run of screw is desired.

PRICES, FIG. 4997

Height of jack when down, 36 inches; rise of screw, 24 inches; diameter of screw, 2½ inches; weight of jack, 85 pounds; capacity, 25 tons.

With spring ratchet.....$45 00
" six way head..... 37 00

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DOUBLE MOVEMENT RATCHET SCREW JACKS

PRICES, FIGS. 4998 AND 4999

SPRING RATCHET

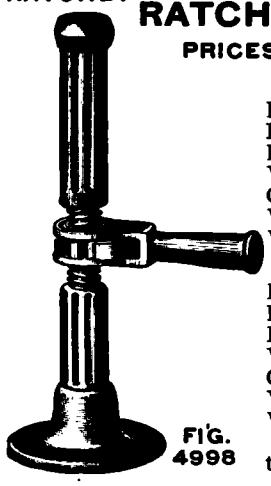


FIG. 4998

No. 22 JACK.

Height of jack when down,	27 ins.
Rise of screw	18 "
Diameter of screw	3 "
Weight of jack	125 lbs.
Capacity	50 tons
With spring ratchet	$45 00
With six way head	35 00

No. 23 JACK.

Height of jack when down,	33 ins.
Rise of screw	24 "
Diameter of screw	3 "
Weight of jack	145 lbs.
Capacity	50 tons
With spring ratchet	$50 00
With six way head	40 00

We can furnish any height of this style of jack to order.

SIX WAY HEAD

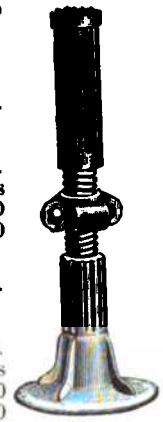


FIG. 4999

TRAVERSING BASE

NO. 40

We put a sliding plate or rest on this base instead of a jack, so that any jack can be readily used.



FIG. 5000

Horizontal movement	15 inches
Size of plate	10 in. x 12 inches
Price	$40 00
Weight	90 lbs.
Capacity	25 tons

TRAVERSING BASE

NO. 43

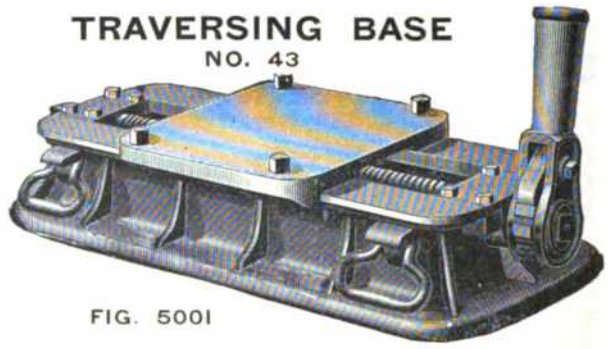


FIG. 5001

Horizontal movement	15 inches
Size of plate	13 in. x 13 inches
Weight	180 lbs.
Capacity	50 tons
Price	$60 00

TELESCOPE TRAVERSING SCREW JACKS

SPRING RATCHET

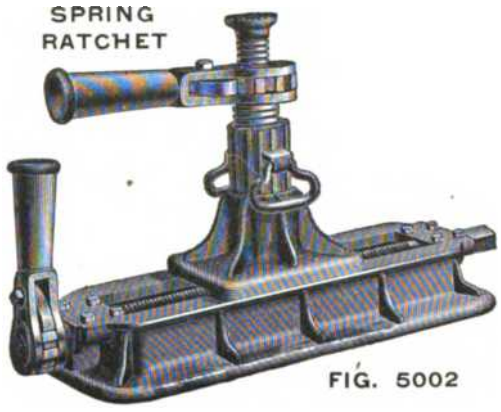


FIG. 5002

SIX WAY HEAD

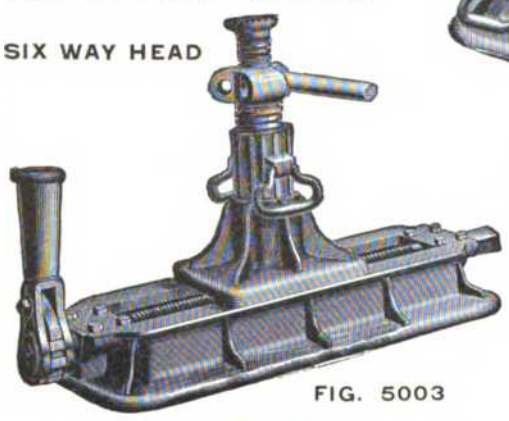


FIG. 5003

No. 37.

Height of jack when down	15 inches
Rise of screw	10 "
Horizontal movement	15 "
Weight of jack	120 lbs.
Capacity	8 tons
Each	$65 00

No. 37A.

Height of jack when down	15 inches
Rise of screw	10 "
Horizontal movement	15 "
Weight of jack	115 lbs.
Capacity	8 tons
Each	$55 00

No. 60.

Height of jack when down	18 inches
Rise of screw	14 "
Horizontal movement	15 "
Weight of jack	140 lbs.
Capacity	15 tons
Each	$75 00

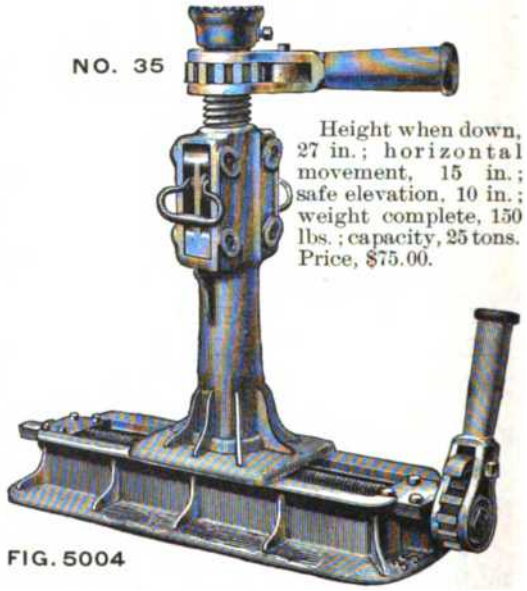
No. 60A.

Height of jack when down	18 inches
Rise of screw	14 "
Horizontal movement	15 "
Weight of jack	135 lbs.
Capacity	15 tons
Each	$63 00

TRAVERSING JACK

Suitable for Locomotive, Wrecking and Bridge Work.

NO. 35



Height when down, 27 in.; horizontal movement, 15 in.; safe elevation, 10 in.; weight complete, 150 lbs.; capacity, 25 tons. Price, $75.00.

FIG. 5004

TRAVERSING JACKS

Suitable for Heavy Bridge Work.

NO. 41

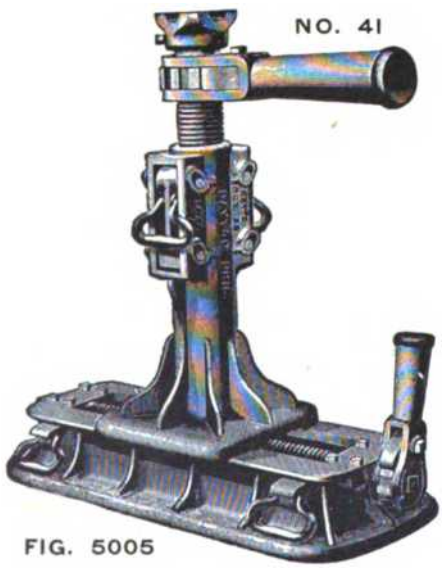


FIG. 5005

Height when down, 30½ in.; rise of screw, 11 in.; horizontal movement, 15 in.; weight, 300 lbs.; capacity, 50 tons. Price $150 00

NO. 42

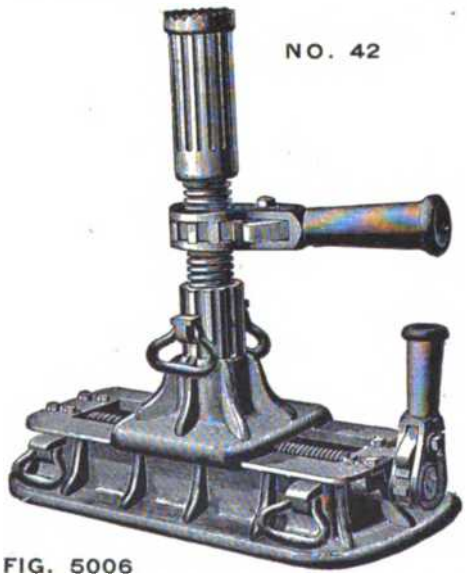


FIG. 5006

Height of jack when down, 26 in.; rise of screw, 12 in.; horizontal movement, 15 in.; weight of jack, 280 lbs.; capacity, 50 tons. Price $125 00

DESCRIPTION, FIG. 5007

This style can be made shorter when desired, in which case the safe elevation will be reduced by the amount the jack is shortened.

Height of jack when down, 23 in.; safe elevation, 10 in.; horizontal movement, 15 in.; weight of jack, 143 lbs.; capacity, 25 tons. Price, $63.00.

NO. 36



FIG. 5007

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BALL BEARING TRAVERSING JACK

PRICES, FIG. 5008

Ball Bearing Traversing Jacks Complete.

Style of Jacks.	Capacity, Tons.	Height Over All, Inches.	Rise, Inches.	Traverse, Inches.	Each.
F	15	28	10	20	$100 00
R	15	24	9	20	110 00
N. A.	25	24	9	20	120 00
N. A.	25	30	13	20	130 00
C. 26 in.	35	30	13	20	165 00
B. J.	50	31	13	20	190 00
B. J.	60	30	12	20	215 00

Cone Bearing Traversing Jacks Complete.

Style of Jacks.	Capacity, Tons.	Height Over All, Inches.	Traverse, Inches.	Each.
N. J.	10	24	15	$59 00
G	15	26	15	60 00
D	10	26	15	55 00

These Jacks can be taken off the bases and used separately, if desired. Jacks are self-lubricating and require no attention whatever when left in car or shop for months at a time, winter or summer.
Any size, height or capacity Jack fitted to either base.

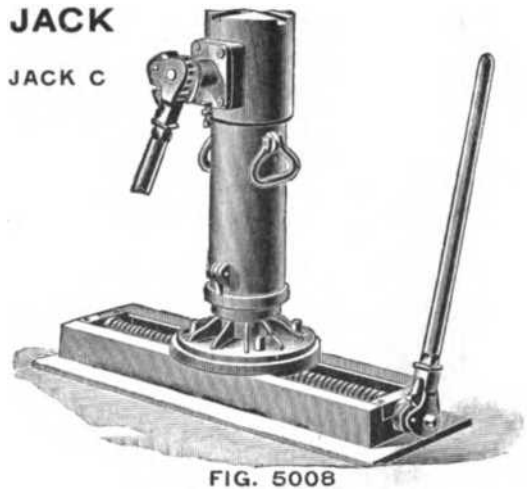
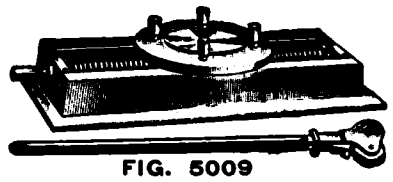


FIG. 5008

TRAVERSING CAR REPLACING JACKS

FOR STREET RAILWAY SERVICE

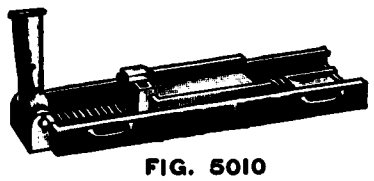
STEEL TRAVERSING BASE


FIG. 5009

15 Inch Traversing Base. Height, 4 Inches.

Traverse, Inches.	Weight, Pounds.	Prices.
20	124	$40 00
15	60	35 00

PLAIN SLIDING BASE


FIG. 5010

STYLE N. J. COMPLETE WITH SLIDING BASE


FIG. 5011

PRICE, FIG. 5010

Plain Sliding Base.

Size of Cradle, Inches.	Traverse, Inches.	Height, Inches.	Weight, Pounds.	Each.
6 x 10	18	3	8¼	$12 00

The sliding base may be used to good advantage with any make of Jack and is furnished separately, if desired.

PRICES, FIG. 5011

Car Replacing Jacks Complete.

Style. Inches.	Capacity, Tons.	Height Over All, Inches.	Rise, Inches.	Traverse, Inches.	Weight, Pounds.	Each.
N. J. 20	10	23	10	18	149	$36 00
N. J. 14	10	17	7	18	128	34 00

RATCHET CARRYING JACK SCREW


FIG. 5012

This Jack has steel base, brass nuts and wrought iron screws and legs. The ratchet, pawls and handles are made of steel and malleable iron.

Lifting capacity, tons 36
Diameter of lifting screw, inches 2¾
" " traverse screw, inches 1⅝
Length of lifting screw, inches 16
" " traverse screw, " 18
Height over all, inches 26

PRICE, $140.00

LIFTING OR TRAVERSING SCREW JACKS

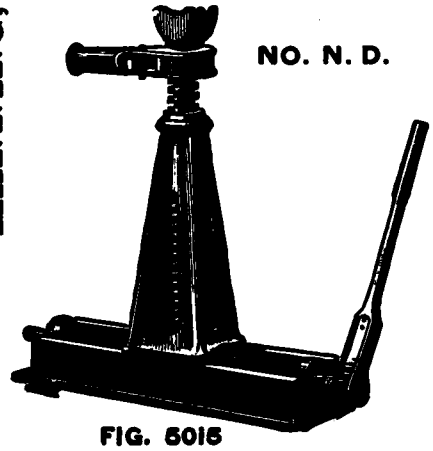
BOTTLE TRAVERSING JACK


FIG. 5013

LEG TRAVERSING JACK


FIG. 5014

NO. N. D.


FIG. 5015

PRICES, FIG. 5015

Size Numbers.	Diameters of Main Screw. Inches.	Capacity, Tons.	Height when Down, Inches.	Will Traverse, Inches.	Will Run Out, Inches.	Length of Base, Inches.	Weight, Lbs.	Each.
1	2¼	12	21	7	9	18	67	$31 00
2	2⅝	20	21	12	9	25	85	37 00
3	2½	25	22	12	9	26	104	45 00
4	2¾	35	22	12	9	28	128	54 00

PRICES, FIG. 5013

Bottle Pattern.

Cast steel base, malleable iron bottle, brass bottom nut, and wrought iron screw. Will run out 9 inches.

Numbers.	Diameters Elevating Screw, Inches.	Height When Down, Inches.	Traverse, Inches.	Approximate Weight, Pounds.	Each.
1	2¼	20	7	76	$46 50
2	2⅝	21	10	90	54 00
3	2⅝	21	12	99	58 50
4	2½	22	12	114	65 00
5	2¾	22	12	138	90 00
6	3	22	12	162	104 00

PRICES, FIG. 5014

Leg Pattern.

Cast steel base, wrought iron legs and screws, brass top and bottom nuts. Will run out 9 inches.

Numbers.	Diameters Elevating Screw, Inches.	Height When Down, Inches.	Traverse, Inches.	Approximate Weight, Pounds.	Each.
1	2¼	20	7	76	$49 50
2	2⅝	21	10	90	60 00
3	2⅝	21	12	99	64 00
4	2½	22	12	114	74 00
5	2¾	22	12	138	102 00
6	3	22	12	162	123 00

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CONE BEARING RATCHET STREET RAILWAY JACKS

STYLE N J, 20 IN.



FIG. 5016

STYLE N J, BRIDGE BASE, 20 IN.



FIG. 5017

STYLE N J 14 IN.

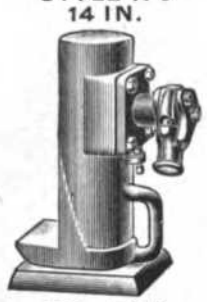


FIG. 5018

These jacks are designed for electric street railway and elevated railway service. They are equally well adapted for carpenters and builders, boilermakers, truckmen, or for any other work that can be done with jacks. These jacks are made of malleable iron and steel, and have hardened tool steel bearing for end of screw.

PRICES, FIGS. 5016 TO 5018

Style.	Height Over All, Inches.	Height of Foot from Ground, Inches.	Rise, Inches.	Sizes of Base, Inches.	Weight, Lbs.	Capacity, Tons.	Each.
N J	20	3	10	8	60	10	$24 00
N J Sq. Front Base	20	3	10	6 x 8	60	10	24 00
N J	14	3	7	6 x 10	40	10	22 00

These jacks are made with square or round base at same price.

CARPENTERS' AND BUILDERS' CONE BEARING RATCHET JACKS

STYLE G WITHOUT HOOK

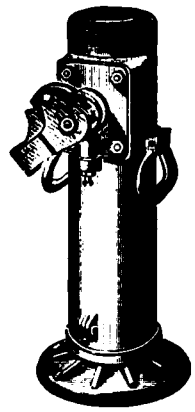


FIG. 5019

STYLE G, FOOT LIFT JACK

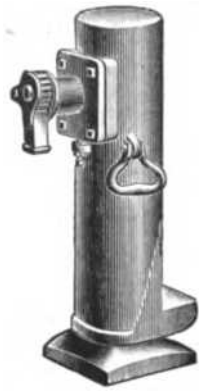


FIG. 5020

STYLE G, WITH HOOK

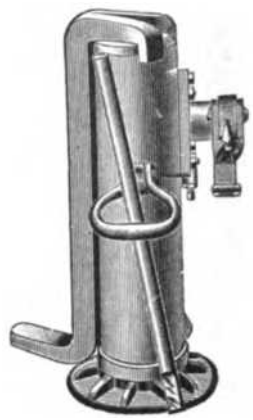


FIG. 5021

Made from best quality malleable iron and steel throughout.

PRICES, FIGS. 5019 TO 5021

Style.	Height, Inches.	Rise, Inches.	Base, Inches.	Weight, Lbs.	Capacity, Tons.	Each.	Hook Extra, Each.
G, Fig. 5019	22	12	10	80	15	$25 00	$5 00
G, Fig. 5020	22	12	10	85	15	28 00	Foot cast on shell.
G with Hook Fig. 5021	22	12	10	85	15	30 00	

In ordering, specify what style base is wanted and whether with or without hook.

BALL BEARING RATCHET BRIDGE JACKS

60 AND 70 TON COMPOUND GEAR

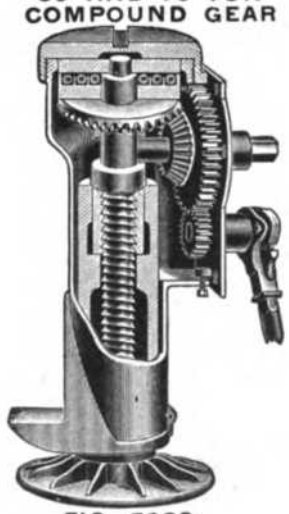


FIG. 5022

50 TON

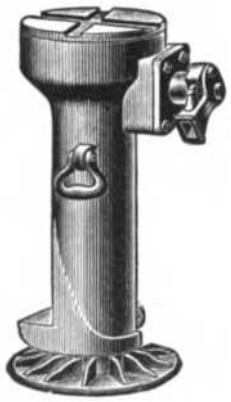


FIG. 5023

25 TON, 26 IN.

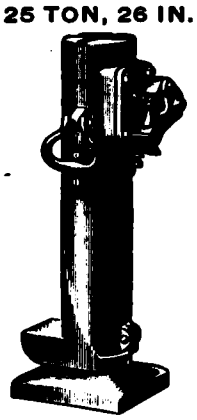


FIG. 5025

15 AND 35 TON 22 IN.



FIG. 5026

PRICES, FIGS. 5022 TO 5026

Capacity, Tons.	Height, Inches.	Rise, Inches.	Diameters of Base, Inches.	Diameters of Head, Inches.	Weights, Lbs.	Each.
15	22	10	8 x 9	5½	90	$60 00
20	22	10	8 x 9	5½	90	80 00
25	26	13	8 x 9	5½	110	96 00
25	22	10	8 x 9	5½	100	90 00
35	22	10	10½ x 8	6½	125	130 00
50	27	13	14	10½	200	150 00
60	26	12	14	10½	300	175 00
70	26	12	14	10½	300	200 00

These jacks are designed for extra heavy bridge and other work. They are made from dropped forged steel and have cut gears. When raising light load, 30 to 40 tons, on compound geared jacks, use ratchet on upper shaft, which gives more speed. When full power of jack is required, use ratchet on lower shaft.

LOCOMOTIVE BALL BEARING RATCHET JACK

STYLE C, 26 IN.

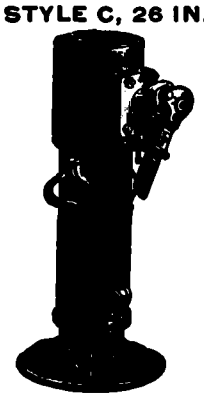


FIG 5027

PRICES, FIG. 5027

This jack is designed for heavy locomotive and wrecking car service, pulling well pipes and all other heavy work.

Style.	Height Closed, Inches.	Rise, Inches.	Diams. of Base, Inches.	Weights, Lbs.	Capacity, Tons.	Each.	Hook Extra, Each.
C	26	13	12	165	35	$125 00	$8 00
C	31	18	12	190	35	135 00	8 00

STYLE N A

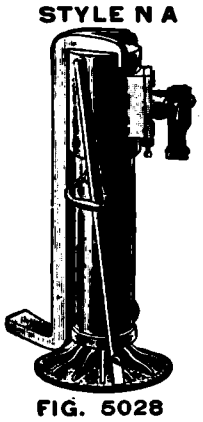


FIG. 5028

BALL BEARING LOCOMOTIVE RATCHET JACK

WITH HOOK FOR GROUND LIFT

PRICES, FIG. 5028

Style.	Height, Inches.	Rise, Inches.	Diams. of Base, Inches.	Weights, Lbs.	Capacity, Tons.	Each.	Hook Extra, Each.
N A	26	13	10	105	25	$90 00	$6 00
N A	20	9	10	95	25	80 00	6 00
R	20	9	12	80	15	60 00	5 00

This jack with square base at same price.

The construction of this jack is such that it can be carried on locomotives for months at a time, exposed to the coal dirt and action of the weather, and be found ready for service when needed. We make a specialty of equipping locomotives with any special height or capacity required at short notice.

STYLE B

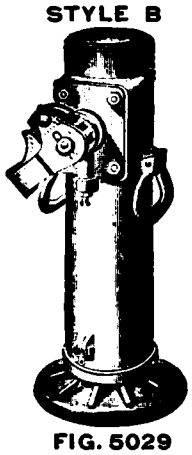


FIG. 5029

BALL BEARING RATCHET JACK

15 TONS

PRICES, FIG. 5029

Capacity, 15 tons.
Height, 22 inches; rise, 12 inches.
Diameter of base, 10 inches.
Weight, 80 pounds.
Each, $60.00.
Hook extra, $6.00.
Square or round base at same price.

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DOUBLE SPEED BALL BEARING RATCHET JACK

GROUND LIFT
Style F.

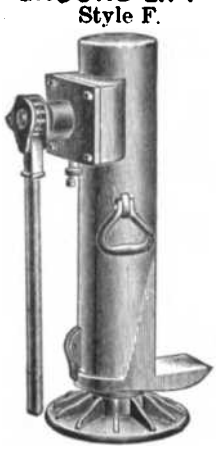


FIG. 5032

DESCRIPTION, FIG. 5032

This jack has large gear on ratchet shaft, giving it double speed. It is malleable iron and steel throughout, extra strong, and is especially adapted to electric plants, power houses on electric railways, and for handling heavy machinery, stone, etc.

PRICE

Style F. Height, 24 inches. Rise, 10 inches. Diameter of base, 10 inches. Weight, 115 pounds. Capacity, 15 tons. Each, $60.00.

ROBIE BALL BEARING LEVER AND RATCHET SCREW JACK

PRICES, FIG. 5033

Style C.



FIG. 5033

For general use; light and powerful; for machine shops and foundries.

Style C. Capacity, 10 tons. Lift, 8 inches. Diameter screw, 2 inches. Height, 14 inches. Diameter base, 7 inches. Weight, 40 pounds. Each, $25.00.

Handy pattern about machine shop and car works. Useful where the shorter 10 ton is not tall enough.

Style D. Capacity 10 tons. Lift, 18 inches. Diameter screw, 2 inches. Height, 24 inches. Diameter base, 8½ inches. Weight, 90 pounds. Each, $42.00.

ROBIE BALL BEARING LEVER AND RATCHET SCREW JACKS

Style G.

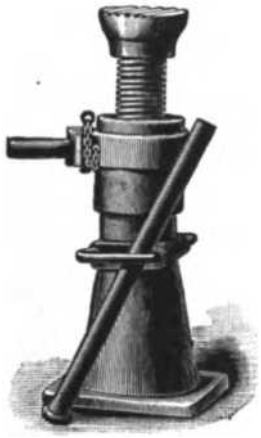


FIG. 5034

PRICE, FIG. 5034

For ship yards, railroad work, furnaces and rolling mills, and for heavy work at machine shops and foundries.

Style G. Capacity, 20 tons. Lift, 10 inches. Diameter screw, 2½ inches. Height, 19 inches. Square base, 8 inches. Weight, 85 pounds. Each, $42.00.

Style J.



FIG. 5035

PRICE, FIG. 5035

This jack is adapted for navy yards and proving grounds, locomotive builders, bridge builders and use about dry docks.

Style J. Capacity, 30 tons. Lift, 10 inches. Diameter screw, 3 inches. Height 20 inches, Diameter base, 10 inches. Weight, 130 pounds. Each, $55.00

Style K.

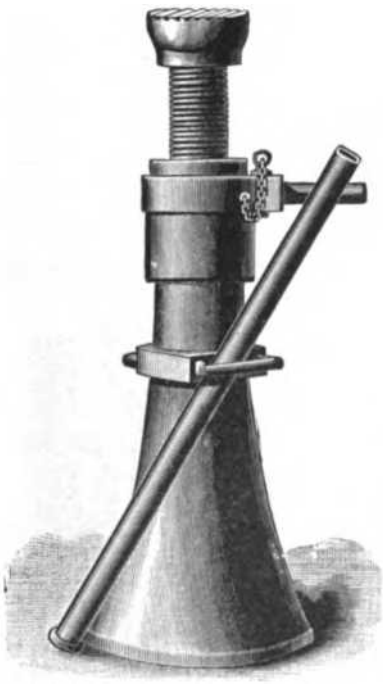


FIG. 5036

Style E.



FIG. 5037

PRICES, FIG. 5037

This size jack is desired for use by manufacturers of boilers and machinery, electric light works, house movers and iron workers, car works. Is also used for locomotive and wrecking work.

Style E. Capacity, 20 tons. Lift, 18 inches. Diameter screw, 2½ inches. Height, 25 inches. Diameter base, 10 inches. Weight, 110 pounds. Each, $45.00.

This jack is especially adapted for use under passenger and sleeping coaches, or wherever a long run of screw is required.

Style F. Capacity, 20 tons. Lift, 24 inches. Diameter screw, 2½ inches. Height, 32 inches. Diameter base, 8 inches. Weight, 130 pounds. Each, $50.00.

PRICE, FIG. 5036

This jack is adapted for navy yards and stations, proving grounds; also railroads and steamship companies, heavy boiler works and contractors.

Style K. Capacity, 30 tons. Lift, 24 inches. Diameter screw, 3 inches. Height, 30 inches. Diameter base, 12 inches. Weight, 200 pounds. Each, $60.00.

SECTION
Style H.

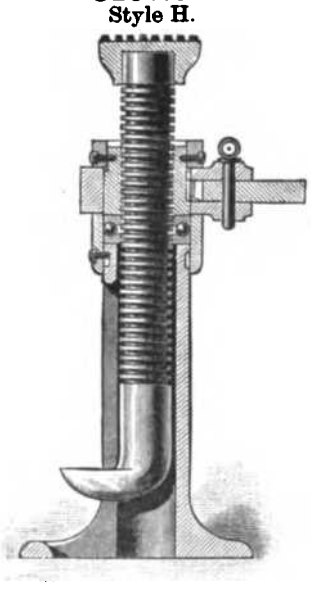


FIG. 5038

Style H.

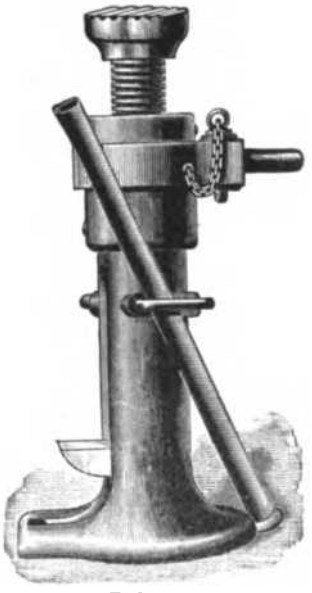


FIG. 5038

PRICES

Useful at boiler works and for handling and moving engines and machinery; for moving safes and monumental work. Useful for masons and builders.

Style H. Capacity, 10 tons. Lift, 8 inches. Diameter screw, 2 inches. Height, 18 inches. Diameter base, 7½ inches. Weight, 58 pounds. Each, $36.00.

Style H. Capacity, 20 tons. Lift, 10 inches. Diameter screw, 2½ inches. Height, 21½ inches. Diameter base, 10 inches. Weight, 75 pounds. Each, $52.00.

Style I. Capacity, 20 tons. Lift, 18 inches Diameter screw, 2½ inches. Height, 29½ inches. Diameter base, 10 inches. Weight, 120 pounds. Each, $55.00.

Used same as the lighter foot lift jack, only for heavier weight.

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HOLLOW SCREW JACKS



FIG. 5039

DESCRIPTION, FIG. 5039

The base of this jack being closed and filled with oil, the screw is always lubricated and protected from rust and dirt, consequently the jack is always ready for instant service. The cap of the jack has an oil chamber, and, the top of the screw being cup shaped, the oil is retained and not forced out as soon as the load is applied. This feature greatly adds to the life and easy working of the jack, as it entirely prevents the cutting between the surfaces of the cap and the screw. The screws of these jacks are made from a special quality of machine steel.

PRICES, FIG. 5039

Numbers of jacks	4	6	8	10	12	14	16	20	24	28	30	36
Height over all closed down, inches	4	6¾	8	10	12	14	16	20	24	28	30	36
Safe rise with load, inches	1½	2½	3¼	4½	6	7	9	12	16	20	22	28
Height over all screwed up to limit, inches	5½	9¼	11¼	14½	18	21	25	32	40	48	52	64
Diameters of screw, in.	1	1½	1¾	1⅞	1⅞	2¼	2¼	2½	2½	2½	2½	2½
Each	$1 50	2 25	3 00	3 75	4 50	6 00	7 50	10 50	13 50	16 50	18 00	24 00

SECTIONAL

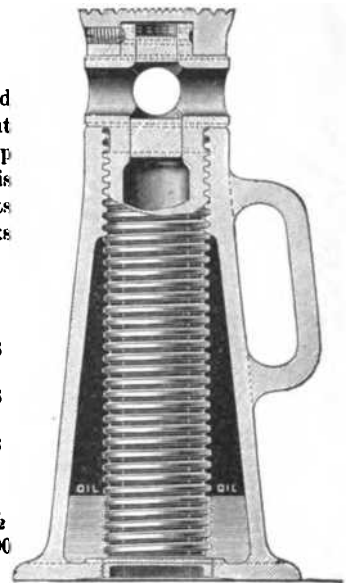


FIG. 5039

BELL BOTTOM JACK



FIG. 5040

DESCRIPTION, FIG. 5040

In these jacks, Nos. 101 to 141, the base is made of malleable iron and the screw of basic steel. The screws are of bracket thread, half square and half V, with the square side to the load. The base is closed to keep the dirt from coming in contact with the screw, and the cap is thoroughly protected from dust, being accurately fitted with special tools, and covering the top of the screw entirely.

Nos. of Jacks.	Height When Down, Inches.	Diameters of Screw, Inches.	Rise, Inches.	Weight, Lbs.	Capacity, Tons.	Prices with Six Way Head.	Prices with Spring Ratchet.
101	10	2	4½	23	8	$5 00	$11 00
102	12	2	6½	26	8	5 50	11 50
111	10	2¼	4½	24	15	5 75	13 75
112	12	2¼	6	29	15	6 35	14 35
120	10	2½	3½	35	25	7 50	15 50
121	12	2½	5½	33	25	8 25	16 25
122	14	2½	7	37	25	9 00	17 00
123	16	2½	9	42	25	9 75	17 75
124	18	2½	11	46	25	10 50	18 50
125	20	2½	13	51	25	11 25	19 25
126	22	2½	15	57	25	12 00	20 00
127	24	2½	17	63	25	12 75	20 75
130	30	2½	23	81	25	15 00	23 00
132	12	3	4	49	50	12 00	22 00
133	14	3	6	55	50	13 00	23 00
134	16	3	8	61	50	14 00	24 00
135	18	3	10	67	50	15 00	25 00
136	20	3	12	77	50	16 00	26 00
137	22	3	14	88	50	17 00	27 00
138	24	3	16	89	50	18 00	28 00
140	28	3	20	118	50	20 00	30 00
141	30	3	22	128	50	21 00	31 00

TELESCOPE JACK



FIG. 5041

PRICES, FIG. 5041

The base is malleable iron, the telescope screw cast steel, and the interior screw high grade machinery steel.

	No. 44.	No. 45.	No. 47.	No. 50.
Height when down	8 in.	12 in.	18 in.	16 in.
Rise of screw,	8 "	12 "	18 "	16 "
Weight of jack	18 lbs.	32 lbs.	65 lbs.	140 lbs.
Capacity	6 tons.	8 tons.	10 tons.	25 tons.
Each	$12 00	$15 00	$20 00	$53 00
" with spring ratchet	17 00	23 00	28 00	65 00

CAR BOX JACK SCREW

PRICES, FIG. 5042

Diams. of Screw, Inches.	Height of Stand, Inches.	Height Over All, Inches.	Lifting Capacity, Tons.	Each.
1½	5	8	12	$4 00
1½	6	9	12	4 25
1½	8	11	12	4 75
1½	10	13	12	5 25
1½	12	15	12	5 75
1¾	6	9¼	16	5 00
1¾	8	11¼	16	5 50
1¾	10	13¼	16	6 25
1¾	12	15¼	16	6 75
2	5	9	20	5 50
2	6	10	20	5 75
2	8	12	20	6 50
2	10	14	20	7 25
2	12	16	20	8 00
2	14	18	20	8 75
2¼	8	12¼	24	8 00
2¼	10	14¼	24	8 75
2¼	12	16¼	24	9 50
2¼	14	18¼	24	10 50
2¼	16	20¼	24	11 50
2½	6½	11	28	8 50
2½	8	12½	28	9 25
2½	10	14½	28	10 25
2½	12	16½	28	11 25
2½	14	18½	28	12 50
2½	16	20½	28	13 75



FIG. 5042

Jack Screw, Fig. 5042, is made with swivel cap of the same diameter as the head, closed at the top to prevent dirt from entering between the cap and screw. The cap is held in place by a set screw running in a groove cut in the top of the screw.

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LOCOMOTIVE JACK SCREWS



FIG. 5044

PRICES

Diameters of Screws, Inches.	Height of Stand, Inches.	Height Over All, Inches.	Each.	Diameters of Screws, Inches.	Height of Stand, Inches.	Height Over All, Inches.	Each.
1¼	4	6¼	$2 90	2	24	27¼	$13 50
1¼	6	8¼	3 10	2¼	6	9¾	7 00
1¼	8	10¼	3 40	2¼	8	11¾	7 50
1¼	10	12¼	3 80	2¼	10	13¾	8 25
1¼	12	14¼	4 20	2¼	12	15¾	9 00
1¼	14	16¼	4 60	2¼	14	17¾	10 00
1½	4	6½	3 25	2¼	16	19¾	11 00
1½	5	7½	3 50	2¼	18	21¾	12 00
1½	6	8½	3 75	2¼	20	23¾	13 25
1½	8	10½	4 25	2¼	22	25¾	14 50
1½	10	12½	4 75	2¼	24	27¾	15 75
1½	12	14½	5 25	2½	6	10	7 75
1½	14	16½	6 00	2½	6½	10½	8 00
1½	16	18½	6 75	2½	8	12	8 75
1¾	6	8¾	4 50	2½	10	14	9 75
1¾	8	10¾	5 00	2½	12	16	10 75
1¾	10	12¾	5 75	2½	14	18	12 00
1¾	12	14¾	6 25	2½	16	20	13 25
1¾	14	16¾	6 75	2½	18	22	14 50
1¾	16	18¾	7 50	2½	20	24	15 75
1¾	18	20¾	8 50	2½	22	26	17 00
2	5	8¼	5 00	2½	24	28	18 25
2	6	9¼	5 25	2½	28	32	22 00
2	8	11¼	6 00	2½	32	36	26 00
2	10	13¼	6 75	3	14	18½	19 50
2	12	15¼	7 50	3	16	20½	20 75
2	14	17¼	8 25	3	18	22½	22 00
2	16	19¼	9 25	3	20	24½	23 25
2	18	21¼	10 25	3	22	26½	24 50
2	20	23¼	11 50	3	24	28½	25 75
2	22	25¼	12 50	3	30	34½	30 00

Screws, Inches.	Capacity, Tons.	Screws, Inches.	Capacity, Tons.
1¼	10	2¼	24
1½	12	2½	28
1¾	16	3	36
2	20		

Levers will be sent only when ordered, and will be charged extra.

BALL JOINTED TOP



FIG. 5047

CAR BOX JACK SCREW

These jacks are used for steam and street cars, and by machinists, builders, etc.

They have broad base, notched cap and stout handles.

This jack has ball jointed top, allowing cap to incline at an angle, thus keeping screw always perpendicular. Can be used with any journal box.

PRICES, FIG. 5047

Diameter screw	inches.	2¼
Height of bell	"	7½
Total height	"	12
Weight	pounds.	24
Lifting capacity	tons.	10
Each		$4 00

ROLLER BEARING JACK SCREWS



FIG. 5045

These jacks have roller bearings, as shown in Fig. 5045.

PRICES, JACK SCREWS

Nos.	Diameters of Screws, Inches.	Height of Barrel, Inches.	Height of Jack When Turned Down to the Lowest Point, Inches.	Net Rise, Inches.	Whole Height, Inches.	Weight, Pounds.	Estimated Lifting Capacity, Tons.	Each.
1	1¼	6	8	4	12	10	10	$2 50
2	1¼	7	10	6	16	11¾	10	3 00
3	1½	7½	10	5	15	18½	12	3 25
4	1½	9	12	7	19	18	12	3 75
5	1½	10½	14	9	23	25	12	4 00
6	1¾	9	12	6	18	24	16	4 25
7	1¾	10½	14	8	22	28¾	16	4 50
8	1¾	12½	16	10	26	33½	16	5 00
9	1¾	15	18	12	30	37½	16	5 50
10	2	8½	12	5	17	31	20	5 50
11	2	10½	14	7	21	36	20	6 00
12	2	12	16	9	25	41½	20	7 00
13	2	16	20	13	33	50	20	8 00
14	2½	10	14	8	22	48	28	8 50
15	2½	12	16	10	26	53¼	28	9 50
16	2½	15½	20	14	34	69	28	11 00
17	2½	20	24	18	42	85	28	13 00

PRICES, CAR JACKS

Nos.	Diameters of Screws, Inches.	Height of Barrel, Inches.	Height of Jack When Turned Down to the Lowest Point, Inches.	Net Rise, Inches.	Whole Height, Inches.	Weight, Pounds.	Estimated Lifting Capacity, Tons.	Each.
17½	2	6	10	4	14	20	20	$5 00
18	2	8½	12	5	17	31	20	5 50
19	2	10½	14	7	21	36	20	6 00
20	2	12	16	9	25	41	20	7 00

These jacks have cast iron barrels, with steel screws cut in a lathe. Both roller bearing and ordinary style. If Roller Bearing Jacks are wanted, so specify on orders, otherwise ordinary style will be sent. Order by numbers, and thus avoid errors.

FLAT BOTTOM JACK

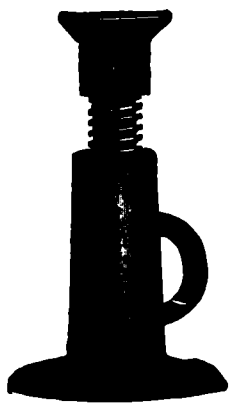


FIG. 5048

PRICES, FIG. 5048

Nos.	Height Over All, Inches.	Diameters of Screws, Inches.	Diameters at Bottoms, Inches.	Each.
1	9	2	7¼	$4 25
2	14	2	8½	5 75
3	15	2½	9¾	10 75

CAST IRON JACK SCREW

These screws are cast with seamless threads, which make them very smooth and uniform.

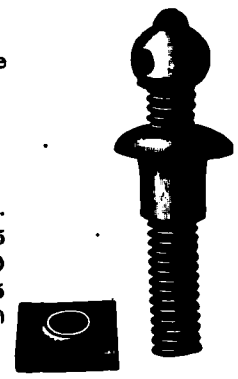


FIG. 5049

PRICES, FIG. 5049

Diameters of Screws, Inches.	Height Over All, Inches.	Each.	Diameters of Screws, Inches.	Height Over All, Inches.	Each.
3	20	$3 50	3	30	$4 75
3	22	3 75	3	32	5 00
3	24	4 00	3	34	5 25
3	26	4 25	3	36	5 50
3	28	4 50			

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JACK SCREWS

HOUSE RAISING SCREW



FIG. 5050

DESCRIPTION, FIGS. 5050 AND 5051

These screws are made of wrought iron, with cast iron nuts and caps. The nuts are made to let into wood blocks.

LIFTING CAPACITY

1¾ in. screw will raise 16 tons.
2 " " " " 20 "
2¼ " " " " 24 "
2½ in. screw will raise 28 tons.
2¾ " " " " 32 "
3 " " " " 36 "

PRESS SCREW

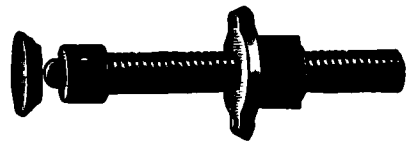


FIG. 5051

PRICES

Diams. of Screws, Inches.	Height Over All, Inches.	Each.
2	24	$8 40
2	26	8 80
2	28	9 20
2	30	9 60
2	32	10 00
2	34	10 40
2	36	10 80
2	38	11 20
2	40	11 60
2¼	24	10 30
2¼	26	10 70
2¼	28	11 10
2¼	30	11 50
2¼	32	11 90
2¼	34	12 30
2¼	36	12 70
2¼	38	13 20
2¼	40	13 60
2¼	42	14 10
2¼	44	14 60
2¼	46	15 00
2¼	48	15 40
2¼	50	16 00
2½	24	11 90
2½	26	12 40
2½	28	12 90
2½	30	13 40
2½	32	$13 90
2½	34	14 40
2½	36	14 90
2½	38	15 50
2½	40	16 00
2½	42	16 50
2½	44	17 10
2½	46	17 60
2½	48	18 10
2½	50	18 60
2½	52	19 10
2½	54	19 70
2½	56	20 30
2½	58	20 80
2½	60	21 30
2¾	24	16 40
2¾	26	17 10
2¾	28	17 80
2¾	30	18 50
2¾	32	19 20
2¾	34	19 90
2¾	36	20 60
2¾	38	21 30
2¾	40	22 00
2¾	42	22 70
2¾	44	23 40
2¾	46	24 10
2¾	48	$24 80
2¾	50	25 50
2¾	52	26 20
2¾	54	26 90
2¾	56	27 60
2¾	58	28 30
2¾	60	29 00
3	24	19 20
3	26	20 00
3	28	20 80
3	30	21 60
3	32	22 40
3	34	23 20
3	36	24 00
3	38	24 80
3	40	25 60
3	42	26 40
3	44	27 20
3	46	28 00
3	48	28 80
3	50	29 60
3	52	30 40
3	54	31 20
3	56	32 00
3	58	32 80
3	60	33 60

PRICES

Diams. of Screws, Inches.	Height Over All, Inches.	Each.
1¾	12	$4 80
1¾	14	5 10
1¾	16	5 40
1¾	18	5 70
1¾	20	6 00
2	12	6 00
2	14	6 40
2	16	6 80
2	18	7 20
2	20	7 60
2	22	8 00
2	24	$8 40
2	26	8 80
2	28	9 20
2¼	12	7 50
2¼	14	7 90
2¼	16	8 30
2¼	18	8 80
2¼	20	9 30
2¼	22	9 80
2¼	24	10 30
2¼	26	10 70
2¼	28	$11 10
2½	12	8 50
2½	14	9 00
2½	16	9 60
2½	18	10 20
2½	20	10 80
2½	22	11 30
2½	24	11 90
2½	26	12 40
2½	28	12 90
2½	30	13 40

CAST IRON HOUSE RAISING SCREW

Cast Iron with Seamless Thread Screw and with Nut to Set Into Wood Block.

Stock size, diams. screws, inches...	3	4
Length over all, in.	22	24
" of thread, in.	16	18
" of nut, in....	5½	5
Weight, pounds...	50	85
Each	$3 75	$7 00

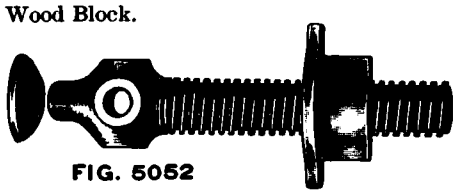


FIG. 5052

PRICES

Following sizes to order, 3 inch screw, 5½ inch nut.

Lengths, inches.	20	24	26	28	30	32	34	36
Weight, pounds	49	52	55	58	61	64	67	70
Each.....	$3 50	$4 00	$4 25	$4 50	$4 75	$5 00	$5 25	$5 50

WORM GEARED BALL BEARING HOUSE MOVING JACK

STYLE N

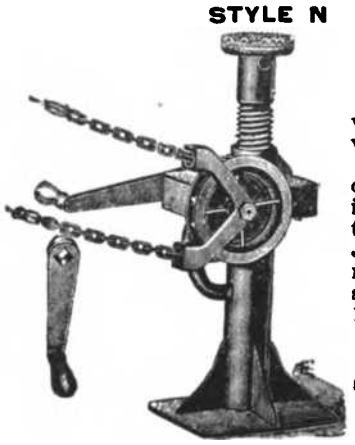


FIG. 5053

DESCRIPTION, FIG. 5053

This Jack is especially adapted for all heavy work, such as house moving, car repairs and wrecking purposes.

This Ball Bearing House Moving Jack has two distinct modes of operating. Cut shows that it can be operated by handle or by a chain attachment at a distance of six feet away from Jack while the operator is standing. It is made of malleable iron frame, steel screw and steel forged balls, and has a lifting capacity of 15 tons.

Height, screw down, 18 inches. Rise of screw, 15 inches. Capacity, 15 tons.

PRICE, $50.00

HEAVY GEARED STONE JACK

Iron Frame, Wood Filled.

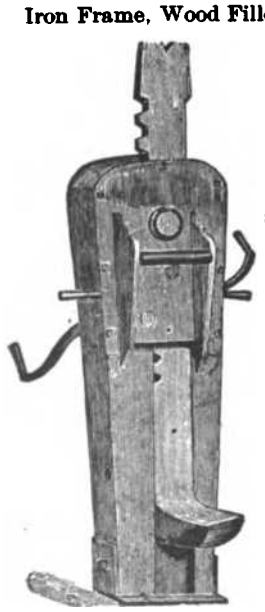


FIG. 5057

PRICES, FIG. 5057

All inside works are wrought steel. Boxes are gun metal.

	Each.
Double Geared Stone Jack, to handle 15 tons.....	$125 00
Extra single Stone Jack, to handle 10 to 12 tons	85 00
Single Stone Jack, to handle 5 to 7 tons....	75 00
Light Stone Jack, to handle 4 to 5 tons....	65 00

LIGHT GEARED STONE JACK

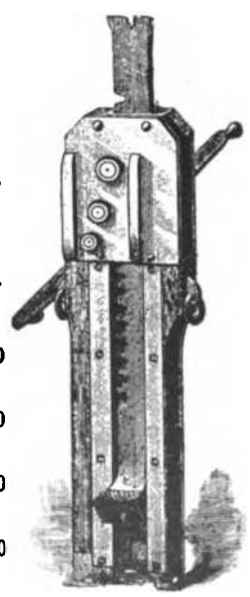


FIG. 5058

CLAW OR TIMBER JACK

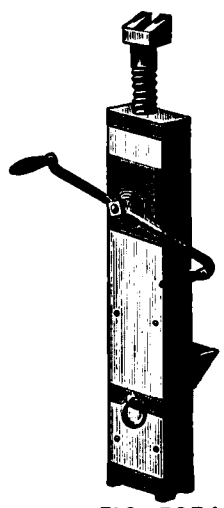


FIG. 5054

PLANKER JACK

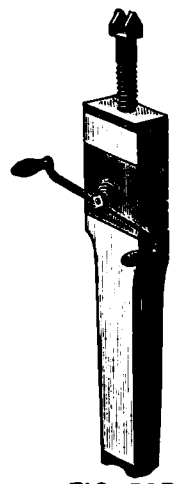


FIG. 5055

SUGAR OR COTTON JACK

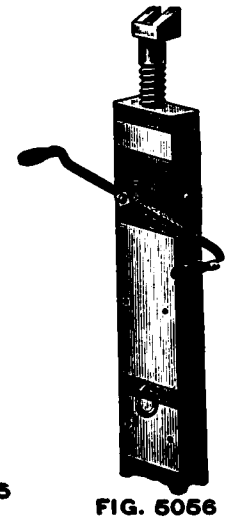


FIG. 5056

PRICES

Screws. Diams.	Screws. Lengths. Inches.	Each.
2	x 24	$20 00
2	x 30	22 00
2	x 33	23 00
2	x 36	24 00
2¼	x 33	29 00
2¼	x 36	32 00
2¼	x 42	36 00
2¾	x 36	50 00
2¾	x 42	55 00
2¾	x 48	60 00

PRICES

Screws. Diams.	Screws. Lengths. Inches.	Each.
2	x 30	$19 00
2	x 33	19 50
2	x 36	20 00
2¼	x 42	28 00

PRICES

Screws. Diams.	Screws. Lengths. Inches.	Each.
2	x 24	$18 00
2	x 30	19 00
2	x 33	19 50
2	x 36	20 00
2¼	x 24	24 00
2¼	x 30	25 00
2¼	x 36	26 00
2¼	x 42	28 00
2¾	x 36	45 00
2¾	x 42	48 00
2¾	x 48	52 00

The 2¾ inch Jacks have steel gearing, and smaller ones composition.

PRICES, FIG. 5058

These Jacks have a heavy steel post and step; are made from the finest steel casting, with partial iron frame nicely finished. Or full iron frame, well finished.

Sizes.	Gear.	Lifts.	Heights.	Will Handle.	Weights.	Each.	Full Extra Heavy Frame. Each.
1	Double	1 ft. 8 in.	2 ft. 6 in.	3 tons	80 lbs.	$33 50	$38 50
2	"	1 " 8 "	2 " 9 "	6 "	115 "	38 50	40 00
3	Triple	1 " 10 "	3 " 2 "	10 "	175 "	60 00	70 00
4	"			12 "		80 00	90 00
5	"			15 "		100 00	115 00

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DOUBLE AND TRIPLE GEARED LIFTING JACKS

DOUBLE GEARED

NO. 1



FIG. 5059

NO. 2

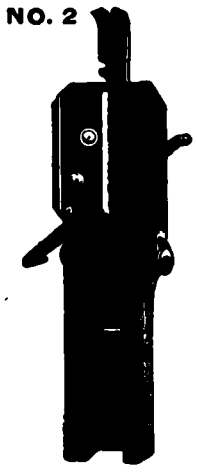


FIG. 5060

The gears and pinions are made of the finest steel. All bushings of brass and copper; the rack or lifting bar of hammered steel. The wood is of the best white and red oak. The face plates are of rolled steel. The center steel bar passes through the bottom of stock to the ground, thus affording a low lift. Numbers 1 and 2 double geared jacks are especially adapted to the use of truckmen, being light and easily carried with the team, and also for use in stone yards and machine works.

The triple geared jacks, Numbers 3 and 4, are especially adapted to the use of contractors and builders, stone, granite and marble workers, stone yards, stone quarries, marble and stone mills, boiler and safe works, bridge builders and for all purposes of heavy lifting.

PRICES

Nos.	Capacity, Tons.	Style.	Height.	Lifts.	Weight, Pounds.	Each.
1	3	Double Geared	2 ft. 8 in.	1 ft. 8 in.	70	$20 00
2	4 to 6	"	2 ft. 11 in.	"	110	30 00
3	9 to 10	Triple Geared	3 ft. 4 in.	"	160	45 00
4	12 to 15	"	3 ft. 8 in.	"	250	75 00

20 Ton Jacks Made to Order.

Where swivel and single crank are not ordered, we always send fork center bar and double crank on both double and triple geared jacks.

TRIPLE GEARED

NO. 3



FIG. 5061

NO. 4

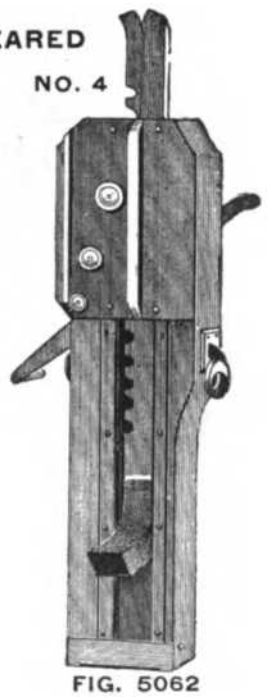


FIG. 5062

WINDLASS STONE JACK

FRONT VIEW



FIG. 5063

BACK VIEW



FIG. 5063

PRICES, FIG. 5063

These jacks have an improved bottom or base, which allows the foot or claw to run down to ¼ inch of the ground. Can be set at any angle without danger of slipping.

Capacity, Tons.	Height, Feet.	Height, Inches.	Weight, Pounds.	Each.
3	3	½	95	$50 00
4	3	1	100	55 00
5	3	1½	110	62 00
6	3	2	125	70 00
7	3	2½	135	77 50
8	3	3	145	84 50
10	3	3½	160	110 00
12	3	4	170	120 00
15	3	5	185	140 00
18	3	5	200	150 00
20	3	5	225	162 50
25	3	5	250	175 00
30	3	6	285	200 00

WOOD CASE GEARED SCREW JACK



FIG. 5064

PRICES, FIG. 5064

Elm case, faced with iron. Wrought iron screw and foot. Case hardened worm wheel.

Capacity, Tons.	Diameter of Screw, Inches.	Height of Head, Inches.	Height of Claw, Inches.	Rise, Inches.	Weight, Pounds.	Each.
3	1¾	28	2	12	67	$32 00
5	2	31	3	12	93	39 00
8	2¼	32	4	12	112	45 00
10	2½	34	4½	13	149	53 00
12	2¾	34	3	13	164	60 00
15	3	36	3½	14	198	75 00

DUDGEON'S HYDRAULIC JACKS

PLAIN JACK

For use in presses, or where there is a firm foundation or support.



FIG. 5065

BASE JACK

For railroad work, or where a broad base, insuring stability, is required.



FIG. 5066

CLAW OR GROUND LIFTING JACK

For machine shops, and for work that will not permit the head to be placed under the load.



FIG. 5067

PRICES, FIG. 5065

Tons lift	4	7	7	7	10	10	10	15	15	15	20	20	20	30	30	30	40	40
Run out	12	12	18	24	12	18	24	12	18	24	12	18	24	9	12	18	12	18
Height, inches	24	25	31	38	25	32	39	26	32	39	26	33	39	22	26	33	27	34
Sizes bottom, in.	4 sq.	4½ sq.	4½ sq.	4½ sq.	6 sq.	6 sq.	6 sq.	6½ sq.	6½ sq.	6½ sq.	7 sq.	7 sq.	7 sq.	8 rd.	8 rd.	8 rd.	9 rd.	9 rd.
Weight, pounds	46	64	72	80	80	96	110	102	120	140	127	155	180	146	194	260	280	330
Each	$60 00	$70 00	$78 00	$75 00	$80 00	$95 00	$110 00	$100 00	$125 00	$150 00	$120 00	$145 00	$170 00	$150 00	$175 00	$210 00	$210 00	$250 00

PRICES, FIG. 5066

Tons lift	4	7	7	7	10	10	10	15	15	15	20	20	20	30	30	30	40	40
Run out	12	12	18	24	12	18	24	12	18	24	12	18	24	9	12	18	12	18
Height, inches	23	25	31	38	25	31	39	25	32	39	26	33	39	22	26	33	27	33
Diameters base, inches	9½	10	10	10	11	11	11	12	12	12	13	13	13	14	14	14	14½	14½
Weight, pounds	61	82	100	120	109	125	145	135	158	176	169	198	228	210	259	300	320	360
Each	$60 00	$80 00	$85 00	$90 00	$95 00	$110 00	$125 00	$125 00	$150 00	$175 00	$150 00	$175 00	$200 00	$170 00	$200 00	$235 00	$240 00	$280 00

PRICES, FIG. 5067

Tons lift	4	7	7	7	10	10	15	15	20	20	30
Run out	12	12	18	24	12	18	24	12	18	12	18	12
Height, inches	24	25	31	38	25	32	39	26	32	26	33	26
Sizes bottom, inches	4 sq.	4½ sq.	4½ sq.	4½ sq.	6 sq.	6 sq.	6 sq.	6½ sq.	6½ sq.	7 sq.	7 sq.	8 rd.
Weight, pounds	64	90	110	123	123	144	170	162	189	207	245	310
Each	$60 00	$85 00	$88 00	$90 00	$100 00	$120 00	$145 00	$150 00	$185 00	$200 00	$240 00	$250 00

SPECIAL SIZES TO ORDER

The ground lifting attachment is a tube screwed into the under side of the head; on the lower end is a claw to support the weight to be raised. Special lengths made to order at the price of the next longer.

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DUDGEON'S HYDRAULIC JACKS

DESCRIPTION, FIGS. 5068 AND 5069

SQUARE BASE

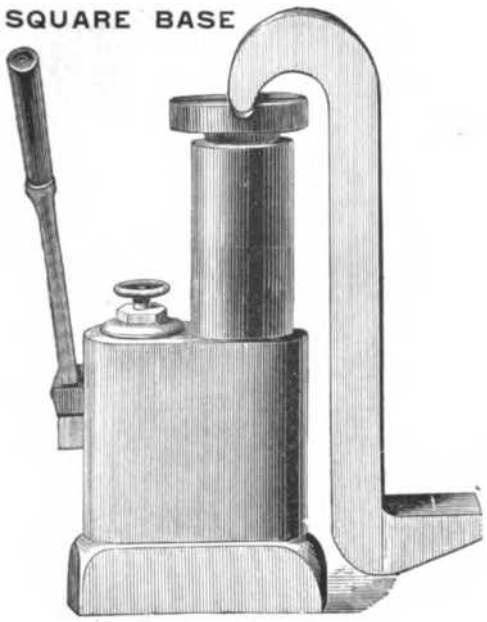


FIG. 5068

Horizontal Jacks, so called, as they will run out as far horizontally as vertically. A removable wrought iron claw which comes nearer to the ground may be used. All working parts are within the cistern, perfectly protected from injury, while the valves are still easy of access.

PRICES, FIGS. 5068 AND 5069

Tons.	Run Out.	Height.	Sizes of Round Base.	Sizes of Square Base.	Weight.	Each.	With Claw, Used with Square Base Only.
7	12 in.	20 in.	11 in.	9 x 5½	102	$80 00	$85 00
7	18 "	26 "	11 "	9 x 5½	120	85 00	90 00
10	12 "	20 "	12 "	9½x 7	135	95 00	105 00
10	18 "	26 "	12 "	9½x 7	166	110 00	125 00
10	24 "	32 "	12 "	9½x 7	196	130 00	150 00
15	12 "	21 "	12 "	9½x 7	150	125 00	150 00
15	18 "	26 "	12 "	9½x 7	187	150 00	180 00
15	24 "	32 "	12 "	9½x 7	200	175 00	215 00
20	12 "	21 "	13½ "	11 x 8½	197	150 00	185 00
20	18 "	27 "	13½ "	11 x 8½	242	175 00	215 00
20	24 "	33 "	13½ "	11 x 8½	255	200 00	250 00

DESCRIPTION

With or Without Removable Wrought Iron Claw.

This style jack is used where there is a firm foundation, and is especially adapted for use horizontally, as there is no projecting round base to interfere with placing the jack on its side. Made in this style up to twenty tons capacity. Above twenty tons, the Oval Base style is used.

ROUND BASE

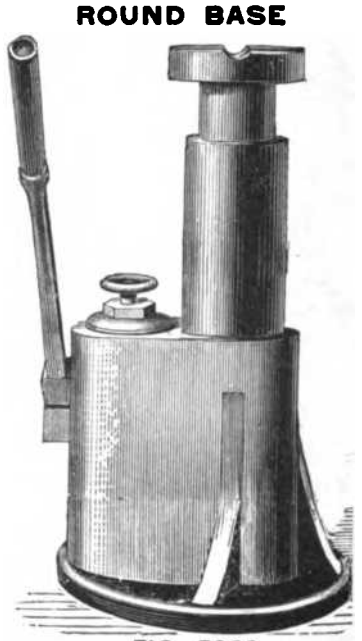


FIG. 5069

DESCRIPTION

This style jack is used for railroad work, and where a firm foundation is difficult to obtain; also where a long lift with a low height over all is required. Made up to and including twenty tons capacity.

OVAL BASE HORIZONTAL JACK

Horizontal Jacks of 30 tons and over are made with this style base. Rams are supplied with either large head (as shown in Figs. 5068 and 5069) or with loose cap, as here shown, as preferred. When claws are used the large head is necessary. Jacks of this style are provided with removable wrought iron claws, when ordered. In this case a support and guide for the lower end of the claw is cast on the cistern. (Not shown in cut.) A lowering valve is made direct in the pump and requires no extra pieces nor packings.

PRICES FIG. 5070

Tons.	Run Out.	Height.	Sizes of Oval Base.	Weight.	Each.	With Claw.
30	12	22 in.	12½x 9	234	$200 00	$240 00
30	18	28 "	12½x 9	285	235 00	285 00
40	12	22 "	13½x10	320	240 00	290 00
40	18	28 "	13½x10	355	280 00	340 00
50	12	22 "	14 x12	335	260 00	320 00
50	18	28 "	14 x12	380	310 00	380 00
60	9	17 "	14 x12	320	250 00	310 00
60	12	20 "	14 x12	350	275 00	340 00
60	18	26 "	14 x12	410	350 00	*
80	9	19 "	16 x13	425	310 00	*
80	12	22 "	16 x13	450	335 00	*
80	18	28 "	16 x13	525	385 00	*
100	9	19 in.	17 x14½	520	$375 00	*
100	12	22 "	17 x14½	570	400 00	*
100	18	28 "	17 x14½	660	475 00	*
125	9	19 "	18 x16	535	425 00	*
125	12	22 "	18 x16	585	450 00	*
125	18	28 "	18 x16	685	525 00	*
150	12	23 "	20 x17½	920	500 00	*
150	18	29 "	20 x17½	1160	575 00	*
200	12	24 "	20 x17½	950	600 00	*
200	18	30 "	20 x17½	1240	700 00	*
250	12	25 "	20 x17½	1400	725 00	*
250	18	31 "	20 x17½	1650	850 00	*

*Claws for these sizes made to order.

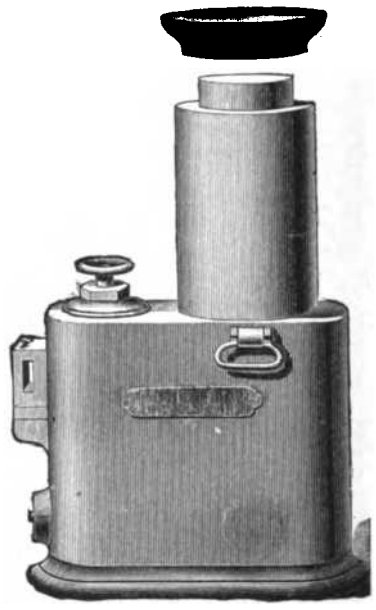


FIG. 5070

OUTSIDE PUMP JACK

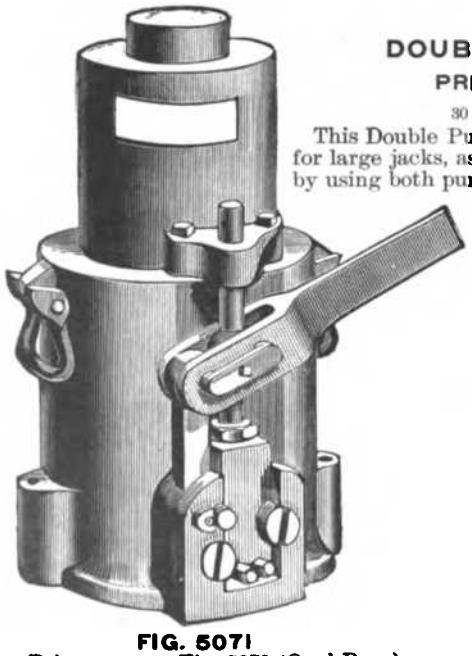


FIG. 5071
Price same as Fig. 5070 (Oval Base).

DOUBLE PUMP JACK

PRICE FIG. 5072

30 TONS AND OVER.

This Double Pump Jack is especially adapted for large jacks, as the ram can be run out rapidly by using both pumps together until the strain is taken up; then the small pump only is used, giving the full power of the jack.

Price, $50.00 extra on list Fig. 5070(Oval Base).

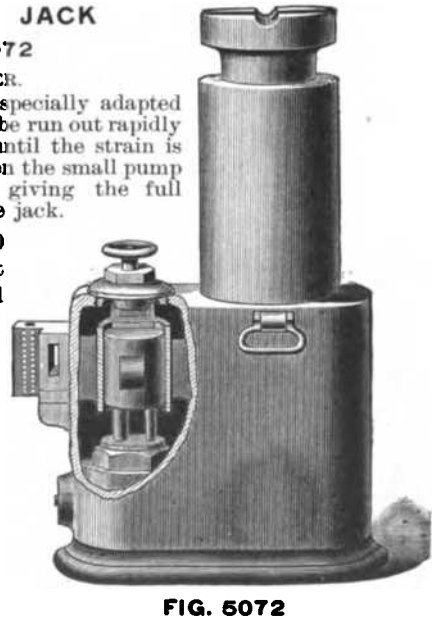


FIG. 5072

CAR BRASS JACK

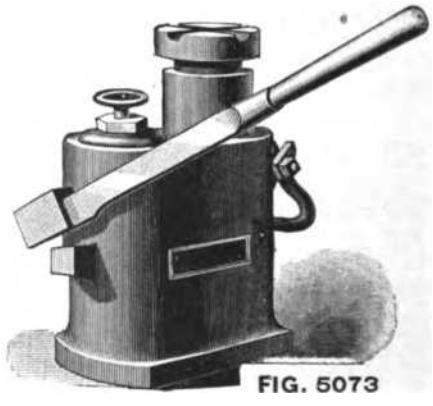


FIG. 5073

PRICES

This jack is used by car inspectors for removing brasses; also by those requiring a jack of limited height.

Tons.	Run Out.	Height.	Sizes of Bottom.	Weight.	Each.
7	5	11	8 x 5	56	$75 00
10	5	12	8 x 5	60	90 00

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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REGULAR HYDRAULIC JACKS

PLAIN

DESCRIPTION, FIG. 5074

This style is designed for use where a good, firm rest can be obtained for the jack and there is sufficient room for the jack under the work.

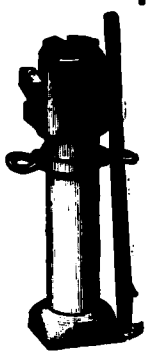


FIG. 5074

BROAD BASE

DESCRIPTION, FIG. 5075

This style is to be used when the jack stands upon the ground or light board and can be placed under the work, or where steadiness is required. They are used largely under locomotives, cars, etc.



FIG. 5075

CLAW

DESCRIPTION, FIG. 5076

This style is to be used when there is not room enough to get the head of the jack under the work, and is the style generally used for moving engines, boilers, machinery, etc.

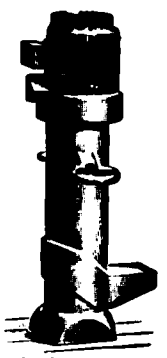


FIG. 5076

PRICES, FIG. 5074

Jack to lift, tons	4	4	7	7	7	7	10	10	10	10	15	15	15	20	20	30	30	40
Raise, inches	3	12	3	12	18	24	12	18	22	24	12	18	24	12	18	9	12	12
Height, "	11	25	11	25	31	37	25	31	35	37	25	32	38½	26	32½	21½	26½	27
Sizes of bottom, inches square	3½	3½	4½	4½	4½	4½	5¼	5¼	5¼	5¼	5¾	5¾	6	6½	6½	9¼	11	11
Weight, pounds	22	41	25	50	72	80	75	92	109	120	100	118	143	121	155	160	218	260
Each	$40 00	$50 00	$46 00	$56 00	$60 00	$64 00	$64 00	$72 00	$78 00	$80 00	$80 00	$92 00	$100 00	$96 00	115 00	$120 00	$140 00	$160 00

PRICES, FIG. 5075

—All steel—

Jack to lift, tons	4	4	7	7	7	7	10	10	10	10	15	15	15	20	20	20	20	30	30	30	30	40	40
Raise, inches	3	12	3	12	18	24	12	18	22	24	12	18	22	12	18	22	24	9	12	18	22	12	18
Total height, inches	11	25	11	25	31	37	25	31	36	38	25½	32	36½	26	32	36	38	21½	26½	34	38	27	34
Diameter of base, ins.	5 sq.	8 rd.	6 sq.	11 rd.	11	11	12	12	12	12	13	13	13	13¼	13¼	13¼	13¼	13½	13½	13½	13½	15	15
Weight, pounds	26	54	32	93	102	114	98	110	115	120	140	161	180	156	182	213	235	180	200	243	304	245	300
Each	$45 00	$56 00	$50 00	$64 00	$67 00	$70 00	$76 00	$88 00	$96 00	$100 00	$100 00	$120 00	$135 00	$120 00	$140 00	$150 00	$160 00	$136 00	$160 00	$200 00	$225 00	$180 00	$220 00

PRICES, FIG. 5076

Jack to lift, tons	4	7	7	7	10	10	15	15	20	20	30
Raise, inches	12	12	18	24	12	18	12	18	12	18	12
Height when down, inches	25	25	31½	38	25½	32	25½	32¾	25½	32½	26¾
Height of claw, inches	4¼	4½	4½	4½	5¾	5¾	6½	6½	6	6	5½
Weight, pounds	58	86	102	120	117	142	153	178	185	222	318
Each	$58 00	$68 00	$70 00	$72 00	$80 00	$90 00	$120 00	$135 00	$160 00	$180 00	$200 00

Special lengths made to order at price of next longer length.

HORIZONTAL CLAW

DESCRIPTION, FIG. 5077

This style has the head enlarged on the front in order to keep the pump submerged when operating horizontally. The jacks with this style of head will push horizontally their entire lifting distance, which makes them especially well adapted for use on shipboard or in mines and moving machinery and boilers.

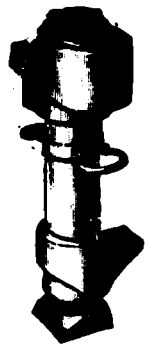


FIG. 5077

HOOK HEAD CLAW

DESCRIPTION, FIG. 5078

This style is used for quarry and logging work. The hooks are made of chilled iron.



FIG. 5078

INDEPENDENT CLAW

DESCRIPTION, FIG. 5079

These jacks are a combination of plain, base and horizontal, plain jacks with a steel claw. These claws are made in such shape that they fit into the cross on top of jack head, and may be placed on either side, as desired.

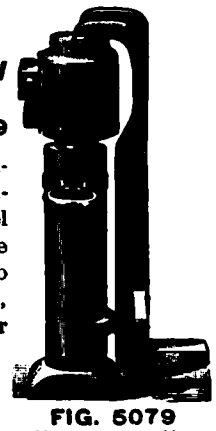


FIG. 5079

PRICES, FIG. 5077

Jack to lift, tons	4	7	7	10	10	15	20	20	30
Raise, inches	12	12	24	12	18	12	12	18	12
Length when closed, inches	24½	25½	38	25½	32	25½	25½	32½	26¾
Weight, pounds	63	90	127	125	150	160	185	220	330
Each	$58 00	$68 00	$72 00	$80 00	$90 00	$120 00	$160 00	$180 00	$200 00

Plain or Base Horizontal Jacks at prices of Plain and Base Jacks, Figs. 5074 and 5075.

PRICES, FIG. 5078

Jack to lift, tons	4	4	7	7	10	10
Raise, inches	12	24	12	24	12	18
Height when down, inches	27	39	27	39	27	34
Height of claw, inches	4¼	4¼	5	5	5¾	5¾
Weight, pounds	60	76	80	115	110	140
Each	$58 00	$62 00	$68 00	$72 00	$80 00	$90 00

Horizontal style heads put on this style if so ordered. Hooked claws also furnished, if so ordered, for use upon logs.

PRICES, FIG. 5079

Sizes, tons	7	7	10	10	15	15	20	20	30
Lift, inches	12	18	12	18	12	18	12	18	12
Plain style, each	$64 00	$70 00	$74 00	$84 00	$92 00	$107 00	$120 00	$145 00	$160 00
Base style, "	72 00	77 00	86 00	100 00	115 00	135 00	135 00	160 00	185 00
Horizontal style, each	68 00	75 00	78 00	88 00	98 00	113 00	128 00	155 00	170 00

LARGE ROUND BASE CLAW

DESCRIPTION, FIG. 5080

This jack has a large bottom under the claw, which produces a long hold on the cylinder.

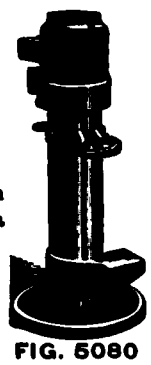


FIG. 5080

PRICES

Jack to Lift, Tons	Raise, Inches.	Total Height, Inches.	Diameters Base, Inches.	Weight, Lbs.	Height of Claw, Inches.	Each.
10	10	25	12	125	4	$100 00
15	10	25½	12¼	175	4	140 00
20	10	26	13	225	4½	185 00

WRECKING HYDRAULIC JACK

DESCRIPTION AND PRICES, FIG. 5081

This jack is designed to fill the special requirements of a complete wrecking tool, and for other outside work. In its construction no detail has been omitted which is necessary to render it capable of handling the work for which it is designed. On account of the form of this jack it is easy to handle, and its being made entirely of steel renders it lighter in weight. It has a horizontal head which enables the jack to work at any angle from vertical to horizontal, and when laid flat upon the side, the ram will push out its entire lifting length. The head also contains enough liquid so that in case of slight leakage the jack will not stop working for lack of filling. To the bottom of the head is attached a cylinder which passes over the outside for the purpose of excluding the sand and dirt from between the ram and cylinder. It is provided with a large square steel bottom which gives it a firm foundation. The independent claw shown in this cut is used in place of the stationary claw; it is easily applied when low lift is required, and removed when the jack is used for other purposes, thus relieving the tool of the additional weight. This jack will be found durable, plain in construction, and reliable in service, and on account of its special design will facilitate the handling of heavy equipment, bridges, etc.

Capacity, Tons.	Raise, Inches.	Height, Inches.	Weight, Lbs.	Each.	—Steel Claw Extra— Weight, Lbs.	Each.
15	18	32	169	$110 00	50	$15 00
20	18	32	200	135 00	65	20 00
30	9	20	190	135 00	50	18 00
30	12	27	250	165 00	63	20 00
30	18	33	300	190 00	80	24 00

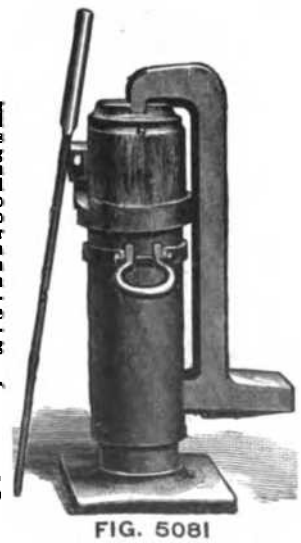


FIG. 5081

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HYDRAULIC JACKS

SEVEN TON SWIVEL CLAW

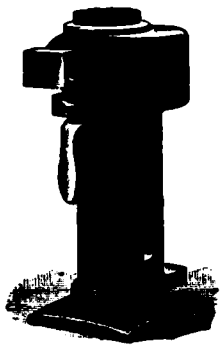


FIG. 5082

DESCRIPTION, FIG. 5082

This new type of jack is a necessity and has been found a very convenient tool in all machine shops building heavy machinery; it being so light in weight—46 pounds—and small in size, it can be carried easily in the tool boxes of machine and engine erection gangs. The toe of the jack is only 1¼ inches from the ground, and can be turned to any angle to the operating lever.

The jack will operate in a horizontal position as well as vertical. It has a convenient handle. It will raise 5 inches with weight on head, or 4 inches on the claw, which for blocking purposes is sufficient for using 3 inch and 4 inch blocking. Total height of jack is only 13 inches.

Weight, 46 pounds. Price, each, $40.00.



FIG. 5085

COAL BREAKER HYDRAULIC JACK

For Pushing Broken Teeth from Coal Breaker.

Jack to push 20 tons; 15 inches high when closed. Price, each, $96.00.

LOW HYDRAULIC JACK

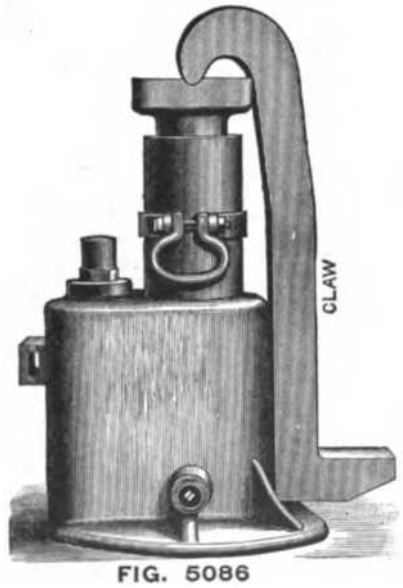


FIG. 5086

PRICES, FIG. 5086

These jacks have been added to our list to fill the call for a jack with a long lift, and still be shorter than is possible with one in which the reservoir is either under or over the ram. These jacks pump out their whole lift horizontally.

Jack to Lift, Tons.	Raise, Inches.	Height, Inches.	Total Weight, Lbs.	Diams. Base, Inches.	Each.	Extra for Claws.
10	12	20	120	10	$80 00	$8 00
15	12	20	180	12	100 00	10 00
15	18	26	200	12	120 00	12 00
15	22	30	215	12	140 00	14 00
20	12	20	190	12	120 00	12 00
20	18	26	235	12	150 00	16 00
20	22	30	270	12	165 00	18 00
30	12	21	245	13	150 00	18 00
30	18	27	265	13	175 00	20 00
30	24	33	290	14	210 00	24 00
45	12	21	293	14	175 00	22 00
45	18	27	320	14	225 00	24 00
60	9	18	290	15	185 00	22 00
60	12	21	360	15	200 00	24 00
80	12	22	400	18	235 00	26 00
100	9	18	550	15	225 00	26 00
100	12	22	670	20	275 00	30 00

HYDRAULIC JOURNAL BOX JACK

LOW STYLE

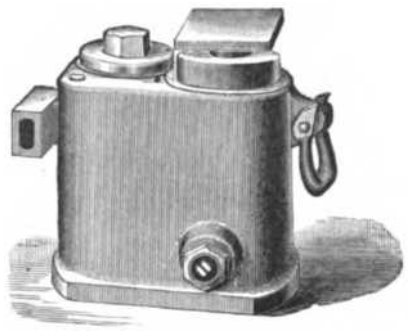


FIG. 5083

BASE STYLE

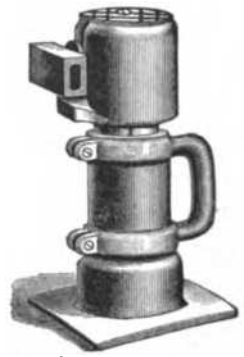


FIG. 5084

DESCRIPTION, FIGS. 5083 AND 5084

In order to call especial attention to the variety of these jacks, which we furnish, we show cuts of two out of three styles. The plain style is similar in every way to the base style, except in area of the bottom. The plain, having a small area, is not adapted to use where the foundation is not firm. The base style has good size steel bottom, and is a very light and convenient tool, if 3 inches of lift will answer. If more than 3 inch lift is desired, or less than 11 inches total height, we would advise the low style, which, with a total height of 11 inches, has about 6 inches of lift.

PRICES, FIGS. 5083 AND 5084

	Capacity, Tons.	Total Height, Inches.	Base, Inches.	Raise, Inches.	Weight, Lbs.	Each.
Plain Style	4	11	3½ x 3½	3	22	$40 00
" "	7	11	3½ x 3½	3	25	46 00
Base "	4	11	5 x 5	3	23	45 00
" "	7	11	6 x 6	3	29	50 00
" "	10	11	6 x 6	3	36	60 00
Low "	7	11	5½ x 8¼	6	68	60 00
" "	10	11	5½ x 8¼	6	80	70 00

DOUBLE OUTSIDE PUMP HYDRAULIC JACK

DESCRIPTION FIG. 5087

These jacks have pumps with pistons ¾ inch and 1¼ inch in diameter, the larger giving about one-third the pressure of the smaller and working three times as fast. They are used where there is a variety of work, or where the jack has to work under varying loads.

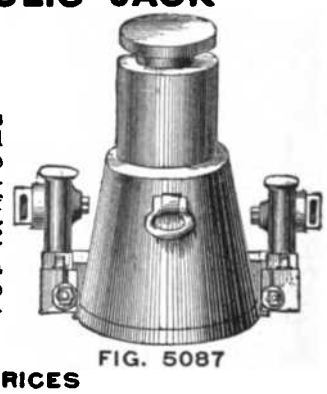


FIG. 5087

PRICES

Jacks to lift	60	tons	12	inches	Each, $320 00
" "	100	"	12	"	" 400 00
" "	125	"	12	"	" 460 00
" "	150	"	12	"	" 525 00

Dimensions are same as vertical type, Fig. 5088.

OUTSIDE PUMP, VERTICAL HYDRAULIC JACK

DESCRIPTION AND PRICES, FIG. 5088

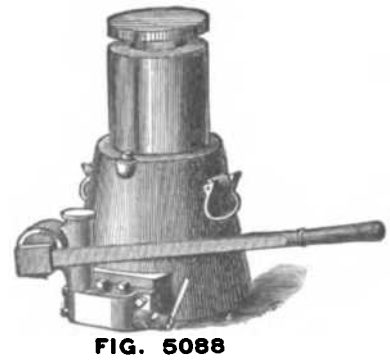


FIG. 5088

These jacks have large valves, which drop on to their seats, instead of small valves dropping away from the seat or lying upon the side. The piston is entirely inclosed, thus preventing all grit or foreign material getting into the pump and cutting it or preventing it working. The cylinder and bottom, on which it rests, are made from one piece of steel, thus relieving the reservoir castings of strain.

There is nothing difficult of access, or which an ordinary mechanic cannot keep in good order.

This style is used for dry docks, wrecking, pressing flanges on patent wagon wheel hubs, hauling oil well pipes, etc.

Jack to Lift, Tons.	Raise. Inches.	Total Height, Inches.	Weight, Lbs.	Each.	Extra Lengths, per Inch.
60	9	17½	250	$200 00	....
60	12	20½	348	220 00	$5 00
100	9	17½	360	275 00	....
100	12	20½	445	300 00	6 00
125	12	20½	600	360 00	7 50
150	12	20½	800	425 00	10 00
200	9	19	1000	450 00	....
200	12	22	1200	500 00	15 00
200	18	28	1500	575 00	....

Prices of heavier jacks given upon application.

If wanted without cap on ram, deduct two inches from total height.

Nine inch raise built to order only.

Base diameters: 60 tons, 12 inches; 100 tons, 13 inches; 125 tons, 14 inches; 150 tons, 15 inches; 200 tons, 18½ inches.

Pump extends 4½ inches at one side.

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HYDRAULIC JACKS

DOUBLE PISTON OUTSIDE PUMP VERTICAL HYDRAULIC JACK

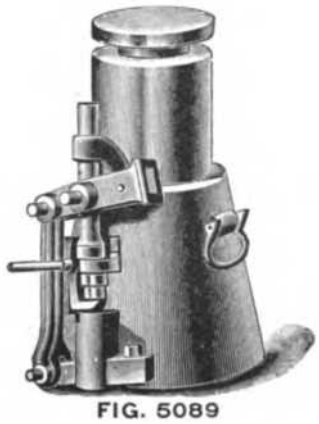


FIG. 5089

In this jack the small piston works inside of a larger one, and a latching clutch, operating on the larger one, throws it in or out of action. The large piston will exert a pressure one third that of the smaller, and has a movement three times faster. As the pulling of oil well pipe is a prominent field for their use, we would advise the use of longer lengths than 12 inches, the length most commonly used for that purpose.

PRICES, FIG. 5089

Jack to Lift, Tons.	Raise, Inches.	Total Height, Inches.	Weight, Lbs.	Diameters of Base, Inches.	Each.
60	12	20½	380	12	$225 00
60	18	26½	430	13	260 00
100	12	20½	480	13	300 00
100	18	26½	580	14	340 00
125	12	20½	600	14	360 00
125	18	26½	700	15	400 00

OUTSIDE PUMP HORIZONTAL HYDRAULIC JACK

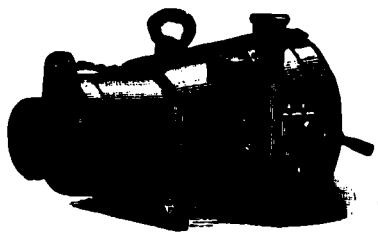


FIG. 5091

These jacks are used in pushing crank pins in and out, pushing bridges and similar heavy work. The lever is worked perpendicularly instead of horizontally, thus adding 50 per cent. to their power and ease of operation.

	Tons.	Inches.	Prices.	Prices, Extra Length, per Inch.
Jack to push	60	12	$220 00	$5 00
" "	100	12	300 00	6 00
" "	125	12	360 00	7 50
" "	150	12	425 00	10 00

INDEPENDENT PUMP HYDRAULIC JACK



FIG. 5093

There are many situations where it is inconvenient to work the lever of a jack, because of lack of room or insufficient footing. There are other places where only a short space is available to place the jack, as in forcing off propeller hubs, etc. These conditions are met by this jack. The pump is a special tool, connected by a flexible metallic pipe to a cylinder, which is regularly made 4 in. motion, but can be made either shorter or longer.

PRICES, FIG. 5093

Power, Tons.	Motion, Inches.	Height Over All, Inches.	Base, Inches Square	Complete.
100	4	9	9	$150 00
125	4	10	10	170 00
150	4	11	11	200 00
200	4	11	12	255 00
250	4	12	13	275 00
350	4	13	14	350 00
500	4	13	14	425 00

Gauges, with safety attachments, $25.00 extra.

OUTSIDE PUMP REVERSED HYDRAULIC JACK

These jacks are similar in all respects to the vertical jacks of same type, except that the position of the pump upon the cistern is changed to give sufficient room for it below the large end of the cylinder, and lugs are put upon the head of the ram so that attachments may be made for counterbalancing the ram.

They are used in press frames for use on work which was not convenient to put upon movable platens.



FIG. 5090

Power, Tons.	Lift, Inches.	Height, Inches.	Diams. of Base, Inches.	Weight, Lbs.	Prices.
60	12	22	12	300	$225 00
100	12	22	13	400	300 00
125	12	22	14	475	360 00
150	12	23	15	600	425 00
200	12	24	18½	900	500 00
200	18	30	18½	1000	575 00

HORIZONTAL HYDRAULIC JACK

DOUBLE PISTON PUMP AND RACK AND PINION RETURN ACTION TO RAM

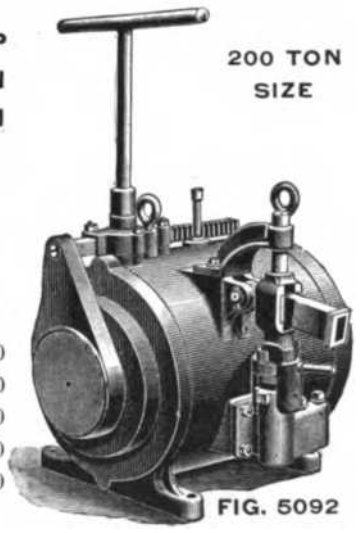


FIG. 5092

PRICES, FIG. 5092

Power, Tons.	Movement, Inches.	Lengths, Inches.	Diams. of Base, Inches.	Weight, Lbs.	Each.
60	12	22	12	315	$250 00
100	12	22	13	415	325 00
125	12	23	14	485	385 00
150	12	23	15	550	450 00
200	12	23	15	650	525 00

TOOLS FOR REPAIRING HYDRAULIC JACKS

HEAD WRENCH

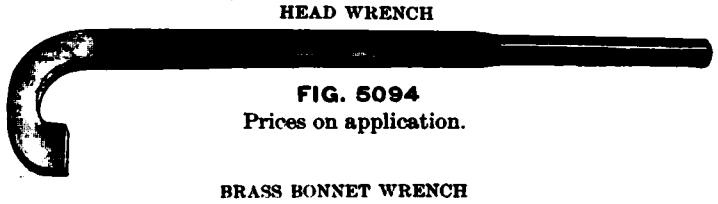


FIG. 5094
Prices on application.

SEAT CUTTER



FIG. 5095
Each.....75c.

BRASS BONNET WRENCH



FIG. 5096
Each.....75c.

SEAT SET

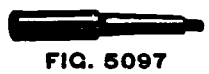


FIG. 5097
Each.....75c.

SOCKET GLAND WRENCH

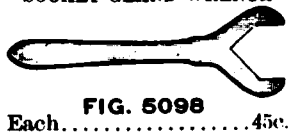


FIG. 5098
Each.....45c.

RAM BONNET WRENCH



FIG. 5099
Each.....$2 75

RAM PACKING RING WRENCH

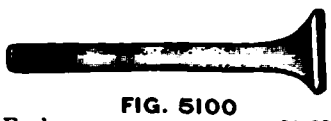


FIG. 5100
Each.....$1 00

PISTON PACKING RING WRENCH



FIG. 5101
Each.....75c.

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HYDRAULIC JACKS

TANGYE'S HYDRAULIC LIFTING JACK

STYLE A, 10 TONS



FIG. 5102

DESCRIPTION, FIG. 5102

With lift either from the foot or top and runs out in any position, perpendicular or horizontal. With wrought iron ram and base in one piece. Cylinder of special hydraulic metal. Gun metal pump and plunger. The lifting capacity is specified for the foot lift, but we allow about 20 per cent. more for a direct lift on the top of same jack. The lever is for raising the jack and the key in the side is for lowering. The pump can be taken out at the top by use of wrench we send with each jack.

DESCRIPTION, FIG. 5103

With wrought iron cylinder, cistern so arranged that the jack can be worked in any position. Gun metal pump and plunger, wrought iron lever. Each jack is tested by machinery to 25 per cent. beyond the weights given in the table.

PRICES

To Lift, Tons.	Each.	Height of Jack,	Height of Claw,	Base, Length and Width, Inches.	Run Out, Inches.	Weight, Pounds.
		Inches.	Inches.			
3	$44 00	19	2	5 x 4	6	34
4	47 00	23	3	5½ x 4¼	10	57
6	50 00	24	3	6 x 4¼	10	68
8	57 00	26	3½	6 x 4½	11	74
10	65 00	27	3½	6¼ x 4½	12	88
15	80 00	28	4	7 x 5½	12	104
20	95 00	28	4	7¾ x 6	12	127
30	105 00	29	4½	8½ x 6½	12	170
40	125 00	29	5¾	9 x 8	11	218
50	150 00	29	5¾	9½ x 7½	11	257
60	175 00	29	6¼	10 x 8	10	332

SHORT LIFT JACK

STYLE B

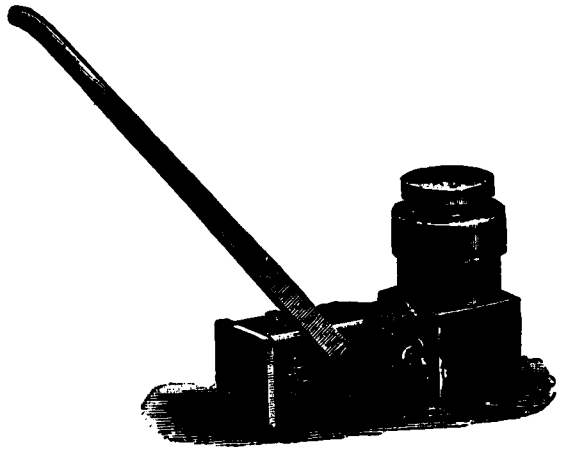


FIG 5103

PRICES

To Lift, Tons.	Each.	Height When Down, Inches.	Run Out, Inches.	Base, Length and Width Over All, Inches.	Approximate Weight, Pounds.
10	$87 00	11	6	15 x 7	94
20	100 00	11	6	16 x 8	102
35	120 00	11	6	17 x 9	136
50	145 00	12	6	19 x 9	195
70	220 00	12	6	21 x 15	267
100	280 00	13	6	23 x 16	387
150	330 00	13	6	29 x 18	527
200	400 00	13	6	33 x 21	622

If with safety valve attached, add $21.00 extra.

TANGYE'S HYDRAULIC LIFTING AND CARRYING JACKS

STYLE No. 2



FIG. 5105

STYLE No. 1



FIG. 5106

PRICES, FIG. 5106

Capacity, Tons.	Each.	Height When Down, Inches.	Runs Out, Inches.	Will Traverse, Inches.	Length Over All, Inches.	Approximate Weight, Pounds.
12	$82 00	20	12	12	25	136
15	92 00	20	12	12	26	157
20	102 00	21	12	12	28	196
25	112 00	21	12	12	28	210

DUDGEON HYDRAULIC TRAVERSE JACK

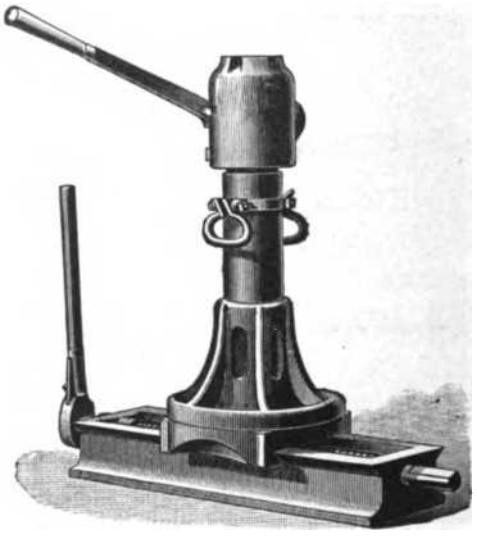


FIG. 5107

PRICES, FIG. 5107

Capacity, Tons.	Run Out, Inches.	Height, Inches.	Weight, Pounds.	Each.
10	12	30	250	$150 00
15	12	30	275	185 00
20	12	31	310	225 00
30	12	32	425	285 00

PRICES, FIG. 5105

Capacity, Tons.	Each.	Height of Top from Floor, Inches.	Height of Foot from Floor, Inches.	Will Run Out, Inches.	Will Traverse, Inches.	Length Over All, Inches.	Approximate Weight, Pounds.
10	$80 00	30	6	12	10	21	132
15	90 00	31	6½	12	12	26	165
20	102 00	32	7	12	12	28	214
30	146 00	34	9	12	18	33	309
40	165 00	34	9½	11	18	33	346
50	230 00	34	11	11	18	38	490
60	265 00	34	11	10	18	38	564

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HYDRAULIC TRAVERSING JACK

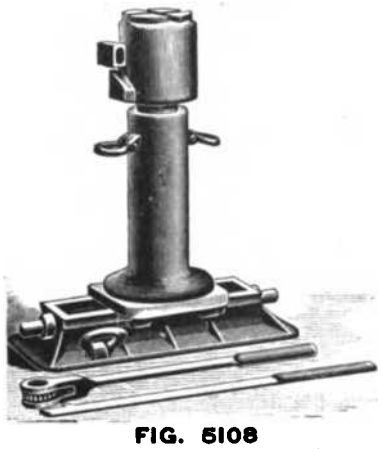


FIG. 5108

Plain Traverse.

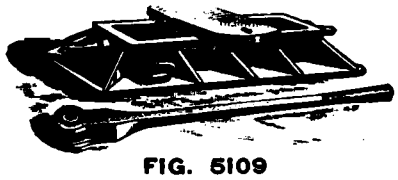


FIG. 5109

This tool has a gibbed carriage, to which is attached a long, well made nut. The screw has a collar at each end and a well cut square thread. The carriage is 10 x 12 inches, and in regular size, has 16 inches motion, with a height of 5 inches.

PRICES, FIGS. 5108 AND 5109

Without jack, 15 inch traversing motion	$40 00
With 10 ton hydraulic jack	116 00
" 15 " " "	140 00
" 20 " " "	160 00
" 30 " " "	176 00

PULLING RING REST



FIG. 5112

When using a pulling ring with a pair of large hydraulic jacks, having flat top rams, unless great care is taken, the two jacks will not be raised at the same speed, the effect being to put the strain on the inside of one jack and outside of the other, both injuring the jacks by breaking of rams and by decreasing the leverage, making the slow jack work harder than the other. These annoyances are avoided by the use of these pulling ring rests, which sit over the center of the ram and allow the ring to rock a little, if necessary. Jacks ordered for oil well pipe work will be drilled for these without charge. Per pair, $5.00.

OIL WELL PIPE PULLING RING

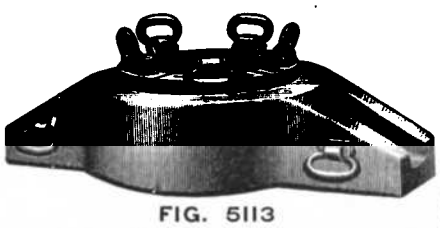


FIG. 5113

We show in this cut an improved pulling ring. The body of ring is of Bessemer steel, well proportioned for the strains to which it is subjected, and two large eyebolts are placed in a convenient place for handling. The wedges are of solid tool steel with well cut teeth and hardened, and in each section is placed a small eyebolt through which a rope can be passed, thereby preventing them from dropping down the well.

For 6½ inch pipe	$130	For 10 inch pipe	$200
" 8 "	140	" 12 "	275

HEAVY HORIZONTAL HYDRAULIC PULLING JACK

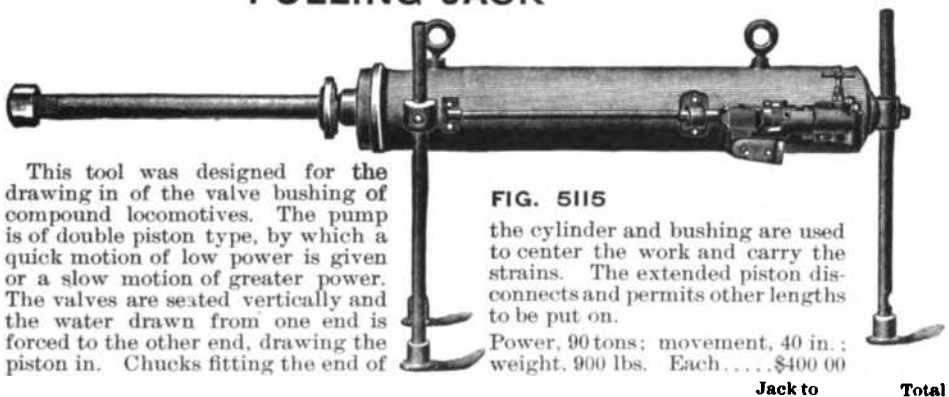


FIG. 5115

This tool was designed for the drawing in of the valve bushing of compound locomotives. The pump is of double piston type, by which a quick motion of low power is given or a slow motion of greater power. The valves are seated vertically and the water drawn from one end is forced to the other end, drawing the piston in. Chucks fitting the end of the cylinder and bushing are used to center the work and carry the strains. The extended piston disconnects and permits other lengths to be put on.

Power, 90 tons; movement, 40 in.; weight, 900 lbs. Each.....$400 00

PRICES, FIG. 5116

It will pull in either a vertical or horizontal direction and can be operated by one man. The cylinder is of gun metal, the rod of manganese bronze, the eyes of wrought iron, cistern of special hydraulic metal, pump of gun metal, with wrought iron plunger. Made to run out either 2 feet, 3 feet or 4 feet.

Capacity, tons	4	6	10	15
Prices 2 foot run, each	$140 00	$155 00	$180 00	$370 00
Length closed, inches	48	51	53	54
Weight, lbs.	62	79	104	187
Prices 3 foot run, each	168 00	185 00	220 00	455 00
Weight, lbs.	77	98	128	230
Prices 4 foot run, each	200 00	225 00	260 00	540 00
Weight, lbs.	92	117	152	272

HYDRAULIC LIFTING AND TRAVERSING JACKS

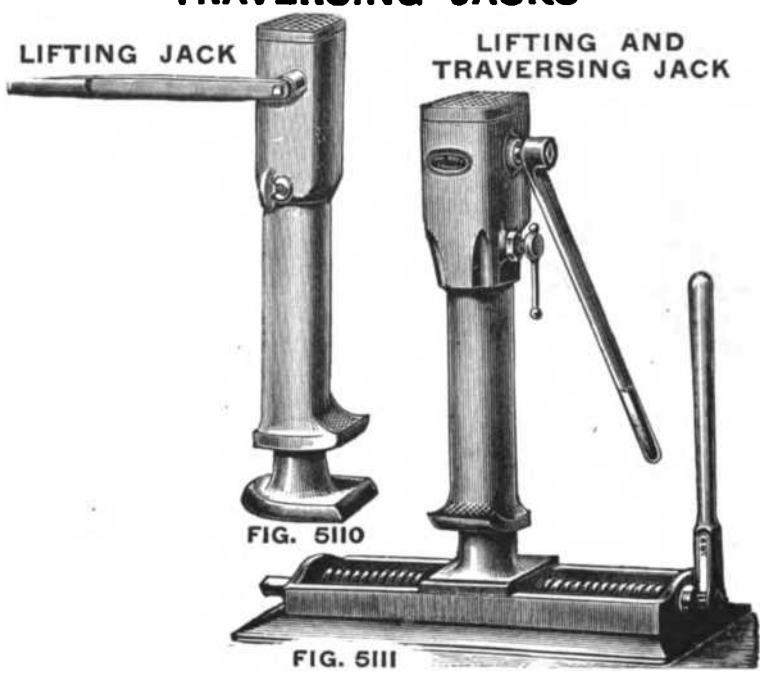


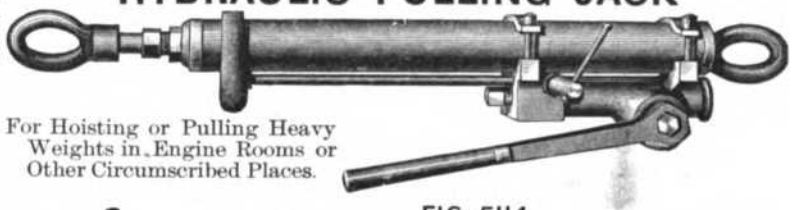
FIG. 5110

FIG. 5111

PRICES, FIGS. 5110 AND 5111

Tested to, Tons.	Height When Down, Inches.	Run Out, Inches.	Weight, Lbs.	Prices. Lifting, Fig. 5110.	Prices. Lifting and Traversing, Fig. 5111.
3	19	6	34	$45 00	$79 00
4	23	10	57	56 00	86 00
6	24	10	68	60 00	94 00
8	26	11	76	67 00	105 00
10	27	12	86	75 00	112 00
12	27	12	96	83 00	120 00
15	28	12	104	90 00	135 00
20	28	12	132	97 00	150 00
30	29	12	174	113 00	202 00
40	29	11	206	135 00	233 00
50	29	11	264	157 00	300 00
60	29	10	364	188 00	337 00

HYDRAULIC PULLING JACK



For Hoisting or Pulling Heavy Weights in Engine Rooms or Other Circumscribed Places.

FIG. 5114

This jack has an improved force pump on the outside, worked by a lever, which, drawing the filling from the upper end, forces the fluid to the opposite side of a piston head, to the rod of which one of the rings at the end is attached. By this operation the jack is drawn together, drawing the body to be moved. It will work vertically or horizontally. Hooks instead of rings will be furnished if desired.

Directions.—Fill the jack through the screw in the side of the cylinder when piston is way in with alcohol 2 parts and water 3 parts. To pull or lift anything, first extend the jack as far as it will go. This is done by giving the socket wrench in the force pump 2 or 3 turns backward, and pulling the piston out; then turn in the socket wrench until it is tight.

PRICES, FIG. 5114

Jack to Pull, Tons.	In.	Total Lengths, In.	Weight, Lbs.	Each.	Jack to Pull, Tons.	In.	Total Lengths, In.	Weight, Lbs.	Each.
7	12	30	65	$150 00	15	24	44	150	$275 00
7	24	42	95	165 00	20	12	32	140	300 00
10	12	30	85	200 00	20	24	44	200	325 00
10	24	42	115	220 00	30	12	34	180	360 00
15	12	30	100	250 00	30	24	46	300	400 00

HYDRAULIC PULLING JACK

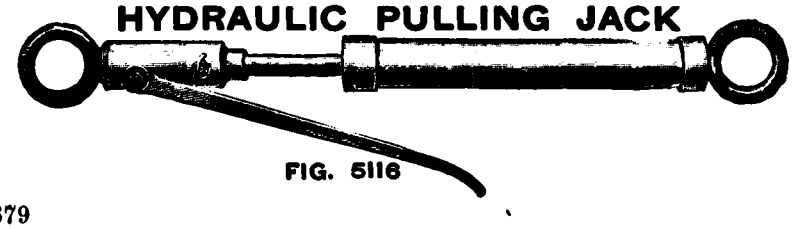


FIG. 5116

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PULLING JACK



DESCRIPTION, FIG. 5117

It is useful in manufactories and warehouses. Its attachment, represented in the cut, to an overhead tramway, shows its adaptability as a stationary or movable hoist. These jacks are furnished, unless otherwise ordered, with 2 feet run of bar; but any length will be made to order; as stated in list of prices.

PRICES, FIG. 5119

Iron Plated Notches. Nos.	Each.	Plain Notches Each.
0	.....	$2 00
1	$2 75	2 25
2	3 25	2 75
3	3 75	3 25
4	4 50	.....

FIG. 5117

Nos.	Capacity, Tons.	Run of Bar, Feet.	Each.	Extra Run, per Inch.
32	4	2	$20 00	$0 10
33	8	2	25 00	15
34	15	2	30 00	20

LITTLE GIANT WAGON JACK



FIG. 5119

EXCELSIOR WAGON JACK

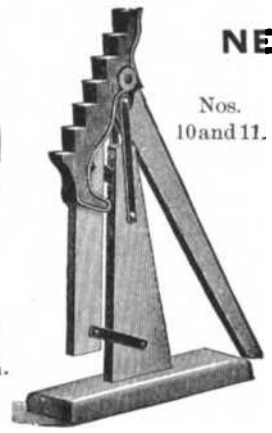


FIG. 5120

PRICES, FIG. 5120

No.	1	Weight,	12½	lbs.	Lifting capacity,	1½	tons,	per dozen	...	$24	00
"	2	"	19	"	"	3	"	"	...	30	00
"	3	"	21	"	"	4	"	"	...	36	00

NEW STYLE WAGON JACKS



Nos. 10 and 11.

FIG. 5121

PRICES

Nos.	Each.
10	$1 35
11	2 00
12, extra braced	2 50

No. 12.



FIG. 5122

SAMSON WAGON JACK

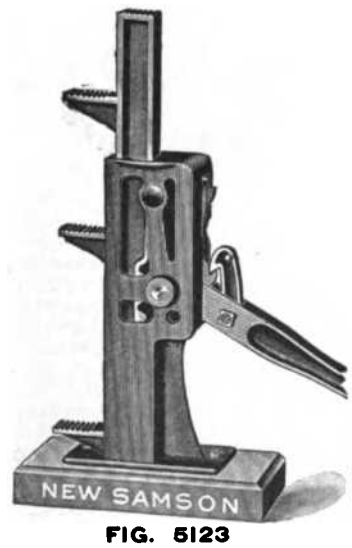


FIG. 5123

OLIVER WAGON JACK



FIG. 5124

PRICES, FIG. 5123

Nos.	Description.	Weight, Pounds.	Each.
4	Will raise vehicles weighing 3 tons	16	$4 00
4	With bracket covered with leather	16	5 00
5	Will raise vehicles weighing 6 tons	25	5 00
6	Will raise vehicles weighing 8 tons	32	7 00
7	Capacity same as No. 6 has 2 brackets	32	7 00

PRICES, FIG. 5124

Nos.	Description.	Weight, Pounds.	Each.
1	Will raise vehicles weighing 1 ton	7	$1 25
1	With bracket covered with leather	7	1 75
2	Will raise vehicles weighing 2 tons	12	2 00
3	Will raise vehicles weighing 3 tons	18	3 00

STEEL CARRIAGE JACK

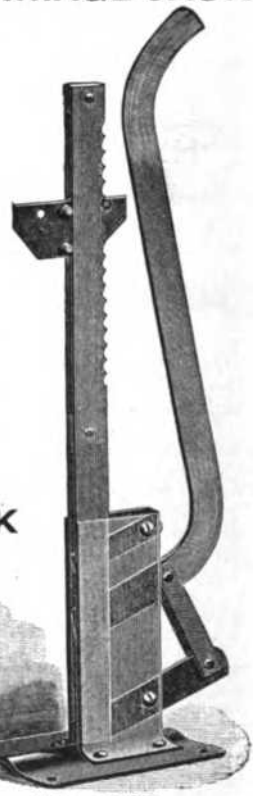


FIG. 5127

WAGON JACK SCREW



FIG. 5125

PRICES, FIG. 5125

These jacks are made with wrought iron screws and cast iron stands.

Diams. Screw, Inches.	Height Stands, Inches.	Capacity, Tons.	Each.
1½	12	12	$5 25
1½	14	12	6 00
1½	16	12	6 75
1¾	14	16	6 75
1¾	16	16	7 50

PRICES, FIG. 5126

Nos.		Lifting Rod, Inches.	Weight, Pounds.	Each.
1	For threshers, portable engines, etc.	1¼	35	$5 00
2	" heavy trucks, etc.	1	20	3 00
3	Regular size, for farm wagons, etc.	¾	10	2 00
4	For carriages and light wagons	½	7	1 50

IMPROVED WAGON JACK



FIG. 5126

Nos.	To Lift, Pounds.	Japanned, per Dozen.	Galvanized, per Dozen.
0	500	$11 50	$16 50
1	900	15 00	22 50
2	1,800	22 50	34 00
3	4,000	50 00	70 00

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WROUGHT IRON TURNTABLE

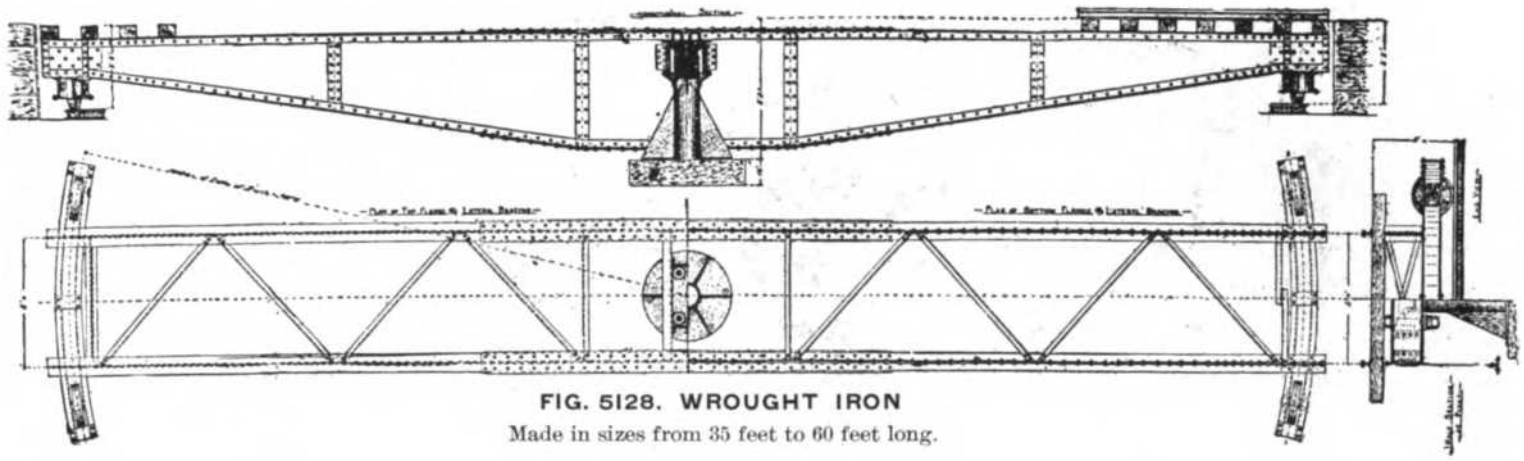


FIG. 5128. WROUGHT IRON

Made in sizes from 35 feet to 60 feet long.

UNDER TRUSS TURNTABLE

Under Truss Turntable, made any lengths. Prices made complete, or for the iron work only.

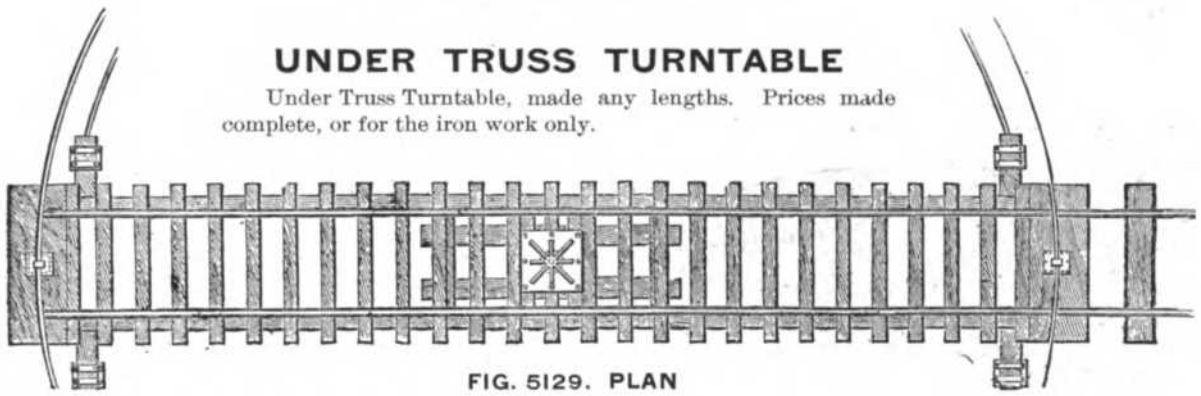


FIG. 5129. PLAN

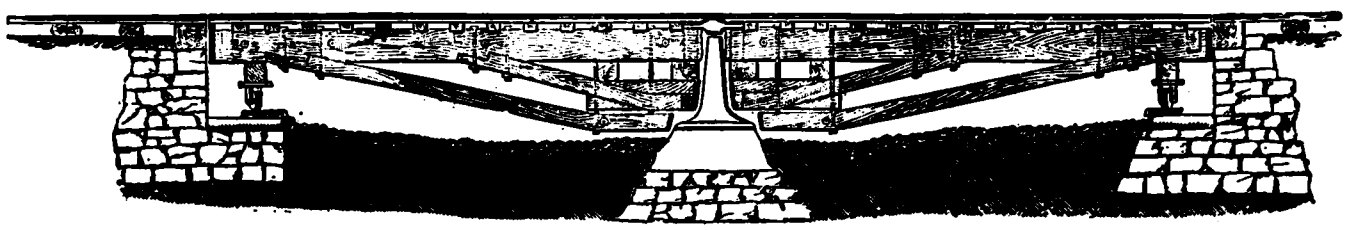


FIG. 5129. SIDE VIEW

GALLOWS FRAME TURNTABLE

Made in any lengths.
Prices made complete, or for the iron work only.

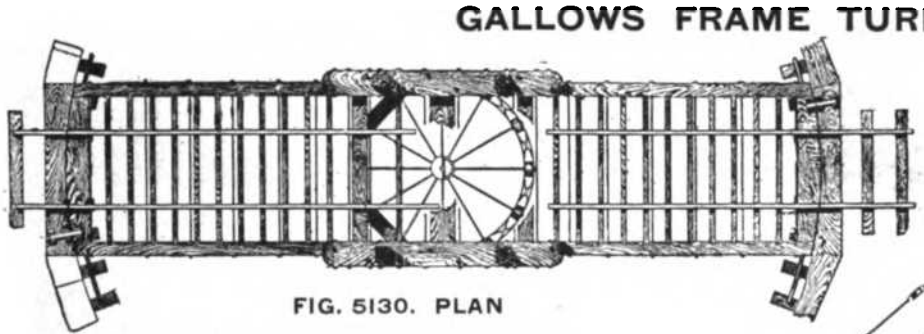


FIG. 5130. PLAN

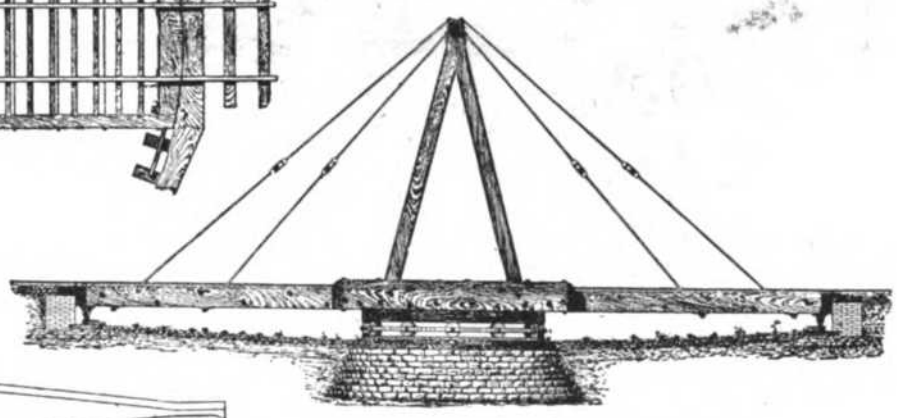


FIG. 5130. SIDE VIEW

HORSE CAR TURNTABLE

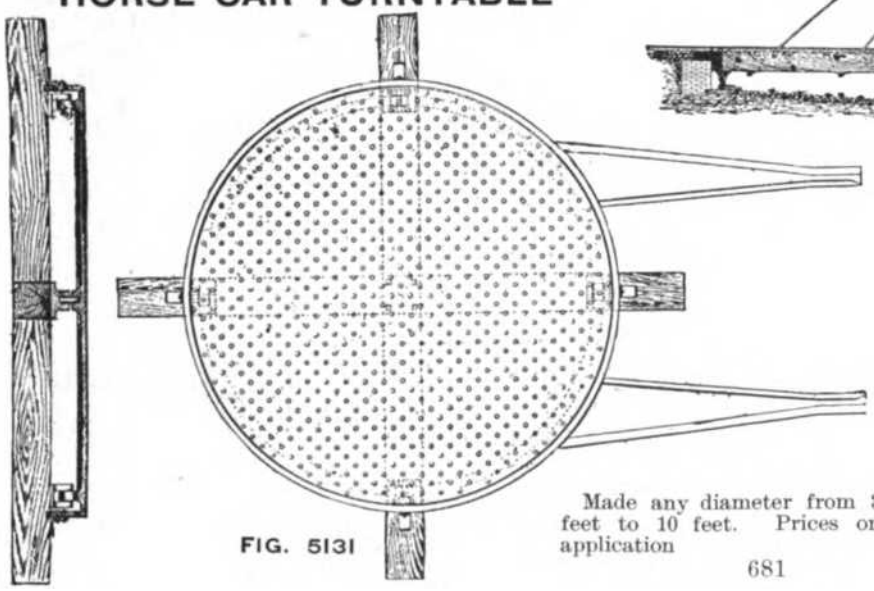


FIG. 5131

Made any diameter from 3 feet to 10 feet. Prices on application

PRICES FOR ALL TURNTABLES ARE MADE ON APPLICATION

In ordering, give gauge of tracks, weight and length of engine and tender on rails; also, for Fig. 5130, height of stack and width between the standards.

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TURNTABLE, CHECKERED STEEL TOP

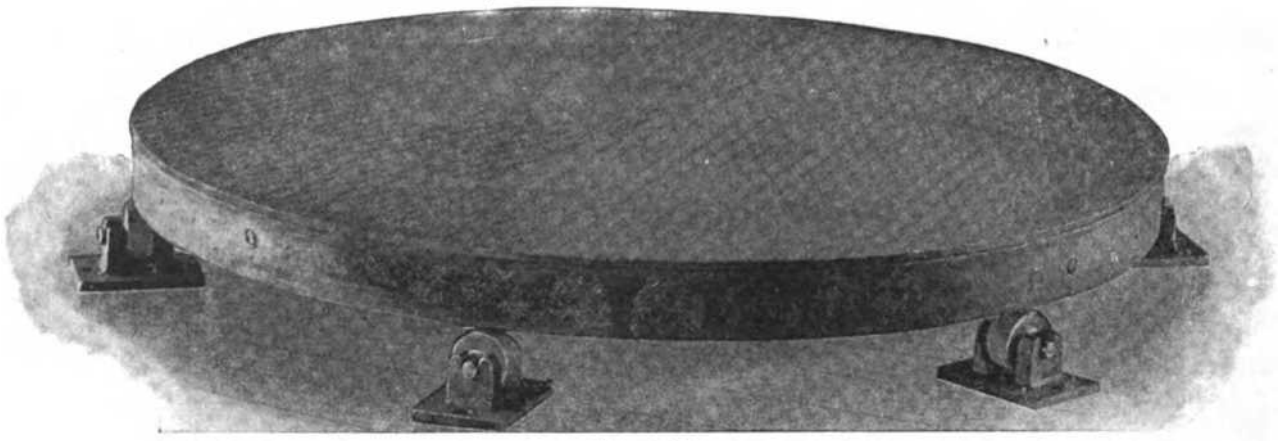


FIG. 5132

Diameter, 5 feet; weight, 550 pounds, complete. This turntable is suitable for all purposes; it is ready to receive cars at any position, the flange of wheels setting into recesses. Made in three sizes: 36 inches, 48 inches, 60 inches diameter.

Prices on application.

WROUGHT TURNTABLE

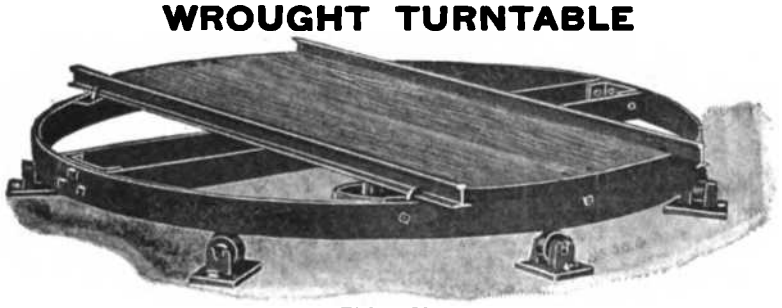


FIG. 5133

A wrought turntable of unusual strength, made with flat steel top or with crossing rails, at special price, if ordered. Diameter of ring, 5 feet; gauge, in-to-in of rails, 24 inches; weight, 225 pounds.

Prices on application.

TURNTABLE

For Contractors, Brick Yards, Coal Work, etc.

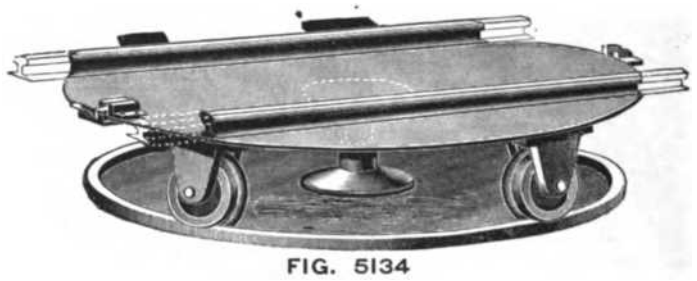


FIG. 5134

Made any gauge and diameter to suit cars. Cut shows a 30 inch gauge, 5 feet diameter; is self-contained. Price.... ..... **$67 00**

SELF-CONTAINED TURNTABLE

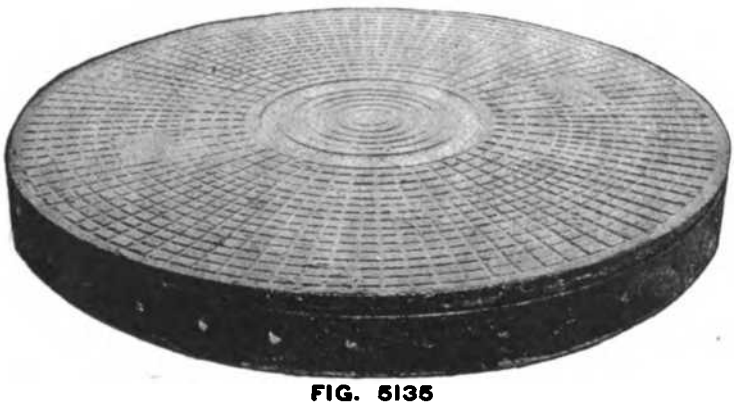


FIG. 5135

TABLE OF SIZES, ETC.

Diameters of Turntable.	Gauge of Track that May Be Used.	Largest Wheel Bases of Trucks or Cars that May Be Used with Corresponding Gauges.
45 inches	18 inches to 30 inches	3 feet to 2 feet
60 inches	18 inches to 36 inches	4 feet to 3 feet
72 inches	24 inches to 36 inches	5 feet to 4 feet 6 inches
96 inches	36 inches to 4 feet 8½ inches	6 feet 6 inches to 5 feet 3 inches

Prices on application.

TURNTABLE, SHOWING COVER REMOVED



FIG. 5135

The cut, Fig. 5135, represents an efficient and easy running turntable. There is no tipping, no getting out of line, no trouble keeping in order, no trouble to put in place, no journal friction.

It is solidly constructed and self-contained, and it is very quickly set in place.

There is no center bearing. The entire load is on chilled rollers, and these are conical and can not slide or grind against each other, being held rigidly apart by a light spider. There is, therefore, only rolling friction. The result is an exceedingly easy turning table. No oil is required, and the dirt is easily kept out.

The track rail may be cast on top to suit any gauge, if specially ordered. Flat top, as shown above, is standard.

See table of sizes.

EIGHT FOOT TURNTABLE, SPECIAL

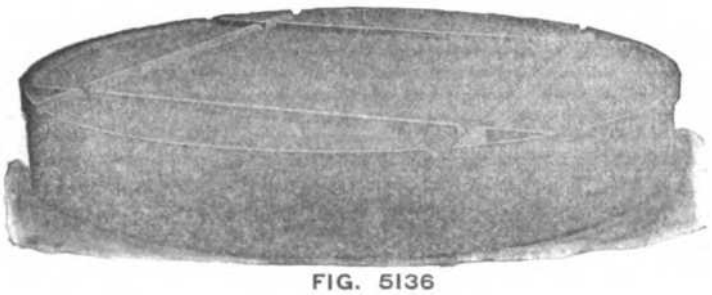


FIG. 5136

DESCRIPTION, FIG. 5136

Self-contained, suitable for track gauge of 36 inches to 4 feet 8½ inches; corresponding wheel base, 6 feet 6 inches for 36 inch gauge; 5 feet 3 inches for 4 feet 8½ inch gauge. Tracks on top made of gauge to suit.

Prices on application.

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CAST IRON TURNTABLE

PLAN

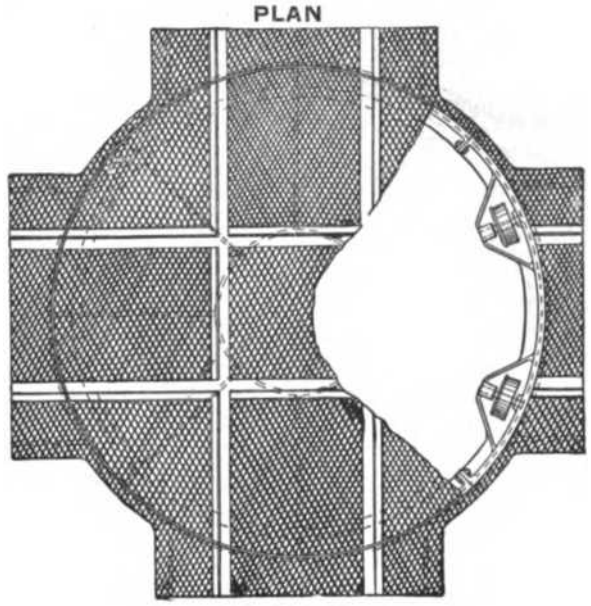


FIG. 5137

SIDE VIEW

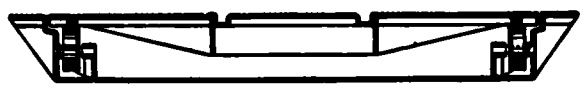


FIG. 5137

In these turntables the rollers are frustums of cones, the axes of the cones being horizontal lines.

A wearing strip is cast to the lower surface of the table.

The tracks are cast with the table, and the surfaces are corrugated with diamond shaped projections, to provide a good walking floor.

PRICES ON APPLICATION

WOODEN TURNTABLE

PLAN

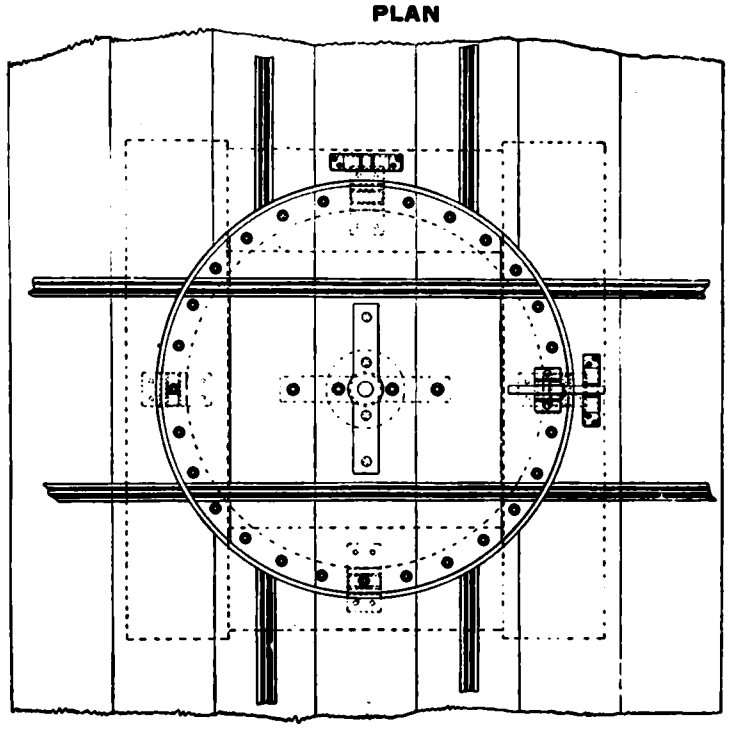


FIG. 5138

SIDE VIEW

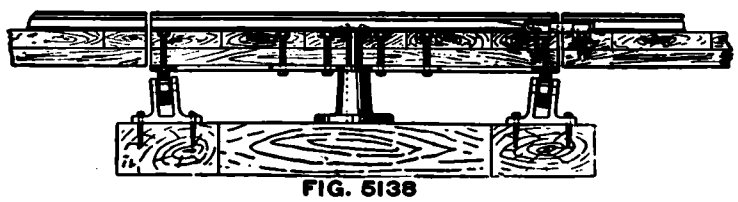


FIG. 5138

The essential feature of a turntable is its easy turning, and to secure it the rollers are made frustums of cones. The line of contact of the frustum with the turntable is a horizontal line. The platforms of these turntables consist of a double row of heavy planking, reinforced on the bottom circumference with a steel band or wearing plate. A suitable center bearing and centering plates are arranged as shown. The turntable is held in proper position by an automatic lock, which is released by a heel piece from the jaw shaped stops. Prices on application.

INDUSTRIAL RAILWAYS

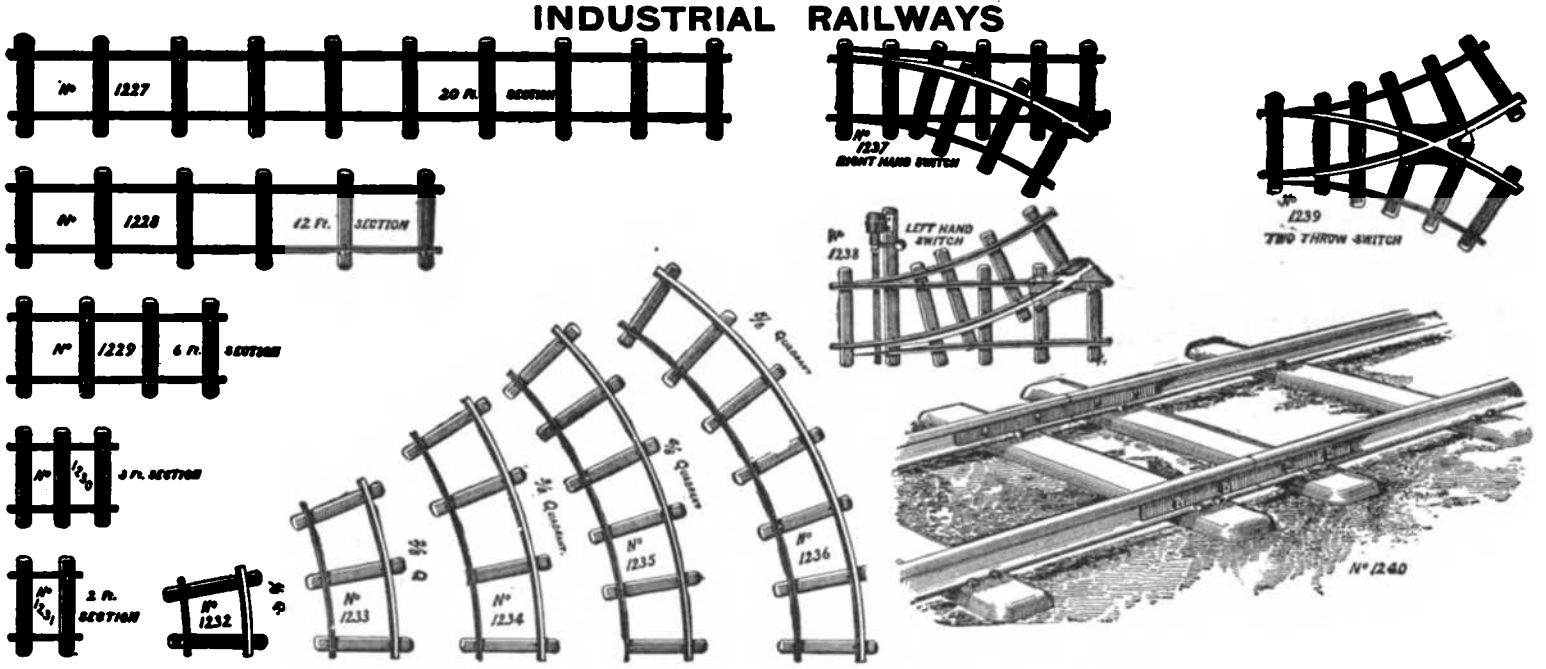


FIG. 5139

90° Crossing. 67½° Crossing. 45° Crossing. Turntable.

We can furnish for immediate shipment, per cut above, straight and curve track switches and crossings, made up with steel cross ties firmly riveted to the rails; also the same shapes in cast plate. They are ready to lay immediately on arrival on the ground. Prices and further information on application.

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RAILROAD SWITCHES

PLAIN Y CURVE

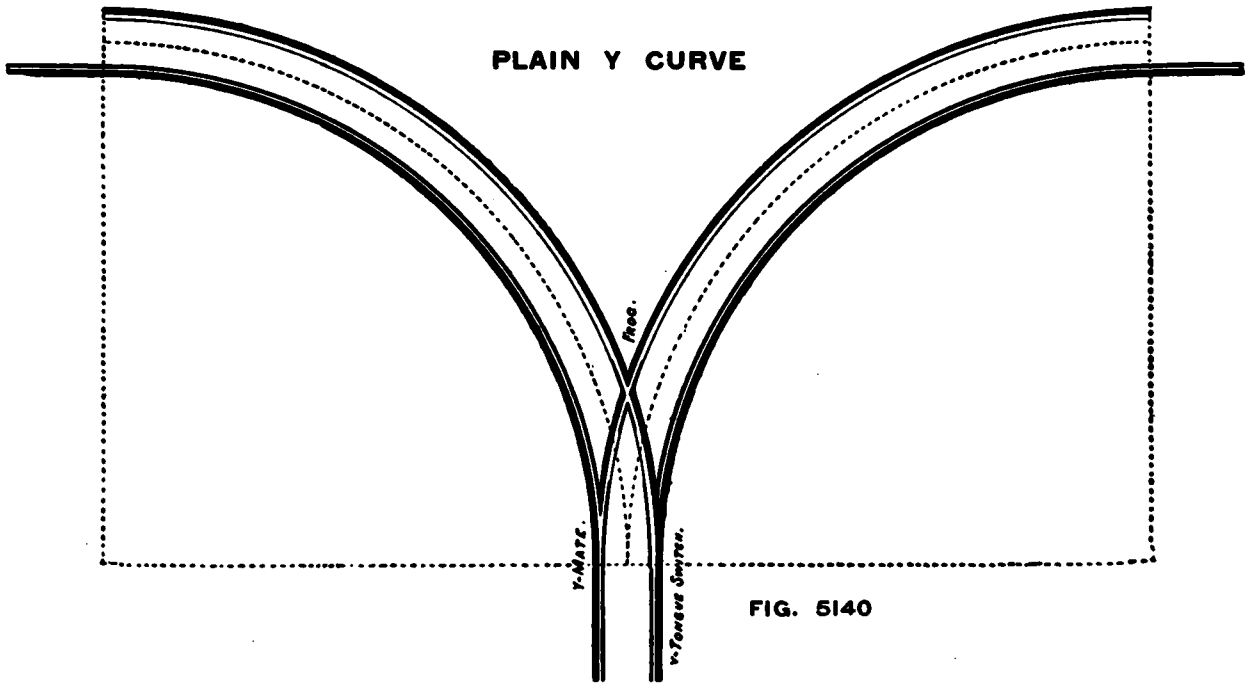


FIG. 5140

THREE PART Y CURVE

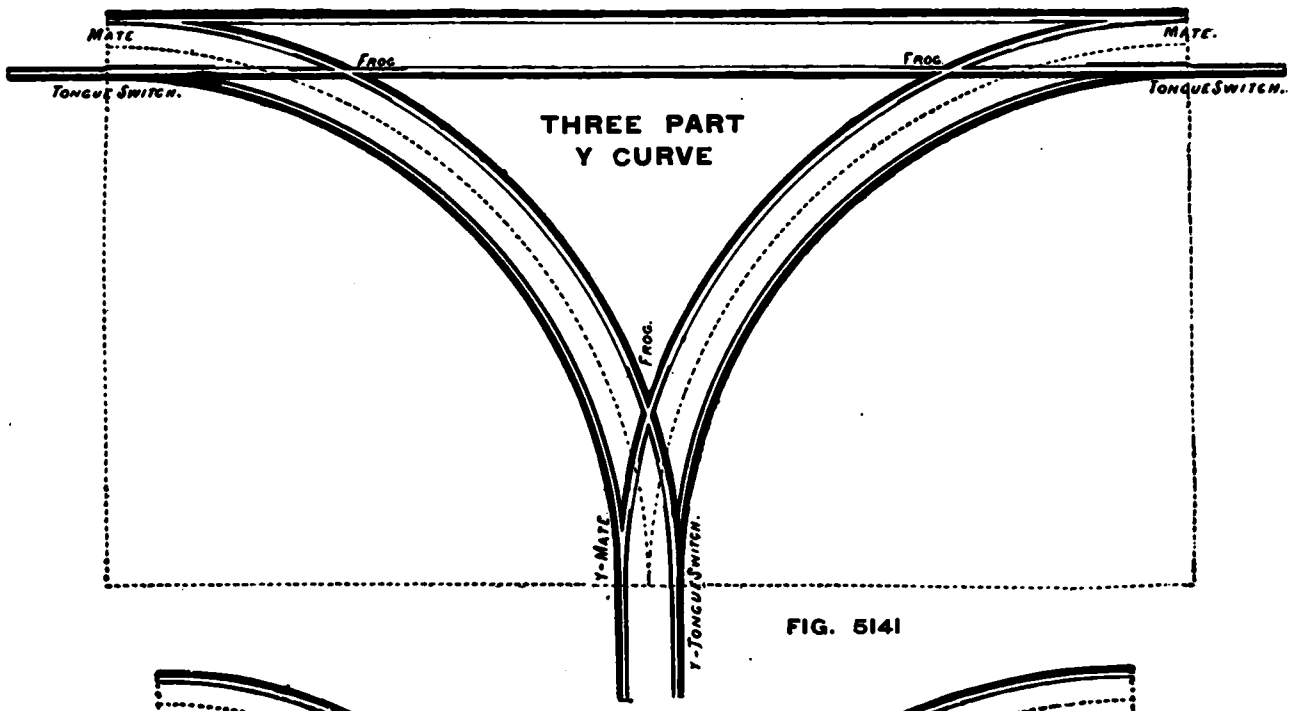


FIG. 5141

THROUGH Y CURVE

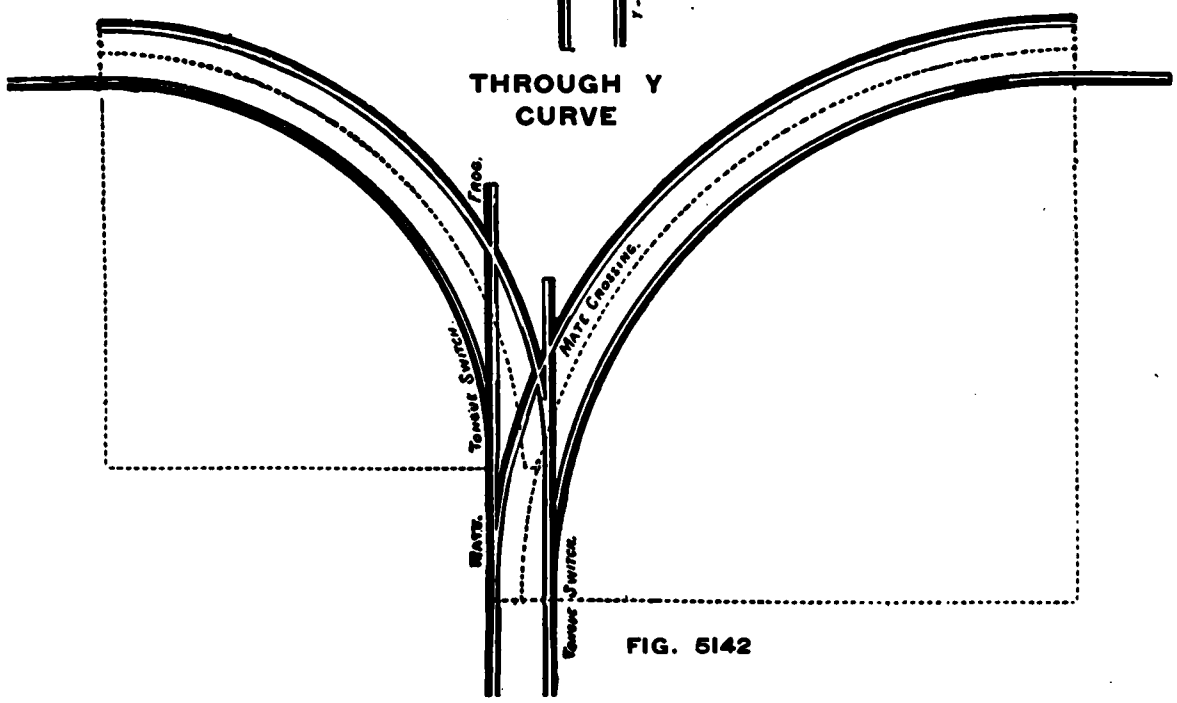


FIG. 5142

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RAILROAD SWITCHES

DOUBLE TRACK LEFT HAND BRANCH OFF CURVE

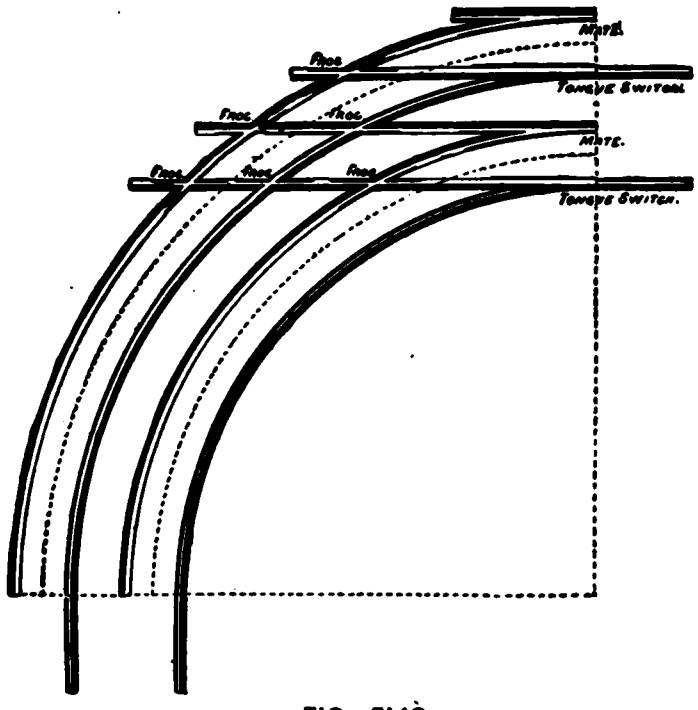


FIG. 5143

DOUBLE TRACK RIGHT HAND BRANCH OFF CURVE

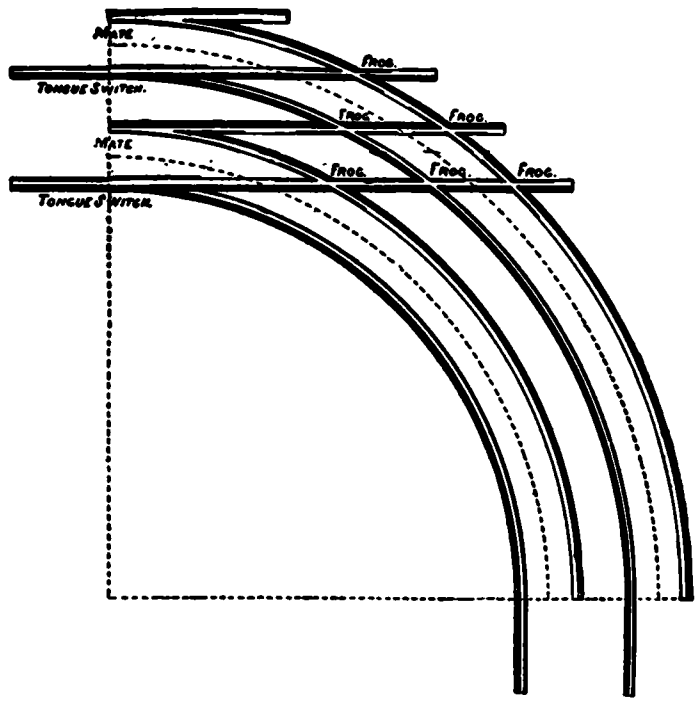


FIG. 5144

DESCRIPTION, FIGS. 5140 TO 5144

We are prepared to furnish railroad switches, as shown in Figs. 5140 to 5144, on receipt of sketch showing just what is wanted and giving angle and whether right or left hand. In writing for prices please give dimensions of rails, as specified in Fig. 5145. We can also furnish switches and curves of any description to suit special requirements. Prices on application.

STEEL RAILS

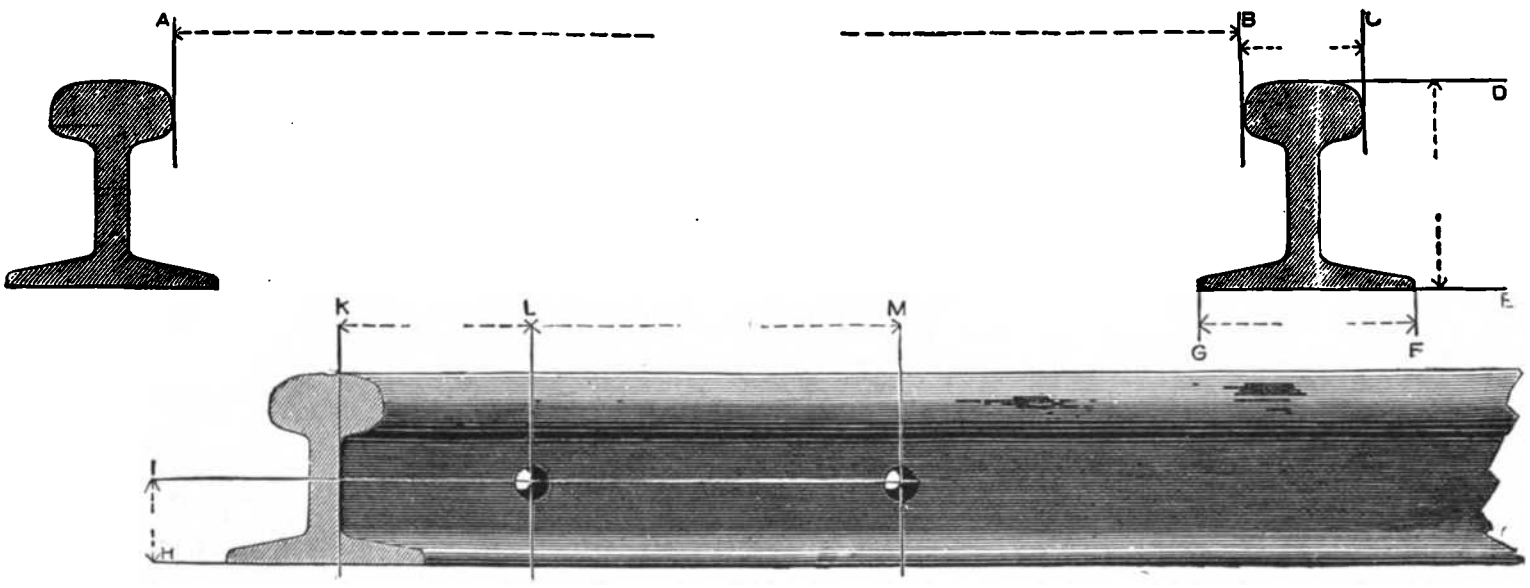


FIG. 5145

A-B—Gauge of track.
B-C—Head of rail.
D-E—Height of rail.
F-G—Base of rail.
H-I—Center of holes from bottom of rail.
K-L—Center of first hole from end of rail.
L-M—Center to center of holes.
Diameters of bolts.

In ordering give dimensions as specified above.

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SPRING RAIL FROG

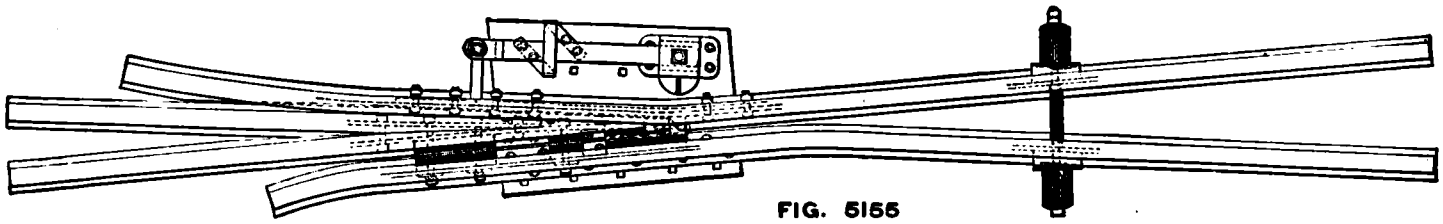


FIG. 5155

Made for angle No. 7 and upward, of rail exceeding 3¾ inches in height, and commonly 15 feet long. When ordering spring rail frogs, state whether turnout is right or left hand.

YOKED FROG

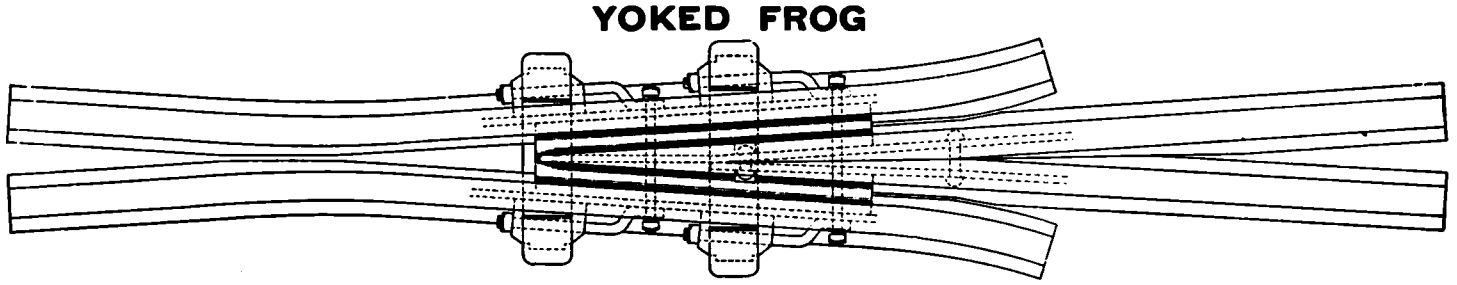


FIG. 5156

Made for angle No 6 and upward, of rail exceeding 3¾ inches in height.

PLATE FROG

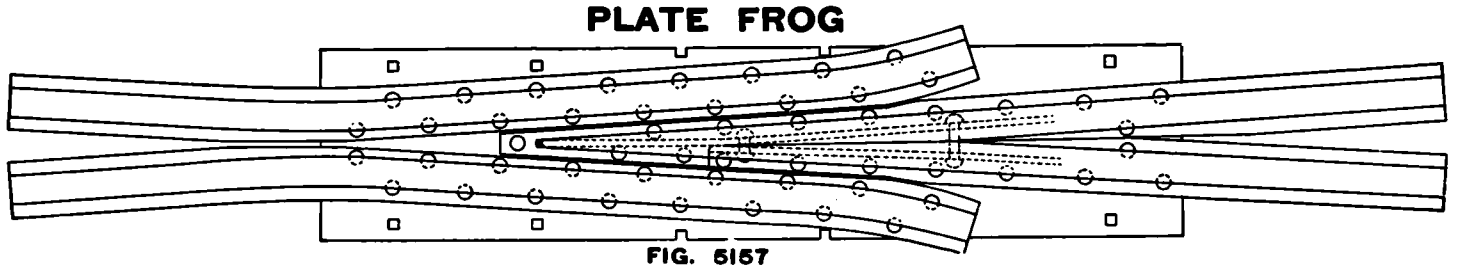


FIG. 5157

Made for any angle and of any size of rail.

To execute orders correctly, the following information must be given:

The frog angle, or number.
This always equals the length over all, divided by the sum of the spreads at heel and at toe.
L. Length over all.
H. Spread at heel.
T. Spread at toe.

The drilling for splice bars, as follows:
End of rail to center of first hole.
Center to center of holes.
Base of rail to center of hole.
Diameter of hole.

A sample piece of the rail to be used, or a full size drawing of rail section, or number of section in rail manufacturer's catalogue.

PLAN OF SPLIT SWITCH

Designed for use with the Automatic Safety Switch Stand.

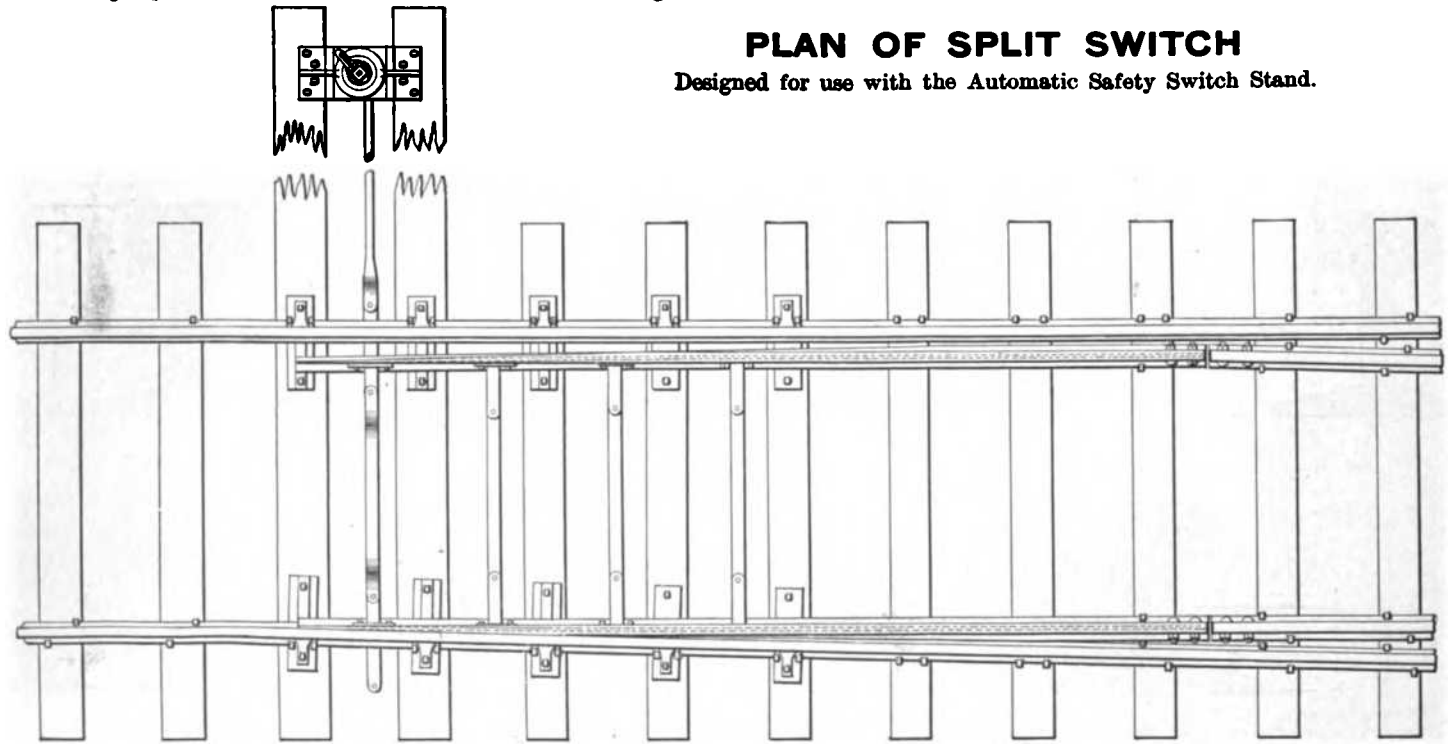


FIG. 5158

DIRECTIONS FOR ORDERING SPLIT SWITCHES

Please supply the following information:

Gauge of track.

Length of switch points.

Throw, measured at point of attachment of stand.

The drilling for splice bars, as follows:
End of rail to center of first hole.
Center to center of holes.
Base of rail to center of hole.
Diameter of hole.

A sample piece of the rail to be used, or a full size drawing of rail section, or number of section in rail manufacturer's catalogue.

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SWITCH STANDS

SAFETY SWITCH STAND, NO. 1, WITH ADJUSTABLE CRANK

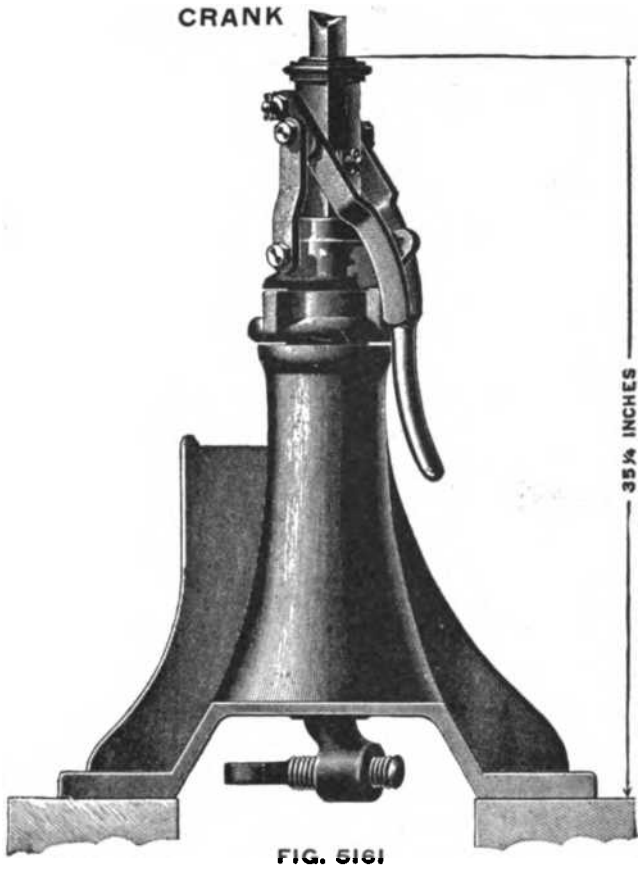


FIG. 5161

SAFETY SWITCH STAND, NO. 2

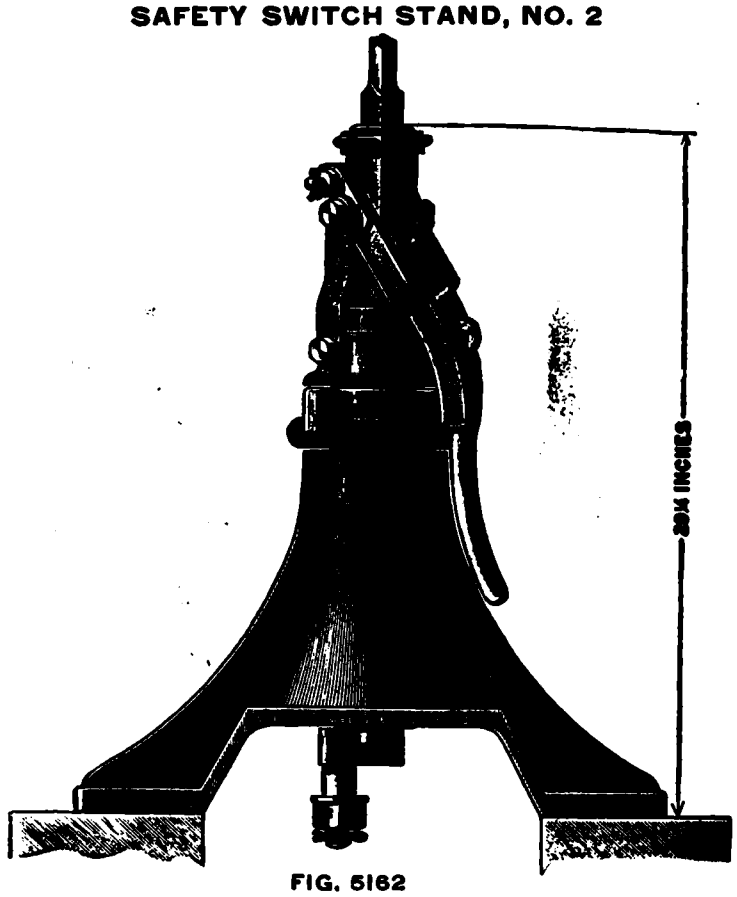


FIG. 5162

DIRECTIONS FOR ORDERING SAFETY SWITCH STANDS

When ordering please supply the following information: The exact throw of switch, measured at the point of attachment. The size of switch bar to which the connecting rod is to be attached, and the diameter of pin hole in same. The distance from the center of the stand to the wearing edge of the nearest rail. The height of the top of target above the surface of tie. The form and color of target. Dimensions of lantern tip. (This is usually tapered and measurements should be made with precision.)

TO SET STANDS FOR SPLIT SWITCHES

Secure the main stock rail in careful line by placing the raised shoulder of the slide plates firmly against base of rail and spiking full; then hold the split rail against it with the stand thrown to position indicated by switch points, and spike down stand. Throw switch points with the stand and bring the bent stock rail to an easy working fit against switch, overcoming all lost motion in stand and rods, and then spike. Great care must be taken to have a decided bend in this rail, and to the proper angle at a point 8½ to 10½ inches ahead of the switch point.

Special descriptive catalogue of Safety Switch Stands furnished on application.

SAFETY SWITCH STAND NO. 3

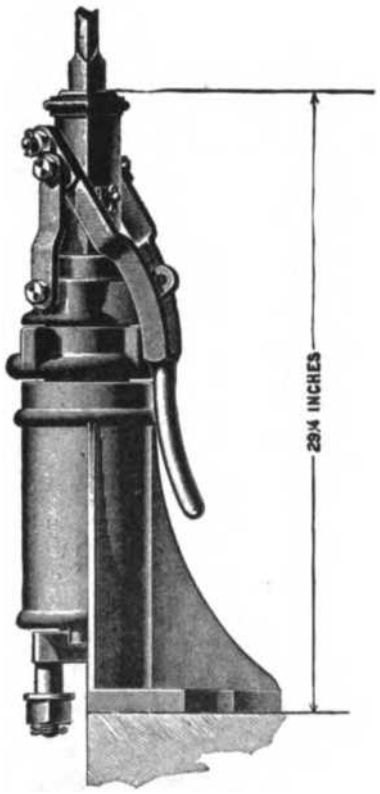


FIG. 5163

SAFETY SWITCH STAND, NO. 5

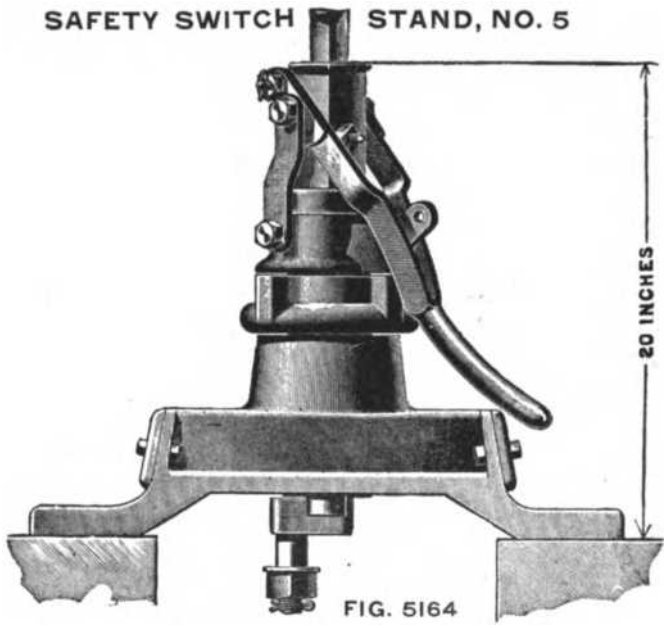


FIG. 5164

SAFETY SWITCH STAND, NO. 4

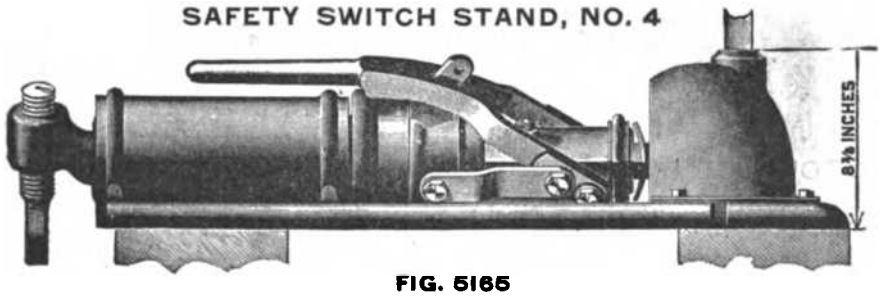


FIG. 5165

PRICES AND FURTHER INFORMATION ON APPLICATION

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SWITCH STANDS

SWITCH STAND NO. II
PONY PATTERN

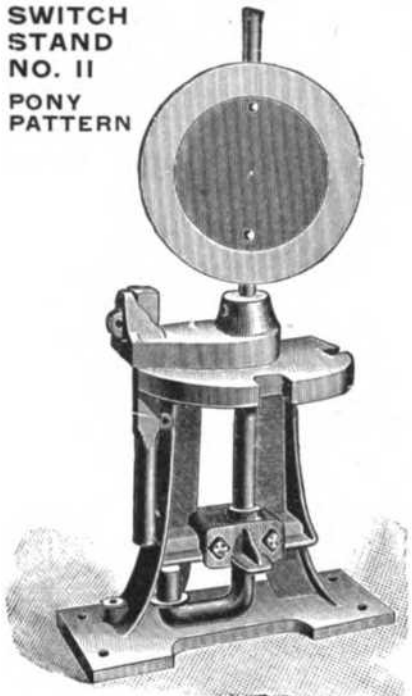


FIG. 5167

SWITCH STAND, NO. 17A

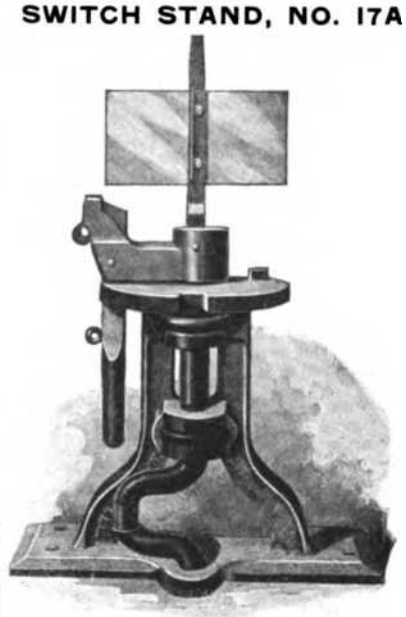


FIG. 5168

SWITCH STAND, NO. 5

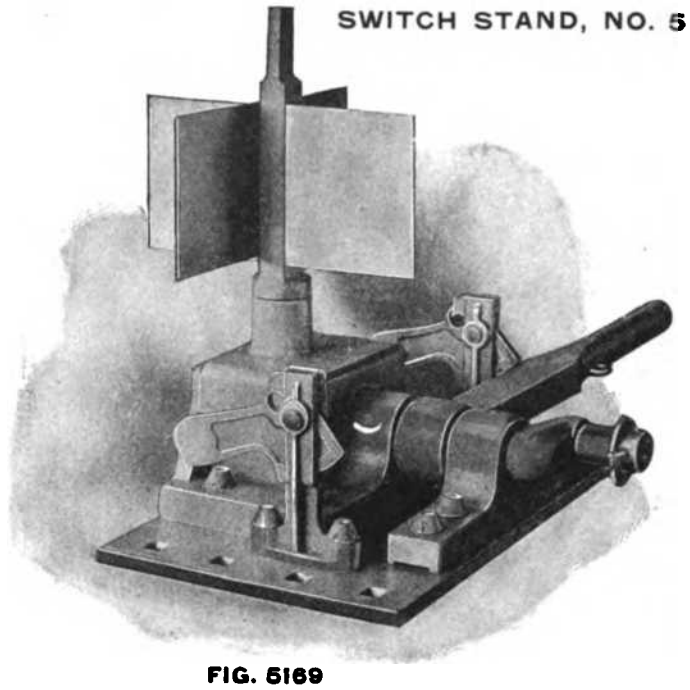


FIG. 5169

GROUND SWITCH STAND, NO. 1

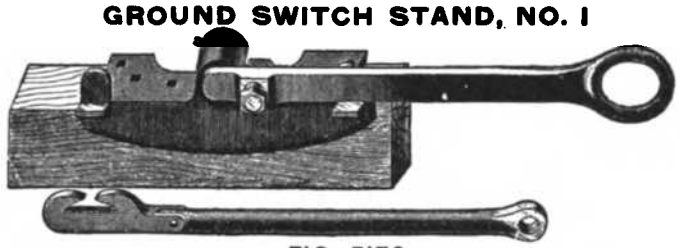


FIG. 5170

GROUND SWITCH STAND, NO. 2

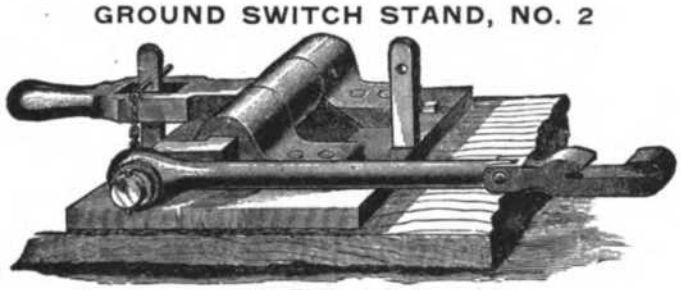


FIG. 5171

GROUND SWITCH STAND, NO. 4½

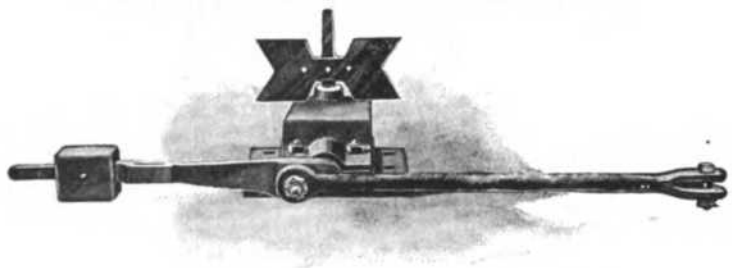


FIG. 5174

GROUND SWITCH STAND, NO. 8



FIG. 5175

GROUND SWITCH STAND, NO. 3



FIG. 5177

LOCKING DEVICE FOR SWITCH STAND, NO. 7



FIG. 5172

SWITCH STAND, NO. 7

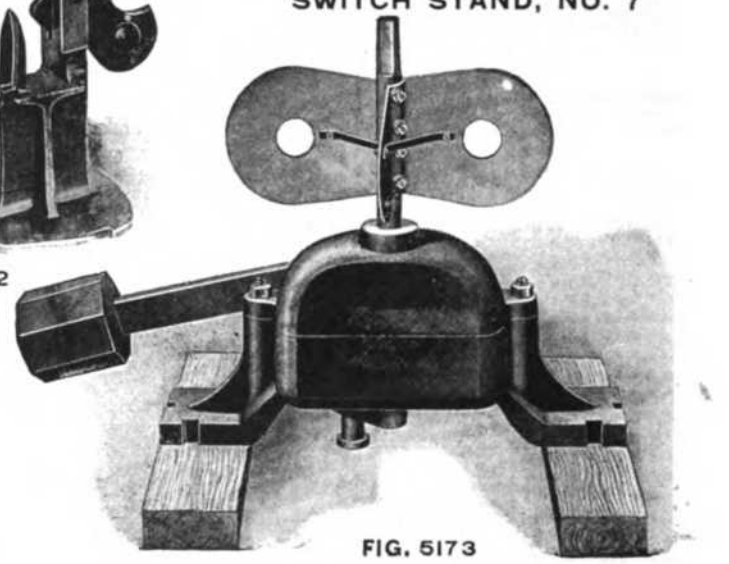


FIG. 5173

GROUND LEVER FOR HEAVY RAIL

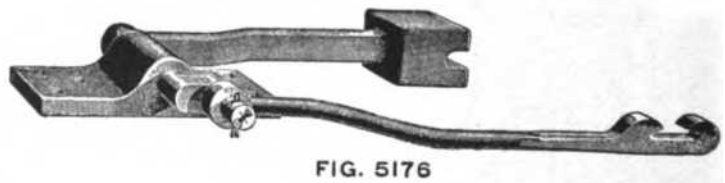


FIG. 5176

GROUND LEVER FOR LIGHT RAIL



FIG. 5178

PRICES ON ALL ABOVE ON APPLICATION

MANNING, MAXWELL & MOORE, 85, 87, 89 LIBERTY STREET, NEW YORK

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EQUIPMENT FOR STUB SWITCH OF HEAVY RAIL

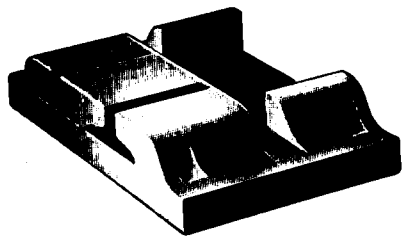


FIG. 5179

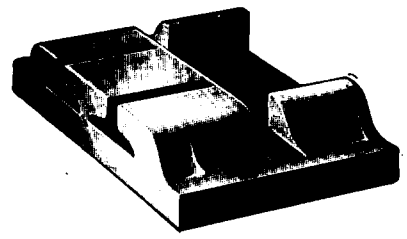


FIG. 5180

DESCRIPTION FIGS. 5179 TO 5181

Please supply the following information :

Gauge of track.

Amount of throw.

A sample piece of the rail to be used, or a full sized drawing of rail section, or number of section in rail manufacturer's catalogue.

PRICES ON APPLICATION

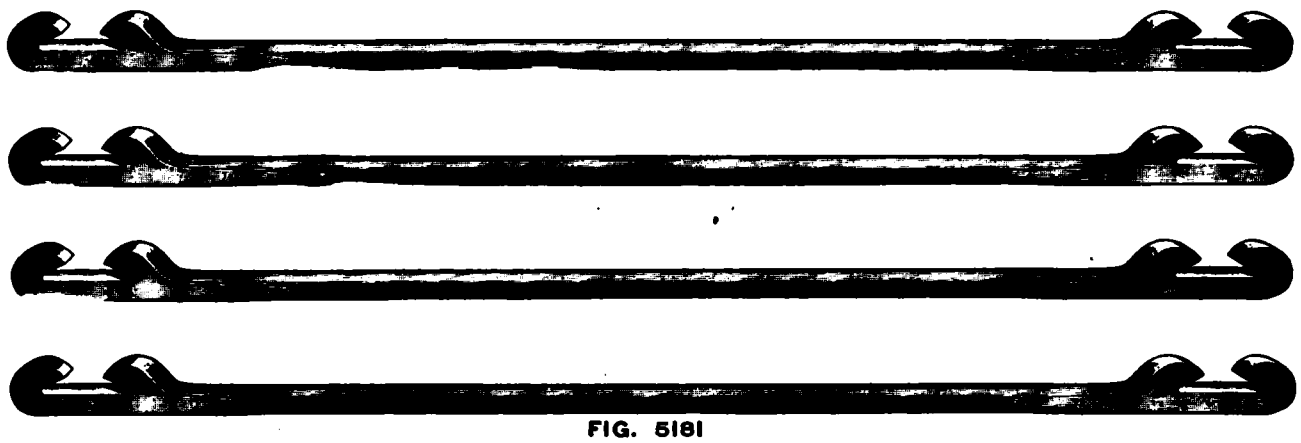


FIG. 5181

SWITCH RODS



FIG. 5182

Strap Connecting Rods for Use with Switch Stands, No. 17A. Fig. 5168.

STANDARD STUB SWITCH RODS

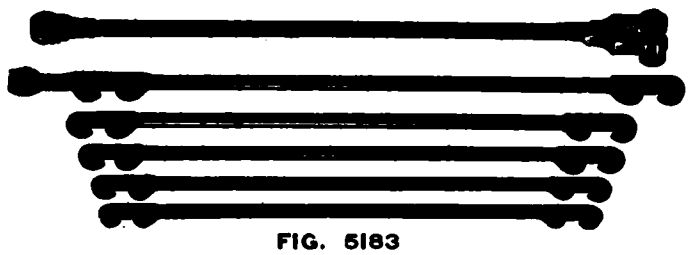


FIG. 5183

PRICES ON APPLICATION

STEEL RIVETLESS HEAD CHAIRS



FIG. 5184

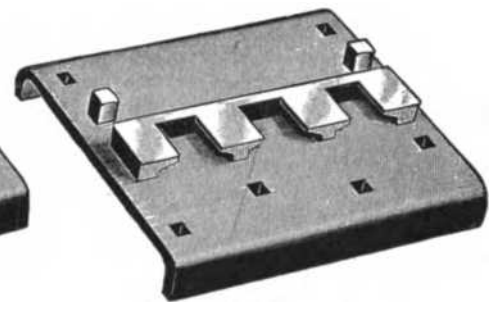


FIG. 5185

Note.—In ordering, give width of head block upon which Chairs are to be used.

PRICES ON APPLICATION

PRESSED STEEL FOOT GUARD

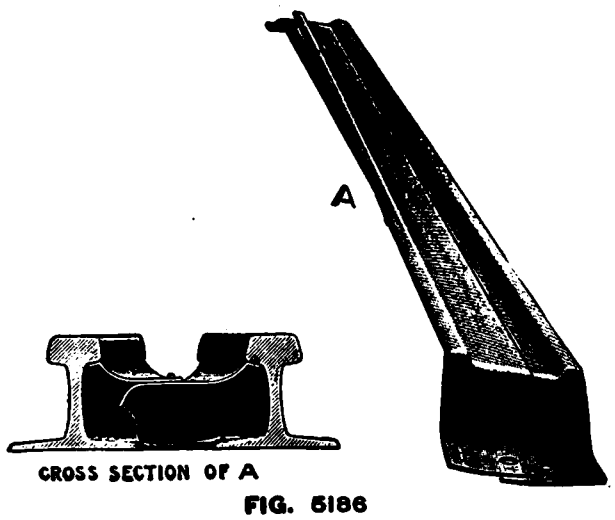
DESCRIPTION, FIG. 5186

This Foot Guard is stamped out of heavy sheet metal. It is substantial and durable ; it can not be broken, and after once being put in at a given point is thereafter constantly at hand whenever repairs are made to the frogs or switches, so that it can be put back just as it was taken out. It is a perfect protection, its shape being such that a person can not possibly get his foot fastened in the openings guarded by it so that he can not instantly remove it.

The guards covering the heel and point of frogs are made in two parts and are adjustable to the different angles ordinarily in use.

Trial orders are solicited. With the first orders from any road should be sent a blue print or sketch showing the standard section of rail in use and the details of standard switches, frogs and guard rails, so that the appliance may be furnished to fit perfectly.

PRICES ON APPLICATION



CROSS SECTION OF A

FIG. 5186

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STANDARD CATTLE GUARD

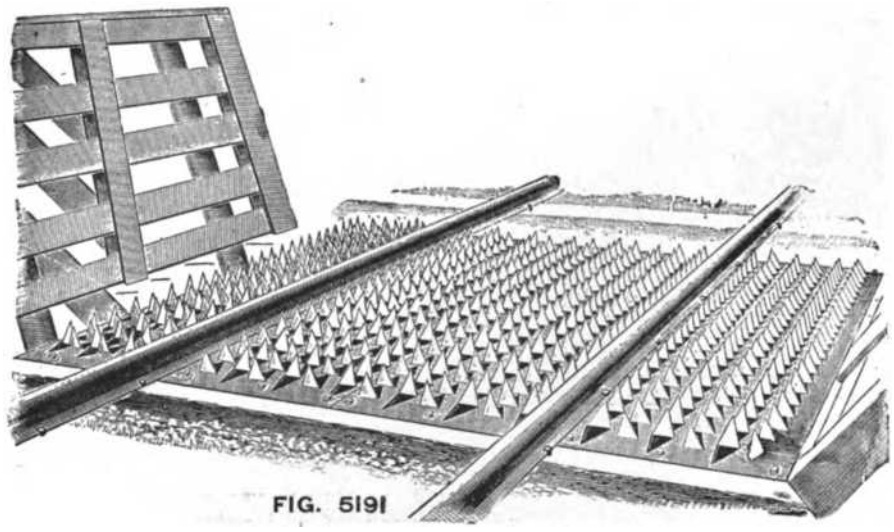


FIG. 5191

It is formed from four sheets of heavy annealed steel, from which teeth are struck up, and so arranged that the points are all alike and so close together that it is impossible for any animal to step upon it without getting hurt. The plates are 26 inches wide, and any desired length, from 8 feet up, and of heavy stock. They are all just alike and need no preparation of the track, but are spiked down upon the ties as they lie in the road bed.

The thickness of the metal precludes its rusting out in a short time; neither is there any disagreeable rattling noise caused by trains passing over. The teeth stand 3 inches high and 3 inches apart in every direction; and while a person, his foot being protected by the ordinary boot or shoe, can walk over it blindfolded, forward or back, and can not possibly get his foot caught in it, no cattle will willingly step upon it. Being made of annealed steel, any of the points accidentally struck by anything and bent, can be straightened up at any time.

PRICES ON APPLICATION

PERFECT CATTLE GUARD

The Perfect Cattle Guard is a distinct departure from earlier designs. The old notion was that animals must be severely punished by sharp points, or deterred by a bristling front of knife edges. This Guard is designed on the idea of affording no footing for venturesome animals. A series of slanting plates secured in position by vertical side plates serve to make unsteady footing. At the first step the hoof slips, toe first, against the edge of the next plate, and while there is held against further advance, although the animal may back off the guard without injury to leg or hoof. While it is a complete puzzle to four footed animals, men may safely cross it on the bridges of the slanting plates, without any chance of injury, for there are no jagged points to fall on. The principal value in this guard hinges on its efficiency as a stock turner.

This guard is made in three sections assembled ready to place in position, Requires no new ties of special sizes.

Saves chamfering ties and excavating and other expensive preparation; also saves the assembling expense attached to guards composed of many parts.

It is readily removable for track overhauling by withdrawal of the anchoring spikes at end.

It chokes weed growth.

It is a very heavy guard, and being dipped after assembling so that all surfaces and crevices are filled with a protecting coat of asphalt, is proof against corrosive influences.

It is well up off the ground, and not half buried.

It is self cleansing of snow and rubbish by draught.

PRICES ON APPLICATION

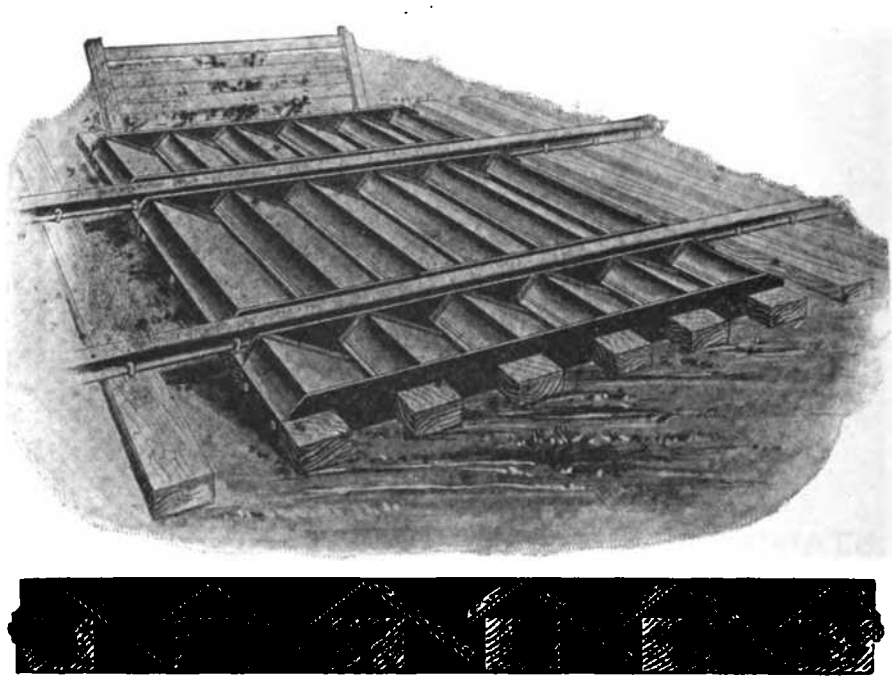


FIG. 5192

HARRISON DUST GUARD

FOR RAILWAY CAR JOURNALS

OPEN

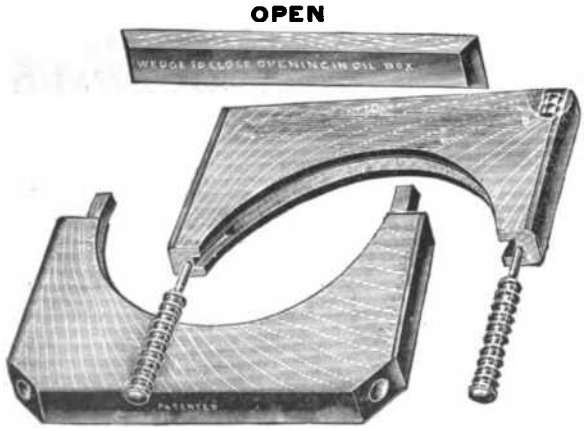


FIG. 5193

This Dust Guard closes the grit out of the top as well as the back of oil boxes. It is most durable and efficient. By its use it will show a large saving in brass by reduced friction, which is also proof of a saving in motive power as well as fuel. It keeps the sand out of the waste, allowing it to hold its resiliency, which insures better lubrication by constantly coming in contact with the journals, preventing delays to trains caused by hot boxes. Is constructed from hard wood, well oiled and made in two sections. Through each of these sections there is formed an orifice adapted to receive bolts. In the upper section of the top part the orifices are enlarged in order to receive springs, which are compressed with jammed hexagon nuts whereby the sections are held yieldingly together, constantly encircling the car axle journal at all times. And in both of the sections there is $\frac{3}{16}$ of an inch taken out of the center, allowing $\frac{3}{8}$ of an inch wear before sections are closed together. In each of the sections there is formed a groove $\frac{3}{8}$ of an inch wide and $\frac{3}{16}$ of an inch deep. Into this groove there are inserted packing strips. The packing strip in the upper section is sufficiently shortened to allow the packing strip in the lower section to telescope into groove in upper section, thereby closing the joints between the two sections; not only making this Guard dust proof, but, as the packing is cut out of heavy belting leather, insures great service.

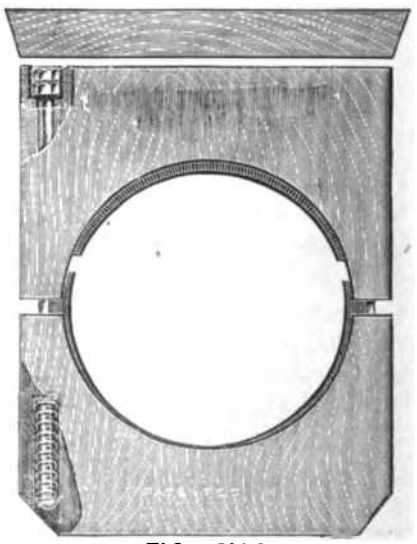


FIG. 5193

PRICES AND FURTHER INFORMATION ON APPLICATION

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ELLIS PATENT BUMPING POST

FOR FREIGHT CARS

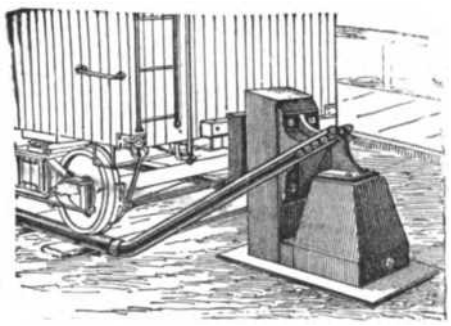


FIG. 5194

FOR PASSENGER CARS

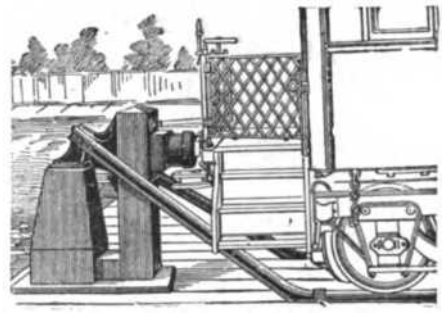


FIG. 5194

DESCRIPTION, FIG. 5194

The rails used in the construction of these Bumping Posts are made of open hearth steel, made to standard specifications for soft steel, and are 70 pounds per yard. Ordinary steel rails will not stand the sudden shocks that these posts receive in all kinds of weather.

The angle bars, which are made to fit up tight to the web of the rails, thereby making a strong pulling splice, are made of the same material, and are made narrow enough to connect up with all sizes of rails that are used on sidings, and are provided with eight ⅞ inch steel bolts to each splice, making an extra strong connection with the track rails which have the weight of the cars on them that come in contact with these Bumping Posts.

PRICES ON APPLICATION

HASKELL BUMPING POST

Showing Bumping Post Ready for Shipment.

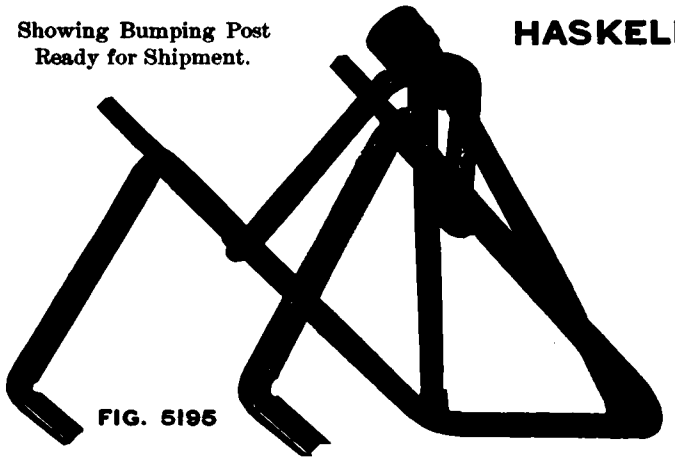


FIG. 5195

Post in Position for Service.

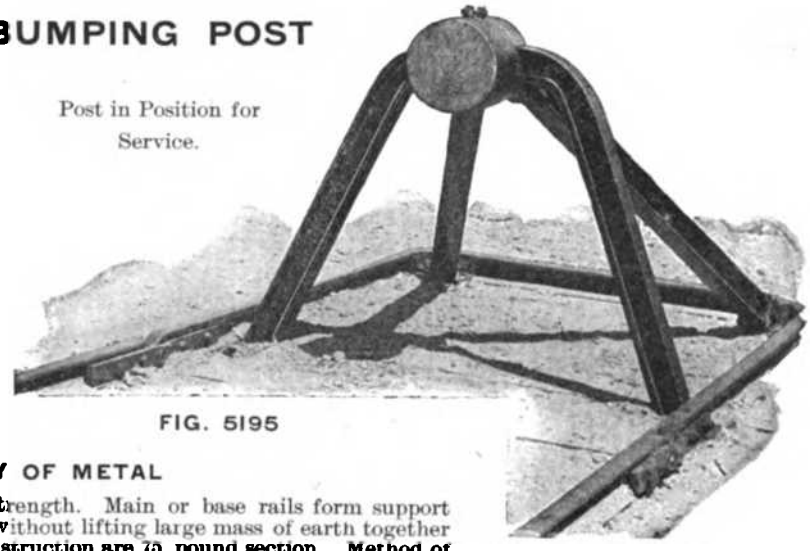


FIG. 5195

DESCRIPTION. MADE ENTIRELY OF METAL

Strong steel rails and cast steel, latter of 70,000 pounds tensile strength. Main or base rails form support for diverging braces. So securely anchored that it can not be moved without lifting large mass of earth together with load itself. Not combustible; will not decay. Rails used in construction are 75 pound section. Method of anchoring in track secures greatest possible resistance to horizontal movement. Splice with main track not wholly relied upon for stability. Buffer engages upper end of diverging brace rails, being held from upward or downward movement in the manner as shown. The head is provided with pocket and cap for holding buffing spring, which acts as a cushion and reduces the force of blow.

The above illustrations show the great strength of this Post, which can not be broken except through bending of rails or tearing apart of base rail.

PRICES ON APPLICATION

WRECKING INCLINE

NO. 1

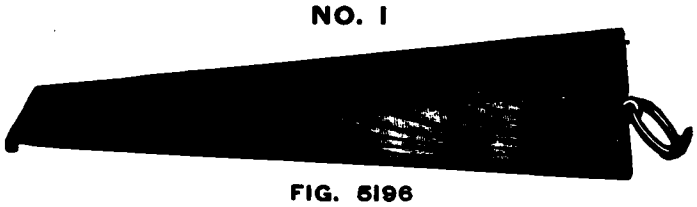


FIG. 5196

PRICES ON APPLICATION

WRECKING FROGS

NO. 1

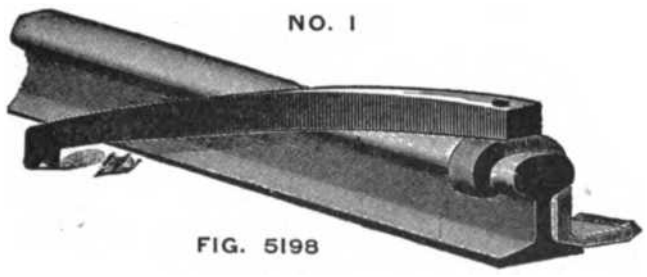


FIG. 5198

NO. 2

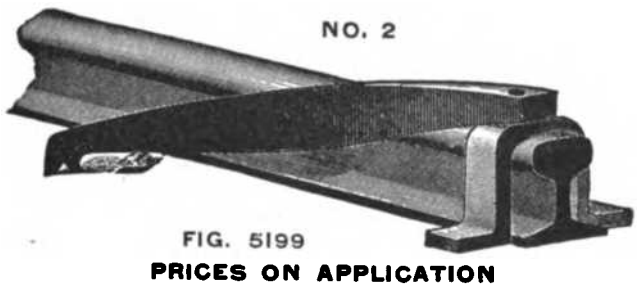


FIG. 5199

PRICES ON APPLICATION

PALMERTON WRECKING FROG

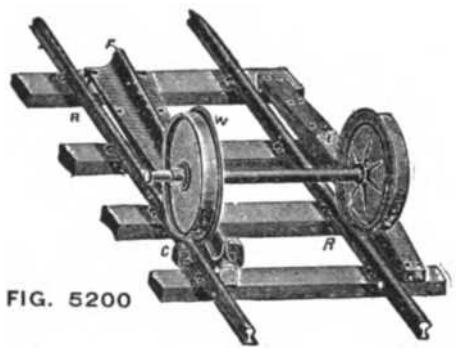


FIG. 5200

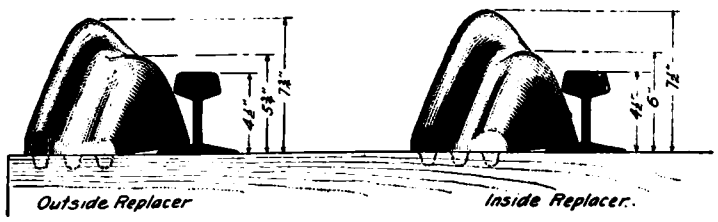
DESCRIPTION

Will replace upon the track, in a few minutes, locomotives of heaviest weight as easily as the lightest cars without injury to the tracks. The Frog is held by the clamp C, which passes under the rail; also by the teeth P, which bite into the tie. The flange of the wheel of the derailed locomotive or car comes on the Frog between the central rib F and the rail; and, as it is drawn forward, is at once gradually lifted and forced over so that the tread takes the rail. They are easily handled, and can be placed in position at any angle by one man in a few minutes.

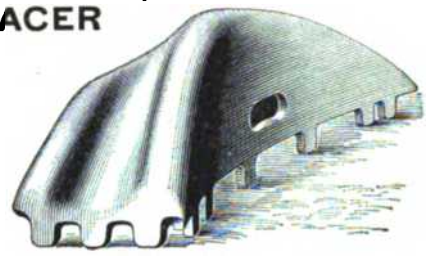
PRICE PER SET, $20.00

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ALEXANDER ENGINE AND CAR REPLACER



SHOWING FIGS. 5201 AND 5202 IN OPERATION



INSIDE REPLACER.
FIG. 5201



OUTSIDE REPLACER.
FIG. 5202

PRICES

These Replacers are Made from ½ Inch Pressed Steel.

							Per Pair.
No. 1 Replacer,	150	pounds per pair,	for	6	inch	rail	$17 00
" 2 "	140	" "	"	"	rail from 4½ to 5⅛	inches high	16 00
" 3 "	50	" "	"	"	any rail under 4½	inches high	12 00

NEWCOMB CAR REPLACER

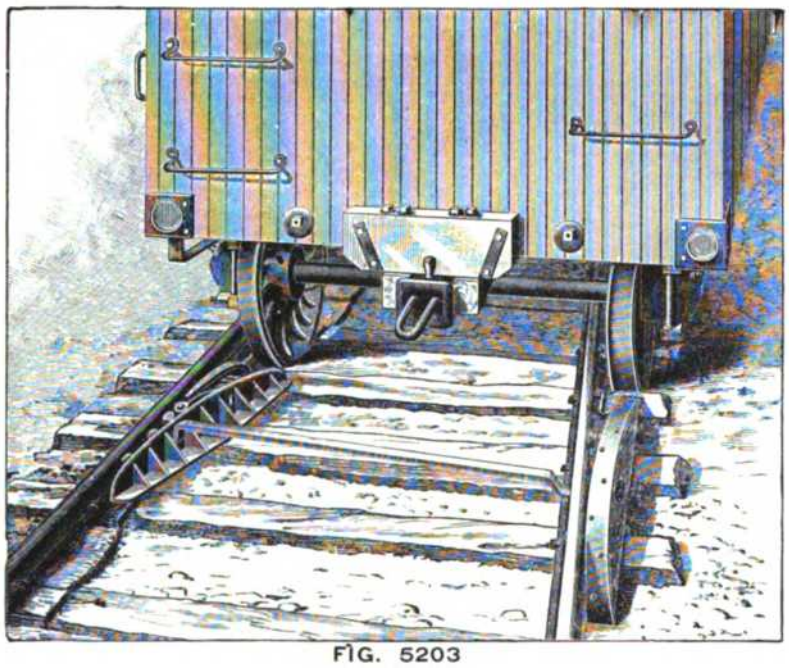


FIG. 5203

DESCRIPTION, FIG. 5203

In these replacers the inside piece or frog is made of two reversible steel castings, pivoted together, and otherwise united by an automatic sliding link. It is held in place by the wrought iron brace and the weight of the car. The outside piece is made of oak, faced with iron plate firmly bolted on. The bolts are pointed and are forced into the ties by the weight of the wheels. All the parts of the replacer are therefore firmly held beside the rails without being hooked thereto, thus making it practicable to place them anywhere under the train without fear of derailing other wheels that may remain on the iron.

A SET FOR STANDARD GAUGE

	Weight, Pounds.		Measures, Lengths, Feet.	Inches.
Frog	70	Frog	4	0
Brace	25	Brace	4	11
Outside piece	60	Outside piece	5	0
Total	155			

PRICE PER SET, $20.00

SHELDON COMPOUND LEVER PINCH BAR



The handle is made of malleable iron; the toe plates and heels are of steel and interchangeable. Every wearing part is protected by a hardened tool steel plate, which is removable. Never slips. Works under any style of brake. The heel is made of Mushet steel, and is reversible four times. When worn out can be replaced by a new one.

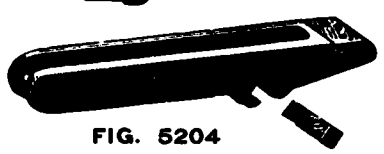


FIG. 5204

PRICES

Bar, including one heel	$5 00
Heels made of Mushet steel, each	25

CHAMPION PINCH BAR



FIG. 5205

Price, each $5 00

HEAD FOR CHAMPION PINCH BAR



FIG. 5206

Price, extra Heads $0 35

CAR PUSHER AND LOCOMOTIVE PINCH BAR

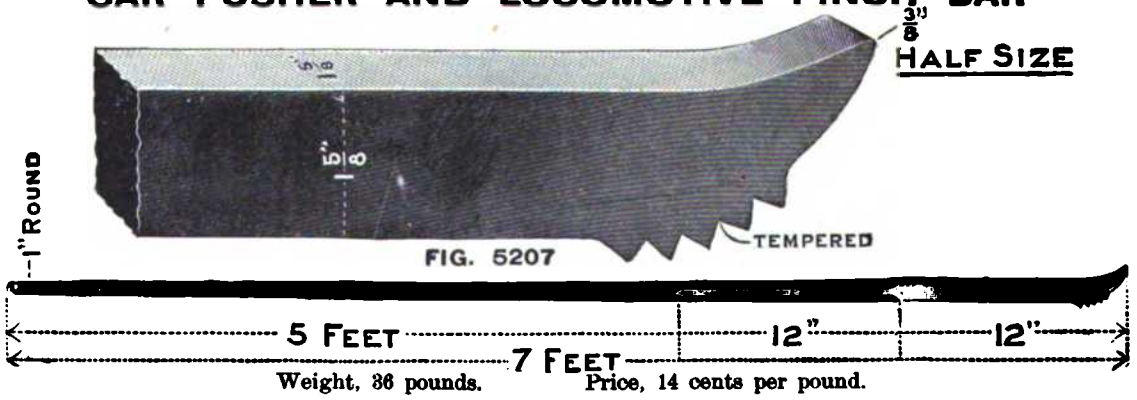


FIG. 5207

Weight, 36 pounds. Price, 14 cents per pound.

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THE GIANT CAR PUSHER

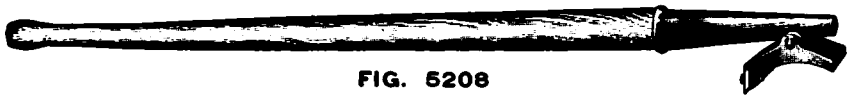


FIG. 5208

PRICE

The handle is of best quality white ash. Both socket and foot are heavy castings, with the nose or part rubbing on wheel chilled to prevent wear.

Weight, 24 pounds. Each, $5.00.

SAMSON CAR MOVER

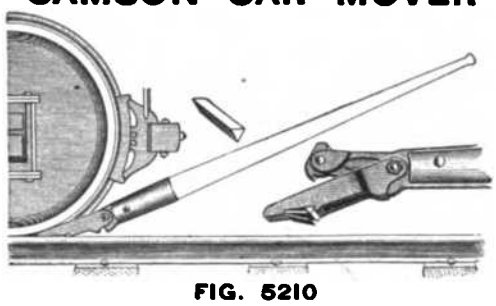


FIG. 5210

DESCRIPTION AND PRICE

The spur C, which clings to the rail, preventing the mover from slipping under all conditions of rail, can easily be removed by loosening the clamp nut holding the piece marked B, and, as the spur is three cornered, it can be turned three times when dull, and can then be ground and still held rigid till worn out. The spring A is so adjusted as to lift the spur from the rail when the mover is being pushed forward. It thus presents a good sliding surface for the mover, prevents the spur from catching in the rail joints and prolongs the life of the spur by preventing the edge from being ground off. The cam D is thrown forward when light cars are to be moved, and thrown back in the position shown in cut when loaded cars are to be moved. The mover is made of malleable iron and steel, with a wooden handle, giving lightness with great strength. All parts can be duplicated.

Weight, 14 pounds. Each, $5.00.

EASY CAR PUSHER

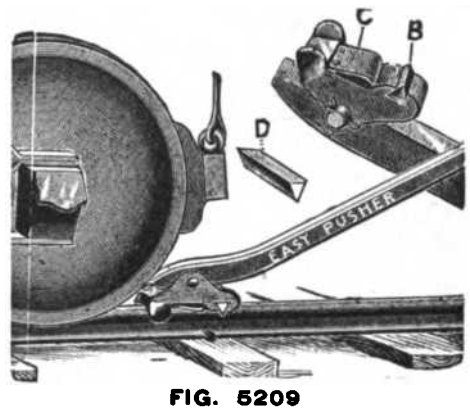


FIG. 5209

DESCRIPTION AND PRICES

It is made of the best material. The bar is steel and tempered at the point so as not to wear. The heel is malleable and the triangular bit is made of the finest tool steel. As shown in the cut, the heel has lugs extending downward on both sides of the rail to hold it firmly in position and prevent its slipping sideways. The triangular bit or steel cuts into the rail when pressure is applied and prevents slipping backward, even though the rail is icy, greasy or wet. This bit can be inverted. Each one has three sharpened edges. When the pressure is released, the steel spring lifts the steel bit from the rail, thus preventing it being dulled by sliding over the rail when following the wheel.

Weight, 20 pounds. Length of pusher, 5½ feet.

Each, $5.00.

Two triangular steels, with each pusher. Extra steels, 20 cents each.

UNITED STATES CAR PUSHER

Shows the U. S. Car Pusher, side view, as in position ready to work; shows trig which runs ahead automatically, trigging at all times; also the friction bearing on wheel tread, side view.

Side view, trig out 4 inches, and showing the hoist at car to push.

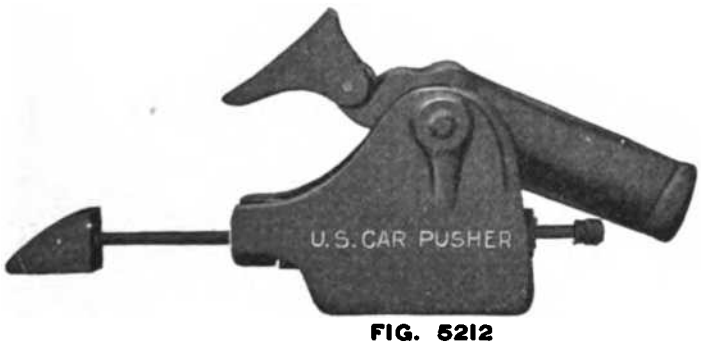


FIG. 5212

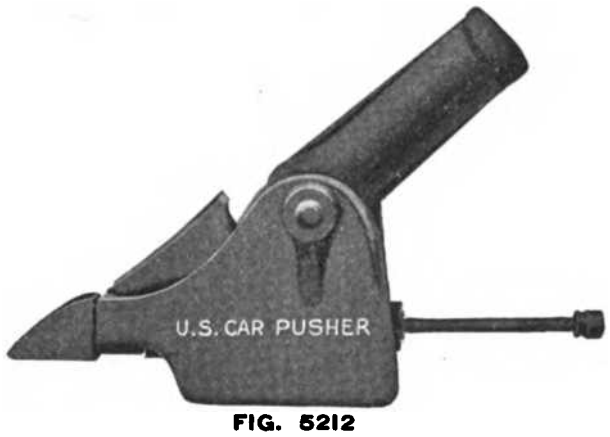


FIG. 5212

DESCRIPTION AND PRICE

The U. S. Car Pusher is one that grabs the rail, automatically trigs the wheel, and pushes loaded cars with ease. It is necessary that there should be one clear rail in order to use this device. Each, $10.00.

GOODWIN BRAKE BEAM CLAMP

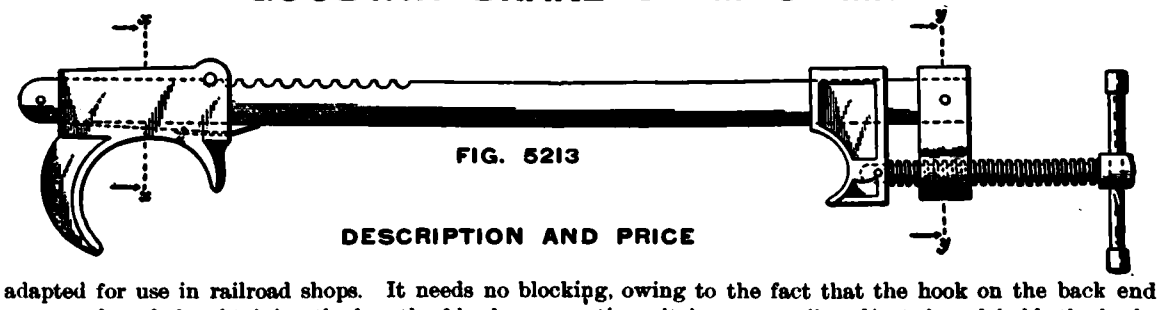


FIG. 5213

DESCRIPTION AND PRICE

This clamp is adapted for use in railroad shops. It needs no blocking, owing to the fact that the hook on the back end is adjustable and saves turns on the screw end, and, for obtaining the length of brake connections, it is most easily adjusted, and holds the brake beams just where required until the length of rod is obtained. Per pair, $10.00.

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STEEL WIRE SWITCH ROPE



FIG. 5214

PRICES

30 Foot, Complete.	Equal to Manila.	Breaking Strain, in Tons.	Each.
⅞ inch diameter	2½	21	$10 50
1 " "	2⅝	24	12 00
1⅛ " "	3	31	15 00
1¼ " "	4	41	19 00
1½ " "	5	55	25 00

CAR WHEELS AND AXLES

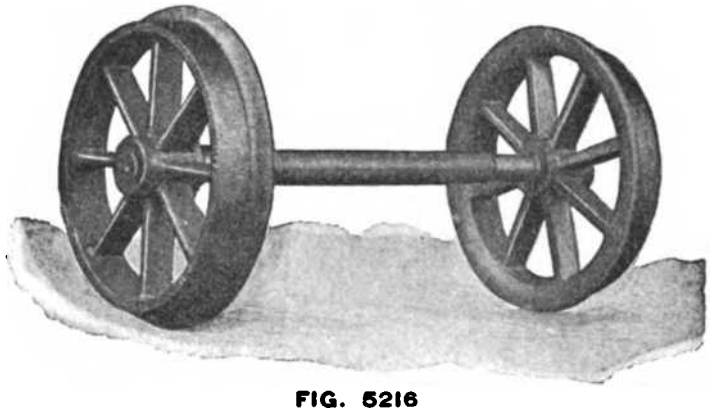


FIG. 5216

We can furnish soft and chilled car wheels, from 4 to 42 inches in diameter, and of various styles and weights, suitable for every variety of light service. We also furnish both round and square steel axles with wheels complete, fitted either with plain cast iron oil reservoirs, babbitted, metalline or anti-friction roller journal boxes. When asking for prices state weight of load to be carried, gauge of track between inside of rails, width of rail head, and whether track is straight or partly curved, diameter of wheels and style of journal boxes.

ELLIPTIC SPRING

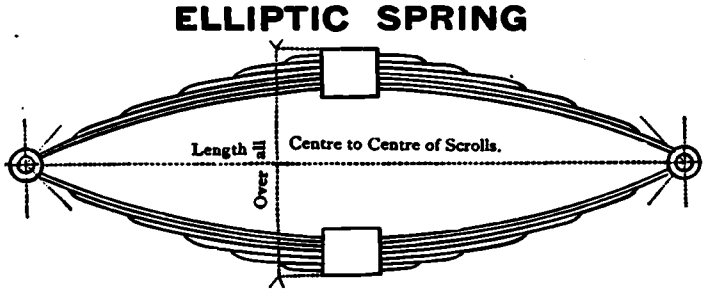


FIG. 5218

In ordering Elliptic Springs for freight or passenger cars, please favor us with the following information:

Length between centers of scrolls, light..Over all, loaded.....
Number of plates.....Total weight car body.....
Width of plates.....Seating capacity.....
Thickness of plates.....Four or six wheeled trucks.....
Sizes of bands.....Number of springs in bundle....
Over all, light.....

Blank forms of this, printed in copying ink, will be furnished upon application.

We designate as Duplicate, two full elliptic springs bolted together.
" " Triplet, three " " " "
" " Quadruple, four " " " "
" " Quintuple, five " " " "
" " Sextuple, six " " " "

DESCRIPTION, FIG. 5219

In ordering Locomotive and Tender Springs of your own dimensions, please favor us with the following information:

Length between centers of hangers... Set, light.....
Length over all curved plate.....Set, loaded.....
" " straight " .....Over all, light.....
Number of plates..... " loaded .....
Width of plate.....Weight on drivers.....
Thickness of plate..... " " trucks.....
Style of end..... } Capacity of tender { Tons coal.....
Style of hangers..... } { Gals. water...
Sizes of hangers.....Total weight.....
" bands.....Weight of tender.....
Shape of " .....Remarks:.....

Blank forms of this printed with copying ink will be furnished upon application.

SECURITY RAILROAD CHOCK

For locking cars on sidings, preventing their being moved by accident or design. When ordering send drawing of head of rail.
Price.....$6 00

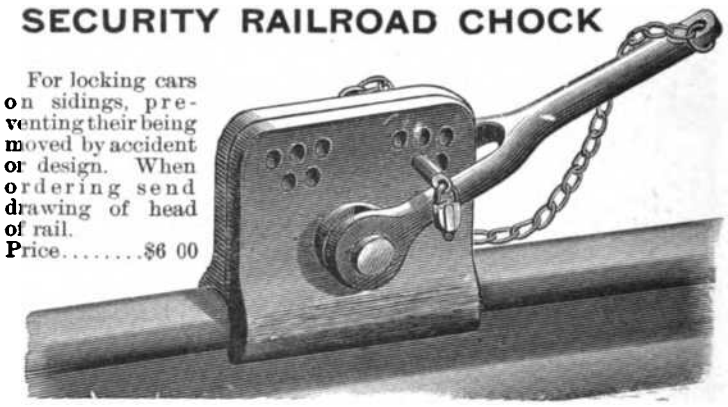


FIG. 5215

LOCOMOTIVE AND CAR AXLES, TIRES, LINKS AND PINS, ETC.



FIG. 5217

PRICES

Steel Tires.

Axles, 1¼ inches..... .....cents per lb.
" 1½ " .... "
" 1¾ " and larger..... ..... "
Car Wheels, chilled..... ..... "
" " not chilled..... ..... "
Truck Wheels..... .... "
Links and Pins..... ..... "

LOCOMOTIVE AND TENDER SPRINGS

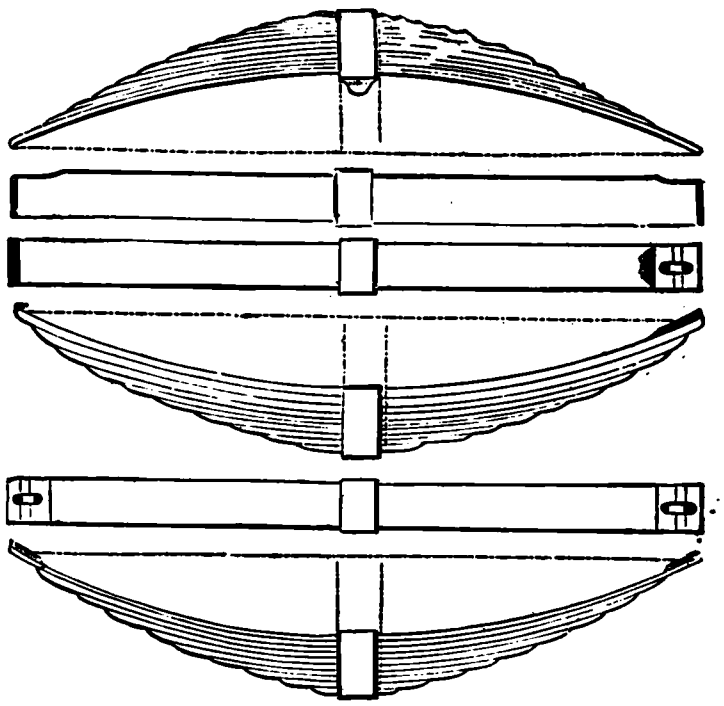


FIG. 5219

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CAR SPRINGS

TWO COIL DRAFT SPRINGS

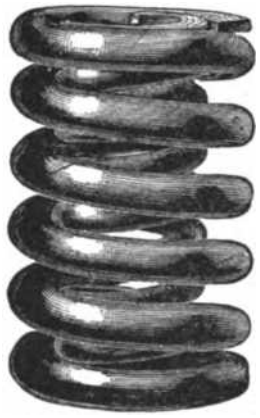


FIG. 5220
5⅛ x 8 in. long.



FIG. 5221
5½ x 4 in. long.

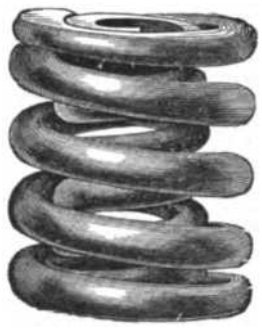


FIG. 5222
5¾ x 6 in. long.

Any depth, diameter, capacity, or size of hole, made to order.

BOLSTER SPRING NO. 2



FIG. 5223
Capacity per set of 4 springs, 10 to 12 ton load.

BOLSTER SPRING NO. 14

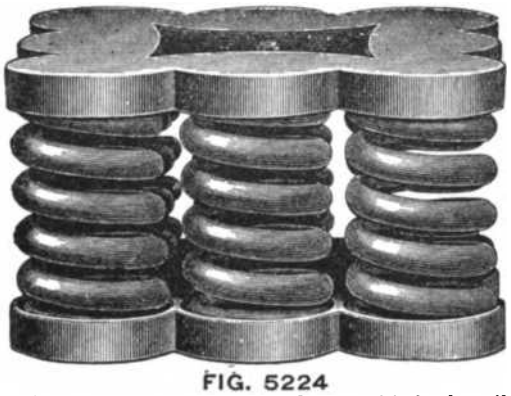


FIG. 5224
⅝ Spirals. Square pattern. Group of 8 single coils.
Capacity per set of 4 springs, 20 to 25 ton load.

GENERAL REMARKS ON SPRINGS

The height of all Bolster Springs is 6 inches full, unless otherwise ordered.

Spirals will be furnished with or without castings.

Any diameter, height, or capacity will be furnished.

In ordering equalizing springs, please give us the weight of car, and the springs will be made and tested to insure easy riding.

All descriptions of springs for machinery, valves, agricultural implements, etc., made to sample or specifications.

The cuts of springs on this page are one-quarter size.

Any of the designs given as group Bolster Springs will be furnished with single or two coil springs.

BOLSTER SPRING NARROW GAUGE NO. 5



FIG. 5225
Group of 5 springs, 2 coils each. Capacity per set of 4 springs, 10 to 12 ton load.

BOLSTER SPRING V

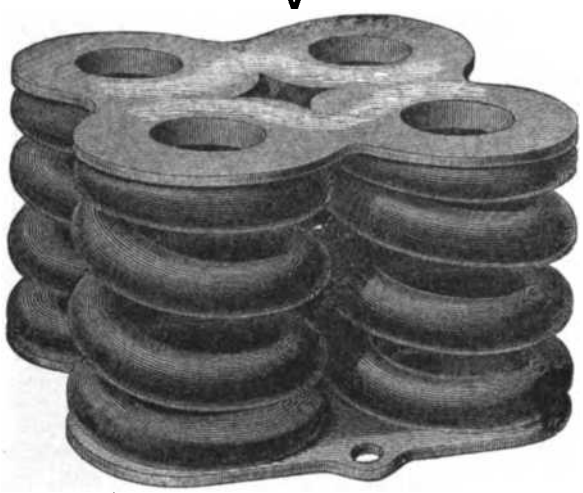


FIG. 5226
Group of 4 single coils. Diameter of case, 11 in.
Height, 6 in. over all.
Capacity of 4 groups, 25 and 30 tons.

COAL CAR PEDESTAL SPRING



FIG. 5230
Nest of 3 coils.
Capacity of 4 Springs, 6 ton load.

DESCRIPTION, FIGS. 5227 TO 5229

The Keg Shape Springs from their varied diameter will accommodate themselves to any burden, and ride easily under a light or heavy load. They are particularly adapted to street car service.

Capacity, height, etc., furnished to suit any service, Arranged in groups, are especially adapted for service as Bolster Springs.

Draft Springs for street car service furnished of any desired diameter and length.

STREET CAR SPRINGS

Keg Shape.



FIG. 5227



FIG. 5228

Draft Spring. Double Spiral.



FIG. 5229

SPIRAL SPRINGS



FIG. 5231



FIG. 5232

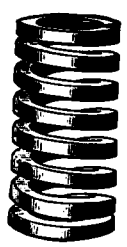


FIG. 5233



FIG. 5234



FIG. 5235

DESCRIPTION, FIGS. 5231 TO 5234

Spiral Springs of all sizes and descriptions for brake, release, switch, valve, and machinery purposes. Send a sample spring and prices will be quoted.

PRICES OF ALL ABOVE SPRINGS ON APPLICATION

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RAIL OR CONSTRUCTION CAR

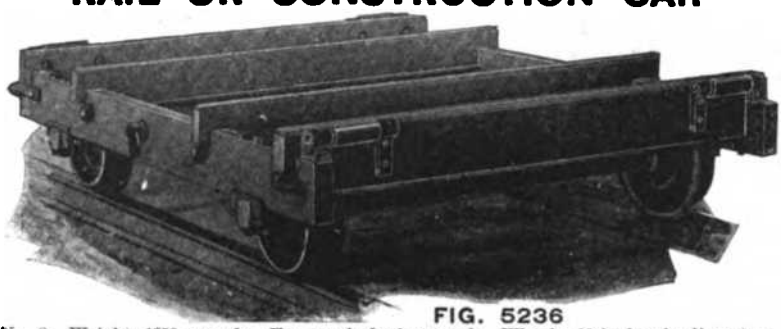


FIG. 5236

No. 8. Weight, 1350 pounds. For use in laying track. Wheels, 16 inches in diameter, weighing 104 pounds each. Two long sills and four cross sills, 8x8 inches, covered with 3x½ inch iron; two rollers at each end; 2¼ inch axles, with outside bearings running in babbitt metal. Car is very substantially built. Capacity, 10 to 12 tons.

PRICE, $60.00

EXTRA HEAVY CONSTRUCTION CAR



FIG. 5238

No. 12. For construction work. Axles and frame timbers extra large size, to carry heavy loads. Platform, 7 feet long by 5 feet 6½ inches wide. Steel wheels, 20 inches in diameter. Actual weight, 700 pounds.

PRICES ON APPLICATION

STANDARD AND NARROW GAUGE PUSH CAR

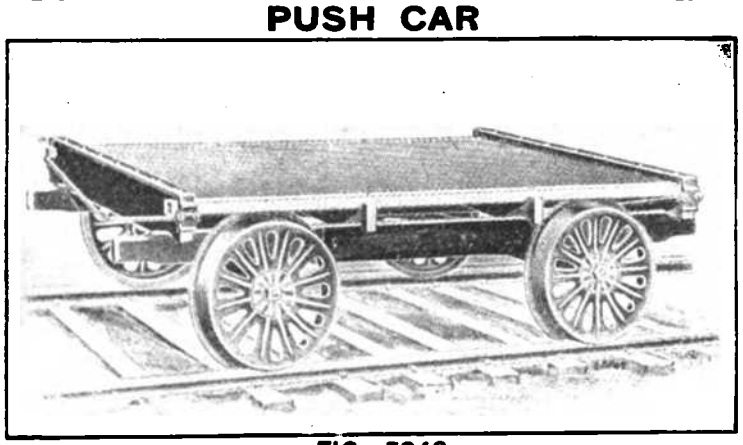


FIG. 5240

No. 4. Platform, 7 feet long by 5 feet 6½ inches wide. Steel wheels, 20 inches in diameter. Best materials, strongly made and well trussed. Actual weight, 470 pounds. All push cars furnished with hard wood rail across end, 1 inch thick and 2½ inches wide, as shown, same covered with iron plate.

PRICES ON APPLICATION

No. 6. Platform, 7 feet long by 5 feet wide. Outside bearings; otherwise general construction same as Standard Gauge Car. Actual weight, 470 pounds. Unless otherwise ordered, steel wheel is furnished.

PRICES ON APPLICATION

STANDARD GAUGE PUSH CAR

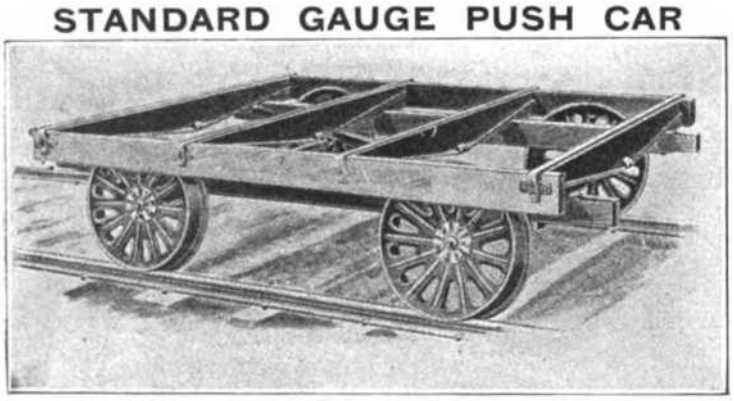


FIG. 5242

No. 19. General dimensions same as No. 4, Fig. 5240, but without decking; car sills being covered with heavy plate of iron.

PRICES ON APPLICATION

TRACK LAYING OR RAIL CAR

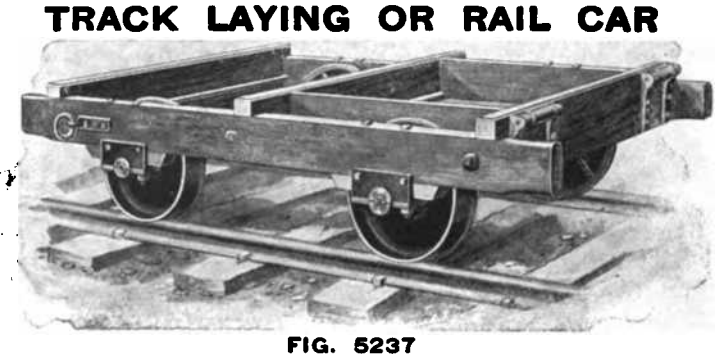


FIG. 5237

No. 11. Weight of car, about 1,350 pounds. Capacity, 20,000 pounds. Length over sills, 7 feet 8 inches. Width over sills, 6 feet 2⅞ inches. Height above top of rails, 1 foot 8 inches. Length of wheel base, 4 feet 5 inches. Four cast wheels, thoroughly chilled, 16 inches in diameter. These are double plate wheels, having 5½ inch tread. Two wheels loose on axles, placed diagonally from each other, and two wheels keyed on.

PRICE, $65.00

TRACK LAYING CAR

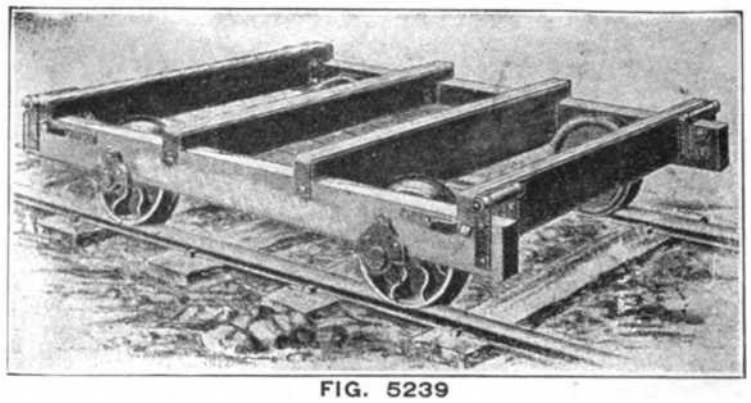


FIG. 5239

No. 10. Standard gauge; size, 8 feet long by 6 feet 6 inches wide; chilled wheels, 16 inches in diameter, with 6 inch tread; axles, 2¾ inches in diameter; capacity, 10 tons; sills, 4x8 inch oak; cross sills plated with iron; car fitted with chain and tool boxes, and has two rollers at each end.

PRICES ON APPLICATION

STANDARD GAUGE PUSH CAR

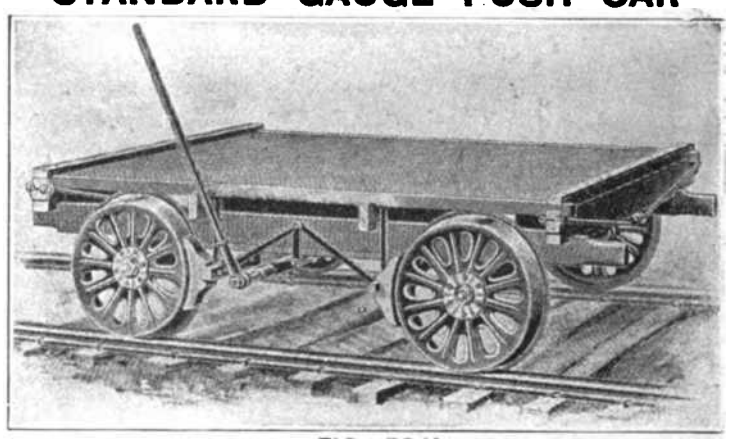


FIG. 5241

No. 18. Same as No. 4 Push Car, Fig. 5240, but furnished with brake, as shown. Actual weight, 400 pounds.

PRICES ON APPLICATION

PUSH CAR WITH STEEL WHEELS

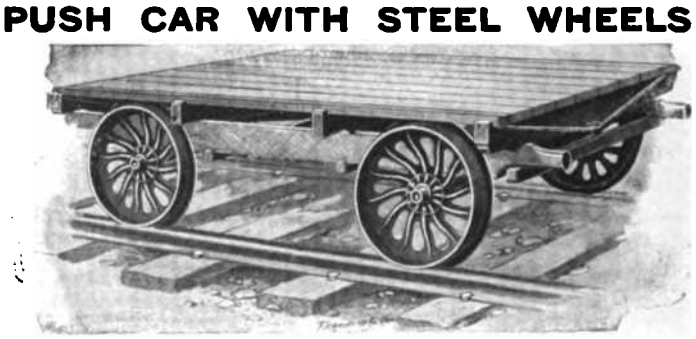


FIG. 5243

No. 6. Standard gauge; platform, 7 feet long by 5 feet 7 inches wide; wheels, 20 inches in diameter; machine steel axles, 1½ inches in diameter; weight, 450 pounds.

PRICE, $35.00

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HEAVY PUSH CAR
WITH IRON PLATE WHEELS

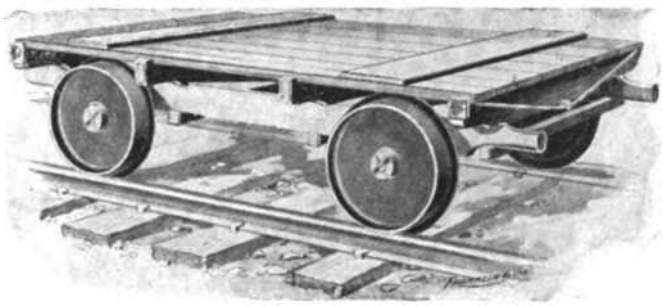


FIG. 5245

DESCRIPTION

No. 7—Standard gauge; platform, 7 feet long by 5 feet 7 inches wide; wheels, 18 inches in diameter; extra heavy framing and axles; weight, 800 pounds; capacity, 5 tons.

PRICES ON APPLICATION

If desired, this car can be equipped at a slight advance in price, with patent steel wheels, thereby reducing weight to 685 pounds.

PUSH CAR
WITH CAST IRON CURVED SPOKE WHEELS

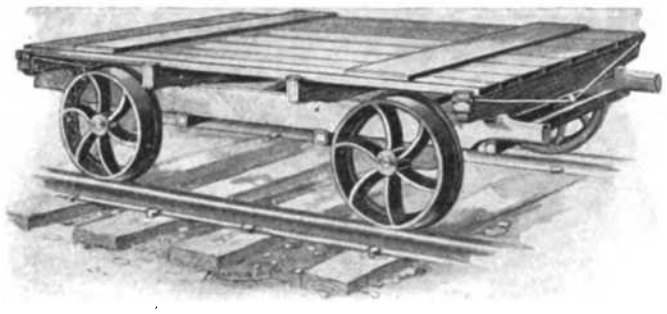


FIG. 5247

DESCRIPTION

No. 9—Standard gauge; platform, 7 feet long by 5 feet 7 inches wide; wheels, 18 inches in diameter; steel axles, 1½ inches in diameter; weight, 525 pounds.

PRICES ON APPLICATION

STANDARD STEEL WHEEL PUSH CAR

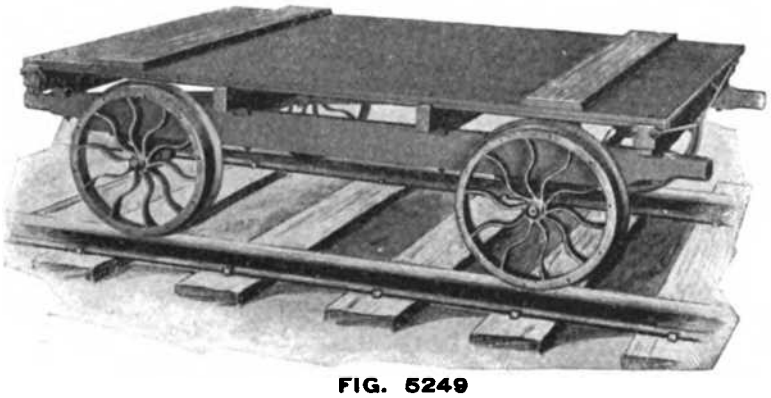


FIG. 5249

DESCRIPTION

No. 7½—Weight, 475 pounds; 1½ inch steel axles running in brass bearings; platform, 7 feet long by 5 feet 8 inches wide; frame constructed of best selected white oak; decking of oak or soft wood, as specified; oak rail across each end of platform, as shown in cut; thoroughly trussed and substantially built throughout.

PRICE, $58.00

DESCRIPTION, FIG. 5251

Platform, 6 feet long, 4 feet 4 inches wide; axles, 1½ inches; bearings, 3 inches; wheels, 20 inches diameter, either all metal or wood filled; weight, gross 750 pounds, net 520 pounds; packs 44 cubic feet; built any gauge.

PRICES ON APPLICATION

PUSH CAR
WITH IRON SPOKE WHEELS

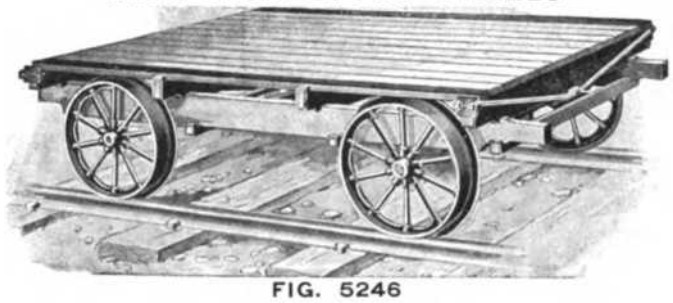


FIG. 5246

No. 8—Standard gauge; platform, 7 feet long by 5 feet 7 inches wide; wheels, 20 inches in diameter; weight, 525 pounds.

PRICES ON APPLICATION

STANDARD STEEL WHEEL PUSH CAR

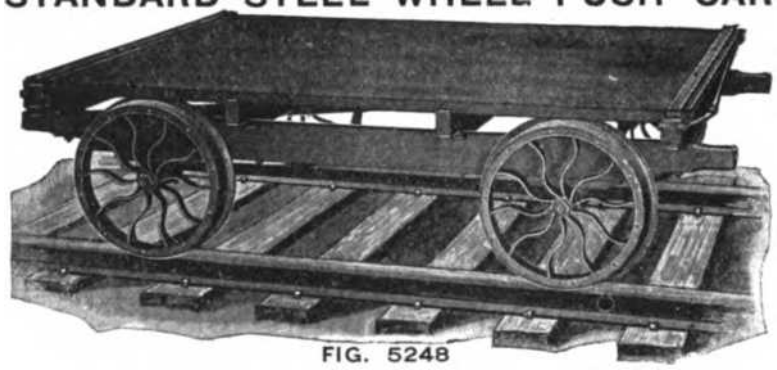


FIG. 5248

No. 16—Weight, 500 pounds. The same throughout as No. 7½, Fig. 5249, excepting that ends are covered with 2x½ inch iron strips.

PRICE, $60.00

STANDARD PUSH CAR

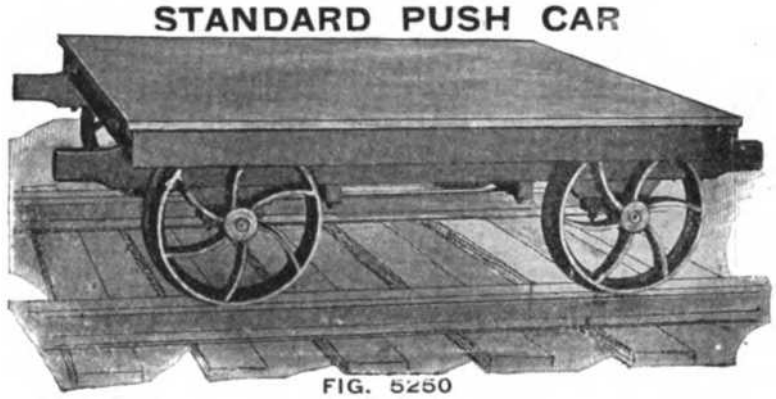


FIG. 5250

No. 7—Platform, 6 feet long; width, 5 feet 6 inches; sills of 1⅞x4¾ inch white oak; two long sills, four cross sills, two cross truss timbers, matched oak decking; cast wheels, 19 inches diameter; weight, 75 pounds each; 1⅝ inch axles, running in 3½ inch babbitt bearings; built very substantially and thoroughly trussed.

PRICE, $50.00

Wheels and other parts made interchangeable with cars of other makes when desired.

STANDARD SECTION HAND CAR

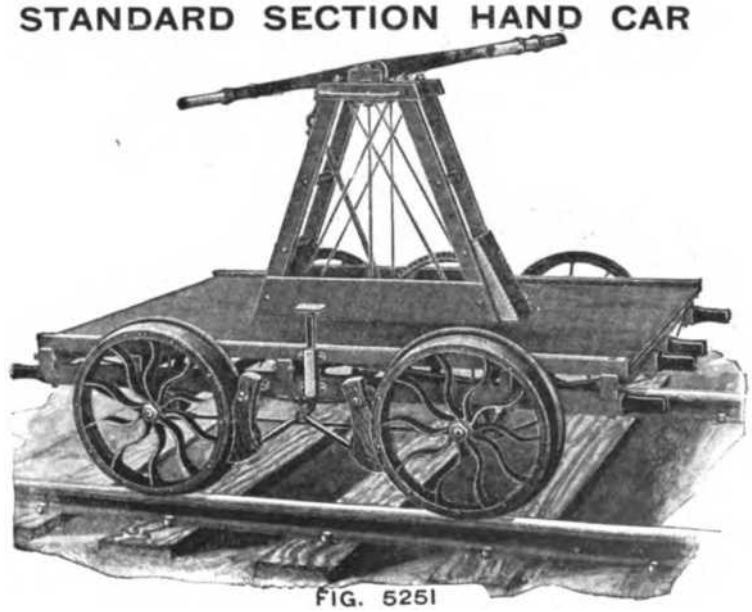


FIG. 5251

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STANDARD SECTION HAND CAR STANDARD GAUGE

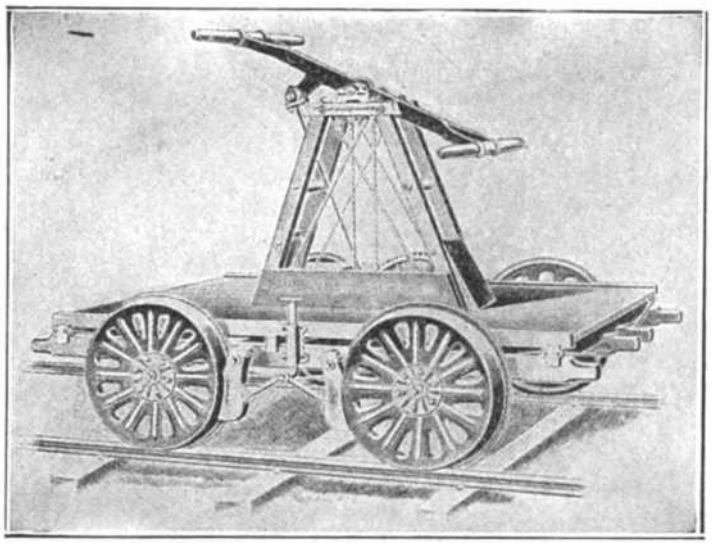


FIG. 5252

No. 1. Platform 6 feet long by 4 feet 4 inches wide. Wheels wood center or all steel, 20 inches diameter. Actual weight, 510 pounds. Steel wheels are standard, and always furnished unless otherwise ordered. Prices on application.

BRIDGE GANG HAND CAR

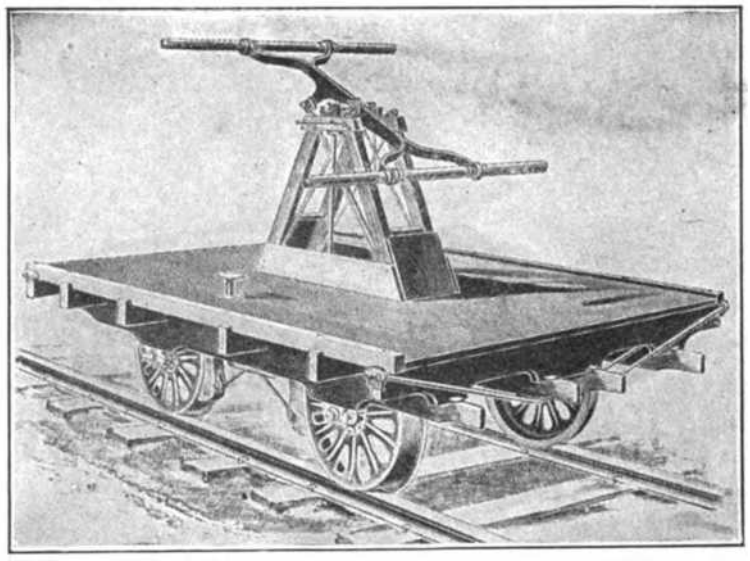


FIG. 5253

No. 3. Extra heavy. Platform 8 feet by 5 feet 7½ inches. Gallows frame in center of car, intermediate gear being used to gear to driving shaft. Very strong, substantial car, with steel wheels, 20 inches diameter. Actual weight, 735 pounds. Prices on application.

STANDARD HAND CAR, WITH STEEL WHEELS

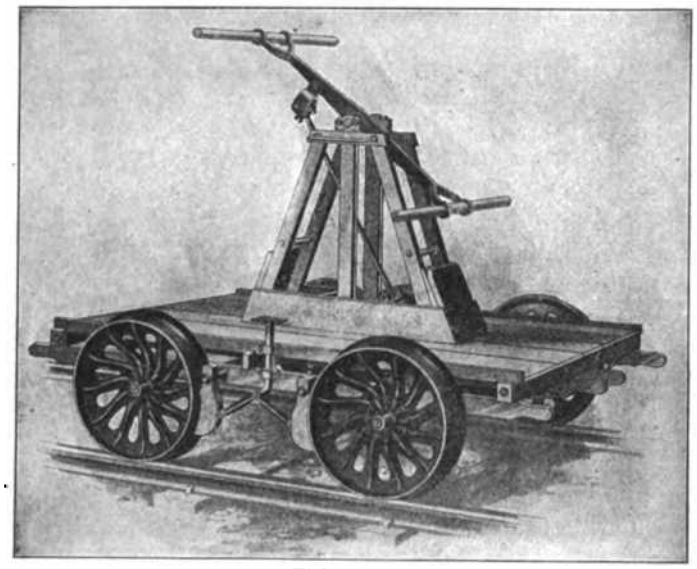


FIG. 5254

No. 1. Standard gauge; platform 6 feet long by 4 feet 5 inches wide; wheels 20 inches in diameter; axles 1½ inches in diameter; weight, 500 pounds. Prices on application.

NARROW GAUGE HAND CAR, WITH STEEL WHEELS

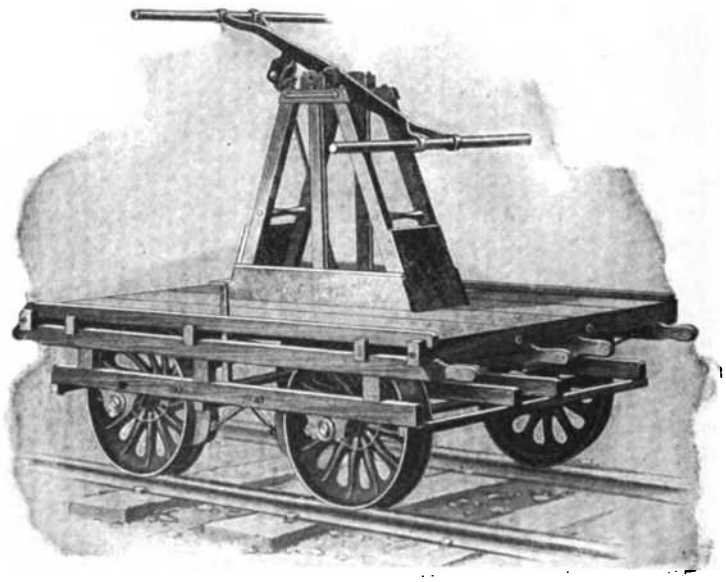


FIG. 5255

No. 3. Platform 6 feet long by 4 feet wide; wheels 20 inches in diameter; outside bearings; weight, 500 pounds. Prices on application.

HAND CAR, WITH TOOL BOX

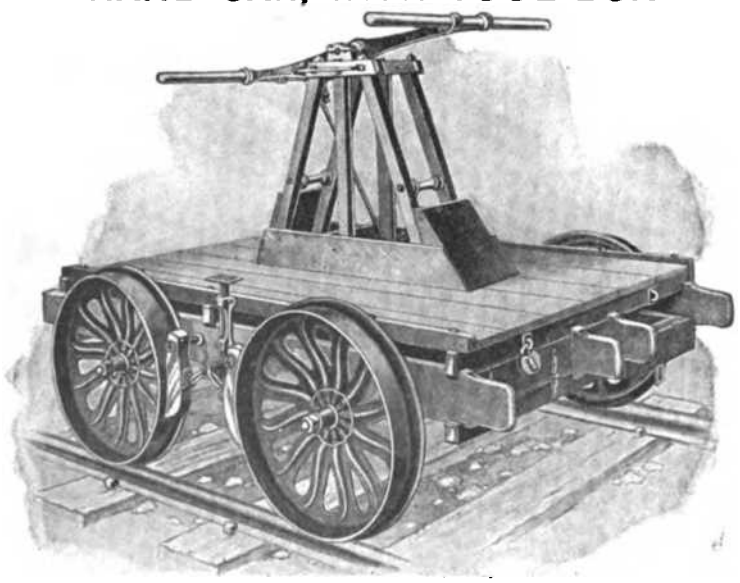


FIG. 5256

No. 11. Platform same size as No. 1, Fig. 5254; 24 inch steel wheels; weight 600 pounds. Prices on application.

HAND CAR, WITH SEATS

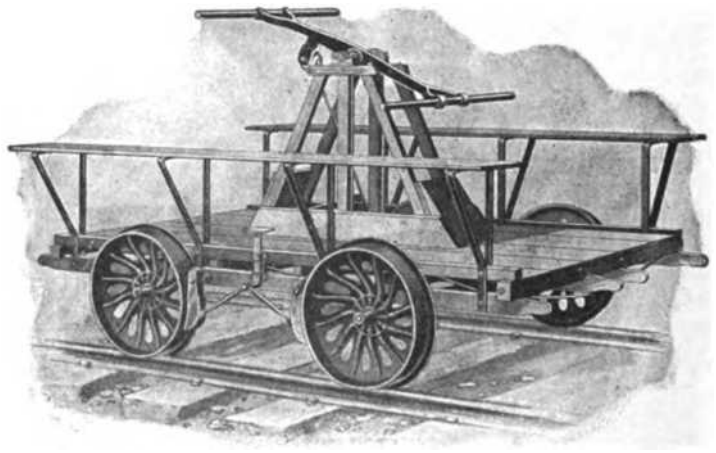


FIG. 5257

No. 4. Standard gauge; steel wheels, platform 7 feet 6 inches long by 4 feet 5 inches wide; weight, 600 pounds. Prices on application.

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HAND CAR
With Guard Rails.

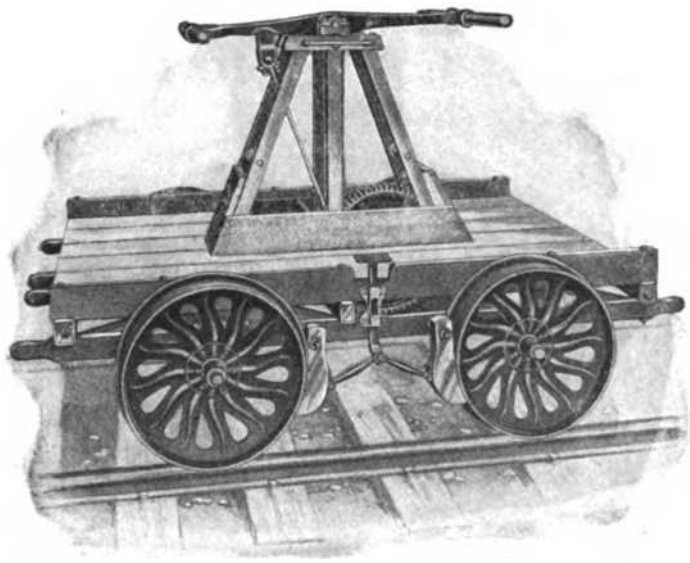


FIG. 5258

INSPECTION CAR
With Wood Wheels.

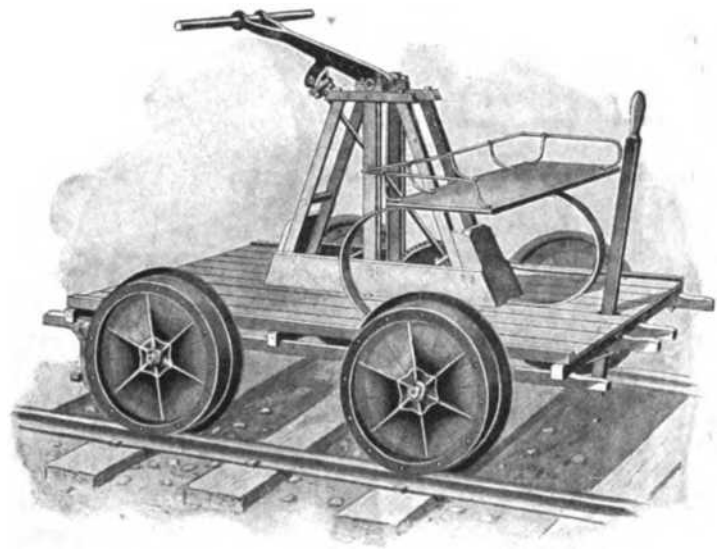


FIG. 5260

DESCRIPTION, FIG. 5258

No. 12. Standard gauge; steel wheels; platform same as No. 1 (Fig. 5254), but with guard rails 3 inches above deck; weight, 515 pounds.

Price on application.

DESCRIPTION, FIG. 5259

No. 13. Special construction throughout; all bearings made of Damascus bronze; weight, 575 pounds.

Price on application.

DESCRIPTION, FIG. 5260

No. 5. For use of roadmasters and supervisors of track. Car has same size platform as No. 1 (Fig. 5254), but lighter construction throughout; furnished with single or double end lever, as desired; weight, 470 pounds. No. 5 car can be furnished with steel wheels instead of wood.

Price on application.

DESCRIPTION, FIG. 5261

No. 5A. 20 or 24 inch wheels; equipped with ball bearings throughout, if desired.

Price on application.

DESCRIPTION, FIG. 5262

No. 5½. Similar to No. 5 (Fig. 5260), except that it is equipped with two swivel spring chairs; weight, complete, 475 pounds.

Price on application.

HAND CAR
With Angle Iron Gallows Frame.

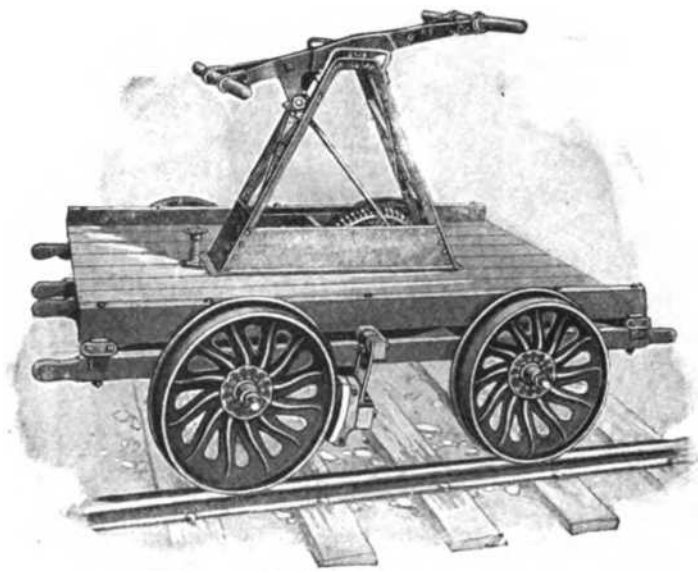


FIG. 5259

INSPECTION CAR
With Spring Settee.

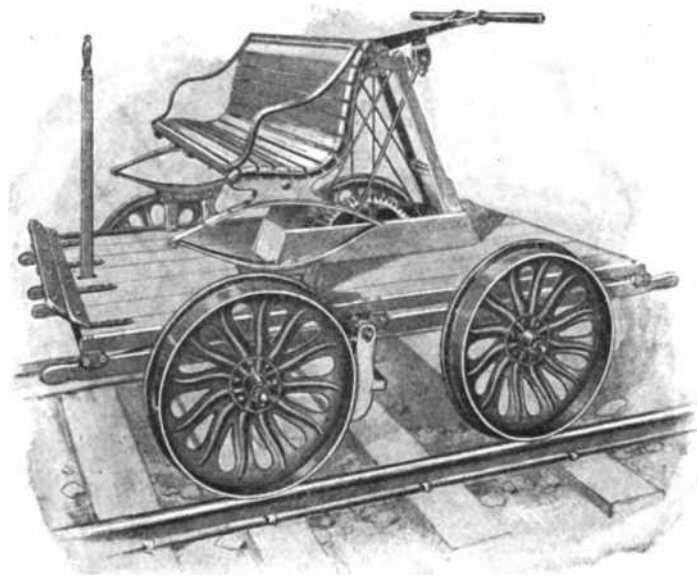


FIG. 5261

INSPECTION CAR
With Steel Wheels.

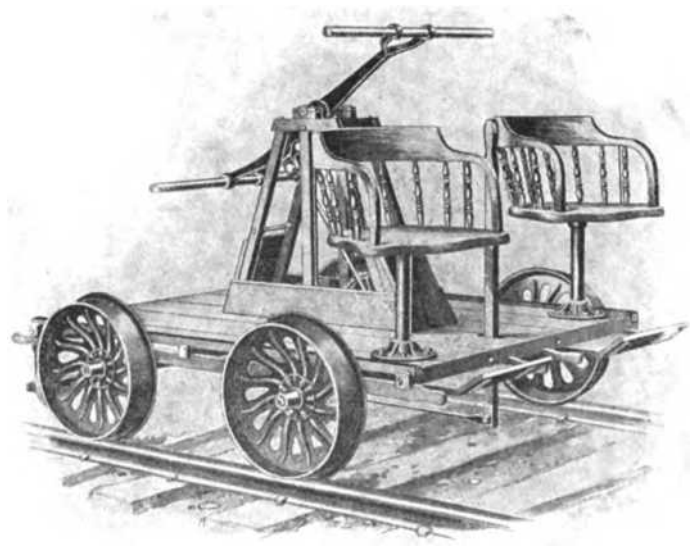


FIG. 5262

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STEAM INSPECTION CAR

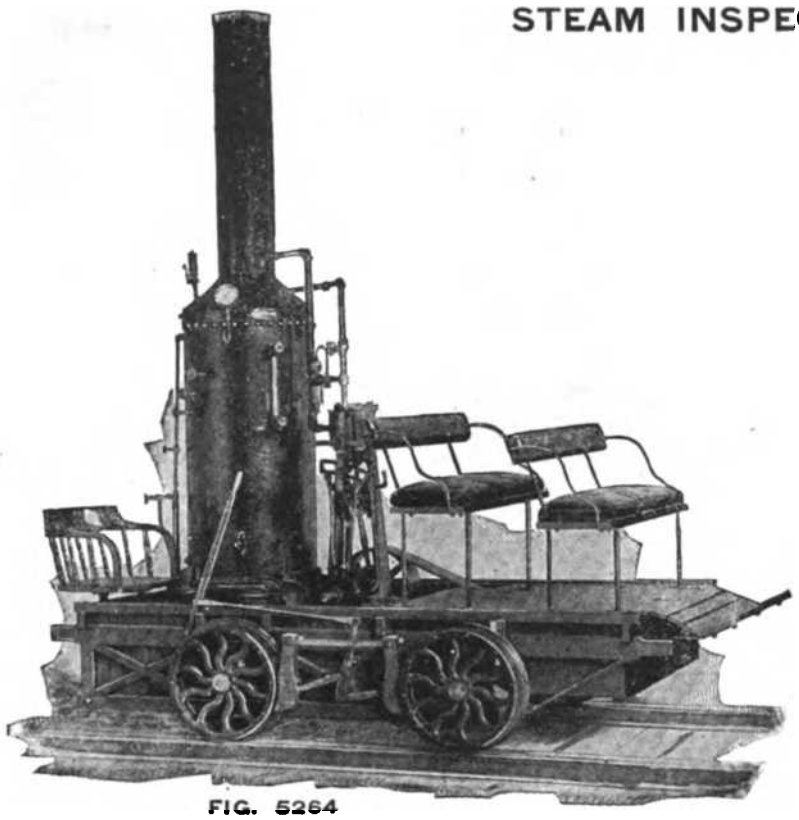


FIG. 5264

DESCRIPTION, FIG. 5264

Built for Service and Durability.

Furnished with steel wheels, with extra heavy hub and tire for this particular car. Five horse power vertical engine attached to boiler. Rate of speed, 25 miles per hour. Weight, 3,000 pounds.

PRICES AND FURTHER INFORMATION ON APPLICATION

MOTOR INSPECTION CAR

Showing Car with Front Seat Unfolded.

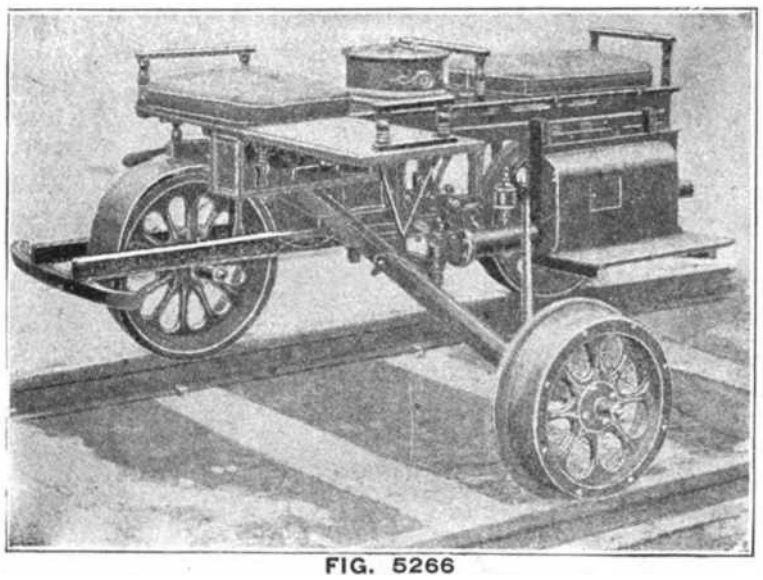


FIG. 5266

STEEL VELOCIPEDE



FIG. 5268

DOUBLE OR FOUR WHEELED MOTOR CAR

For Inspection Purposes.

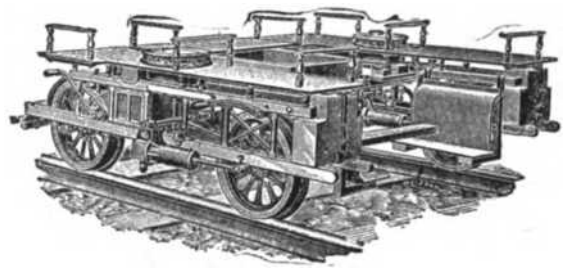


FIG. 5267

DESCRIPTION

A very useful variation of the Motor Car is the double type. In this case two complete single three wheeled motor cars are used, and after discarding the third wheel, together with the arm and brace rod, the two main frames are joined by a seat that runs across the front of both, containing ample room for four persons. Back of this, but between the two main frames, is a platform upon which a considerable amount of hand baggage or tools can be carried if desirable. At the rear of the car the two driving axles are united by a connecting shaft having universal couplings, by which means any propelling impulse communicated to either of the rear drivers is received by both. There is also on each of the main frames a rear seat for an operator, making a capacity on the device for six persons. Each main frame having its full double engine, there is ample power for use of the car with its full load under all ordinary circumstances. These double cars are so arranged that they can be disconnected at any time and used as two three wheeled cars.

PRICES ON APPLICATION

DESCRIPTION, FIG. 5266

This device is essentially a double gasoline engine mounted on a Velocipede Car. Simplicity, lightness and efficiency have been the aim constantly in view in constructing this device. The car is light, the weight being about 275 pounds; it is very strong and the motor furnishes power enough to carry a load of two men up any ordinary grade, and will run at a speed of 15 to 20 miles per hour. Its use enables the roadmaster or engineer of maintenance of way to visit all parts of the line under his charge very frequently and with exceedingly small expense. The single motor car is arranged for three riders by means of a folding seat in front. When unfolded this seat has a support which reaches down to the cross arm of the car; the forward foot rest is also extended toward the center of the track, so that there is sufficient room for the feet of both passengers. Brakes are provided for both the front and rear wheels, so that the car is constantly under the control of both the operator and the inspecting officer.

PRICES AND FURTHER INFORMATION ON APPLICATION

DESCRIPTION, FIG. 5268

This car is extensively used by switch lamp lighters. The left hand trailing arm and wheel attachment is particularly beneficial and of great advantage when the rails are slippery or frosty, and on roads where there are steep grades and sharp curves. We furnish a special box that can be used for carrying lamps. Weight, 185 pounds; furnished with 1 inch steel axle.

Price..... **$85 00**

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VELOCIPEDE CARS

NO. 1

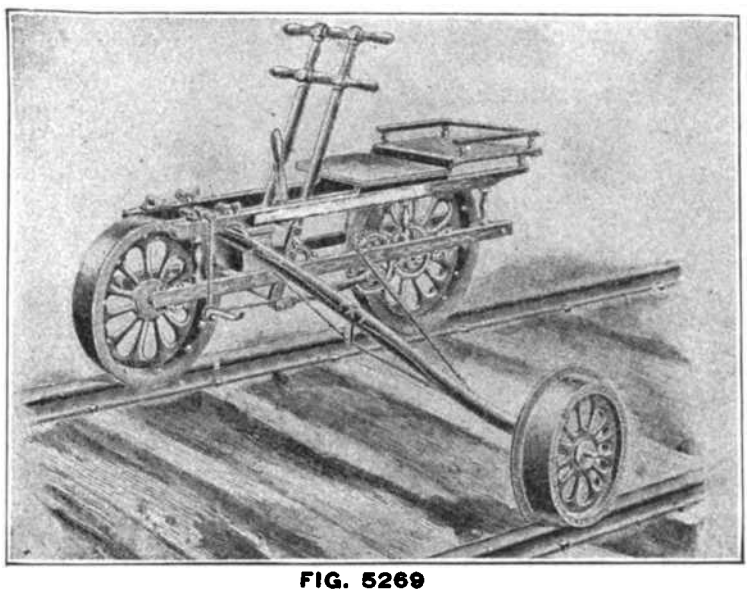


FIG. 5269

No. 1. Actual weight, 140 pounds; boxed for ocean shipment, 265 pounds. Can be arranged adjustable from narrow to standard gauge, if desired. Price on application.

NO. 2

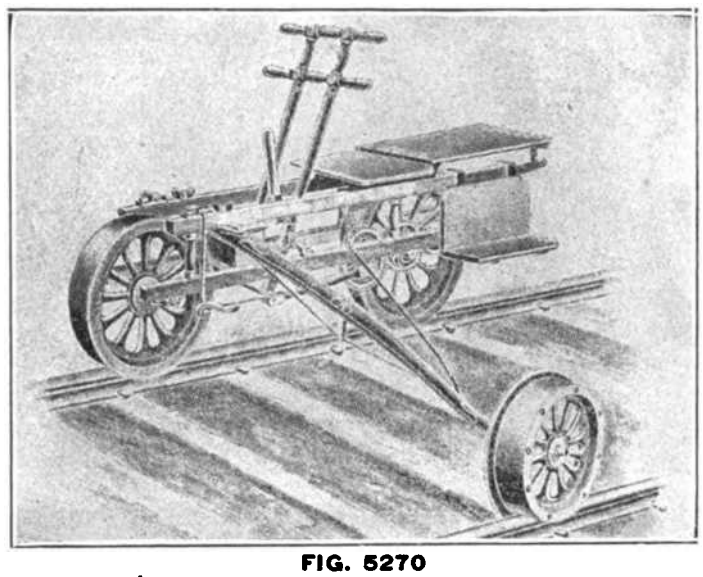


FIG. 5270

No. 2. It is the same in general design as the No. 1, Fig. 5269, but has in addition a seat and foot rest in rear of operator for carrying a second person. It makes an excellent inspection car, as the inspector can sit facing the track and carefully note its condition as the car proceeds. Weight same as No. 1 Car. Prices on application.

NO. 4. VELOCIPEDE CAR

Arranged for One Rider.



FIG. 5271

DESCRIPTION FIGS. 5271 AND 5272

Actual weight, 145 pounds; boxed for ocean shipment, 270 pounds. The change to accomodate two riders is instantly made, the seat being so made as to swing crossways of the car at will.

Prices on application.

PRICES VELOCIPEDE CAR EXTRAS, FOR FIGS. 5271 AND 5272

Cushions, each	$1 50
Lock and Chain, each	1 50
Detachable Foot Rest, when ordered separately	1 50

We can also, when desired, arrange any of these cars to throw out of gear when going down grade. For this attachment there is an additional charge of $5.00. An adjustable wrench and oil can are furnished with each, without extra charge.

NO. 4. VELOCIPEDE CAR

Arranged for Two Riders.



FIG. 5272

GAUGE OF VELOCIPEDE CARS, FIGS. 5271 AND 5272

All of the above three wheeled cars can be so made that the arm will be adjustable in the main frame, so that the car can be adapted to run on any gauge of track from three feet up to five feet, or even a greater gauge, and without any extra expense. We, however, when cars are ordered and no gauge is specified, understand that they are wanted for standard gauge track, and in such cases send the regular arm for standard gauge, which is not adjustable to different gauges. Parties, therefore, wishing car with arm so arranged as to run on different gauges of track, will please specify same with their order, when arm of this description will be furnished without extra charge.

VELOCIPEDE OR TELEGRAPH CAR

DESCRIPTION, FIG. 5273

Designed especially for use of telegraph companies. It will carry three persons, although it can be readily handled by one man. A small tray is provided for carrying tools and materials. It is a great convenience for linemen, enabling them to make careful inspections and to carry with them supplies needed to promptly make any necessary repairs.

No. 3. Weight 175 pounds, or boxed for ocean shipment, 300 pounds. Made for any gauge desired, but not adjustable. Prices on application.

When the No. 3 or Telegraph Car is wanted with adjustable arm, it will be best to order an additional arm and brace rod, which will be $3.50 extra.

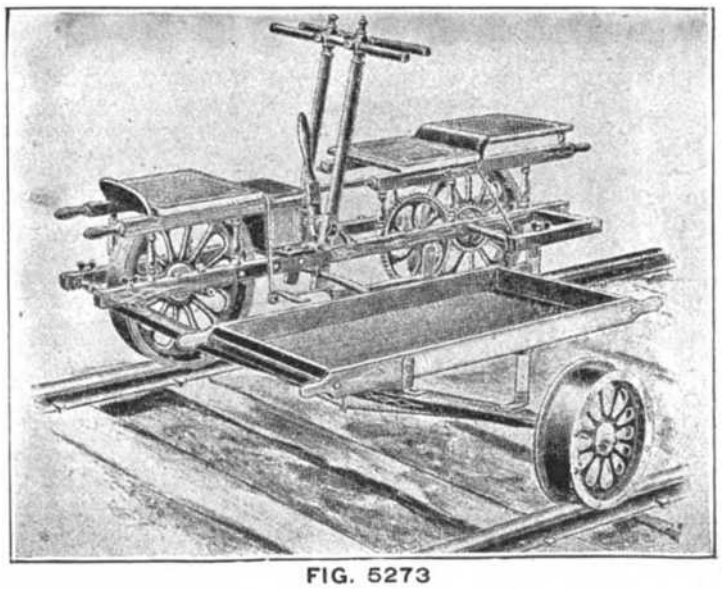


FIG. 5273

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NO. 14 VELOCIPEDE CAR

Car in Position on Track Ready to Run.

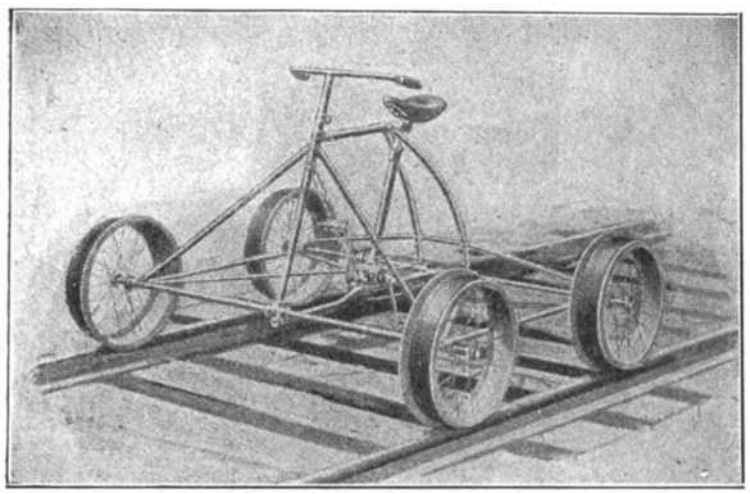


FIG. 5275

This Car is built in a general way on the principles of the safety bicycle; the frame is of weldless steel tubing, trussed in such a way as to be amply strong to carry any ordinary rider. The wheels have wire spokes and rubber tires. The propelling power is foot motion, transmitted to rear axles by sprockets and endless steel chain. Both crank shaft and all wheels are carried on ball bearings. The handle bar in front is not for the purpose of steering, but for steadying the rider. Car can be run at a very high speed. As will be seen by Fig. 5277, the Car folds into a very compact space for transportation in baggage car or other conveyance where it is desirable to occupy as little room as possible. The amount of space occupied is only the width of the wheels, and after being folded, being turned on its edge, occupies exceedingly little space. This folding is accomplished without the removal of a single bolt, or even a nut, from the car; the hand nut shown on seat post, being unscrewed, drops to a lower point on the post, when the Car can be readily folded into the position shown in cut. It is equipped with Garford saddle, unless other make is preferred. A leather tool pouch is furnished with each Car, containing wrench, screw driver and oiler. Weight 70 pounds.

PRICES ON APPLICATION

NO. 8 VELOCIPEDE CAR

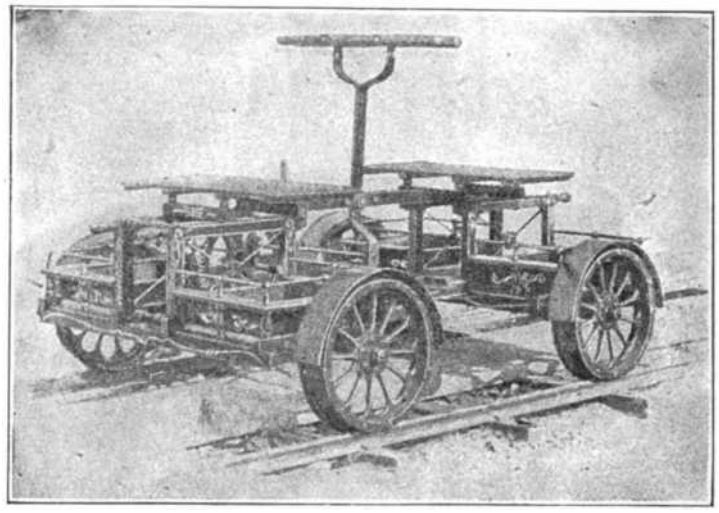


FIG. 5276

The illustration shows a standard gauge Car. It is built with a light frame work carried upon two axles, which revolve upon 20 inch velocipede wheels. The seats are elevated and run crossways of the track and each will accommodate two men, so that the capacity of the car is four passengers. At each side and beneath these seats are receptacles for packages or light baggage. This Car is useful for carrying mail or passengers short distances when the trains are far apart, and have many other uses which will be thought of on consideration. The axles are 1¼ inch steel. The gearing 3⅜ to 1. The two seats are each 16x32 inches in size. The weight of car for standard gauge is something over 400 pounds. It is also constructed for narrow gauge down to 36 inches, after substantially the same style. Ordinarily the cars are complete without the railing and boxes for carrying packages, their place being supplied by simple platforms, upon which what is carried is fastened with straps. A car built thus is, of course, of somewhat cheaper construction.

PRICES ON APPLICATION

NO. 14 VELOCIPEDE CAR

Folded for Transportation.

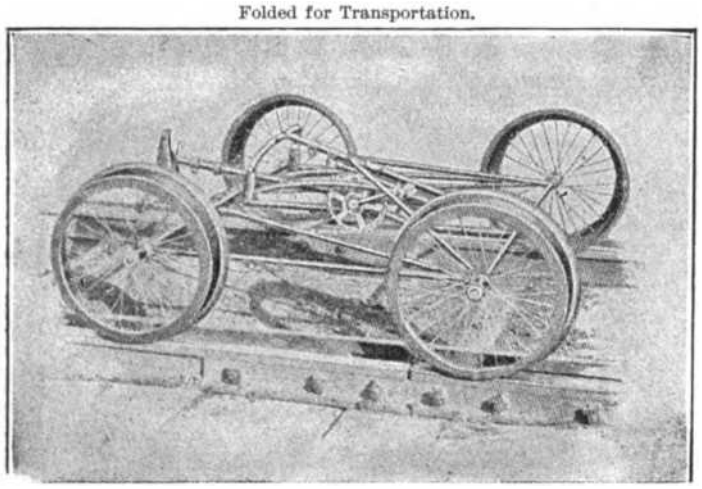


FIG. 5277

RAILWAY CYCLE

SINGLE SEATED CAR



FIG. 5278

This Car is made for any width of track. Where the width is more than 3 feet they are made to fold compactly and rigidly. Narrower widths do not fold because the width is less than the wheel base. Weight 60 pounds.

DOUBLE SEATED CAR

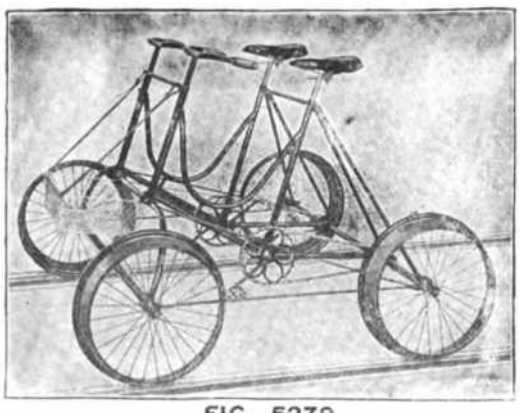


FIG. 5279

RAILWAY CYCLES

DESCRIPTION FIG. 5279

While seats are provided for two, the Car runs so lightly that one person can operate it with but little more exertion than that required for a Single Car. This Car can not be made of less than 3 feet gauge. Weight 75 lbs.

DESCRIPTION FIG. 5280

They have proven very efficient on mountainous roads, where the grades are steep and the curves sharp. They can be run over frogs and switches, and around curves at the highest rate of speed. Weight 55 lbs.

NARROW GAUGE CAR

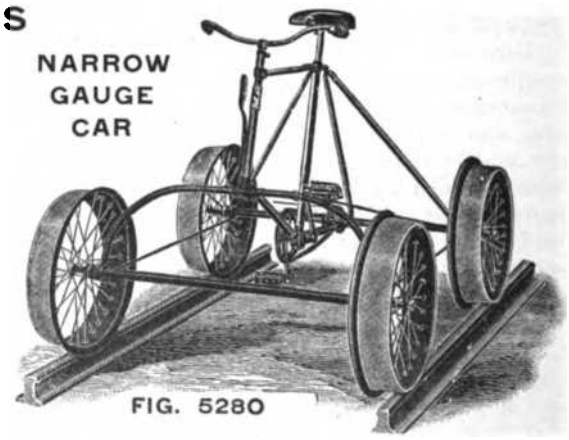


FIG. 5280

GENERAL DESCRIPTION, FIGS. 5278 TO 5280

The wheels are so flanged as to be adaptable to any kind of rail, whether of wood or iron. The Cars are made of any desired gauge, and for one or two persons. When specially ordered, we can adjust an extra seat to the front of the frame of either the Single or Double Car, in which position it is not possible for the rider to assist in propelling the Car. The Cars can be geared to suit any grade conditions, and every Car is equipped with an effective brake. The use of corrugated rubber tires prevents slipping on any kind of a rail, renders the passage of the Car noiseless, and protects the Car itself from injury by reason of jolts and jars. They can be run both backward and forward with equal facility, and frogs and switches can be run over at undiminished speed without danger of derailment. Frame—Cold drawn seamless steel tubing, so disposed as to brace and strengthen the frame longitudinally, transversely and diagonally. Reversible—Course can be changed almost instantly from forward to backward direction without rider dismounting. Folds—Conveniently and compactly. Double and Narrow Gauge Cars do not fold. Gear—Standard, 60. Higher or lower gears furnished when so ordered. Bearings—Balls throughout. Cones and cups made from special cone steel, hardened in oil. Finish—Black enamel nicely decorated. Furnishings—Necessary wrenches, screw driver and oiler, in pouch. Attachments—Strong receptacle for baggage and tools. Brake—Band pattern; convenient to the hand; friction applied to brake wheel on rear axle.

PRICES FIGS. 5278 TO 5280 ON APPLICATION

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HAND TRUCKS

NEW YORK PATTERN

HALF IRONED



FIG. 5281

STRAPPED UP



FIG. 5282

PRICES, FIGS. 5281 AND 5282

Nos.	Length of Handles, Inches.	Width at Nose, Inches.	Width at Upper Bar, Inches.	Size of Wheels, Inches.	Fig. 5281. Half Ironed, Each.	Fig. 5282. Strapped Up, Each.
0	45	12	16½	6 x 1½	$4 40	$5 15
1	48	13	18	6½ x 1¾	4 60	5 35
2	53	14	19	7½ x 2	6 10	7 10
3	56	15	20	9 x 2⅜	8 00	9 00
4	60	15½	21	10 x 2½	9 50	11 00
5	64	17	22	11 x 2½	11 50	13 50

Axles turned and wheels bored to center.

BOSTON PATTERN

HALF IRONED

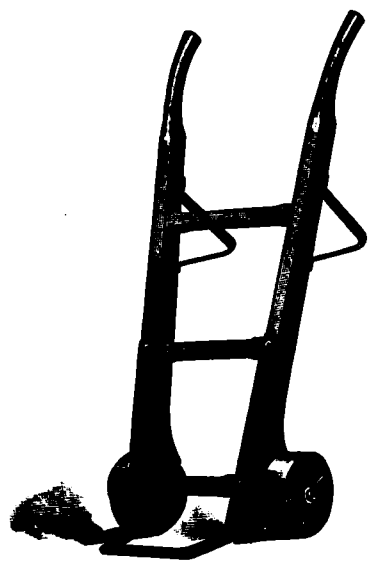


FIG. 5283

STRAPPED UP



FIG. 5284

PRICES, FIGS. 5283 AND 5284

Nos.	Length of Handles, Inches.	Width at Nose, Inches.	Width at Upper Bar, Inches.	Size of Wheels, Inches.	Fig. 5283. Half Ironed, Each.	Fig. 5284. Strapped Up, Each.
0	48	11	17½	6 x 1½	$6 00	$7 00
1	50	11½	18	6½ x 1¾	6 50	7 50
2	55	13	19½	7½ x 2	8 50	10 00
3	57	14½	22	9 x 2¾	11 00	12 50
4	66	15	22½	10 x 3		15 50
5	73	15	23	11 x 3		18 50

We can furnish trucks with wheels inside when desired at an extra price.

EXTRA HEAVY WESTERN PATTERN RAILROAD HAND TRUCKS

FULL IRONED, WITH STEAM BENT HANDLES



FIG. 5285

PRICES, FIG. 5285

Axles turned, wheels bored and faced.

No. 4—Length of handles, 61 inches; width, 24 inches; size of wheels, 10¾ x 2¾ inches; diameter of axles, 1⅛ inches; weight, 124 lbs.
Each..... $20 00

No. 5—Length of handles, 66 inches; width, 25 inches; size of wheels, 12 x 3 inches; diameter of axle, 1¼ inches; weight, 148 lbs.
Each.....$24 00

EXTRA FULL IRONED, WITH STEAM BENT HANDLES

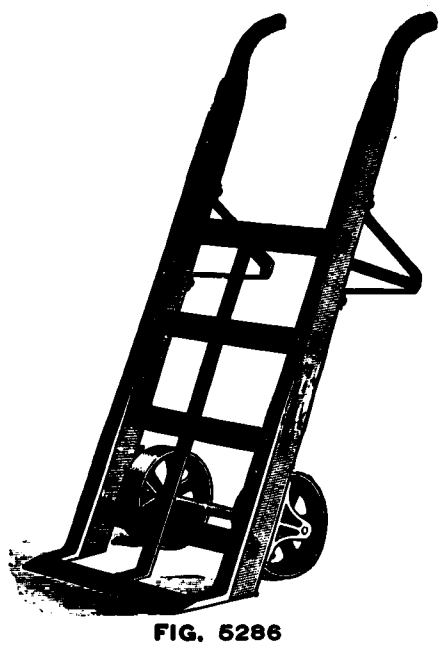


FIG. 5286

PRICES, FIG. 5286

Axles turned, wheels bored and faced, center strap welded to nose iron.

No. 4X—Length of handles, 61 inches; width, 24 inches; size of wheels, 10¾ x 2¾ inches; diameter of axle, 1⅛ inches; weight, 128 lbs.
Each.....$22 00

EXTRA FULL IRONED, WITH STEAM BENT HANDLES



FIG. 5287

PRICES, FIG. 5287

Axles turned, wheels bored and faced, with two center straps welded to nose iron.

No. 4XX—Length of handles, 61 inches; width, 24 inches; size of wheels, 10¾ x 2¾ inches; diameter of axle, 1⅛ inches; weight, 137 lbs.
Each.....$28 00

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WAREHOUSE OR DOCK TRUCK

BUFFALO PATTERN FULL IRONED

Front View. Back View.

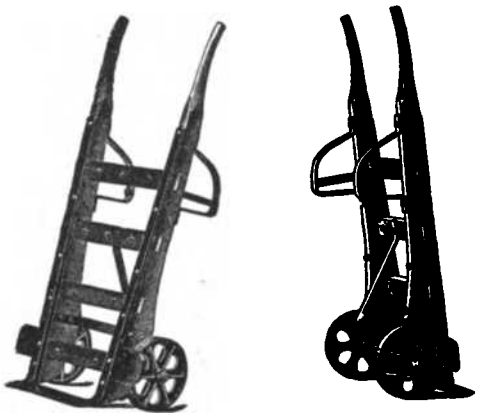


FIG. 5288 FIG. 5288

Has third leg, axle bearings turned, wheels bored true to center.

Length of handles, 62 inches; width at nose, 18½ inches; width at upper bar, 22 inches; size of axle, 1½ inches square; size of wheels, 12 x 2½ inches. Price, $22 00.

BARREL TRUCKS

WESTERN PATTERN NEW YORK PATTERN



FIG. 5291 FIG. 5292

WESTERN PATTERN

One wood and three curved iron cross bars.

PRICES, FIG. 5291

Nos.	Length of Handles, Inches.	Width, Inches.	Diameters of Wheels, Inches.	Strapped up, Each.
1	48	19	6½	$9 00
2	52	20	7½	11 00
3	56	22	9	16 00

NEW YORK PATTERN

PRICES, FIG. 5292

Nos.	Length of Handles, Inches.	Width at Nose, Inches.	Width at Upper Bar, Inches.	Diams. of Wheels, Inches.	Wood Slats Half Ironed, Each.	Three Curved Iron Cross Bars, Upper Bar Wood, Strapped up, Each.
1	48	13	18	6½	$5 60	$7 00
2	53	14	19	7½	7 10	9 00
3	56	15	20	9	9 00	10 50
4	60	15½	21	10	....	12 50
5	64	17	22	11	....	15 00

Furnished with all iron cross bars if so desired.

SPECIAL RAILROAD OR DOCK TRUCK

FULL IRONED



FIG. 5289

Axles Turned and Wheels Bored.

Length of handles, 61 inches; width at nose, 15⅜ inches; width at upper bar, 21 inches; size of wheels, 10 x 2¾ inches; axle, 1¼ inches square; weight, 120 lbs. Price, $20 00.

STEAMBOAT TRUCK



FIG. 5293

PRICES

No. 3—Length of handles, 56 inches; width at nose, 16 inches; width at upper bars, 20 inches; size of wheels, 9 x 2¾ inches.
Each..... $20 00

No. 4—Length of handles, 60 inches; width at nose, 20 inches; width at upper bar, 22 inches; size of wheels, 10 x 3 inches.
Each..... $24 00

Heavily ironed, with bent flat iron cross bars.

CLYDE TRUCK



FIG. 5290

Axles Turned and Wheels Bored.
All Bolts Countersunk.

Length of handles, 65 inches; width at nose, 17½ inches; width at upper bar, 22 inches; wheels, 12 x 3 inches; axle, 1½ inches square; weight, 145 lbs. Price, $20 00.

This is a full ironed truck with special curved nose, iron. Wheels riveted on.

LONGSHORE OR MACHINERY TRUCK

FULL IRONED



FIG. 5294

Axles Turned and Wheels Bored.

Length of handles, 62 inches; width at nose, 16¾ inches; width at upper bar, 21½ inches; size of wheels, 11¾ x 3 inches; axle, 1½ inches square; weight, 137 lbs. Price, $20 00.

Designed for general use, having three curved iron slats and one wood top slat ironed. Wheels are set well back, enabling heavy weights to be balanced on truck. Iron work extra heavy.

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NEW ORLEANS COTTON TRUCK



FIG. 5295

Nos.	Length of Handles, Inches.	Width at Nose, Inches.	Width at Upper Bar, Inches.	Sizes of Wheels, Inches.	Each.
3	56	15	20	9 x 2⅜	$9 00
4	60	16½	21½	10 x 2½	12 00
5	64	18	23	11 x 2½	15 00

WESTERN PATTERN TRUCK
FULL IRONED



FIG. 5298

Nos.	Length of Handles, In.	Width at Upper Bar, In.	Sizes of Wheels, In.	Each.
1	48	19	6½	$8 00
2	52	20	7½	10 50
3	56	22	9	15 00
4	60	24	10	18 50

BAGGAGE BARROW
CURVED PATTERN

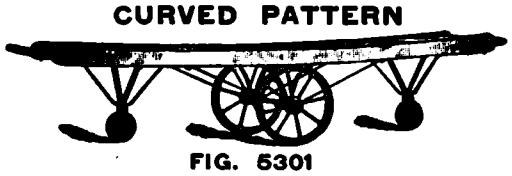


FIG. 5301

Wrought spoke wheels. Axles turned, wheels bored and faced.

Nos.	Length, Feet.	Width, In.	Sizes of Wheels, In.	Weight, Lbs.	Each.
1	8	24	20 x 2	350	$40 00
2	10	27	20 x 2	385	45 00
3	13	29	20 x 2	455	55 00

WESTERN PATTERN COTTON TRUCK



FIG. 5296

Full ironed. Wheel guard welded to side straps, thereby insuring great strength. Axles turned, wheels bored and faced.

Length of handles, 61 inches; width of frame, 24 inches; size of wheels, 13¾ x 2½ inches; diameter of axles, 1⅛ inches; weight, 133 lbs. Each, $22.00.

Furnished with inside wheels when so ordered.

BAG TRUCK



FIG. 5299

Steam bent plow handles and cast iron nose. Axles turned and wheels bored.

Length of handles, 42 inches; width at nose, 11⅛ inches; width at upper bar, 16¾ inches; size of wheels, 6 x 1⅜ inches; axle, ⅞ inch square; weight, 23 lbs.

Each.....$5 00

LIGHT BAGGAGE BARROW
WITH SLOPING BACK

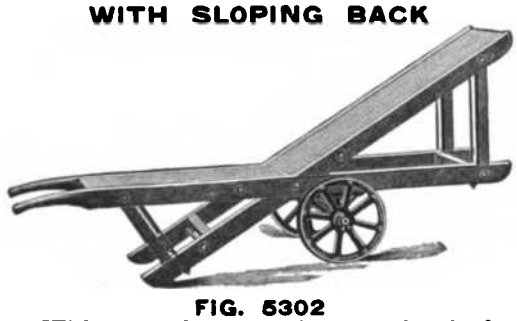


FIG. 5302

With covered top. Axles turned, wheels bored and faced.

Length of platform, 84 inches; width, 24 inches; wheels, 14 x 3½ inches; diameter of axle, 1¼ inches; weight, 147 lbs. Each, $25.00.

WESTERN PATTERN TRUCK
HALF IRONED

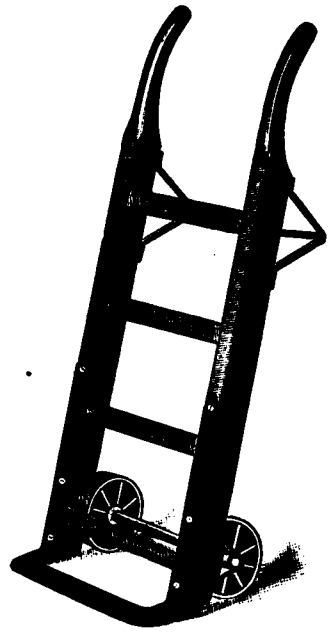


FIG. 5297

Nos.	Length of Handles, Inches.	Width of Truck, Inches.	Diameters of Wheels, Inches.	Each.
0	44	18	6	$6 00
1	48	19	6½	7 00
2	52	20	7½	9 00
3	56	22	9	13 00

HEAVY BAG TRUCK



FIG. 5300

With bent plow handles and cast iron nose. Axles turned and wheels bored.

Length of handles, 47 inches; width at nose, 15 inches; width at upper bar, 20½ inches; size of wheels, 6⅞ x 2 inches; axle, ⅞ inch square; weight, 63 lbs. Each, $9.00.

SLOPING BACK BAGGAGE BARROW



FIG. 5303

Axles turned, wheels bored and faced.

Nos.	Length, Feet.	Width, In.	Sizes of Wheels, In.	Weight, Lbs	Each.
1	7	24	18 x 2	210	$33 00
2	9	27	20 x 2	267	40 00
3	10	30	20 x 2	305	55 00

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BAGGAGE WAGON



FIG. 5304

PRICES

Nos.	Length of Body, Ft.	In.	Width. Inches.	Length of Racks, Inches.	Sizes of Front Wheels, Inches.	Sizes of Rear Wheels, Inches.	Weight, Lbs.	Each.
1	7	0	26	28	20 x 2	22 x 2½	462	$70 00
2	10	0	27	35	20 x 2	22 x 2½	500	80 00
3	12	0	32	44	20 x 2	22 x 2½	615	90 00

With sloping ends and wrought spoke wheels. Axles turned, wheels bored and faced.

These wagons are the latest and most approved pattern, and are made of carefully selected material. Heavily ironed. Painted in vermilion and green. Any other finish to order, as may be desired.

BAGGAGE AND EXPRESS WAGON WITH SARVEN PATENT WHEELS

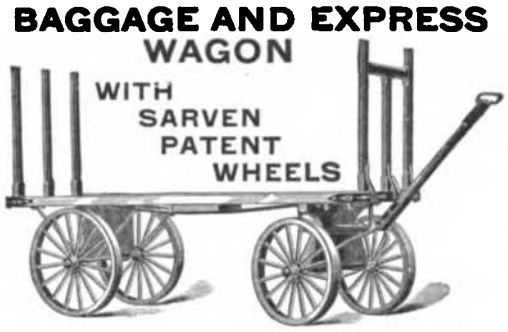


FIG. 5305

PRICE

Axles turned and wheels bored.

Length of platform, 10 feet; width of platform, 39 inches; height from floor, 35 inches; height of end racks, 39 inches; front wheels, 28 x 3½ inches; rear wheels, 31 x 3½ inches; weight, 630 pounds. Each, $100.00.

These wagons are the latest and best model, and are made of the most carefully selected material. Heavily ironed. Painted in vermilion and green. Any other finish to order, as may be desired. Furnished with wrought iron wheels (cast iron hub), 31 inches and 28 inches in diameter, with 3 inch tread, when so ordered.

DOUBLE END EXPRESS WAGON

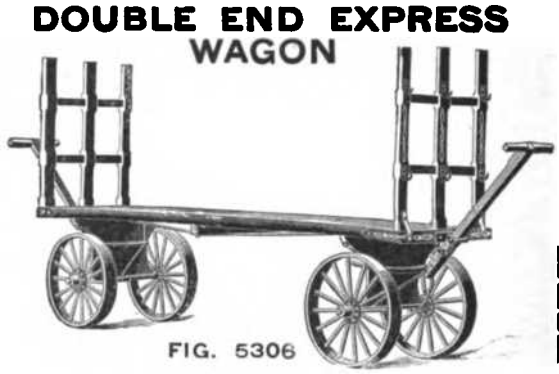


FIG. 5306

PRICE

Wrought iron fifth wheel, 20 inches in diameter. Steel axles.

A very desirable wagon for use at stations where platforms are narrow or space contracted, as it is not necessary to turn it around. Size, 38½ inches x 12 feet; height, from floor, 34 inches; standards, 45 inches high, and furnished with check hooks; Sarven patent wood wheels, 28 inches in diameter; tire, 3½ x ¼ inches; weight, 795 pounds. Each, $125.00.

BOSTON EXPRESS WAGON



FIG. 5307

PRICE

Axles turned, wheels bored and faced.

Length of platform, 84 inches; width, 30 inches; height of platform, 22 inches; height of end racks, 36 inches; wheels, 18 x 2 inches; axle, 1⅛ inches square; weight, 400 pounds. Each, $60.00.

This wagon is designed for use at the small stations where traffic is light; has three check hooks on each end rack. Made of the best selected material, and finished in vermilion and green, or otherwise, as may be desired.

EXPRESS TRUCK

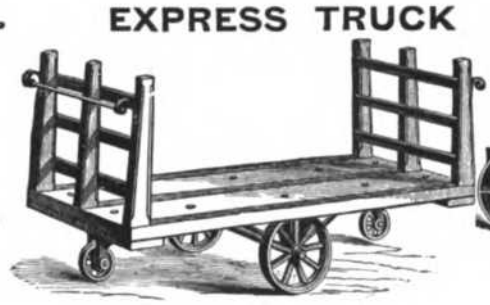


FIG. 5308

PRICE

Axles turned and wheels bored.

Length over all, 5 feet; length inside racks, 54 inches; width, 24 inches; height of racks above platform, 24 inches; center wheels, 13 x 1½ inches; caster wheels, 7¼ x 1½ inches; axle, 1 inch square; weight, 220 pounds. Each, $40.00.

DEPOT HOGSHEAD TRUCK



FIG. 5309

For handling hogsheads of tobacco, casks of queensware, etc. The platform being only 7 inches above floor at rear end, and 14 inches in front, casks are easily tipped onto truck.

PRICE

Platform, 2 inch ash, 32½ inches long, 18 inches wide; two curved iron cross bands, ⅝ x 3 inches, with four sharp cone head bolts in each, which hold casks in place; wheels are extra heavy, 10 inches in diameter, 3 inch face; wrought iron fifth wheel, 11 inches in diameter. Weight, 160 pounds. Each, $25.00.

RAILROAD FREIGHT AND WAREHOUSE WAGON

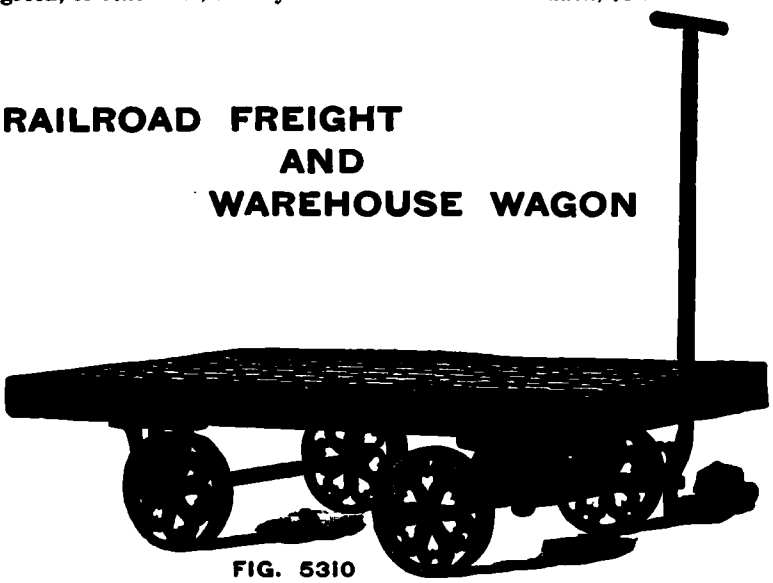


FIG. 5310

An extra heavy four wheel platform truck, especially adapted for use in railroad freight warehouses, etc.

Platform 45 inches wide by 79½ inches long by 21 inches high, with three stake pockets at each end, all made of selected oak lumber. Heavy frame, substantially put together with countersunk head bolts. Wood varnished and painted vermilion on edges of platform. Steel tongue or handle, 1 inch round by 4 feet long, which is held upright when not in use, by coil spring, as shown in cut. Weight, 516 lbs. Each, $33.50.

WAGON TRUCK

DESCRIPTION, FIG. 5311

Axles turned and wheels bored.

Only the best selected Vermont oak or ash lumber is used in the construction of these trucks. Furnished with cast iron fifth wheel, and the rear axle strongly braced to platform. All parts made to templet and are interchangeable.



FIG. 5311

Nos.	Length of Platform, Ft.	In.	Width of Platform, Ft.	In.	Sizes of Wheels, Inches.	Sizes of Axles, Sq. In.	Diams. of 5th Wheel, Inches.	Weight, Lbs.	Each.
1	3	0	2	0	7¾ x 2½	1	5	110	$14 00
2	3	2	2	2	7¾ x 2½	1	5	120	15 00
3	3	4	2	4	7¾ x 2½	1	7	130	16 00
4	3	6	2	6	8¾ x 2¾	1⅛	7	155	17 50
5	3	8	2	8	8¾ x 2¾	1⅛	7	158	18 50
6	3	10	2	10	8¾ x 2¾	1⅛	7	172	20 00

Nos. 1, 2 and 3, with rubber banded wheels, extra, $12 00
" 4, 5 " 6, " " " " " 15 00

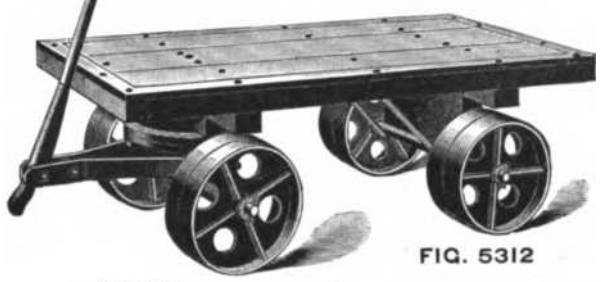
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METAL TRUCK

PRICE, FIG. 5312

This truck is adapted for tin plate, pig tin, sheet lead, shot, etc. Platform 42 inches long, 20 inches wide, 2 inches thick, made of best selected seasoned oak, with heavy iron band around top and countersunk, as shown in cut. All bolts countersunk. Extra heavy wheels, 9¾x4 inches; cast iron fifth wheel, 10 inches in diameter. Iron handle 36 inches long. Well braced. Weight 200 pounds. Each.....$30 00



Axles turned and wheels bored.

FIG. 5312

SHEARING TRUCK

Especially Designed for Tin Plate Mills.



FIG. 5314

PRICE

This truck is designed for carrying the trimmings after they are bundled to the cars for shipment. Platform, 36x28 inches; top of platform, 12¼ inches above floor; three strips of ¼x2 inch iron screwed to top of platform; end racks, 18 inches high above deck; 7 inch cast iron circles; wheels, 8¾x2¾ inches; axles, 1¼ inches square; axles turned and wheels bored; capacity, 2000 lbs. Weight, 210 lbs. Each, $35.00.

HOT METAL TRUCK

PRICE, FIG. 5313

This truck is especially designed and constructed for taking the hot plates as they come from the rolls and carrying them to the shears for trimming. Labor is saved in handling the plates, as it is backed up to the rolls, the hot plates being laid thereon flat and allowed to cool before trimming. Corners of platform rounded. The frame is built of 5/16x3x3½ angle iron covered with No. 10 iron riveted on top; platform, 56 inches long, 24 inches wide; top of platform, 11½ inches from floor; axles, 1½ inches square; 7 inch wrought iron circles; rear wheels, 9⅜x2 15/16 inches; front wheels, 8x2½ inches. Axles turned and wheels bored. Capacity, 6,000 lbs. Weight, 315 lbs. Each, with plain wheels.....$60 00



FIG. 5313

FACTORY TRUCK

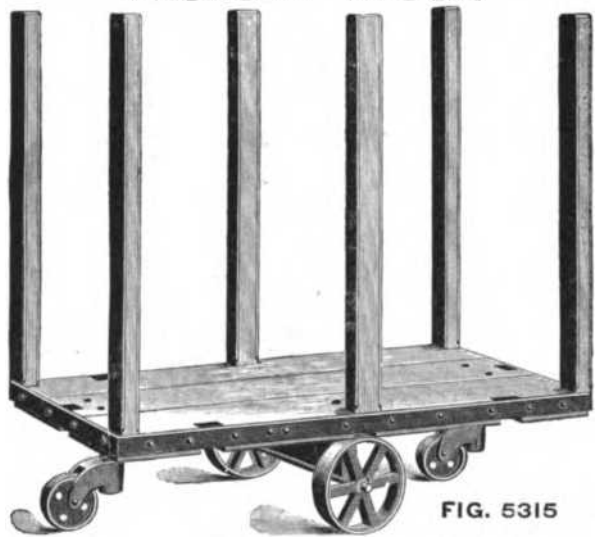


FIG. 5315

PRICE, FIG. 5315

Platform 27 inches wide by 48 inches long, with iron strap ¼x1¾ inches around outside edge; six stakes, 36 inches high, adjustable in any of the twelve sockets, to suit convenience of user; all wheels bored and faced and axle turned; centre wheels, 8¾x2¾ inches; weight, 195 pounds. Each.....$22 00

3 WHEEL TRUCKS

OLD STYLE

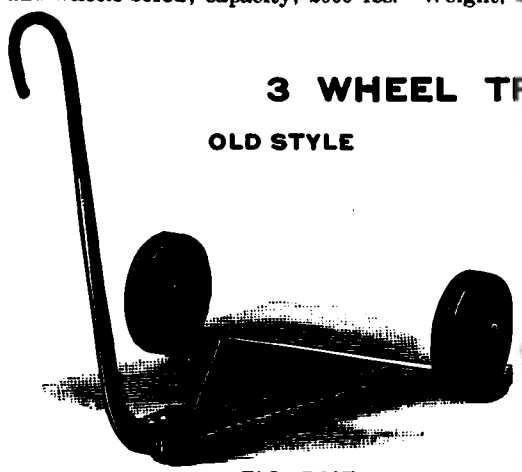


FIG. 5317

NEW STYLE

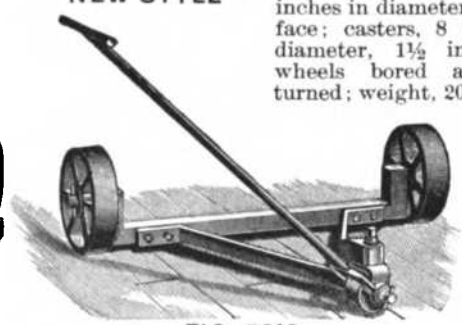


FIG. 5318

DESCRIPTION, FIG. 5318

The small third wheel in front of this truck is made to swivel, so that the truck can be made to turn with little or no effort.

These trucks are designed to take the place of rollers for moving pieces of castings and machinery. It will be noticed that the axles run quite close to the floor, thereby requiring very little effort on the part of the operator to load or unload the trucks.

PRICES, FIGS. 5317 AND 5318

Nos.	Capacity, Pounds.	Distance bet. Drops, Inches.	Each.
1	750	22	$10 00
2	1,000	26	20 00
3	1,500	30	25 00
4	2,000	34	30 00

PRICE FIG. 5316

Turns in its own length. For wood working shops, door and sash factories, etc. Platform, 27 inches wide by 54 inches long by 20 inches high; wheels, 13¾ inches in diameter, 2½ inch face; casters, 8 inches in diameter, 1½ inch face; wheels bored and axle turned; weight, 200 pounds.

WOOD SHOP TRUCK



FIG. 5316

Each.....$25 00

PIPE TRUCK



FIG. 5319

This truck is designed to handle pipe and can be loaded to 3,000 pounds capacity. Platform, 3 feet long, 2 feet wide, 22 inches high; staggered wrought spoke wheel, 18 inches diameter, 4 inch face; axle, 1¾ inches square; weight, 300 pounds. Each..... ....$30 00

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AUTOMATIC TRUCKS

FOR ROUND HOT STEEL, IRON WHEELS



FIG. 5320

PRICES, FIG. 5320

30 inch Iron Wheel, Wrought Iron Spokes; width, 30 inches; capacity, 2 to 9 inches diameter. Designed for Locomotive and Car Axles, Bar Iron Shafting, Cast Columns, etc. Weight, 235 pounds. Each, $75.00.

Same, Wooden Wheels. Weight, 175 pounds. Each, $80.00.

PRICES, FIG. 5321

30 inch or 33 inch Sarven's Wood Wheels. Width, 30 inches; capacity, 4 inches to 15 inches. This truck is designed for handling Wrought Iron Beams and Railroad Iron. Weight, 175 pounds. Each, $80.00.

33 inch Sarven's Wood Wheels, designed for handling Car Wheels on Axles. Each, $85.00.

FOR BEAMS, SARVEN WOOD WHEELS

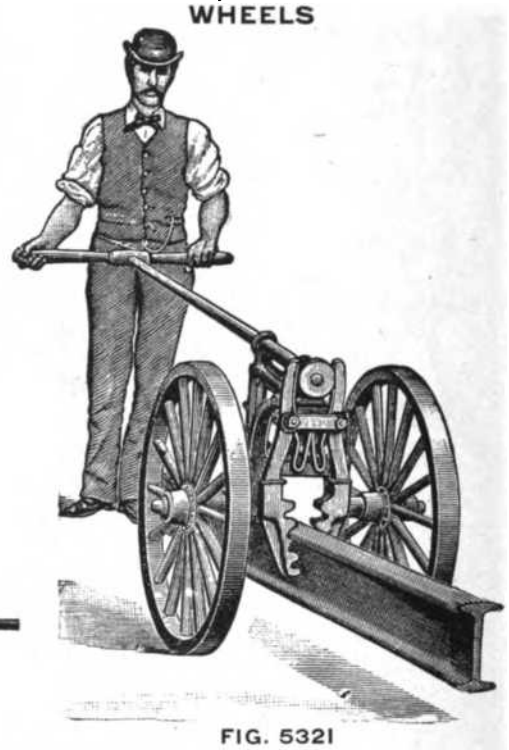


FIG. 5321

BAR IRON TRUCK

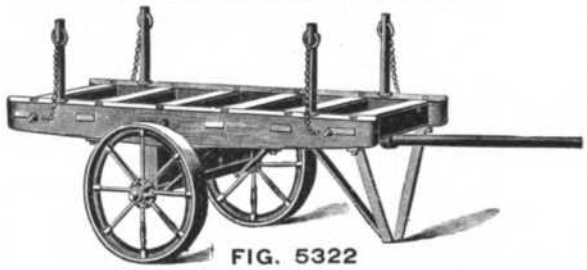


FIG. 5322

PRICE, FIG. 5322

A very heavy, strong and durable truck. Platform 25½ inches wide by 63 inches long; iron handle extends 59 inches in front of platform; truck stands on platform scale 3 feet square; patent steel spoke wheels, 3 x 20 inches; weight, 350 pounds. Each, $50.00.

BRACED BOX TRUCK

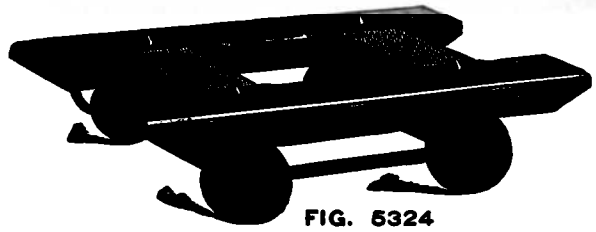


FIG. 5324

PRICE

Length, 24 inches; width, 16 inches; size of wheels, 4 x 1½ inches; axle, ¾ inch square; axles turned and wheels bored; weight, 33 pounds. Each, $9.00.

BOX TRUCK

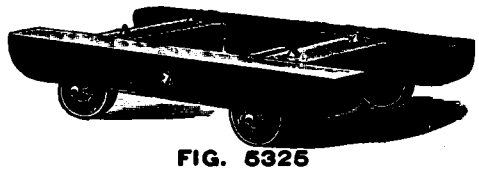


FIG. 5325

PRICES

With Spike Head Bolts to prevent boxes from slipping. Axles turned and wheels bored.

Nos.	Lengths, Inches.	Width, Inches.	Sizes of Wheels, Inches.	Sizes of Axles, Sq. Inches.	Weight, Pounds.	Each.
1	18	18	4 x 1⅜	¾	27	$5 00
2	26	18	4 x 1⅜	¾	32	6 00

ALL MALLEABLE IRON BOX TRUCK



FIG. 5326

23 x 16 inches. Each, $5.50,

DENISON'S SUSPENDED WEIGHING MACHINE

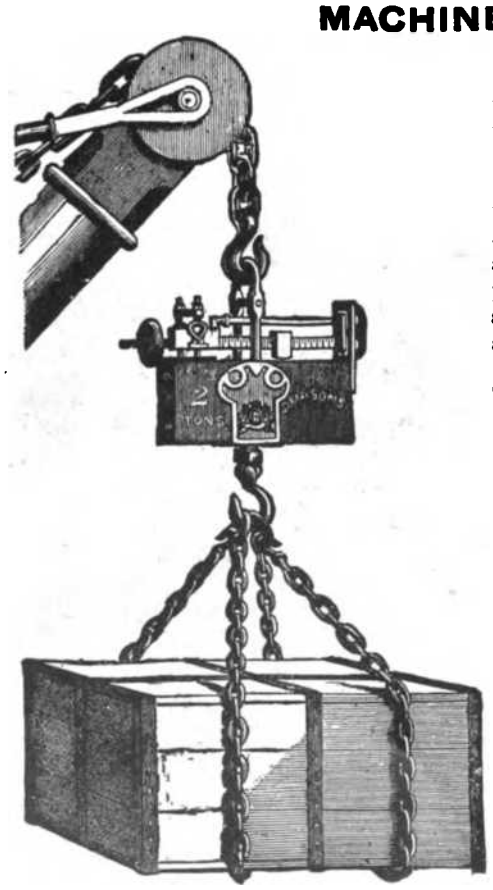


FIG. 5323

DESCRIPTION, FIG. 5323

It has no springs, no liquids, no loose weights. This machine is constructed upon the compound lever principle, of the best forged iron and steel. All the knife edges and bearings are steel, scientifically tempered and hardened, and the working parts are protected from damp and dust by being inclosed in a strong iron or steel box.

Capacity, Tons.	Prices, With Regular Steelyard.	Add For Brass Steelyard.	Approximate Weight, Pounds.
½	$73 00	$1 80	44
1	82 00	2 25	62
1¼	96 00	2 75	68
1½	115 00	2 75	90
2	136 00	3 20	112
2½	155 00	3 20	122
3	175 00	3 60	126
4	215 00	4 00	154
5	250 00	4 50	184
6	264 00	4 50	200
8	290 00	5 85	262
10	312 00	6 30	318
12	335 00	6 75	335
16	370 00	9 50	560
20	415 00	9 50	682
26	500 00	11 25	752
30	565 00	12 60	896
40	690 00	15 30	1,120
50	820 00	18 00	1,540
60	1,050 00	20 00	1,830

70, 80, 90, 100 and 125 tons, special. Prices on application.

The sensitiveness of these machines is shown as follows:

Up to 5 tons, actuated by 1 pound.
" 10 " " " 2 "
20 tons, actuated by 5 pounds.
40 " " " 10 "

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DYNAMOMETER



FIG. 5327

PRICES, FIG. 5327

Capacity, ranging from 500 to 2,500 pounds, each $36 00

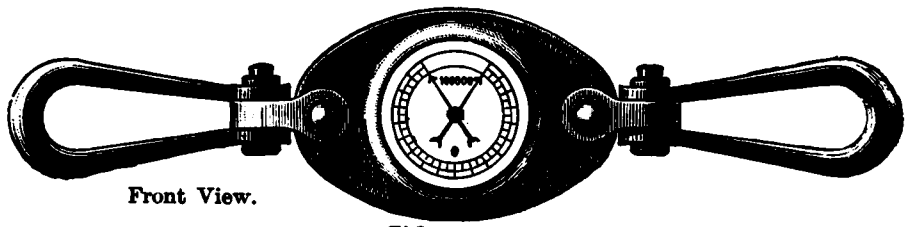
Capacity, ranging from 3,000 to 5,000 pounds, each $48 00

PRICES, FIG. 5328

For tractive power, lbs..	500	1,000	2,000	3,000
Each	$50 00	$60 00	$70 00	$80 00
For tractive power, lbs..	4,000	6,000	8,000	10,000
Each	$100 00	$120 00	$135 00	$150 00

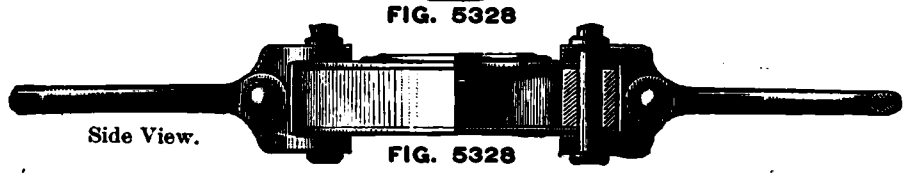
DYNAMOMETER

FOR ASCERTAINING POWER OF TRACTION ENGINES



Front View.

FIG. 5328



Side View.

FIG. 5328

TESTING MACHINE

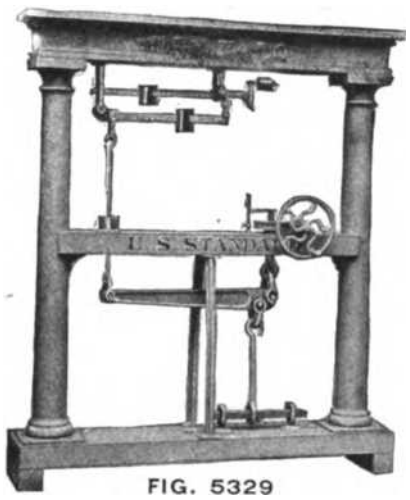


FIG. 5329

For testing the strength of 1 inch bars of cast iron, from 12 to 24 inches long. Send for circulars containing complete description.

No.	Capacity.	Each.
2800	5,000 lbs.	$100 00

FURNACE CHARGING SCALE

DORMANT PATTERN, WITH FOUR OR MORE BEAMS

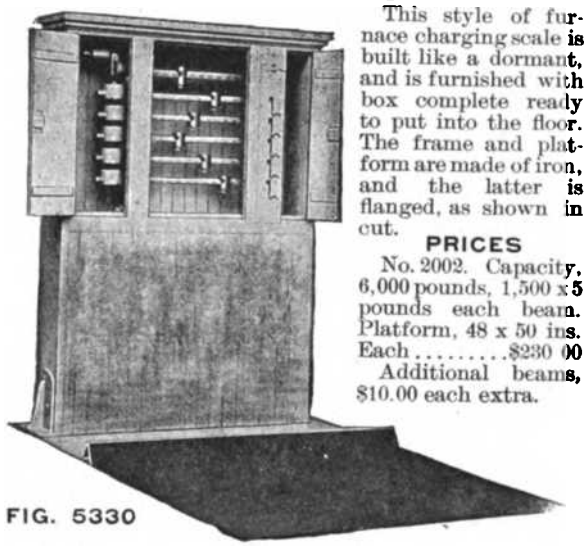


FIG. 5330

This style of furnace charging scale is built like a dormant, and is furnished with box complete ready to put into the floor. The frame and platform are made of iron, and the latter is flanged, as shown in cut.

PRICES

No. 2002. Capacity, 6,000 pounds, 1,500 x 5 pounds each beam. Platform, 48 x 50 ins. Each $230 00

Additional beams, $10.00 each extra.

PRICES, FIG. 5331

With iron posts and platform.

Nos.	Beams.	Height of Posts, Feet.	Platform, Feet.	Each.
2004	4	8	6 x 5	$450 00
2006	5	8	6 x 5	460 00
2008	6	8	6 x 5	470 00
2010	7	8	6 x 5	480 00
2012	8	8	6 x 5	490 00

FURNACE CHARGING SCALE

SUSPENSION PATTERN



FIG. 5331

PRICES

With wood posts and platform.

Nos.	Beams.	Height of Posts, Feet.	Platform, Feet.	Each.
2015	4	8	6 x 5	$300 00
2017	5	8	6 x 5	310 00
2019	6	8	6 x 5	320 00
2021	7	8	6 x 5	330 00
2023	8	8	6 x 5	340 00

ROLLING MILL SCALE



FIG. 5332

With vibratory axle, rack, rubber spring platform and heavy wheels.

These scales are constructed especially for heavy work, and are warranted strong, accurate and durable. They are in general use in rolling mills, foundries and iron warehouses. If hanging poise is wanted, order must so specify.

PRICES

Nos.	Capacity, Pounds.	Platform, Inches.	Each.
1494	2,500 x 1	32 x 24½	$125 00
1496	4,000 x 1	40 x 31	160 00
1498	6,000 x 1	40 x 31	185 00
1500	8,000 x 1	40 x 31	210 00
1502	10,000 x 1	40 x 31	225 00
1504	12,000 x 1	40 x 31	240 00

ROLLING MILL SCALE

WITH SHORT IRON PILLAR

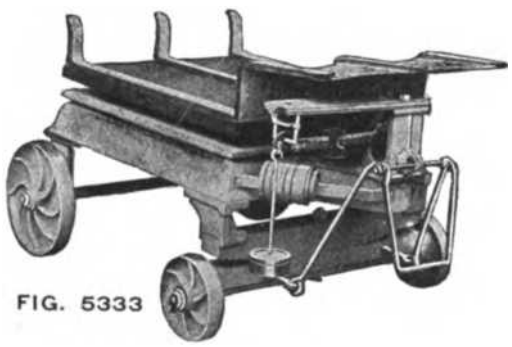


FIG. 5333

With vibratory axle, rack, rubber spring platform and heavy wheels.

This scale has a hood over the beam and weights, so that large plates and bars of iron may be passed over the scale.

PRICES

Nos.	Capacity, Pounds.	Platform, Inches.	Each.
1506	2,500 x 1	32 x 24½	$125 00
1508	4,000 x 1	40 x 31	160 00
1510	6,000 x 1	40 x 31	185 00
1512	8,000 x 1	40 x 31	210 00
1514	10,000 x 1	40 x 31	225 00
1516	12,000 x 1	40 x 31	240 00

MONITOR ROLLING MILL SCALE

WITH SHORT IRON PILLAR

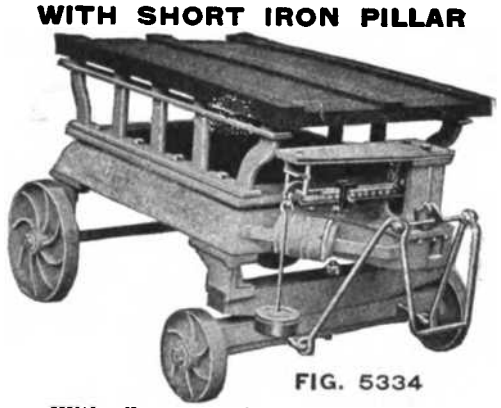


FIG. 5334

With vibratory axle, rack, rubber spring platform and heavy wheels.

Especially adapted for weighing bar iron or large plates of iron and steel.

PRICES

Nos.	Capacity, Pounds.	Platform, Inches.	Height.	Each.
1518	4,000 x 1	33 x 50	3 ft. 3 in.	$180 00
1520	6,000 x 1	33 x 50	3 " 4 "	210 00
1522	8,000 x 1	33 x 50	3 " 4 "	235 00
1524	10,000 x 1	33 x 50	3 " 6 "	260 00
1526	12,000 x 1	33 x 50	3 " 6 "	285 00
1528	15,000 x 1	33 x 50	3 " 6 "	315 00

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PORTABLE PLATFORM SCALES

PIG IRON SCALE

WITH DROP LEVER AND BRASS SLIDING POISE



FIG. 5335

This scale is made very heavy and constructed entirely of metal, and is especially designed for weighing pig iron and other metals.

PRICES

No. 1490. Capacity, 2500 x ½ pounds; platform, 24 x 38 inches. Each, $110.00.

No. 1492. Capacity, 3000 x ½ pounds; platform, 24 x 38 inches. Each, $120.00.

ORE SCALE

Made entirely of metal, very strong and heavy. Beams graduated by ½ pounds to 100 pounds.

PRICES

No. 114. Capacity, 2,500 pounds; platform, 44 x 35 inches. Each, $126.00.

Same as Above, with Drop Lever.

No. 115. Capacity, 2,500 pounds; platform, 44 x 35 inches. Each, $136.00.



FIG. 5337

WHEELBARROW SCALE

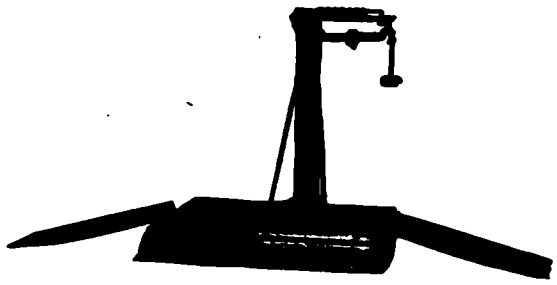


FIG. 5338

No wood is used in the construction of this scale. The scale is intended for weighing wheelbarrow loads of coal, etc., and platform is suitable size. Pillar braced. A set of inclines included with scale.

Without Wheels.

Nos.	Capacity, Pounds.	Platform, Inches.	Each.
1451	1,000 x 1	42 x 30	$70 00
1453	1,500 x 1	42 x 30	80 00
1455	2,000 x 1	44 x 35	93 00
	With Wheels.		
1458	1,000 x 1	42 x 30	$75 00
1460	1,500 x 1	42 x 30	85 00
1462	2,000 x 1	44 x 35	100 00

WHEELBARROW SCALES, "A" PATTERN

Without Wheels.

Nos.	Capacity, Pounds.	Platform, Inches.	Each.
1465	1,000 x 1	39 x 30	$60 00
	With Wheels.		
1466	1,000 x 1	39 x 30	65 00

TIERCE BEAM AND FRAME

WITH BARREL HOOKS

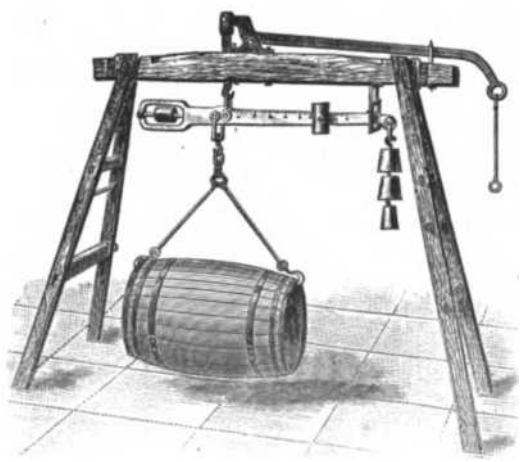


FIG. 5341

The beam is graduated by ½ pounds to 110 pounds on each side. Sliding brass poise and brass weights, to hang at the end of the beam to make up the full capacity. Extreme length, 87 inches; height, 73 in.; weight, 120 pounds.

Complete, as Shown in Cut.			Beam and Weights Only.		
Nos.	Capacity, Pounds.	Each.	Nos	Capacity, Pounds.	Each.
764	600	$70 00	765	600	$45 00
766	700	75 00	767	700	55 00
768	1,000	90 00	769	1,000	70 00

This frame is made from selected ash or oak lumber, and thoroughly ironed.

WHEELBARROW SCALE

WITH QUICK WEIGHING ATTACHMENT, AND AUTOMATIC CHECK VALVE

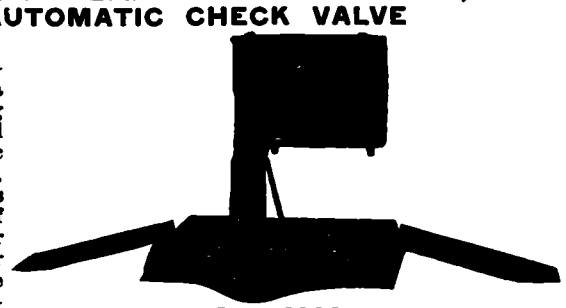


FIG. 5339

Scale is furnished with a quick weighing attachment and an automatic check valve, which controls the oscillation of the needle after load is run on or taken off. The indicator is graduated to 200 x 2 pound marks. A set of inclines included in price.

Without wheels. No. 1469; capacity, 1000 x 1 pounds; platform, 42 x 30 inches. Each, $110.00.

With wheels. No. 1470; capacity, 1000 x 1 pounds; platform, 42 x 30 inches. Each, $115.00.

SOUTHERN COTTON SCALE

No. 1480. Complete scales, with japanned beam; cotton frame, complete; cotton beam only; cotton hook, plain; cotton hook, with swivel; chain down hauls; balance poise for hooks.

Special prices quoted on application.

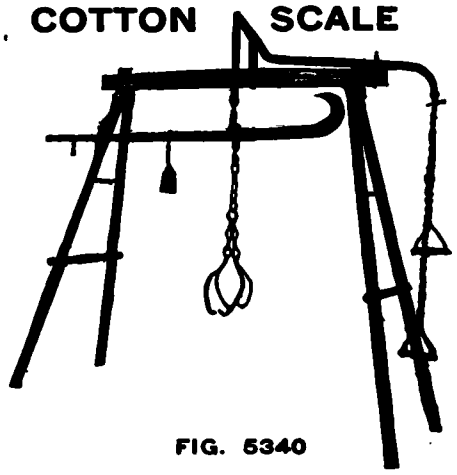


FIG. 5340

COMPOUND CRANE BEAM

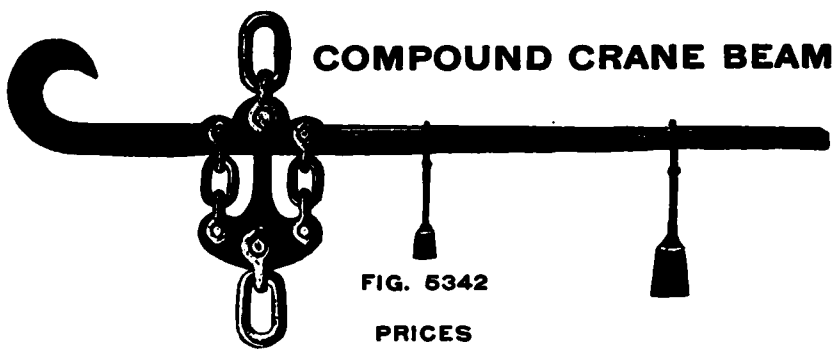


FIG. 5342

PRICES

Nos.	Capacity, Pounds.	Each.	Nos.	Capacity, Pounds.	Each.
1481	8,000	$110 00	1487	15,000	$175 00
1483	10,000	125 00	1489	20,000	200 00
1485	12,000	150 00			

These beams are made especially heavy in all parts and are adapted for foundry and crane use.

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WOOL AND COTTON SCALE

With Drop Lever, Sliding Poise and Heavy Caster Wheels.



FIG. 5343

This pattern of scale is particularly suited for weighing bales of cotton and wool, having a large platform and being easily moved from place to place. If desired, bag rack will be furnished at an additional price of $5.00.

PRICE

No.	Capacity, Pounds.	Platform, Inches.	Each.
1432	1,000 x ½	42 x 30	$100 00

PORTABLE DROP LEVER SCALE



FIG. 5346

PRICES

Nos.	Capacity, Pounds.	Platform, Inches.	Each.
76	4,000 x ½	32 x 40	$140 00
78	3,500 x ½	32 x 40	130 00
79	2,500 x ½	26 x 34	94 00
82	2,000 x ½	23 x 32	82 00
84	1,500 x ½	21 x 30	69 00
86	1,200 x ½	19 x 28	56 00
88	1,000 x ½	17 x 26	50 00
85	800 x ¼	17 x 24	45 00
87	600 x ¼	16 x 24	40 00
89	400 x ¼	15 x 22	34 00

FREIGHT SCALE

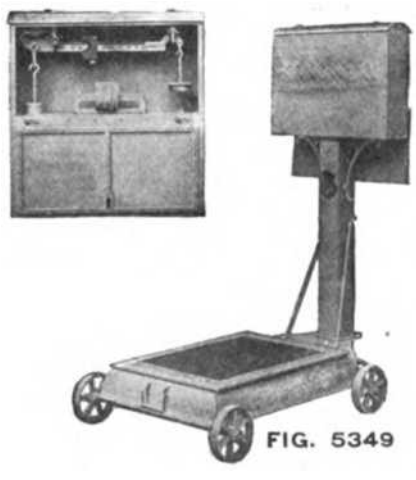


FIG. 5349

WOOL OR COTTON SCALE

With Broad, Heavy Wheels and Vibratory Axle.



FIG. 5344

This scale is furnished with vibratory axle, rendering it easily movable from place to place. Having a large platform it is especially adapted for weighing bales of cotton or wool. Beams graduated by half pounds to 100 pounds.

PRICES

Nos.	Capacity, Pounds.	Platform, Inches.	Each.
146	1,000	43 x 30	$90 00
148	1,500	43 x 30	100 00

PORTABLE SQUARE PLATFORM SCALE

With Wheels and Pillar Guards.



FIG. 5347

PRICES
With Panel Platform.

Nos.	Capacity, Pounds.	Platform, Inches.	Each.
847	2,500 x ½	34 x 34	$100 00
849	2,000 x ½	32 x 32	85 00
851	1,500 x ½	30 x 30	64 00
853	1,200 x ½	28 x 28	57 00
855	1,000 x ½	26 x 26	49 00
857	800 x ¼	25 x 25	44 00
859	600 x ¼	24 x 24	38 00
861	400 x ¼	22 x 22	33 00

Same as Above, with Drop Lever.

Nos.	Capacity, Pounds.	Platform, Inches.	Each.
863	2,500 x ½	34 x 34	$110 00
865	2,000 x ½	32 x 32	95 00
867	1,500 x ½	30 x 30	78 00
869	1,200 x ½	28 x 28	67 00
871	1,000 x ½	26 x 26	57 00

PRICES, FIG. 5349

An iron box, so made as to shed water, preserves the beam and weights. The platform is covered with a wrought iron plate, and the whole scale is heavily made and adapted for rough usage.

Without Wheels.

Nos.	Capacity, Pounds.	Platform, Inches.	Each.
1529	2,000 x 1	25 x 33	$88 00
1531	2,500 x 1	26 x 34	100 00

With Wheels.

Nos.	Capacity, Pounds.	Platform, Inches.	Each.
1533	2,000 x 1	25 x 33	$98 00
1534	2,500 x 1	26 x 34	110 00
1536	3,000 x 1	31 x 40	150 00

DROP LEVER DOCK SCALE

This scale is especially adapted for use on docks; being constructed with long neck and large wheels, it can be easily tipped up and moved on forward wheels from place to place.



FIG. 5345

PRICES

Nos.	Capacity, Pounds.	Platform, Inches.	Each.
800	2,500 x ½	23 x 32	$99 00
802	2,000 x ½	23 x 32	90 00

PORTABLE WAREHOUSE SCALE



FIG. 5348

Hardwood box. Strong wheels and axles. Adapted for heavy work.

PRICES
With or Without Drop Lever.

Nos.	Capacity, Pounds.	Platform, Inches.	Each.
1538	2,000 x ½	28 x 36	$78 00
1540	2,500 x ½	36 x 37	105 00
1542	3,000 x ½	35 x 44	115 00
1544	3,500 x ½	42 x 43	125 00
1546	5,000 x 1	48 x 50	185 00
1548	6,000 x 1	48 x 54	200 00

Without Wheels.

Nos.	Capacity, Pounds.	Platform, Inches.	Each.
1550	2,500 x ½	28 x 36	$68 00
1552	2,500 x ½	36 x 37	95 00
1554	3,000 x ½	35 x 44	100 00
1556	3,500 x ½	42 x 43	110 00
1558	5,000 x 1	48 x 50	170 00
1560	6,000 x 1	48 x 54	185 00

PRICES, FIG. 5350

With Solid Iron Platform, High Open Wheels and Vibratory Axle.

Nos.	Capacity, Pounds.	Platform, Inches.	Each.
53	3,000 x ½	32 x 40	$145 00
51	2,500 x ½	26 x 34	115 00
81	2,000 x ½	23 x 32	100 00
62	1,500 x ½	21 x 30	84 00
64	1,200 x ½	19 x 28	68 00
67	1,000 x ½	17 x 26	60 00

PORTABLE IRON PLATFORM SCALE

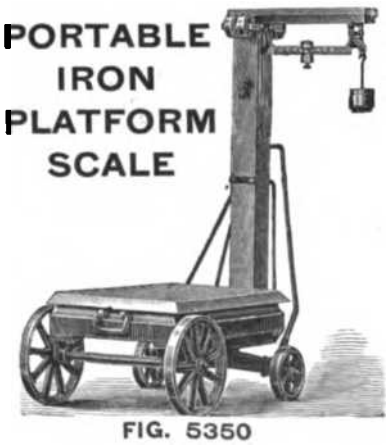


FIG. 5350

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PLATFORM SCALE
ALL METAL

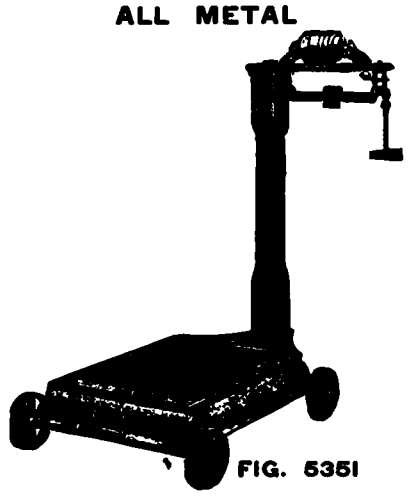


FIG. 5351

PRICES

This scale is constructed of metal entirely, and is designed to meet the demands for a scale where all metal is desired.

WITH WHEELS

Nos.	Capacity, Pounds.	Platform, Inches.	Each.
1266	400x¼	15 x21	$31 00
1268	600x¼	16 x25	39 00
1270	800x¼	17 x25	44 00
1272	1000x½	17 x26	49 00
1274	1200x½	20 x28	56 00
1276	1600x½	21½x30	63 00
1278	2000x½	23 x33	83 00
1280	2500x½	24 x33	95 00

WITHOUT WHEELS

1265	400x¼	15 x21	$28 00
1267	600x¼	16 x25	36 00
1269	800x¼	17 x25	40 00
1271	1000x½	17 x26	45 00
1273	1200x½	20 x28	52 00
1275	1600x½	21½x30	59 00
1277	2000x½	23 x33	78 00
1279	2500x½	24 x33	90 00

DOUBLE BEAM PLATFORM SCALE

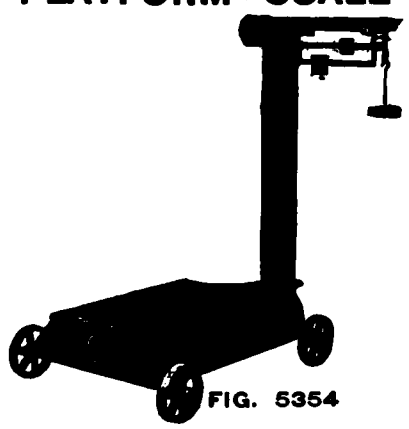


FIG. 5354

ENGINEERING SCALE

DESCRIPTION
FIG. 5356

This scale is especially designed for the mechanical department of universities and colleges. Capacity, 500 pounds. Brass weights. Tare beam is marked to 50 pounds, in ¼ pound marks. Main beam, 50 pounds, in 5 pound marks. Unit beam, 5 pounds, in 1/10 pound marks.

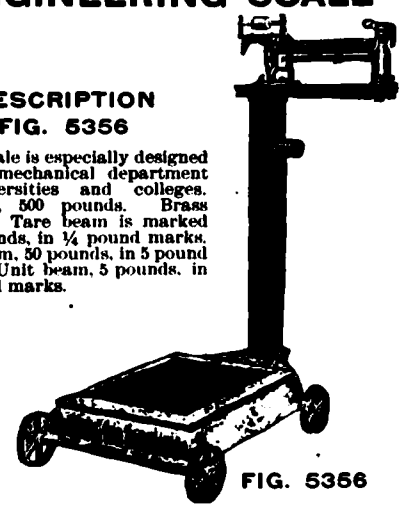


FIG. 5356

PRICE

No. 1264. Each..... $50 00

PLATFORM SCALE WITH VIBRATORY AXLE
WHEELS AND SLIDING POISE

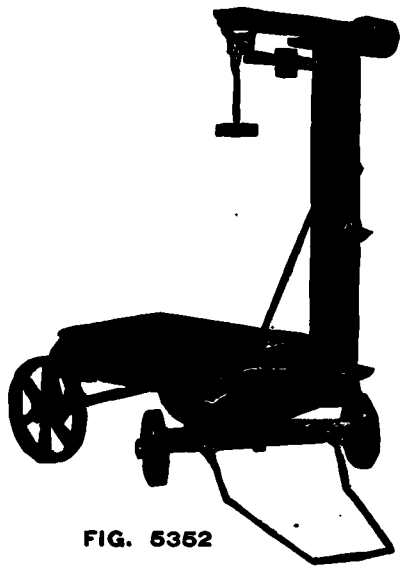


FIG. 5352

PRICES

This scale is placed on high raised wheels, and is designed for weighing articles which are likely to hang over sides.

Nos.	Capacity, Pounds.	Platform, Inches.	Each.
1412	1000x½	26x17	$57 00
1414	1200x½	28x20	65 00
1416	1600x½	29x21	77 00
1418	2000x½	32x23	90 00
1420	2500x½	35x25	102 00

PRICES, FIG. 5354

With sliding brass poises. Lower poise has set screw. These scales are of use where it is necessary to take tare weights. The 400, 600 and 800 pound beams are marked in ¼ pound marks to 50 pounds. On all larger sizes the top bar is marked to 50 pounds in ¼ pound marks, and the lower to 100 pounds in ½ pound marks.

WITH WHEELS

Nos.	Capacity, Pounds.	Platform, Inches.	Each.
1282	400	21x15	$30 00
1284	600	25x16	37 00
1286	800	25x17	42 00
1288	1000	26x17	47 00

WITHOUT WHEELS

1283	400	21x15	$27 00
1285	600	25x16	34 00
1287	800	25x17	38 00
1289	1000	26x17	43 00

Double beam can be furnished on any size platform scale at $4.00 extra, but is not recommended for drop lever scales.

PLATFORM SCALE
WITH WHEELS AND DROP LEVER

DESCRIPTION
FIG. 5357

Adapted for all kinds of general weighing. The beams and poises are of brass. The three smaller scales have beams marked to 50 pounds by ¼ pound marks; large sizes, beams are marked 100 pounds by ½ pound. Drop lever scales are made very heavy and strong and have pillar braced. Notched beam with hanging poise furnished when so ordered.



FIG. 5357

PRICES

Nos.	Capacity, Pounds.	Platform, Inches.	Each.
1236	400x¼	21x15	$34 00
1238	600x¼	25x16	40 00
1240	800x¼	25x17	45 00
1242	1000x½	26x17	50 00
1244	1200x½	28x20	56 00
1246	1600x½	30x21½	69 00
1248	2000x½	33x23	82 00
1250	2500x½	33x24	94 00
1252	3000x½	38x30	125 00

PLATFORM SCALE
WITH PATENT COMBINATION BEAM



FIG. 5353

PRICES

Full capacity is on the beam and no loose weights are required. Beams are graduated to ½ pound.

Nos.	Capacity, Pounds	Platform, Inches.	Description.	Each.
1396	500x½	21x15	Without Wheels	$38 00
1398	500x½	21x15	With "	41 00
1400	800x½	25x17	Without "	49 00
1402	800x½	25x17	With "	53 00
1404	1000x½	26x17	Without "	54 00
1406	1000x½	26x17	With "	58 00

COUNTING SCALE
WITH WHEELS

DESCRIPTION
FIG. 5355

This scale is intended for counting bolts, nuts, screws, etc., and is so arranged that one article placed in pan on end of beam will balance 100 on the platform. Each article placed on pan multiplies 100 on the platform and the necessity of counting is obviated.



FIG. 5355

PRICE

No. 1260. Platform, 25x16 inches. Each..... $33 00

PLATFORM SCALE
WITH WHEELS

DESCRIPTION
FIG. 5358

Adapted for all kinds of general weighing. The beams and poises are of brass. The three smaller scales have beams marked to 50 pounds by ¼ pound marks; large sizes, beams are marked 100 pounds by ½ pound.

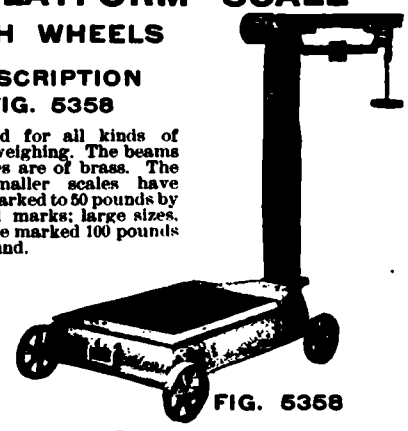


FIG. 5358

PRICES

Nos.	Capacity, Pounds.	Platform, Inches.	Each.
1200	400x¼	21x15	$26 00
1202	600x¼	25x16	33 00
1204	800x¼	25x17	38 00
1206	1000x½	26x17	43 00
1208	1200x½	28x20	48 00
1210	1600x½	30x21½	56 00
1212	2000x½	33x23	75 00
1214	2500x½	33x24	85 00

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PLATFORM SCALE
WITHOUT WHEELS

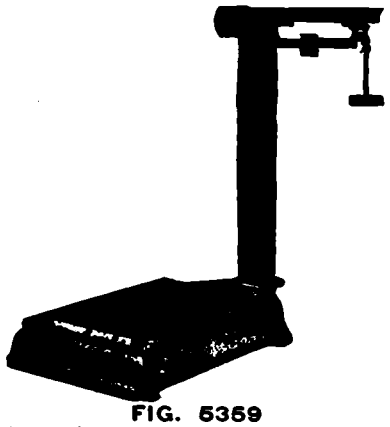


FIG. 5359

Adapted for all kinds of general weighing. The beams and poises are of brass. The three smaller scales have beams marked to 50 pounds by ¼ pound marks; large sizes, beams are marked 100 pounds by ½ pound.

PRICES

Nos.	Capacity, Pounds.	Platform, Inches.	Each.
1221	400 x ¼	21 x 15	$23 00
1223	600 x ¼	25 x 16	30 00
1225	800 x ¼	25 x 17	34 00
1227	1,000 x ½	26 x 17	39 00
1229	1,200 x ½	28 x 20	44 00
1231	1,600 x ½	30 x 21½	52 00
1233	2,000 x ½	38 x 23	70 00
1235	2,500 x ½	38 x 24	80 00

ARMY AND NAVY SCALE

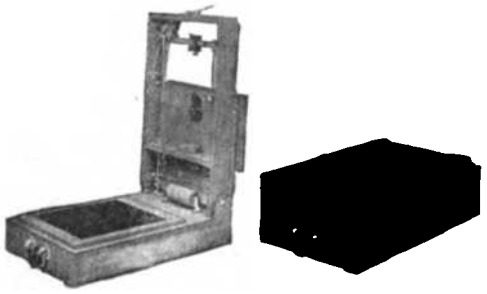


FIG. 5362

This is a very useful scale where space in transportation is an object. When not in use, scale can be quickly closed and forms a box which can be readily handled.

PRICES

Nos.	Capacity, Pounds.	Platform, Inches.	Each.
814	600 x ½	21 x 15	$40 00
816	800 x ½	21 x 15	45 00
818	1,200 x ½	27¾ x 20	50 00

POSTAL SCALE
SINGLE BEAM



FIG. 5366

No. 506. Capacity, ½ ounce to 4 pounds, each.....$8 00
" 506. Nickel plated.....12 00

UNION SCALE
SINGLE BEAM

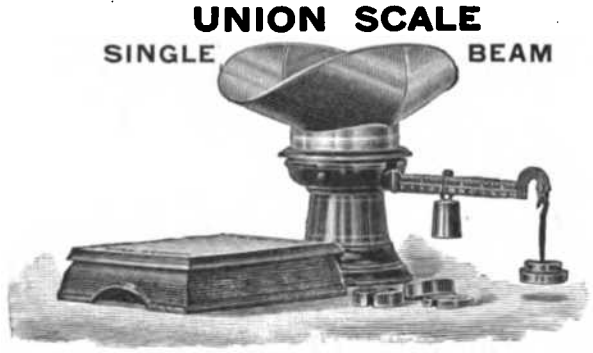


FIG. 5368

COUNTER PLATFORM SCALE

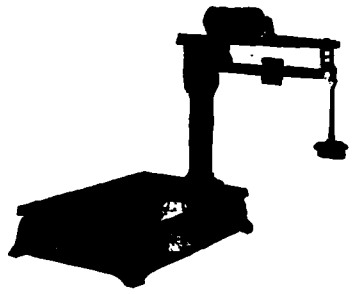


FIG. 5360

With Iron Pillar and Sliding Brass Poise.

PRICES

Nos.	Capacity.	Pillar.	Platform, Inches.	Each.
802	200 lbs. x 1 oz.	Short	10½ x 14½	$16 00
804	300 " x 2 "	"	13½ x 19	19 00
806	300 " x 2 "	High	13½ x 19	21 00

BULLION SCALES
TROY WEIGHT

These Scales are especially designed for weighing silver bullion and are handsomely finished with brass poise, weights and counterpoise.

PRICE

No.	Capacity.	Platform, Inches.	Each.
808	3,200 lbs. x ¼ oz.	13½ x 19	$50 00

PACKAGE SCALE

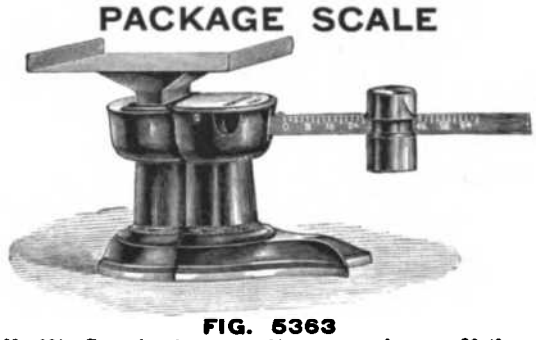


FIG. 5363

No. 364. Capacity, 1 ounce to 64 ounces, each.....$8 00

POSTAL SCALE
DOUBLE BEAM

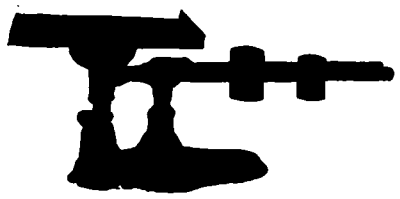


FIG. 5367

No. 508. Capacity, ½ ounce to 6 pounds, each.....$12 00
" 508. Nickel plated, each..... 16 00

Regular scales will be furnished unless nickel plated are specified.

DESCRIPTION AND PRICES
FIG. 5368

Beams graduated as follows: Upper row of figures, for round platform, ½ ounce to 5½ pounds; lower row of figures, for square platform, 4 ounces to 44 pounds; balance of capacity made up by weights.

Nos.	Capacity.	Platform.	With	Each.
320	½ oz. to 240 lbs.	10 x 14 in.	Tin Scoop.....	$14 00
324	½ " " 240 "	10 x 14 "	Brass Scoop.....	15 00
805	½ " " 240 "	10 x 14 "	Tin Funnel Scoop.	15 00
806	½ " " 240 "	10 x 14 "	Brass Funnel Scoop	16 50

UNION SCALE
SINGLE BEAM

FIG. 5368

PRICES, FIG. 5369

Beams graduated as follows: Front bar, upper row of figures, for round platform, ½ ounce to 5½ pounds; lower row of figures, for square platform, 4 ounces to 44 pounds.

Rear or tare bar, for round platform, ½ ounce to 5 pounds. Balance of capacity made up by weights.

Platform, 10 x 14 Inches.

Nos.		Each.
322	With Tin Scoop; capacity, ½ ounce to 240 pounds.....	$15 00
326	With Brass Scoop; capacity, ½ ounce to 240 pounds.....	16 00
807	With Tin Funnel Scoop; capacity, ½ ounce to 240 pounds	16 00
808	With Brass Funnel Scoop; capacity, ½ ounce to 240 lbs..	17 50

COLUMBIAN AUTOMATIC SCALE

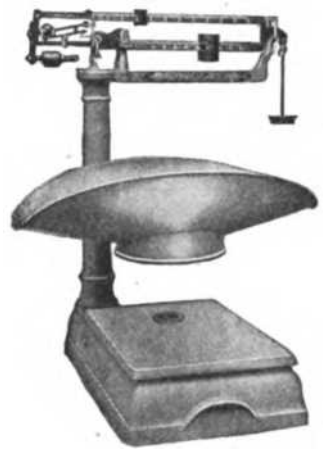


FIG. 5361

Nickel Plated Beam and Poises; Double Beam, Marked on Both Sides.

Size of platform, 15 x 10½ inches; pillar, 22 inches high; total length on counter, 22½ inches; total width on counter, 13 inches.

Extra finish, ornamented in blue and silver. Scoop, beam and poises; weights and counterpoise all brass, nickel plated.

PRICE

No. 798. Capacity, 250 pounds by ounces; large seamless brass scoop, each.....$32 00

This Scale is furnished with patent automatic scoop balance.

EXPRESS PACKAGE SCALE

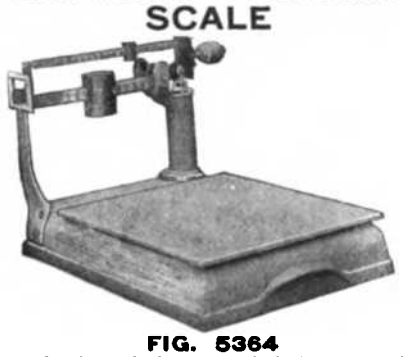


FIG. 5364

Upper bar is marked to 5 pounds in 1 ounce notches. Lower bar, 1 pound notches to 50 pounds.

PRICE

No. 800. Capacity, 1 ounce to 55 pounds; platform, 10½ x 12 inches, each.....$15 00

POSTAL SCALE

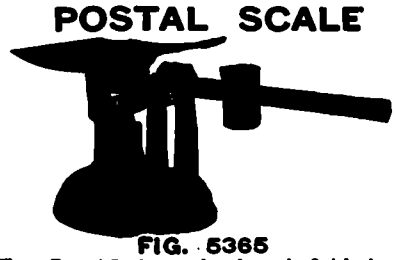


FIG. 5365

These Postal Scales are handsomely finished and are made to weigh in ounces, but can be furnished in the 15 gram weights adopted by the Universal Postal Union. They are particularly adapted for office use.

Nos.	Capacity. Ounces.	15 Gram Wts.	Each.	Nickel Plated. Each.
500	½ to 9	15	$3 00	$4 00
502	½ " 16	32	4 00	5 00
504	½ " 34	65	6 00	8 00

UNION SCALE
DOUBLE BEAM

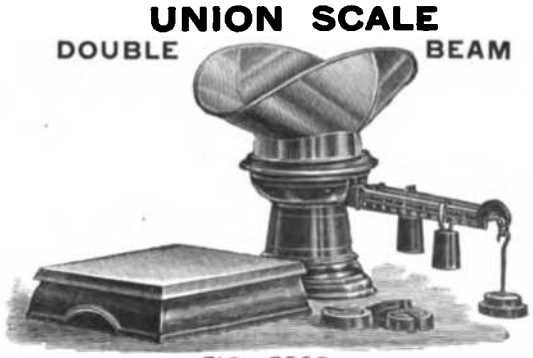


FIG. 5369

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OIL SCALE
DORMANT PATTERN

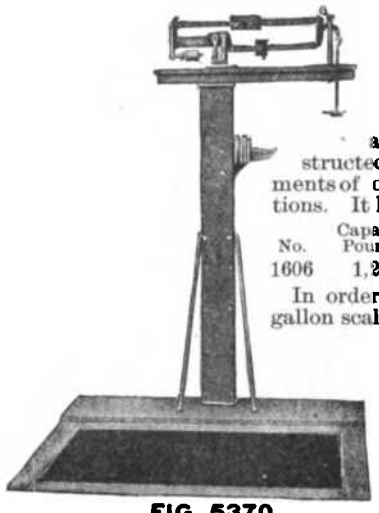


FIG. 5370

PRICES, FIG. 5370

This Scale weighs by the gallon and by pounds, and has been constructed especially to meet the requirements of oil dealers, according to their suggestions. It has tare beam.

No.	Capacity, Pounds.	Gallons.	Platform, Inches.	Each.
1606	1,200	60	42 x 33	$84 00

In ordering, state how many pounds to the gallon scale should indicate.

SINGLE PILLAR DORMANT SCALE

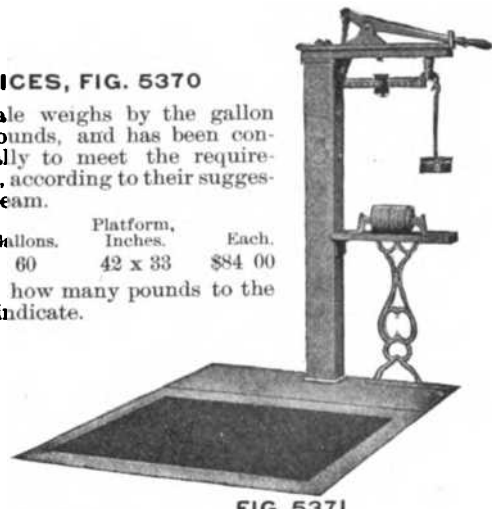


FIG. 5371

PRICES, FIG. 5371

With One Pillar. With or Without Drop Lever.

Nos.	Capacity, Pounds.	Platform, Inches.	Platform to Pillar, Inches.	Each.	Nos.	Capacity Pounds.	Platform, Inches.	Platform to Pillar. Inches.	Each.
1700	1,200 x ½	20 x 28	8¼	$58 00	1708	2,500 x ½	37 x 46	12¼	$92 00
1702	1,500 x ½	21 x 31	8	68 00	1710	3,500 x ½	42 x 44	13	105 00
1704	2,000 x ½	30 x 42	8½	78 00	1712	5,000 x 1	48 x 50	24	150 00
1706	2,500 x ½	36 x 37	15	92 00					

If drop lever is wanted, order should so specify. For ordinary uses we recommend scale without drop lever.

TWO PILLAR DORMANT SCALE

IRON FRAME

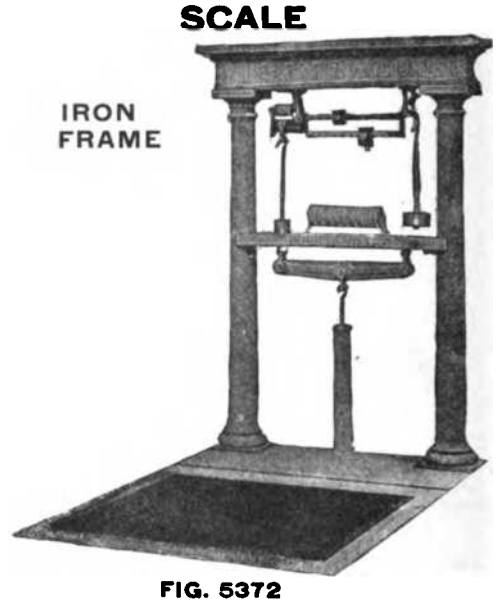


FIG. 5372

PRICES

With Two Iron Pillars, Double Beam and Graduated Counterpoise.

Nos.	Capacity, Pounds.	Platform, Inches.	Platform to Pillar, Inches.	Each.
1715	1,200 x ½	43 x 33	7¾	$96 00
1717	1,500 x ½	44 x 34	7½	100 00
1719	2,500 x ½	36 x 37	14	105 00
1721	2,500 x ½	37 x 46	11½	105 00
1723	3,500 x ½	42 x 44	12½	125 00
1725	3,500 x ½	42 x 44	Extra long neck.	133 00
1727	5,000 x 1	48 x 50	23	170 00

The pillars of this Scale are bronzed, and the finish is elegant in every particular.

SHORT PILLAR DORMANT SCALE

IRON FRAME

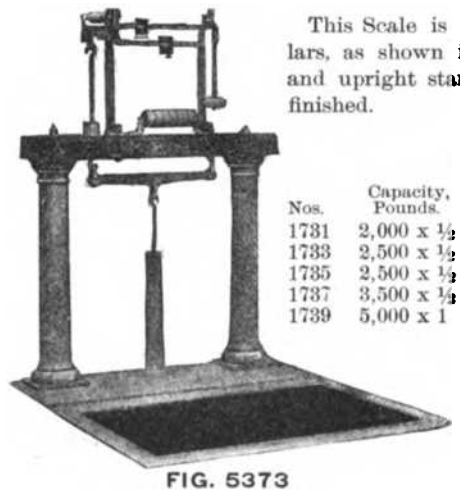


FIG. 5373

PRICES, FIG. 5373

This Scale is furnished with short pillars, as shown in cut. Hardwood shelf and upright standards. It is handsomely finished.

Nos.	Capacity, Pounds.	Platform, Inches.	Platform to Pillar, Inches.	Each.
1731	2,000 x ½	30 x 42	8	$84 00
1733	2,500 x ½	36 x 37	14	89 00
1735	2,500 x ½	37 x 46	11½	89 00
1737	3,500 x ½	42 x 44	12½	108 00
1739	5,000 x 1	48 x 50	23½	147 00

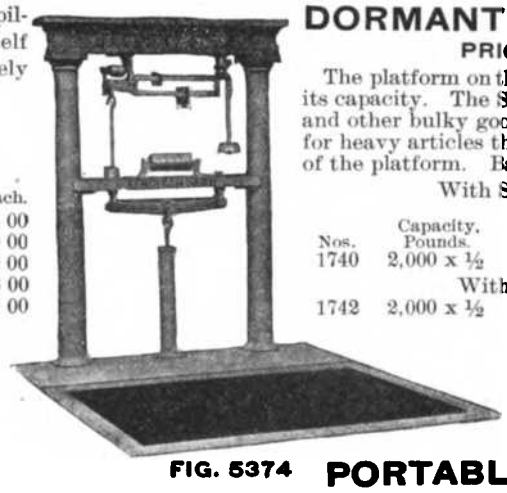


FIG. 5374

DORMANT COTTON SCALE

PRICES, FIG. 5374

The platform on this Scale is large in proportion to its capacity. The Scale is used for weighing cotton and other bulky goods, but we do not recommend it for heavy articles that can be piled up in the middle of the platform. Bag rack, $6.00 extra.

With Single Wood Pillar.

Nos.	Capacity, Pounds.	Platform, Inches.	Platform to Pillar, Inches.	Each.
1740	2,000 x ½	49 x 55	15	$87 00

With Two Iron Pillars.

1742	2,000 x ½	49 x 55	15	100 00

RAILROAD DEPOT SCALE
WITH PILLARS AND CAP

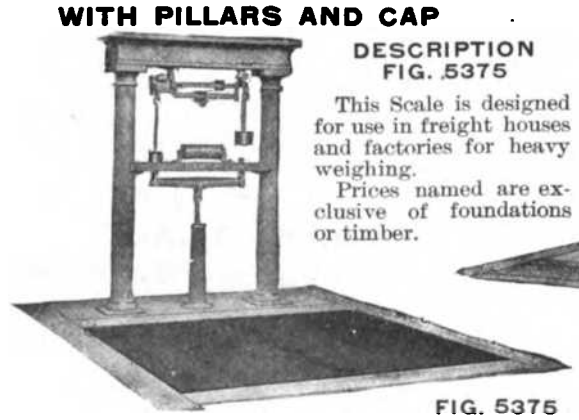


FIG. 5375

DESCRIPTION FIG. 5375

This Scale is designed for use in freight houses and factories for heavy weighing.

Prices named are exclusive of foundations or timber.

PRICES

Nos.	Capacity, Tons.	Platform, Feet.	Single Beam, Each.	Comb. Beam, Each.
2274	2	5 x 6	$145 00	$165 00
2276	3	6 x 8	185 00	205 00
2278	4	7 x 9	200 00	220 00
2280	6	9 x 10	240 00	260 00

Double Beam $8.00 more than Single Beam.

MINER'S AND TRANSPORTATION SCALE



FIG. 5376

PRICES, FIG. 5376

Without Pillars or Cap. This Scale is designed for weighing small cars, heavy machinery and bulky articles in factories. Special sizes may be furnished, if desired.

Nos.	Capacity, Tons.	Platform, Feet.	Single Beam, Each.	Comb. Beam, Each.	Nos.	Capacity, Tons.	Platform, Feet.	Single Beam, Each.	Comb. Beam, Each.
2350	2	3 x 4½	$115 00	$135 00	2362	4	5 x 6	$160 00	$180 00
2352	2	4 x 5	130 00	150 00	2364	4	6 x 8	165 00	185 00
2354	2	5 x 8	135 00	155 00	2366	4	7 x 9	170 00	190 00
2356	3	4 x 6	140 00	160 00	2368	5	5 x 6	180 00	200 00
2358	3	5 x 6	155 00	175 00	2370	6	7 x 9	180 00	210 00
2360	3	6 x 8	160 00	180 00	2372	6	9 x 10	200 00	230 00

Double Beam $8.00 more than Single Beam. Purchasers furnish lumber and foundation.

PORTABLE CART SCALE

PRICES, FIG. 5377

Beam Graduated by 2½ lbs. to 500 lbs

Nos.	Cap'y, Lbs.	Platf'm, Ft.	Each.
242	4,000	4 x 6	$150 00
243	6,000	4 x 6	160 00

With double beam, extra, $8.00.

This Scale is especially adapted to locations where a Portable Scale with large platform is required. The price of scale does not include inclines.

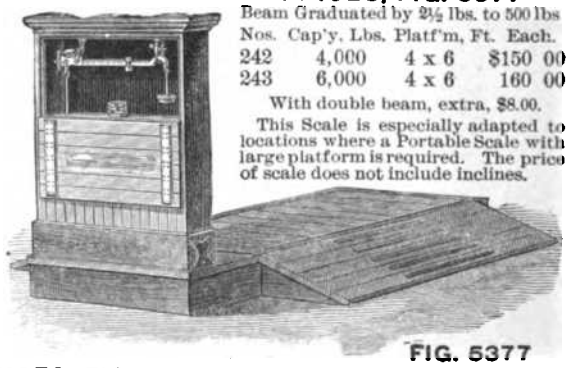


FIG. 5377

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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RAILROAD TRACK SCALE

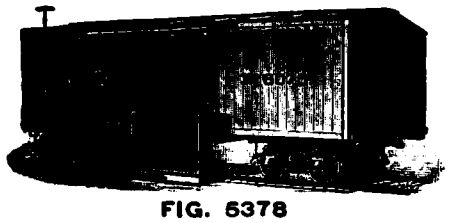


FIG. 5378

PRICES, STANDARD GAUGE

Nos.	Capacity, Tons.	Lengths of Platforms, Feet.	Each.
312	10	12	$425 00
367	20	12	450 00
369	30	12	475 00
371	40	12	500 00
373	50	12	525 00
375	60	12	550 00
377	10	14	450 00
379	20	14	475 00
381	30	14	500 00
383	40	14	525 00
385	50	14	550 00
387	60	14	575 00
325	20	16	500 00
389	30	16	525 00
391	40	16	550 00
393	50	16	575 00
395	60	16	600 00
323	20	18	525 00
397	30	18	550 00
414	40	18	575 00

We can furnish these Scales with platforms in lengths 20 to 112 feet, with capacities varying from 20 to 100 tons.

PRICES ON APPLICATION

PRICES, NARROW GAUGE

Nos.	Capacity, Tons.	Lengths of Platforms, Feet.	Each.
314	20	20	$575 00
316	25	22	625 00
318	25	24	690 00
319	25	30	750 00
321	30	32	850 00

Unless otherwise specified it will be understood that on Narrow Gauge Scales the gauge will be 3 feet.

Pillars and Cap for Track Scales, extra.....$60 00
Short Pillars, Shelf and Hangers for Track Scales, extra..... 30 00
Beam Boxes for Track Scales..... 40 00

Timber, work and foundation for all track scales to be furnished by the purchaser.

HAY, COAL AND WAGON SCALE

With Improved Double Brass Beam.



FIG. 5379

PRICES

Graduated by 2½ Pound Marks.

Nos.	Capacity, Tons.	Platform. Feet.	Edge of Platform to Beam Rod. Feet.	Inches.	Each.
244	20	22x8	2	4	$450 00
246	15	22x8	2	4	400 00
247	15	20x8	2	4	400 00
248	10	22x8	2	4	350 00
249	10	20x8	2	4	350 00
250	10	18x8	2	4	315 00
251	10	16x8	2	4	315 00
252	10	15x8	2	4	300 00
253	10	14x8	2	4	300 00
254	8	22x8	2	4	300 00
255	8	20x8	2	4	300 00
256	8	18x8	2	4	285 00
257	8	16x8	2	4	285 00
258	8	15x8	2	4	270 00
259	8	14x8	2	4	270 00
260	6	22x8	2	4	265 00
261	6	20x8	2	4	265 00
262	6	18x8	2	4	250 00
263	6	16x8	2	4	250 00
264	6	15x8	2	4	225 00
265	6	14x8	2	4	225 00
266	5	15x8	2	4	200 00
267	5	14x8	2	0	200 00
269	4	22x8	2	4	225 00
268	4	14x8	2	0	165 00
270	3	14x8	2	0	145 00

These Scales require a total depth of only 16 to 24 inches. Timber, work and foundation for any of the above scales to be furnished by the purchaser.

Pillars and Cap, 3, 4 and 5 tons, extra. $50 00
" " " 6, 8 " 10 " " 60 00
Short Pillars, Shelf and Hangers, extra. $25 00
Beam Boxes, extra..... 15 00

In addition to the sizes and capacities shown above, we can furnish special scales adapted to all locations. The distance from the platform of the scale to the beam rod may be increased from 28 to 72 inches on center connected scales, when so ordered.

Extensions to carry beam additional distance from platform, for 2 feet, $12.00; for each additional foot, $3.00.

BOILER ROOM SCALE

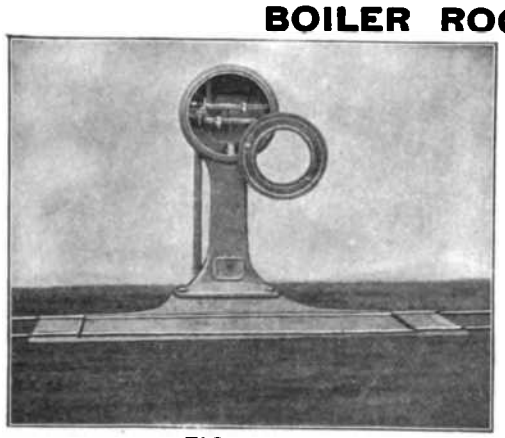


FIG. 5380

Floor Plan of Boiler Room Scale.

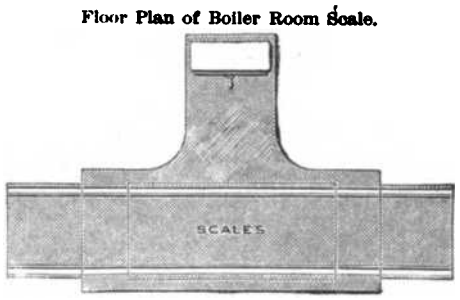


FIG. 5381

DESCRIPTION, FIGS. 5380 AND 5381

Figs. 5380 and 5381 illustrate a Floor or Platform Scale especially adapted for use in connection with industrial railway tracks in boiler rooms and store rooms having cement, paved, or iron floors. The scale is of iron, and the beam box is dust tight. The cover to the beam box is nickel plated, and contains a beveled plate glass front. As industrial railways are usually installed where these scales are used, tracks of gauge, 21½ inches, are cast in the platform and the frame. The remaining surface is roughened with small diamond point projections, which can be easily swept clean and prevent the slipping of the workman's foot. The total floor area occupied by the entire platform is 26 square feet. The double beam furnished with this scale is arranged for the weights on one beam to be set to balance the weight of the empty car, and the other beam used to weigh the net load on the car. The beams are graduated to pounds; or, when so ordered, to kilograms.

DIMENSIONS OF BOILER ROOM SCALE

Capacity, tons	2	5
Lengths of platform, feet	5	5
Width of platform, inches	27	27
Center of platform to beam, inches	43	43
Depth of pit required, inches	20	22

PRICES ON APPLICATION

SEALED IRON WEIGHTS

Ring Weight. Handle Weight. Square Weight.



FIG. 5384 FIG. 5385 FIG. 5386

Weights, Pounds.	Each.
1	$0 65
2	65
3	1 00
4	1 25
5	1 50
7	1 50
10	1 85
14	2 25
20	2 75
25	3 25
28	3 50
50	5 00
56	5 50
100	10 00

Sealed weights of the above patterns will be furnished of the standard of any country, at corresponding prices to those given above. In ordering, please specify which pattern of weights is desired.

U. S. STANDARD TEST WEIGHT



FIG. 5383

Made of Cast Iron.

PRICE

Capacity, pounds..... 50
Each.....$5 00

INDUSTRIAL RAILWAY TRACK SCALE

With a Wooden Beam Box, Platform and Frame.

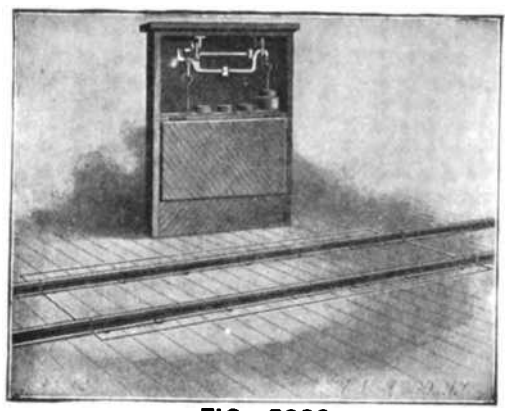


FIG. 5382

This Platform Scale is adapted for use in manufacturing establishments and boiler rooms for weighing Industrial Railway Cars. It is durable and accurate. The platforms are 27 inches wide, and made in three lengths—5, 8 and 12 feet—to accommodate the different sizes and types of narrow gauge cars. The 5 foot platform is suitable for standard shop and push cars, the 8 foot platform for automatic railway and tip cars, and the 12 foot platform for 8 wheeled platform cars, cable railway cars, or electric locomotives. The scale beam is placed 43 inches away from the center of the track, which allows ample space for all ordinary cars to pass; when necessary or desirable the beam can be located, by means of an extension lever, as far away as the requirements of the situation demand. The graduation of the beam is in pounds, or kilograms when so ordered. We furnish the ironwork and working parts, and send directions for installing these scales. The purchaser furnishes and builds the wooden platform and wooden beam box.

DIMENSIONS OF INDUSTRIAL RAILWAY FLOOR SCALES

With a Single Beam.

Capacity, tons	2	2	3	3	5	5
Lengths of platform, feet	5	8	5	8	8	12
Width of platform, inches	27	27	27	27	27	27
Center of platform to beam, inches	43	43	43	43	43	43
Depth of pit required, inches	20	20	22	22	22	22

Double beams extra.

PRICES ON APPLICATION

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TIP CAR



FIG. 5387

This Tip Car is intended for many industrial uses. Its adaptability for conveying materials, whether solid or in pasty or liquid form, renders it highly efficient for many situations. The sides of the car body are inclined, making it top heavy and securing rapid dumping of the contents when tipped. To the body of the car are fixed side plates, which carry four pins which constitute bearings for the body of car. By virtue of this construction the top heaviness does not affect the equilibrium of the car, but secures easy tipping and clean and rapid dumping. The wheels are of large diameter, running on large bearings. They are furnished with either fixed or flexible wheel bases, obtaining thereby the best construction for running around sharp curves. The height of the body is proportioned to easily propel cars by hand, or by the use of rope tramway or horse power.

PRICES, FIG. 5387

Size numbers of cars	230	231	232	233	234
Capacity, cubic feet	12	20	25	30	45
Coal capacity, pounds	600	1000	1250	1500	2240
Width over all, inches	37	47	48	51	58
Lengths over all, inches	50	60	63	65	70
Height of cars, inches	36	48	55	58	61
Diameters of wheels, inches	10	12	14	16	18
Gauge of track, inches	24	24	24	28	30
Wheel base, inches	24	28	28	28	30
Weight of cars, pounds	450	650	800	950	1050
Each	$65 00	75 00	85 00	100 00	125 00



FIG. 5387

CONTRACTOR'S TIP CAR



FIG. 5388

To meet the special requirements of the contractor's work, we furnish a Tip Car as here represented. It is entirely of iron and steel. Bumpers and link couplings enable them to be coupled and propelled either by hand, horse or steam power. Their large wheels are fitted to strong axles, which turn in anti-friction roller bearings.

PRICES, FIG. 5388

Size numbers of cars	235	236	237	238
Capacity, cubic feet	20	27	36	45
Width, inches	48	52	54	58
Lengths, inches	60	65	68	74
Height of cars, inches	54	56	61	64
Gauge of track, inches	24	28	30	36
Each	$85 00	95 00	115 00	140 00

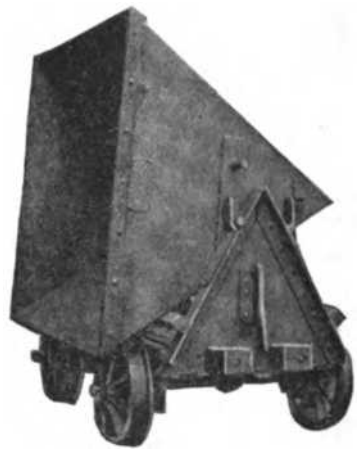


FIG. 5388

OVAL HOPPER SIDE DUMPING TIP CAR



FIG. 5389

This car is designed for conveying coal and other bulky material on wharf trestles, etc. The hopper is made of steel, bound on top with a heavy wrought iron band. On the ends a single pin trunnion is fixed, which constitutes a support and bearings for the hopper to rock from side to side. It is held in an upright position by a lever catch, which is fastened to the truck and bottom of hopper. When the catch is released the load will dump on either side of the track, at the will of the operator, and return to its former upright position automatically. The stands and socket bearings are made of wrought iron. The truck is made of oak wood, or iron, as desired. The axles are made of crucible machinery steel, and turn in babbitted metal bearings fitted with oil chambers. The standard sizes are tabulated below. For cars of a greater or lesser capacity and of varying dimensions, and also for cars fitted with anti-friction roller bearings, estimates will be furnished.

PRICES, FIG. 5389

Size numbers of cars	240	241	242	243	244
Capacity, cubic feet	22	33	45	67	89
Coal capacity, pounds	1120	1650	2240	3360	4480
Height of cars, inches	50	59	62	64	68
Height of cars when dumping, inches	63	74	75	84	93
Extreme lengths, inches	80	88	90	94	112
Width of cars, inches	50	58	61	69	80
Diams. of wheels, in.	14	16	18	20	23
Wheel base	30	36	36	48	54
Each	$120 00	140 00	150 00	175 00	225 00



FIG. 5389

RECTANGULAR BODY TIP CAR



FIG. 5390

This car is intended for the same purpose, and is built similar to the car shown in Fig. 5389. The hopper is made rectangular on the top instead of oval, the object being to give a greater capacity with the same outside dimensions, and also to fit the car to handle long articles, such as cord, log wood, etc.

PRICES, FIG. 5390

Size numbers of cars	245	246	247	248	249
Capacity, cubic feet	22	33	45	67	89
Coal capacity, pounds	1120	1650	2240	3360	4480
Each	$120 00	140 00	150 00	175 00	225 00

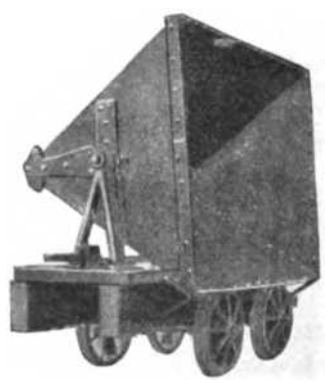


FIG. 5390

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SIDE DUMPING CAR WITH SLIDING DOOR



FIG. 5391

The bottom of this car is inclined one way, which allows the contents to be emptied beyond the track. A sliding door, operated by a lever as shown, is attached.

PRICES

Size Numbers.	Coal Capacity in Pounds.	Coal Capacity in Cubic Feet.	Each.
258	1,120	22	$90 00
259	1,680	33½	105 00
260	2,240	45	125 00
261	3,360	67	150 00
262	4,480	89	200 00

COMPARTMENT TIP CAR

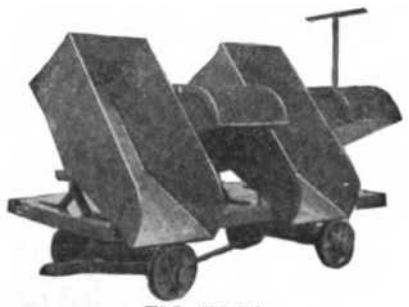


FIG. 5394

This car is useful in manufacturing plants for carrying different materials at the same time.

Prices on application.

TIPPING HOPPER COAL WEIGHING CAR

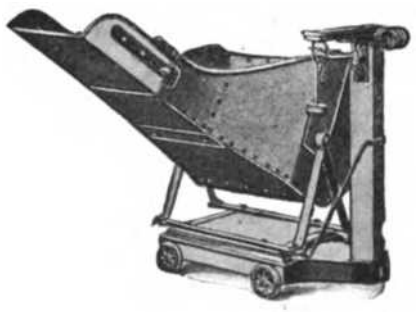


FIG. 5392

Made in sizes from one-quarter to one ton capacity.

STATIONARY HOPPER COAL WEIGHING CAR

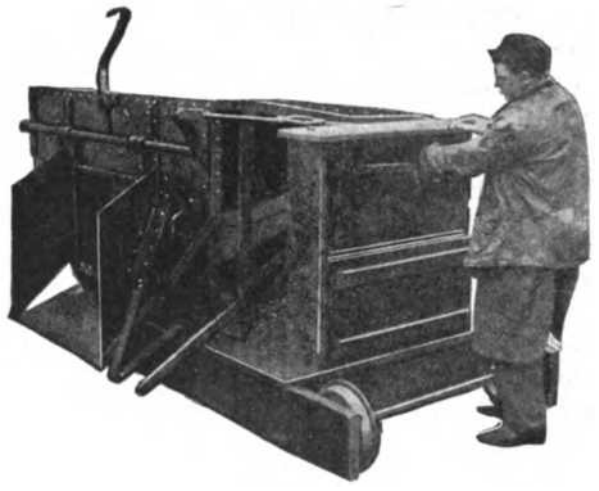


FIG. 5393

Made in sizes from one-quarter to two tons capacity.

Prices on application.

SIDE DUMPING CARS, BOTTOM INCLINED TWO WAYS

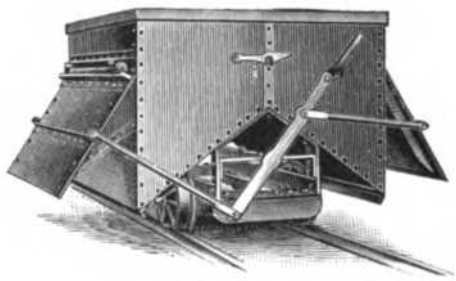


FIG. 5395

This car is used in manufacturing plants to carry ore, or other material, from stock pile to furnaces. It is strong, durable and easily operated.

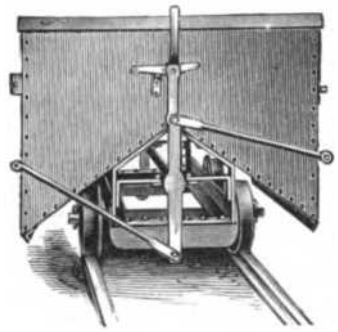


FIG. 5395

PRICES

Size Numbers.	Capacity in Cubic Feet.	Each.
266	15	$80 00
267	20	90 00
268	30	125 00
269	40	150 00

END DUMP TIP CAR

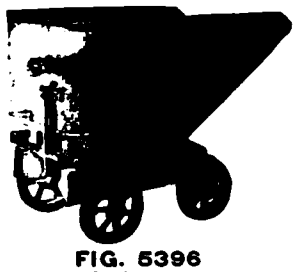


FIG. 5396

DESCRIPTION, FIG. 5396

This tip car is used for coal, ore, clay, sand, etc. The body of car is made of iron and the truck frame is wood.

A hand lever catch connects the body and truck as shown.

Size Numbers.	Coal Capacity in Pounds.	Capacity in Cubic Feet.	Gauge of Track in Inches.	Width in Inches.	Length in Inches.	Depth in Inches.	Each.
285	500	10	18	24	50	19	$60 00
286	750	15	20	27	58	22	70 00
287	1,120	22	24	32	56	24	85 00
288	1,500	30½	30	36	60	28	105 00

END DUMPING CAR WITH SLIDING DOOR

PRICES, FIG. 5397

Size Nos.	Coal Capacity in Lbs.	Capacity in Cubic Feet.	Each.
270	1,120	22	$90 00
271	1,680	33½	105 00
272	2,240	45	125 00
273	3,360	67	150 00
274	4,480	89	200 00



FIG. 5397

ROTARY DUMPING MINING CAR



FIG. 5398

These cars are made of best wrought iron and steel throughout. They are very strong and durable, properly balanced, easily managed and dumped. The door does not require to be opened until the bed of the car is at full angle of dump. The door is held in place by connecting rods placed on both sides, and operated by a hand lever, as shown.

PRICES

Size Numbers.	Capacity in Cubic Ft.	Length Over All in Inches.	Width Over All in Inches.	Height of Car in Inches.	Diam. of Wheels in Inches.	Gauge of Track in Inches.	Weight of Car in Lbs.	Each.
310	10	44	28	41	10	18	700	$105 00
311	18	45	30	49	12	18	800	120 00
312	22	58	35	53	14	24	1,150	140 00
313	45	78	40	58	18	30	1,650	225 00



FIG. 5398A

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ROTARY DUMP MINING CAR

DESCRIPTION, FIG. 5399

These cars are thoroughly well made. The sides and end of car body are made of heavy steel plates, and the bottom of still heavier stock, all securely riveted. The top is reinforced with a strong wrought iron band. The body is supported on a cast iron turntable, which permits the load to be dumped at one end or on either side. One lever serves to operate hinged door, and also to lock the car box to its truck frame. The frame is made of hardwood; the axles of square steel. Wheels of cast iron with chilled face.

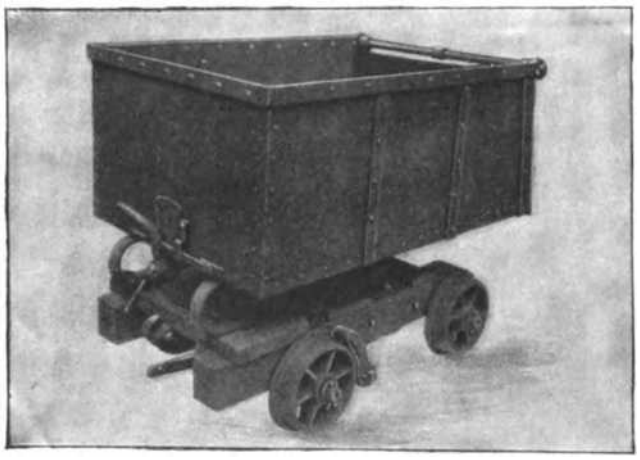


FIG. 5399

PRICES, FIG. 5399

Size Nos.	Capacity in Cubic Feet.	Length in Inches.	Width Over All in Inches.	Diameters of Wheels in Inches.	Gauge of Track in Inches.	Each.
314	10	44	28	12	24	$100 00
315	13	45	30	12	24	115 00
316	22	58	35	12	24	130 00
317	27	64	39	18	30	175 00
318	45	76	44	18	30	200 00

AUTOMATIC ORE CAR

SQUARE BOX, SIDE AND END DUMPING

End View.

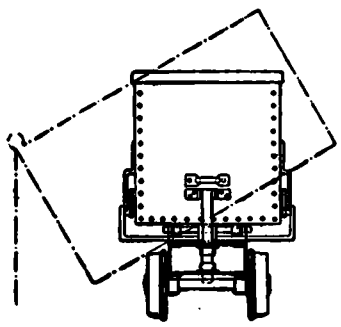


FIG. 5401

Side View.

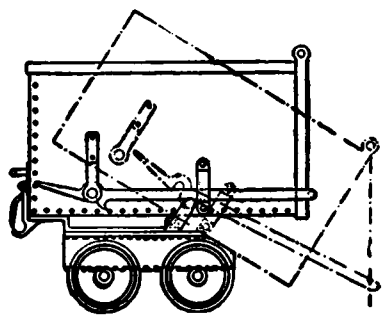


FIG. 5401

These cars are made of the best quality of steel and wrought iron with cast chilled wheels. They are very strong and durable and fitted with automatic opening and closing doors, which do not require levers in the back In dumping, the body of the car is lifted, and when the bed is at an angle of four degrees with the track the door is automatically opened. The advantage of this arrangement over the old style door is evident, as it obviates the necessity of opening the door before starting to dump.

Size Nos.	Capacity in Cubic Feet.	Length in Inches.	Width Over All in Inches.	Depth in Inches.	Diameters of Wheels in Inches.	Gauge of Track in Inches.	Thickness of Steel in Side Gauge and Inches.	Thickness of Steel in Bottom, Inches.	Weight of Car in Pounds.	Each.
289	13	44	29	22	10	18	12	3/16	460	$45 00
290	13	44	29	22	10	18	10	1/4	500	50 00
291	13	44	29	22	10	18	3/16	1/4	535	53 00
292	15	45	30	24	10	18	10	3/16	520	53 00
293	15	45	30	24	10	18	10	1/4	540	55 00
294	15	45	30	24	10	18	3/16	1/4	570	58 00
295	21	54	32	24	12	18	10	3/16	650	65 00
296	21	54	32	24	12	18	10	1/4	700	70 00
297	21	54	32	24	12	18	3/16	1/4	785	75 00
298	27	54	35	30	12	18	10	1/4	775	82 00
299	27	54	35	30	12	18	3/16	1/4	850	85 00

IRON ORE CAR

SQUARE BOX, SIDE AND END DUMPING

End View.

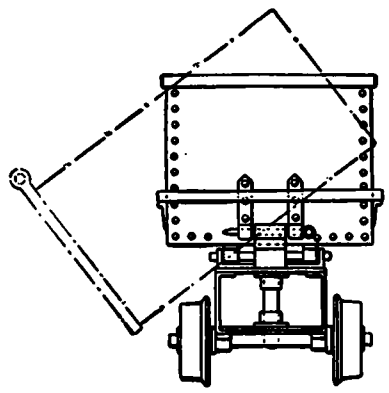


FIG. 5402

Side View.

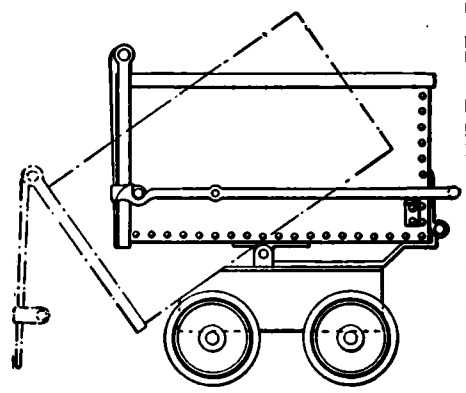


FIG. 5402

These cars are made of wrought iron and steel, with cast iron wheels having chilled treads. They may be easily dumped at either side and forward end. The door does not require to be opened until the bed of the car is at the full angle of dump. The door is held in place by a single lever, which is carried around the back and connected on both sides, as shown.

Size Nos.	Capacity in Cubic Feet.	Length in Inches.	Width Over All in Inches.	Depth in Inches.	Diameters of Wheels in Inches.	Gauge of Track in Inches.	Weight of Car in Pounds.	Each.
300	13	44	27	22	10	18	500	$50 00
301	15	45	28	24	10	18	530	53 00
302	17	48	28	25	10	18	560	56 00
303	21	52	34	25	12	20	675	67 00
304	27	54	34	30	12	20 to 24	850	85 00

End View.

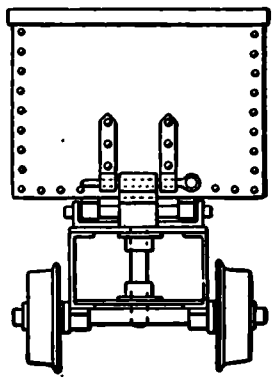


FIG 5403

IRON ORE CAR

SCOOP BOX, SIDE AND END DUMPING

These cars are very carefully built of the best steel and iron, strong for their weight and properly balanced. They are fitted with cast iron wheels, chilled on the face.

Size Nos.	Capacity in Cubic Feet.	Length in Inches.	Width in Inches.	Depth in Inches.	Gauge of Track in Inches.	Diameter of Wheels in Inches.	Each.
305	8	39	26	17	18	10	$35 00
306	12	51	26	20	18	10	50 00
307	15	51	28	22	18	10	55 00
308	20	56	30	24	18	12	70 00
309	27	60	34	28	30	12	85 00

Side View

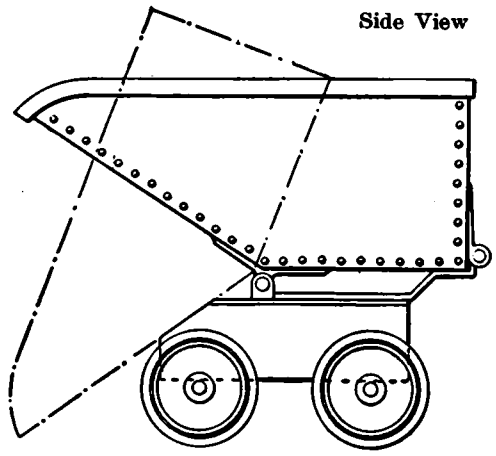


FIG 5403

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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BOTTOM DUMPING CAR
FOR OVERHEAD TRAMWAY



FIG. 5404

Where coal or other material is conveyed by overhead tramways on wharves to storage sheds, the Bottom Dumping Car, as shown in the accompanying cut, is particularly adapted. It is strong, simple, durable, and can be easily handled by one man.

PRICES

Size numbers	319	320	321	322
Coal capacity, pounds	1120	2240	3360	4480
Capacity, cubic feet	22	45	67	90
Height, inches	42	48	51	54
Length over all, inches	48	68	78	88
Width " " "	42	48	51	58
Wheel base, inches	24	30	32	32
Gauge of track, inches	36	40	40	40
Diams. of wheels, inches	20	23	23	23
Each	$120 00	$150 00	$175 00	$225 00

BOTTOM DUMPING COAL CAR

END VIEW

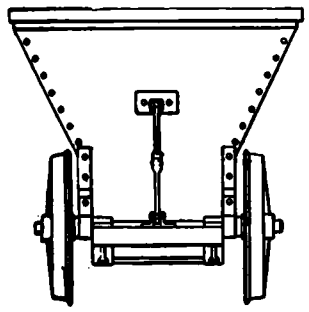


FIG. 5405

SIDE VIEW

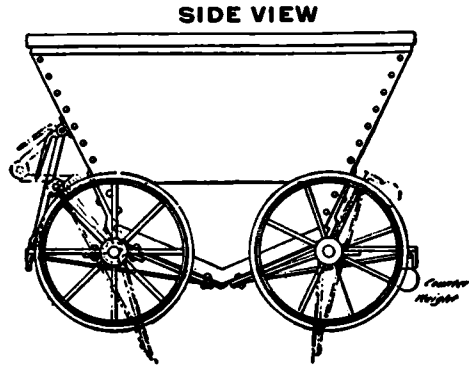


FIG. 5405

For locomotive coaling stations, where the platform is placed above the locomotive, and the coal run to the tender through a vertical chute, we furnish a drop bottom car, as shown. The car is fitted with two doors on the bottom, which are hinged directly upon the axles. They are operated by a single knuckle joint lever, which is connected to an extension arm on one of the doors and to the body of the car. The cars are constructed entirely of iron and steel and in the most thorough and workmanlike manner. They are made to suit standard gauge, 4 feet 8½ inches, or narrow gauge tracks down to 30 inches in width.

PRICES

Size Nos. of Car.	Coal Capacity, Pounds.	Capacity, Cubic Feet.	Each.
323	1120	22	$135 00
324	2240	45	165 00
325	3360	67	190 00
326	4480	90	250 00

SIDE DUMPING COAL CARS



FIG. 5406

For use in coal yards, brick works and large factories. Dumping both sides of the track.

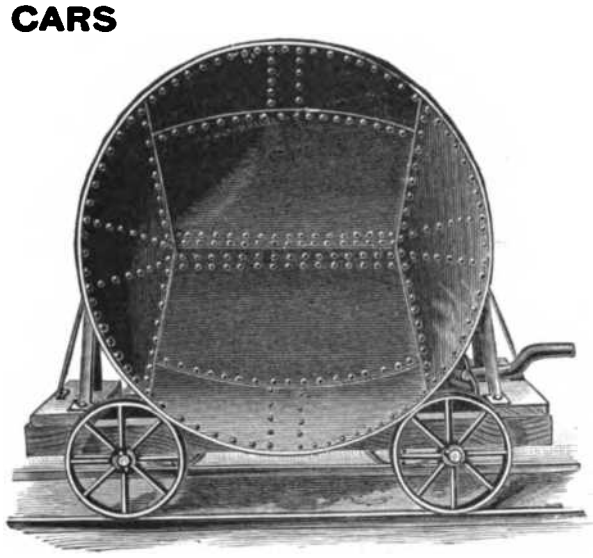


FIG. 5406

PRICES

Nos.	Height from Track, Inches.	Height, Dumping, Inches.	Width on Top, Inches.	Length Over All, Inches.	Diameters of Wheels, Inches.	Track Gauge, Inches.	Distance, C to C Wheels, Inches.	Capacity, Tons.	Each.
60	62	72	60	90	18	30	52	1	$150 00
61	63	83	69	91	18	30	52	1½	175 00
62	68	93	80	112	23	36	52	2	225 00

COAL CARS

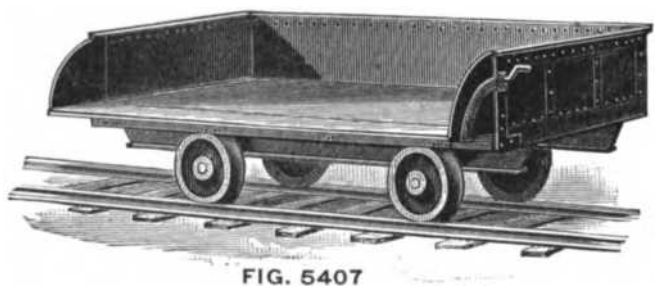


FIG. 5407

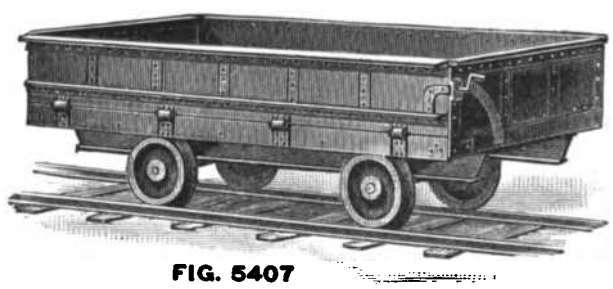


FIG. 5407

For use in factories, foundries and all manufactories where steam boilers are employed. These cars are made to run on tracks, as shown in the cuts, or on the ground, as may be required. A feature peculiar to these cars is the hinge which permits the side to lower without an opening between the two plates. The advantages of this arrangement are obvious. The cars are made only to order, but the following is the size in common use: 7 feet 8 inches x 3 feet 7 inches x 14 inches inside measurement, 28 inches from top of track to top of body. For track of 36 inch gauge. Capacity of 32 cubic feet, or 2,500 pounds of coal.

PRICES GIVEN ON APPLICATION

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LOCOMOTIVE COALING CAR

STEEL CAR, END DUMP



FIG. 5408

Capacity, 2 Tons, Gauge of Track, 36 Inches.

Designed for use at locomotive coaling stations, in connection with transfer scale car.

Steel Box—Length, 9 feet; width, 4½ feet; depth, 2 feet; of No. 12 plates. End gate of No. 10 plate. Steel angles, 2½ x 2½ x ⅜ inch. Top band, 1¾ x ½; end bands, 3 x ⅝; center band, 4 x ¾ inch, to which dumping hinges are attached.

Wheels—Single plate, chilled face, diameter 16 inches; tread, 3⅝ inches.

Steel Axles—2½ inches round, turning in cast boxing with Babbitted bearings.

Truck Frame—4 inch, steel I beams with 6 steel cross braces 2½ x ¾ inch.

The end gate is hinged at top by 1⅛ inch rod across end of box, and is operated by 1⅛ inch unlocking rod, extending under the box lengthwise and controlled by hand lever on opposite end, which has hook engaging with another hook on end of truck frame to lock box to truck, as shown in cut.

Painted steel color. Wheels blacked. Weight, 2056 lbs. Prices on application.

STEEL SAND CAR

ROTARY DUMP

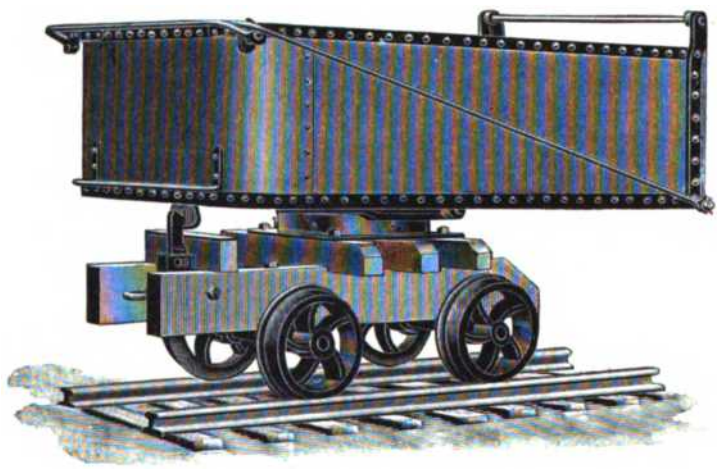


FIG. 5409

With Anti-Friction Roller Turn Table.

We furnish them with box of any size or capacity desired. The car here illustrated is of the following dimensions:

Box—72 inches long, 46 inches wide, 22 inches deep, of No. 8 U. S. gauge steel plate. Steel angles around bottom at front end and sides, 4 x 4 x ¼ inches, and rivets ⅜ x ¾ inch. The capacity of this size box is 42 cubic feet.

This car is made for track 23 inches gauge. We furnish any gauge desired.

The end gate is hinged at top, and has an iron bail, secured at bottom, which extends diagonally to the opposite upper corners of box, and there engages with an eccentric locking device, which holds the end gate firmly in place until released for dumping.

This locking device is very simple and automatic in action. After the load is dumped, the box is brought back to a level position, when the end gate will close and lock automatically, ready for reloading, as shown above.

The wheels are 14 inches diameter, shrunk solid on 2 inch round steel axles which revolve in cast iron bearing boxes.

Weight of car, 1400 lbs. Prices on application.

SHEET METAL CAR

FOR TIN PLATE MILLS AND SHEET METAL PLANTS

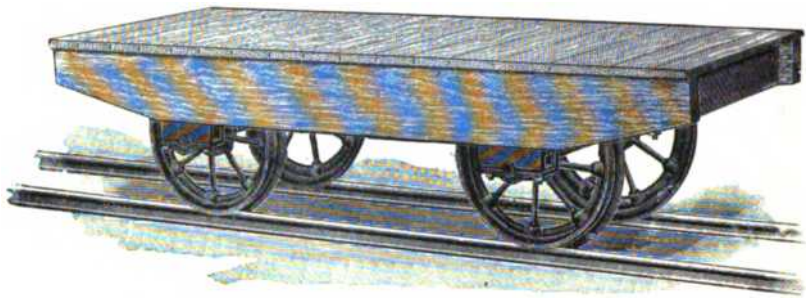


FIG. 5410

Gauge of Track, 16½ Inches.

Platform—7 feet long by 28 inches wide by 20 inches high. Side sills, 8¼ x 2 inches; ends, 5 x 2 inches; top ⅞ inch.

Staggered Spoke Wheels—Diameter, 18 inches; tread, 1¾ inches.

Steel Axles—1½ inch round, turning in cast boxing with Babbitted bearings.

Painted steel color, wheels blacked. Weight, 440 lbs. Prices on application.

HEAVY FOUNDRY OR MILL CAR

ROLLER BEARINGS

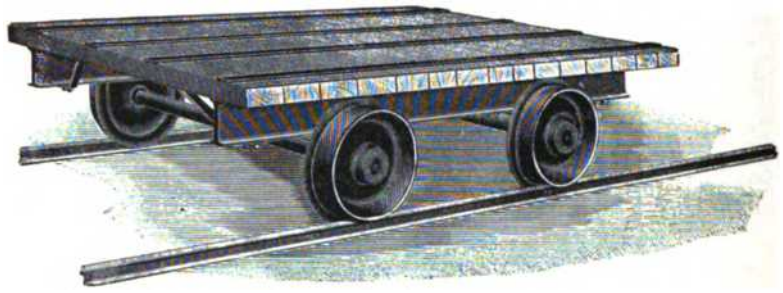


FIG. 5411

Gauge of Track, 5 feet 3 Inches. Capacity, 5 Tons.

An extra heavy car for foundry and mill purposes.

Platform—7 feet long by 70 inches wide, 3 inch oak. Four steel top straps, 3 x ¼ inches.

Steel I Beam Sills—6 inches high, with 4 steel braces, 2 x ⅜ inches.

Steel Axles—2½ inch round, turning in heavy cast boxing, with 14 cold drawn steel rollers, 1 1/16 x 4¾ inches, in each bearing.

Wheels—Solid web chilled face, 16 inches diameter, 3⅝ inch tread.

Painted steel color, wheels blacked. Weight, 1600 lbs. Prices on application.

This car also made with ⅜ inch solid steel plate top, supported by four 3 inch steel I beam cross sills, instead of wooden top; all other parts same as above described.

LIGHT BILLET CAR

FOR IRON AND STEEL BILLETS, ETC.

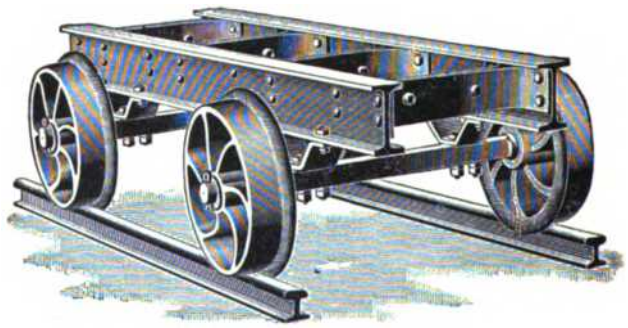


FIG. 5412

Gauge of Track, 30 Inches.

This car designed especially for handling light billets in iron and steel mills.

Frame—6 inch steel I beams. Length, 7 feet; width, 20 inches. Four double cross trusses of steel, 2½ x ½ inch, riveted together, V shaped at ends, and double riveted to side sills, as shown in illustration.

Steel axles—2 inches square.

Wheels—16 inches diameter, curved spoke, gray iron.

Steel brackets, connecting axles and side sills, well bolted together. Wheels turn on axles.

These cars are painted steel blue, metallic brown, or black, as preferred. Weight, 740 lbs. Prices on application.

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PIPE CAR

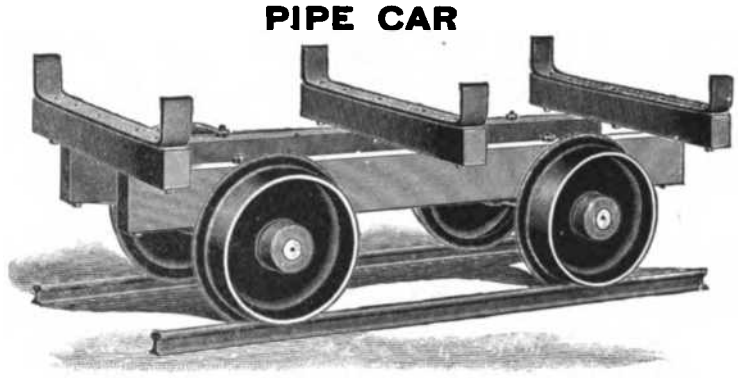


FIG. 5413

Gauge of track, 2 feet; capacity, 4,500 lbs.

Platform—6 feet long x 3 feet wide; side sills, 2¼ x 8 inches; cross sills, 2¼ x 4 inches.

Wheels—Solid web chilled face; diameter, 16 inches; thread, 3⅝ inches.

Steel Axles—2¼ inches round, turning in cast boxing, with babbitted bearings.

Three iron cross bars on top, as shown in cut, turned up at sides of car, to hold pipe in place. This car was designed to carry 28 pieces 4¾ inch pipe, 150 lbs. each. Painted Venetian red. Weight, 540 lbs. Prices on application.

STEEL PLATFORM CAR

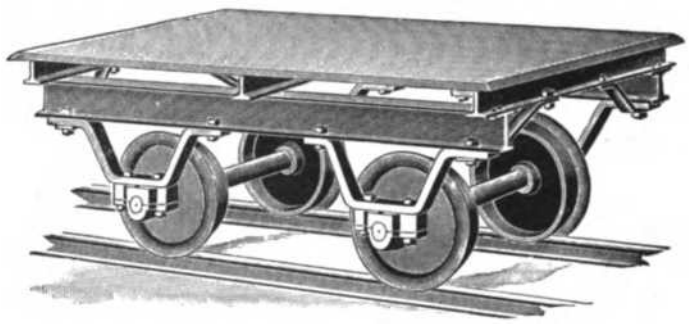


FIG. 5415

Used in bolt and other metal works for handling material in process of manufacture. Wheels run outside of track, 21½ inches gauge. Also made with wheels to run inside of rail, and with platform of any size.

Platform—Length, 60 inches; width, 36 inches; height, 21 inches. Top of No. 8 steel.

Frame—Two side sills of 4 inch steel I beams, and three cross sills of 3 inch steel I beams.

Wheels—Chilled face, 12 inches diameter.

Steel Axles—2 inches round, turning in cast boxing, with babbitted bearings.

The wheels are keyed solid on the axles, and the bearing boxes are atttached to side sills by heavy wrought steel brackets 3 x ¾ inches. Car is thoroughly well bolted and riveted together and very substantially constructed. Painted steel blue, metallic brown or black, as ordered. Weight, 615 lbs. Prices on application.

DESCRIPTION, FIG. 5417

Made with roller bearings when desired. For light T track, 30 inch gauge.

These cars are well built, light and strong, and will carry a very heavy load. Designed principally for use on yard tracks in large factories for handling lumber, iron or other material, conveying completed stock from shop to warehouse, etc.

Sills—7 feet long by 3¼ inches wide by 5½ inches deep. Cross pieces, 3½ feet long by 2 inches thick by 6¾ inches wide.

Wheels—16 inches in diameter, 3⅝ inch thread; hub, 5 inches long; bore, 2⅞ inches.

Steel Axles—2¼ inches round, turning in cast boxing, 2 x 4 inches, with babbitted bearings

Height from track to top of cross piece, 18 inches. Weight, 625 lbs. Prices on application.

NO. 27. YARD PUSH CAR

Same as above, but with solid top and wheels curved spoke, gray iron, 16 inches diameter. For light T track, 30 inch gauge. Weight, 695 lbs. Prices on application.

NO. 28. IMPROVED YARD PUSH CAR WITH ROLLER BEARINGS

Platform—Length, 7 feet; width, 4 feet; height, 19½ inches.

Side Sills—4 x 6 inches; cross sills, 3 x 6 inches.

Wheels—16 inches diameter, chilled face.

Steel Axles—2½ inches round, turning in cast boxing with cold drawn steel roller bearings.

For light T track, 36 inch gauge. Painted Venetian red. Weight, 936 lbs. Prices on application.

COPPER ANODE OR INGOT CAR

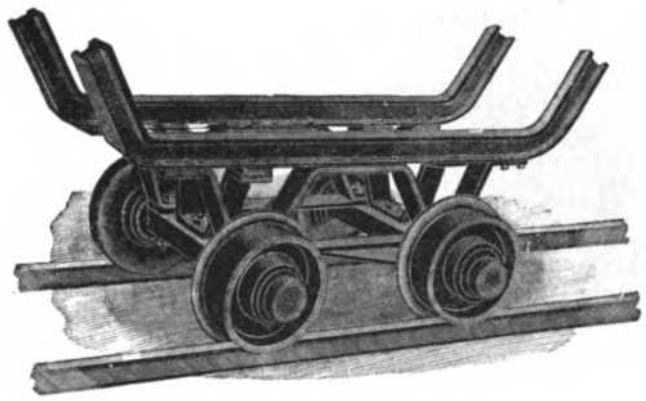


FIG. 5414

For handling Copper Anodes; also adapted to handle other Metal Ingots and Billets.

Gauge of Track—18 inches.
Roller bearings of cold drawn steel.
Length between rails at top, 47 inches.
Width, outside rails at top, 14½ inches.
Height, from rail to top of T rack, 27½ inches.
Rack—20 pound T rails.
Cross and Side Axle Brackets—2½ x ½ steel.
Steel Axles—2¼ inches square.
Wheels—Solid web, chilled face; diameter, 9 inches; face, 3¼ inches.
Cold Drawn Steel Rollers—$1\frac{1}{16}$ x 4 inches, 12 in each bearing.
Painted steel color, brown or black. Weight, 465 lbs. Prices on application.

WOODEN PLATFORM CAR

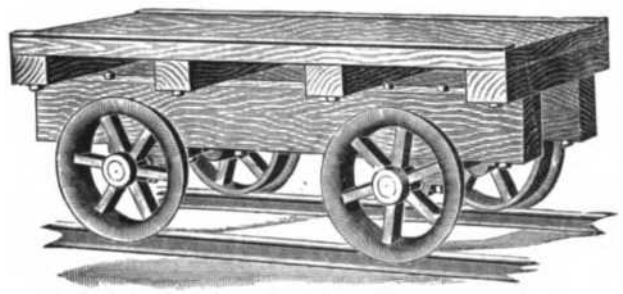


FIG. 5416

For light T track, gauge 19 inches between rails, or 21½ inches outside.

This car designed for manufacturers of railway supplies for handling press steel bolsters, beams, etc. A very substantial and durable car for many other purposes. Flanges of wheels run outside of rails, but also made with flanges to run inside of rails, and for any gauge of track, depending upon width of platform desired.

Platform—Length, 54 inches; width, 24 inches. Top of 1¾ inch oak, selected and dry.

Wheels—12 inches diameter, 2¾ inch tread on rail; hub, 5 inches long; straight spoke, gray iron.

Steel Axles—2 inches round, turning in cast boxing with babbitted bearings. Center to center of axles, 30 inches. Car is thoroughly well bolted together and substantially constructed throughout. Extra strong and durable. The platform has top straps of 2 x ¼ inch steel bolted lengthwise on outer edges. Painted Venetian red. Weight, 445 lbs. Prices on application.

YARD PUSH CAR

For yard tracks in large factories, lumber yards, etc.

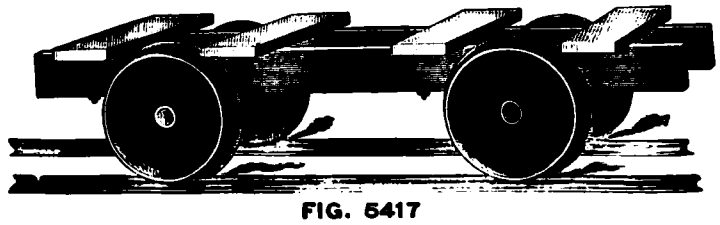


FIG. 5417

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CHARGING CARS AND WAGONS

CHARGING CARS



FIG. 5418

To obtain economy in firing and to avoid dust and the inconvenience of heaps of coal and ashes on the floors of boiler houses, we recommend these charging wagons and cars.

They are provided with doors on either side, or end, and are of a height best suited for the operator to shovel the contents directly from the car to furnace.

The doors are hinged to always remain one eighth of an inch above the level of the bottom of the car, to permit the shovel to slide over the joint without obstruction.

We generally furnish the charging wagons and cars as tabulated below, but can furnish them of the same capacity and of varying dimensions to suit the requirements of the purchaser.

CHARGING WAGONS



FIG. 5419

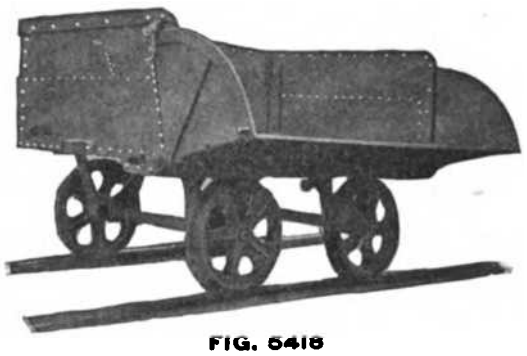


FIG. 5418

PRICES, FIGS. 5418 AND 5419

Size numbers	327	328	329	330	331	332
Coal capacity in lbs.	500	700	1,000	1,250	1,500	2,000
Capacity in cubic feet.	10	14	20	25	30	40
Width over all in inches	30	32	35	36	42	44
Height in inches	27	29	35	36	39	40
Length in inches	58	64	68	69	75	92
Diama. of wheels in inches	12	14	16	16	18	18
Wheel base in inches	24	26	32	32	36	40
Gauge of track in inches	20	22	24	24	24	24
Prices	$50 00	60 00	75 00	80 00	90 00	110 00

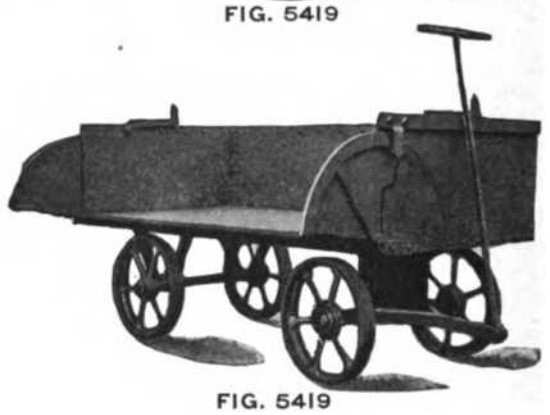


FIG. 5419

COMPARTMENT CHARGING CAR

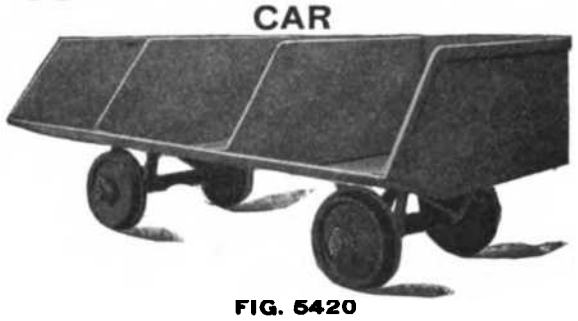


FIG. 5420
PRICES ON APPLICATION

DOUBLE END CHARGING CAR



FIG. 5421
PRICES ON APPLICATION

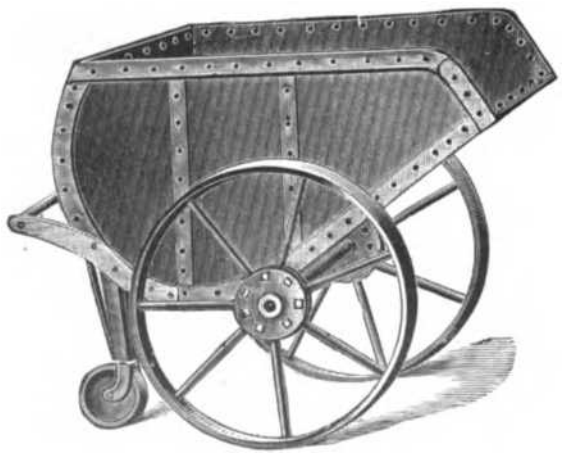


FIG. 5423

DESCRIPTION FIG. 5422

The barrow is made entirely of iron and steel, the sides being No. 10 gauge. The plate forming the back, bottom and front of barrow is made of heavier stock than the sides, and the barrow is also reinforced on the bottom with an extra plate, which serves to break the fall of the ore and protects the bottom plate from wear at a point which is subject to the initial blows when the barrow is filled.

The wheels are large in diameter and 2½ inches wide on the face. They are made with plain round or anti-friction steel roller bearings.

Leg supports as shown in cut or a 12 inch diameter drag wheel is provided.

The barrow is neatly designed and the load carried directly on the wheels, making it easy to push, fill and dump.

PRICES, FIG. 5422

Size Nos.	Coal Capac'y in Lbs	Capac'y in Cubic Feet.	Width in Inches.	Width Over All in Inch.	Lengths in Inches.	Each.
363	500	10	20	36	54	$58 00
364	600	12	21	37	54	62 00
365	700	14	24	40	54	65 00
366	800	16	26	42	56	68 00
367	1,000	20	28	44	57	72 00

CHARGING BARROW



FIG. 5422

CHARGING BARROWS
FOR CHARGING BLAST FURNACES AND GAS RETORTS

PRICES, FIGS. 5423 AND 5424

Number.	Dimensions of Body. Width, Inches.	Depth, Inches.	Lengths, Inches.	Diameters of Wheels, Inches.	Cap'city, Cubic Ft.	Each.
18	20	21½	54	28, Malleable	10	$58 00
19	21	25	54	28, "	12	62 00
20	24	26	54	28, "	14	65 00
21	26	28	56	32, Wrought	16	68 00
22	28	30	57	32, "	20	72 00

Any of the above sizes can be furnished with swivel at a small additional cost. See figure 5423.

Charging barrows of other sizes can be made to order.

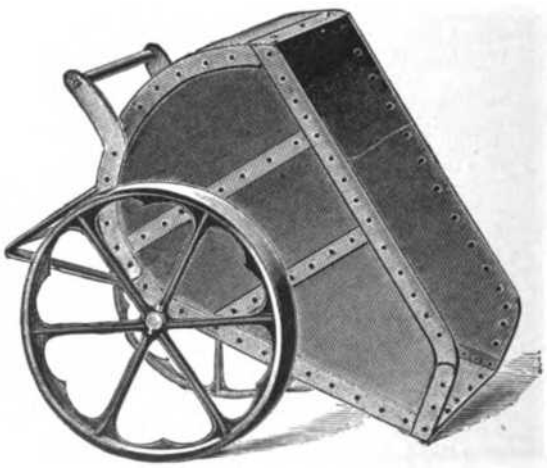


FIG. 5424

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CHARGING BARROW

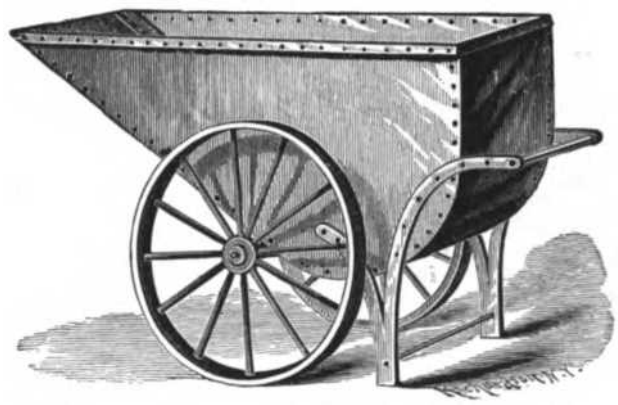


FIG. 5425

The above barrow is used very largely in iron furnaces and mills, and by railroads and steamboats for conveyance of coal ore, limestone, coke, etc.

PRICES

		Each.
Capacity,	400 lbs. coal	$65 00
"	500 " "	70 00
"	1,000 " "	90 00
"	1,500 " "	112 50

Estimates furnished for special sizes on application.

TWO WHEELED BARROW

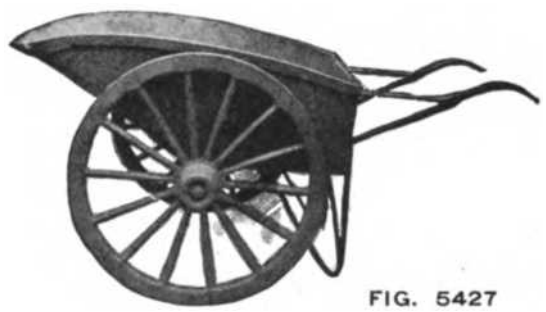


FIG. 5427

The two wheeled barrow is preferable to a car for some situations. With it one man can handle double the load of an ordinary barrow. It is balanced to throw the load directly over the wheels, requiring the operator to only push the load. The barrow is thoroughly well made, and will stand any amount of hard and rough usage. The tray is made of steel, and is reinforced with a heavy wrought iron band around the top. The plate forming the bottom, front and rear end is heavier than the sides, thereby equalizing the wear. The handles and legs are made of one continuous piece of iron and firmly fastened to the tray. The barrows are very easily dumped forward and the load freely and cleanly discharged.

PRICES, FIG. 5427

Size Nos.	Coal Capacity in Pounds.	Capacity in Cubic Feet.	Greatest Width in Inches.	Each.
342	400	8	46	$30 00
343	500	10	48	35 00
344	600	12	50	40 00
345	700	14	52	45 00
346	1,000	20	55	60 00
347	1,250	25	57	68 00
348	1,500	30	60	75 00

THREE WHEELED BARROW



FIG. 5429

DESCRIPTION FIG. 5429

To carry material long distances over wooden staging or pavements, we furnish a three wheel barrow, as shown. With this construction the weight is thrown on the wheels and the operator is free to exert his entire strength in pushing the barrow.

PRICES

Size Nos.	Coal Capacity in Pounds.	Capacity in Cubic Feet.	Each.
356	400	8	$30 00
357	500	10	35 00
358	600	12	40 00
359	700	14	45 00
360	1,000	20	60 00
361	1,250	25	68 00
362	1,500	30	75 00

DESCRIPTION FIG. 5426

These barrows are designed for use in chemical, phosphate and gas works.

They are adapted for carrying crushed ores, phosphate rock and other materials from one part of the building to another. The body is balanced to bring the weight directly upon the wheels, which reduces the efforts of the operator to a minimum. Prices on application.

TWO WHEELED BARROW FOR COAL, ORE, ETC.

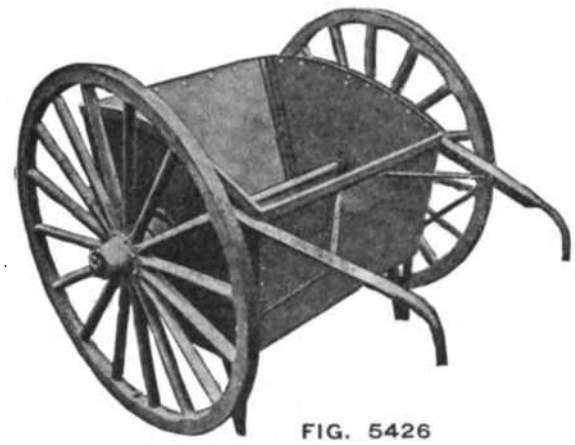


FIG. 5426

TWO WHEELED BARROW

DESCRIPTION, FIG. 5428

For wheeling heavy loads varying from 400 to 600 pounds, we furnish a two wheeled barrow, as shown herewith.

The barrow is made to dump forward, and at the dumping point readily discharges its load. The wheels are placed well underneath the tray to bring the greatest weight directly upon the axle and to reduce the effort of the operator to a minimum.



FIG. 5428

The sides and ends of the tray are made of number 14 gauge steel or iron, and the bottom of heavier stock. The front and part of the bottom is reinforced with an extra plate and a bar of angle iron, which serves to stiffen the tray and equalize the wear.

The frame is constructed of hard wood lumber, and is strengthened and protected against wear by iron bands securely riveted to the parts directly above the axle of the wheels. The wheels are very strong, one being fastened to the axle and one loose to facilitate turning corners.

PRICES, FIG. 5428

Size Nos.	Coal Capacity in Pounds.	Capacity in Cubic Feet.	Each.
339	400	8	$30 00
340	500	10	32 00
341	600	12	34 00

SPECIAL TWO WHEELED BARROW



FIG. 5430

The trays of these barrows are made of steel The wheels are either of wood or iron with wrought iron double braced spokes The handles are made of wood or iron as desired. The general construction is similar to the barrow shown in Fig. 5427, with the exception of the back end, which is rounded as shown, which increases the efficiency of the barrow when it is emptied by shoveling.

PRICES

Size Nos.	Coal Capacity in Pounds.	Capacity in Cubic Feet.	Each.
349	400	8	$30 00
350	500	10	35 00
351	600	12	40 00
352	700	14	45 00
353	1,000	20	60 00
354	1,250	25	68 00
355	1,500	30	75 00

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LOCOMOTIVE COAL BARROW

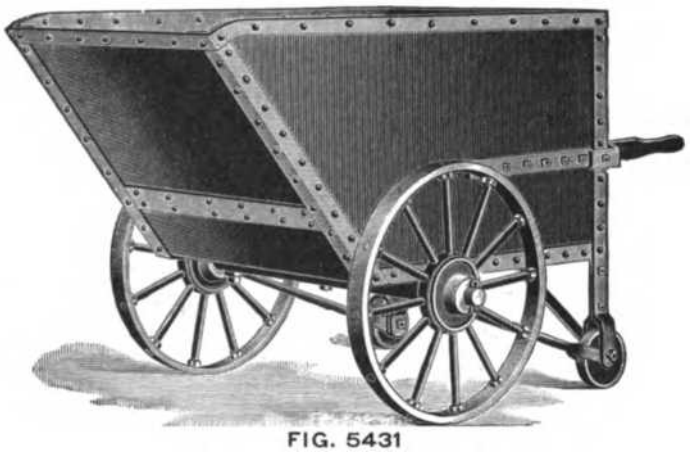


FIG. 5431

Steel wheelbarrow for locomotive coal stations. Capacity, 1,500 pounds coal.

Steel Coal Box—63 inches long, 36 inches wide, 30 inches deep; sides and end No. 10, bottom and front dump No. 6 gauge steel; steel angle corners 2 x 2 x ¼ inch; well riveted together. Top band, 1½ x ⅜ inch.

Wrought Iron Wheels—Heavy cast hub, diameter, 32 inches; tire, 2 inches wide by 1 inch deep; ⅞ inch round spokes having forged shoulder inside and countersunk riveted outside of tire. Steel axle, 2¼ inch square and steel axle plate 3 x ½ inch. Heavy steel legs, with drag wheels, cross and lateral braced.

Weight, 895 pounds. Painted steel color, metallic brown, or black, as preferred. Prices on application.

TWO WHEELED STEEL COKE BARROW

FOR GAS HOUSES



FIG. 5432

Capacity, 18 cubic feet or 15 bushels of coke. Weight, 380 pounds.

SIZE OF TRAY

Length on top	63 inches
Width on top	43 "
Length on bottom	24 "
Width " "	26 "
Depth	19 "
Steel in tray	No. 9
Weight of tray	200 lbs.

Staggered spoke iron wheels, 18 inches diameter, extra wrought tire, 2½ x ¼ inches.

Steel axle 1½ inches square. One inch tubular handles. Painted metallic brown. Each, $50.00.

TWO WHEELED COAL AND ORE OR SMELTER BARROW



FIG. 5433

DESCRIPTION

This smelter barrow is made with bottom and front of tray of No. 7 and the sides and back of No. 10 gauge steel. Handles of 1¼ inch double thick pipe. Axle, 1¾ inches square, and wheels with extra wrought tires, 2¼ x ⅜ inches. This barrow is thoroughly well made and will stand the hardest usage. The tray is the most approved shape for the purpose, and when tipped forward and resting on the curved tubular frame every particle of coal or ore slides out easily, so that the load is dumped with the least labor and in the quickest time.

Steel Tray—Size: Bottom, 20½ x 21 inches. Top measures 44 inches long by 40 inches wide at wheel end, by 31 inches wide at handle end. Greatest depth, 14½ inches. The bottom and front of tray of coal barrow is No. 10 gauge steel, sides and back No. 13, and put together with 5/16 rivets. Tubular handles, curved up front of tray and riveted to it, which are 1¼ inch pipe. Axle, 1½ inch square by 38 inches long. Leg, 1 inch half oval iron and cross braced by 1¼ x 5/16 iron. Wheels, improved staggered wrought spoke, with heavy cast hub and rim 20 inches diameter; tire, 2 inches; wrought spokes, ⅝ inch round; hub, 4¾ inches long; bore, 1¼ inches. Capacity, even full, 10 cubic feet. Capacity, even full, nut coal, 400 pounds; heaping full, 480 pounds; lump coal, even full, 450 pounds; heaping full, 650 pounds.

PRICES

Coal Barrow, weight 265 pounds	$38 00
Smelter Barrow, weight 350 pounds	45 00

COAL BARROW



FIG. 5435

The parts of all these barrows are made interchangeable.

TWO WHEELED COAL OR COKE BARROW

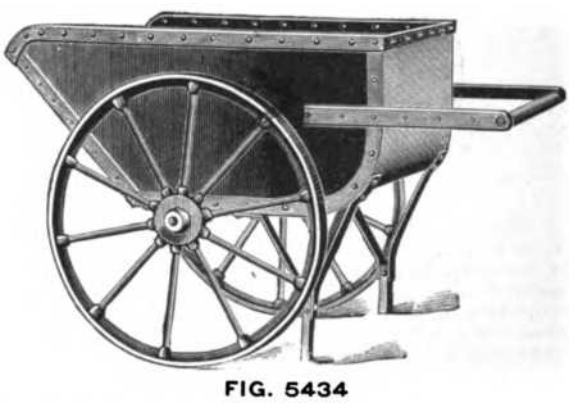


FIG. 5434

PRICES

Nos.	Cubic Ft.	Lbs. Coal.	Bottom.	Sides.	Each.
1	8	400	No. 12	No. 14	$40 00
2	10	500	" 12	" 14	45 00
3	12	600	" 12	" 14	47 50
4	16	800	" 10	" 12	50 00
5	20	1,000	" 10	" 12	52 50

Wheels, 24 to 30 inches diameter. Perfectly balanced; is light running.

DESCRIPTION, FIG. 5435

The following sizes of coal barrows are commonly made with two wheels.

PRICES

Nos.	Capacity, Pounds.	Each.
9½	260	$28 00
10½	340	30 00
11½	400	32 00
12½	480	34 00
13½	600	38 00

These two wheeled coal barrows are also made in the A (of Nos. 12 and 10 steel) and AA (of Nos. 12 and 8 steel) styles, of the same sizes and capacity as the preceding, as follows:

PRICES

Nos.	Capacity, Pounds.	Each.
9½A	260	$29 50
10½A	340	31 50
11½A	400	33 50
12½A	480	35 75
13½A	600	40 00
9½AA	260	30 50
10½AA	340	32 75
11½AA	400	34 50
12½AA	480	36 75
13½AA	600	42 00

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TWO WHEELED COAL BARROW

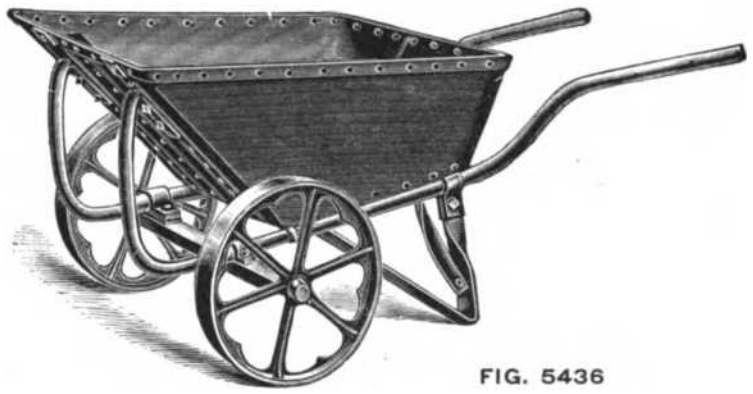


FIG. 5436

PRICES

Nos.	Capacity, Lbs.	Each.	Nos.	Capacity, Lbs.	Each.
9½	260	$28 00	12½	480	$34 00
10½	340	30 00	13½	600	38 00
11½	400	32 00			

Two wheeled coal barrows are also made in the A (of Nos. 12 and 10 steel) and AA (of Nos. 12 and 8 steel) styles, of the same sizes and capacity as the preceding, as follows:

PRICES

Nos.	Capacity, Lbs.	Each.	Nos.	Capacity, Lbs.	Each.
9½A	260	$29 50	9½AA	260	$30 50
10½A	340	31 50	10½AA	340	32 75
11½A	400	33 50	11½AA	400	34 50
12½A	480	35 75	12½AA	480	36 75
13½A	600	40 00	13½AA	600	42 00

COAL BARROW, SQUARE TRAY



FIG. 5437

PRICES

No. 9—Greatest width of tray, 32 in.; greatest length of tray, 34 in.; capacity, 260 lbs., or 3½ bushels of coal; 18 in. wheel; tray of Nos. 14 and 10 steel. Each.....$22 00

No. 10—Greatest width of tray, 33 in.; greatest length of tray, 36 in.; capacity, 340 lbs., or 4½ bushels of coal; 18 in. wheel; tray of Nos. 14 and 10 steel. Each..... 24 00

No. 11—Greatest width of tray, 35 in., greatest length of tray, 38 in.; capacity, 400 lbs., or 5½ bushels of coal; 18 in. wheel; tray of Nos. 14 and 10 steel. Each..... 26 00

No. 12—Greatest width of tray, 36 in.; greatest length of tray, 40 in.; capacity, 480 lbs., or 6½ bushels of coal; 18 in. wheel; tray of Nos. 14 and 10 steel. Each..... 28 00

No. 13—Greatest width of tray, 38 in.; greatest length of tray, 42 in.; capacity, 600 lbs., or over 8 bushels of coal; 18 in. wheel; tray of Nos. 14 and 10 steel. Each..... 30 00

These coal barrows with square trays are also made in the A (of Nos. 12 and 10 steel) and AA (of Nos. 12 and 8 steel) styles, of same size and capacity as the preceding, at the following prices:

Nos.	Capacity, Lbs.	Each.	Nos.	Capacity, Lbs.	Each.
9A	260	$23 50	9AA	260	$24 50
10A	340	25 50	10AA	340	26 75
11A	400	27 50	11AA	400	28 50
12A	480	29 75	12AA	480	30 75
13A	600	32 00	13AA	600	33 50

COAL BARROW, ROUND TRAY

PRICES, FIG. 5438

These coal barrows we furnish in two grades of thickness, each style having thicker bottoms than sides.

The A barrows have sides of No. 12 and bottoms of No. 10 steel.

No. 4A—Greatest width of tray, 29 in.; greatest length of tray, 32 in.; 16 in. wheel; tray of Nos. 12 and 10 steel; capacity, 3 cubic feet. Each.....$14 00

No. 5A—Greatest width of tray, 31½ in.; greatest length of tray, 36 in.; 16 in. wheel; tray of Nos. 12 and 10 steel; capacity, 4 cubic feet. Each..... 15 00

No. 6A—Greatest width of tray, 32 in; greatest length of tray, 38 in.; 16 in. wheel; tray of Nos. 12 and 10 steel; capacity, 4½ cubic feet. Each..... 16 50

No. 7A—Greatest width of tray, 36 in.; greatest length of tray, 39 in.; 16 in. wheel; tray of Nos. 12 and 10 steel; capacity, 5½ cubic feet. Each..... 20 00

No. 8A—Greatest width of tray, 40 in.; greatest length of tray, 45 in.; 16 in. wheel; tray of Nos. 12 and 10 steel; capacity, 7½ cubic feet. Each.....$22 00

The AA barrows have sides of No. 12 and bottoms of No. 8 steel.

No. 4AA—Same size as No. 4A; tray of Nos. 12 and 8 steel. Each.....$15 00

No. 5AA—Same size as No. 5A; tray of Nos. 12 and 8 steel. Each..... 16 00

No. 6AA—Same size as No. 6A; tray of Nos. 12 and 8 steel. Each..... 17 50

No. 7AA—Size and capacity, same as No. 7A; tray of Nos. 12 and 8 steel. Each..... 21 00

No. 8AA—Size and capacity, same as No. 8A; tray of Nos. 12 and 8 steel. Each..... 23 00

These coal barrows stand on end and dump forward.



FIG. 5438

COAL BARROW, ROUND TRAY

PRICES, FIG. 5439

No. 4—Greatest width of tray, 29 in.; greatest length of tray, 32 in.; capacity, 150 lbs. of coal; 16 in. wheel; tray of Nos. 16 and 12 steel. Each.....$12 25

No. 5—Greatest width of tray, 31½ in.; greatest length of tray, 36 in.; capacity, 200 lbs. of coal; 16 in. wheel; tray of Nos. 16 and 12 steel. Each.....$14 25

No. 6—Greatest width of tray, 32 in.; greatest length of tray, 38 in.; capacity, 225 lbs. of coal; 16 in. wheel; tray of Nos. 16 and 12 steel. Each..... 15 00

No. 7—Greatest width of tray, 36 in.; greatest length of tray, 39 in.; capacity, 300 lbs. of coal; 16 in. wheel; tray of Nos. 16 and 12 steel. Each..... 18 00

No. 8—Greatest width of tray, 40 in.; greatest length of tray, 45 in.; capacity, 450 lbs. of coal; 16 in. wheel; tray of Nos. 16 and 12 steel. Each..... 20 00

These barrows dump forward. Any size, any shape, made to order.



FIG. 5439

These coal barrows are provided with thicker bottoms than sides, and have all the advantages of forward dumping. They are carefully constructed and are especially adapted for wheeling coal and ashes.

PATENTED PAPER SHEATHS

When so ordered, we can furnish patented paper sheaths to the handles of barrows. These sheaths are made of papier mache, and, from their non-conducting property, permit the use of the barrow throughout the year, without inconvenience to the hands of the operator. Price, per barrow, $1.00.

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COAL BARROWS



FIG. 5440

PRICES, FIG. 5440

Nos.	Capacity, Pounds.	Tray, Nos.	Handles, Nos.	Weight, Pounds.	Each.
B1	200	14	12	78	$14 50
B2	250	14	12	84	15 00
B3	325	14	12	90	16 00
B3½	325	12	10	105	20 00
B4	400	11	10	130	22 00

Wheels, 16 inches diameter.

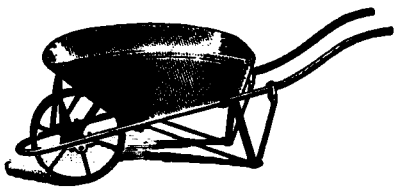


FIG. 5441

PRICES, FIG. 5441

Size A—With tray holding 325 lbs. of coal; greatest width of tray, 30 in.; weight of barrow, 135 lbs. Each..... $26 00

Size B—With tray holding 400 lbs. of coal; greatest width of tray, 36 in.; weight of barrow, 145 lbs. Each..... 29 00

Size C—With tray holding 260 lbs. of coal; greatest width of tray, 25 in.; weight of barrow, 135 lbs.; especially designed for use in coal bunkers. Each..... 26 00

Size D—With tray holding 300 lbs. of coal; weight of barrow, 98 lbs. Each $18 00

Size D, No. 2—With tray holding 350 lbs. of coal; weight of barrow, 110 lbs. Each..... 20 00

Size E—With tray holding 4 bushels of coke or charcoal; weight of barrow, 126 lbs. This barrow is expressly designed for carrying coke, charcoal or other equally light material, and is not intended for use as a coal barrow. Each 28 00

COAL AND COKE BARROW

With Wheel Guard.

DESCRIPTION, FIG. 5442

The Lewis steel wheels used with these barrows are 16½ inches in diameter, with iron tire 1¼ x ⅜ inches, and steel spokes ½ inch round, and extra heavy malleable hubs; ⅝ inch axle bolts. The legs and leg braces are extra heavy. Greatest length of all barrows, 67½ inches. Greatest width of all barrows is width on top of tray.

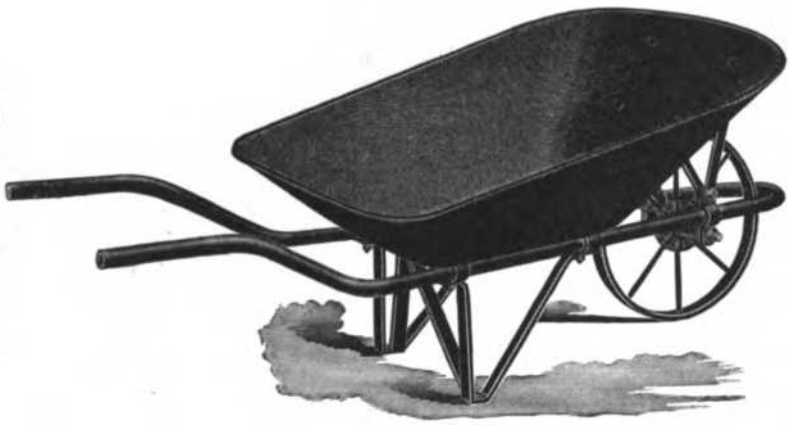


FIG. 5442

CAPACITIES, FIG. 5442

No. 7 barrow—Capacity, 215 to 250 lbs. of coal.

No. 10 barrow—Capacity, 400 to 450 lbs. of coal.

No. 12 barrow—Capacity, 5 bushels coke or charcoal.

No. 12 barrow is intended for carrying coke, charcoal or other light material, and is not intended for use as a coal barrow.

Nos.	Gauge of Steel in Tray.	Length on Top, Inches.	Width on Top, Inches.	Depth at Wheel, Inches.	Depth at Handle, Inches.	Greatest Height, Inches.	Cubic Capacity, Feet.	Weight, Pounds.	Each.
7	14	35½	28½	8½	6	21½	4	88	$14 25
10	13	41½	33	11½	8	25½	6	109	20 00
12	15	41½	33	11½	8	25½	6	93	18 50

SMELTING FURNACE BARROW



FIG. 5444

Suspension braces. All parts extra heavy.

No. 1—Capacity, 325 lbs.; tray, No. 12; handles, No. 10; weight, 130 lbs.; wheels, 16 in. diameter. Each..... $25 00

FOUNDRY BARROW

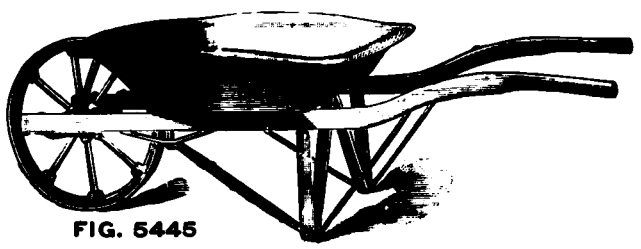


FIG. 5445

Suspension braces. All parts extra heavy.

Nos.	Capacity, Cubic Feet.	Tray, Nos.	Handles, Nos.	Weight, Pounds.	Each.
1	3	13	10	85	$14 00
2	3	12	10	100	15 00
3	4	12	10	110	16 50

Wheels, 16 inches.

FOUNDRY BARROW

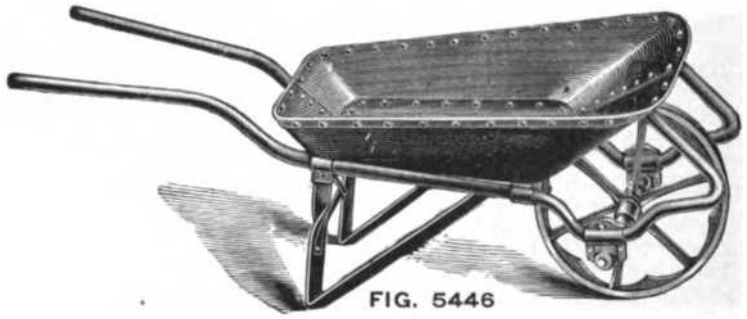


FIG. 5446

These Foundry Barrows are furnished in two grades of thickness; each style has heavier bottom than sides.

PRICES

No. 4A—Greatest width of tray, 29 in.; greatest length of tray, 32 in.; 16 in. wheel; tray of Nos. 12 and 10 steel; capacity, 3 cubic feet. Each..... $14 00

No. 4AA—Tray of Nos. 12 and 8 steel. Each..... 15 00

No. 5A—Greatest width of tray, 31½ in.; greatest length of tray, 36 in.; 16 in. wheel; tray of Nos. 12 and 10 steel; capacity, 4 cubic feet. Each..... 15 00

No. 5AA—Tray of Nos. 12 and 8 steel. Each..... 16 00

No. 6A—Greatest width of tray, 32 in.; greatest length of tray, 38 in.; 16 in. wheel; tray of Nos. 12 and 10 steel; capacity, 4½ cubic feet. Each..... 16 50

No. 6AA—Tray of Nos. 12 and 8 steel. Each..... 17 50

No. 7A—Greatest width of tray, 36 in.; greatest length of tray, 39 in.; 16 in. wheel; tray of Nos. 12 and 10 steel; capacity, 5½ cubic feet. Each..... 20 00

No. 7AA—Tray of Nos. 12 and 8 steel. Each..... 21 00

No. 8A—Greatest width of tray, 40 in.; greatest length of tray, 45 in.; 16 in. wheel; tray of Nos. 12 and 10 steel; capacity, 7½ cubic feet. Each..... 22 00

No. 8AA—Tray of Nos. 12 and 8 steel. Each..... 23 00

These barrows dump forward.

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FOUNDRY BARROW

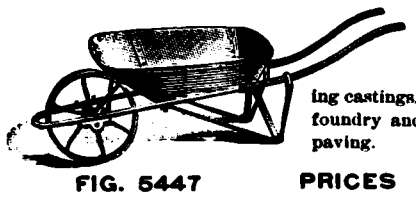


FIG. 5447

These barrows are made with trays of No. 12 steel, heavy legs and wheels, are especially adapted for wheeling castings, hot cinders, and for general foundry and furnace use, and for street paving.

PRICES

Size 4a	Capacity, 3 cubic feet.			Each	$14 00
" 5a	" 4 "	"	"		15 00
" 6a	" 5 "	"	"		16 50

MINING BARROW

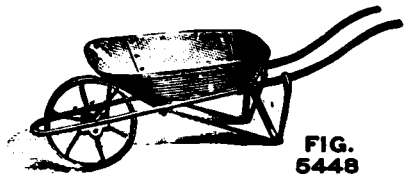


FIG. 5448

No. 4	Capacity, 3 cubic feet.			Tray No. 16 steel.			Each	$11 50
" 4½	" 3 "	"	"	"	14	"	"	12 25
" 5	" 4 "	"	"	"	14	"	"	14 25
" 6	" 5 "	"	"	"	14	"	"	15 75

MINING AND FOUNDRY BARROW

WITH WHEEL GUARD



FIG. 5449

DESCRIPTION, FIG. 5449

Greatest length of barrow, 67½ inches. Greatest width of barrow is width on top of tray. The steel wheels with which these barrows are furnished are 16½ inches in diameter, with iron tire, 1¼ x ⅝ inches, and steel spokes ½ inch round, and extra heavy malleable iron hubs; ⅝ inch axle bolts.

Nos. 6 and 7 are intended for mining and general purpose barrows. Nos. 8 and 9 are intended for wheeling castings, hot irons, etc., and for general foundry and furnace use.

PRICES, WITH OR WITHOUT WHEEL GUARD

Nos.	Gauge of Steel in Tray.	Length on Top, Inches.	Width on Top, Inches.	Depth at Wheel, Inches.	Depth at Handle, Inches.	Greatest Height, Inches.	Capacity, Cubic Feet.	Weight, Pounds.	Each.
6	14	32	29	7	5	19½	3	83	$12 25
7	14	35½	28½	8½	6	21½	4	88	14 25
8	12	32	29	7	5	19½	3	95	14 00
9	12	35½	28½	8½	6	21½	4	98	16 00

STEEL EXPORT MINING BARROW



FIG. 5450

PRICE, FIG. 5450

No. D—Export barrow. Capacity, 3 cubic feet. Weight, 60 pounds. Tray No. 16 steel. Sizes of tray: 33½ inches long, 29 inches wide, 6¼ inches deep. Each, $10.00.

PRICE, FIG. 5451

No. A6. Capacity, 4 cubic feet. Tray No. 10. Handles No. 10. Weight, 130 pounds. Each, $22.00. Wheels, 16 inches diameter. Suspension brace. All parts extra heavy.

MINING BARROW

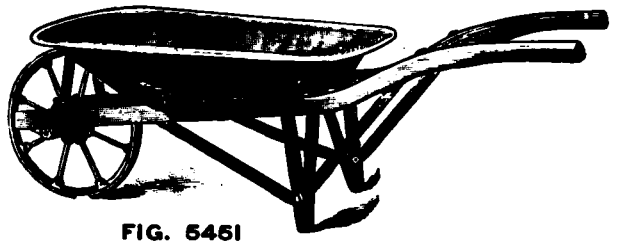


FIG. 5451

MINING BARROW



FIG. 5452.

Nos.	Capacity.	Tray.	Handles.	Weights.	Each.
A1	3 cubic feet	No. 15	No. 12	68 pounds	$11 50
A2	3 " "	" 14	" 12	74 "	12 00
A3	3 " "	" 13	" 12	80 "	12 50
A4	3 " "	" 12	" 10	86 "	14 00
A5	4 " "	" 12	" 10	92 "	15 00

Wheels, 16 inches diameter.

MINING BARROW

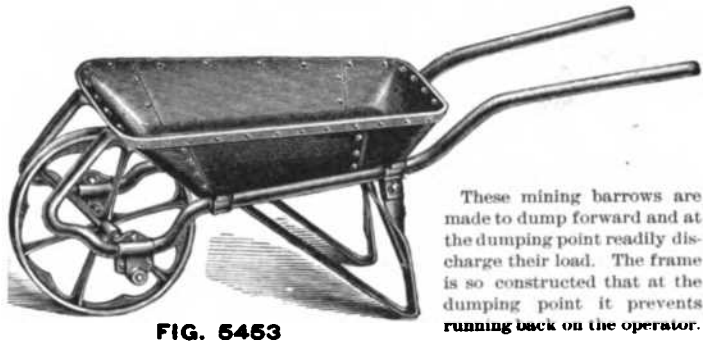


FIG. 5453

These mining barrows are made to dump forward and at the dumping point readily discharge their load. The frame is so constructed that at the dumping point it prevents running back on the operator.

PRICES

No. 4—Greatest width of tray, 29 inches. Greatest length of tray, 32 inches. Capacity, 3 cubic feet of earth. 16 inch wheel. Tray of No. 16 steel. Each, $11.50.

No. 4½—Size and capacity same as the No. 4. Tray of No. 14 steel. Each, $12.25.

No. 5—Greatest width of tray, 31½ inches. Greatest length of tray, 36 inches. Capacity, 4 cubic feet of earth. 16 inch wheel. Tray of No. 14 steel. Each, $14.25.

These barrows will stand on end.

DIRT BARROW

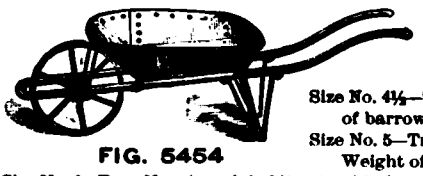


FIG. 5454

Size No. 4—Tray No. 16 steel, holding 3 cubic feet of earth. Weight of barrow, 65 pounds. Price, $10.75.

Size No. 4½—Tray No. 14 steel. Same size as No. 4. Weight of barrow, 70 pounds. Price, $11.50.

Size No. 5—Tray No. 14 steel, holding 4 cubic feet of earth. Weight of barrow, 80 pounds. Price, $13.50.

Size No. 6—Tray No. 14 steel, holding 5 cubic feet of earth or 225 pounds of coal, adapted for same use as No. 5 and as a small coal barrow. Weight of barrow, 85 pounds. Price, $15.00.

IDEAL STEEL BARROW FOR EXPORT

The opposite cut represents the Ideal Steel Barrow, such as is sold for export. The tray, which is of the most approved shape, is made of the best grade of steel, and has a strong iron band riveted around to stiffen it. Special attention has been paid to bracing this barrow, with a view to increased strength. The wheel is made of malleable iron, which is light and neat in form, but with an exact distribution of metal that secures strength and durability. The tubular iron handles are attached to tray by the use of patent malleable iron clips.

No. 4—Greatest width of tray, 29 inches. Greatest length, 32 inches. Capacity, 3 cubic feet. 15 inch wheel. Tray No. 16 steel.

Each.....$10.00.

These barrows can be made with the tubular handles passing around the wheels.

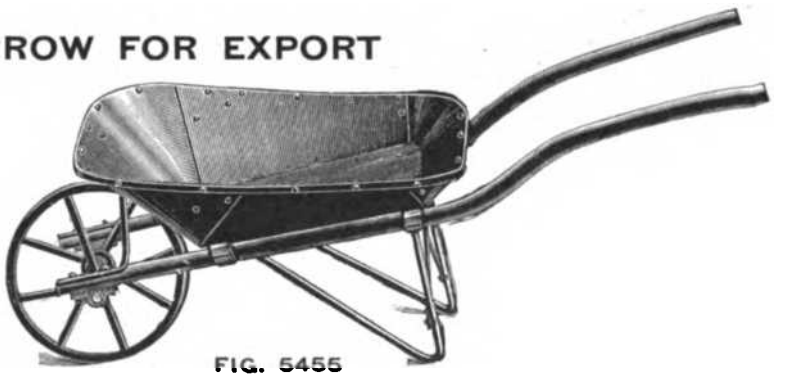


FIG. 5455

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STEEL DIRT BARROWS

WITH WHEEL GUARD



FIG. 5456

WITHOUT WHEEL GUARD



FIG. 5457

DESCRIPTION, FIGS. 5456 AND 5457

These barrows are intended for moving earth, sand, gravel, mortar, etc.

The steel wheels used with these barrows are 16½ inches in diameter, with iron tire 1½ x ⅜ inches, and steel spokes ½ inch round, malleable hub, ½ inch axle bolt.

Greatest length of all barrows, 67½ inches. Greatest width of all barrows is width on top of tray.

PRICES, FIGS. 5456 AND 5457

Nos.	Gauge of Steel in Tray.	Lengths on Top, Inches.	Width on Top, Inches.	Depth at Wheel, Inches.	Depth at Handle, Inches.	Greatest Height, Inches.	Cubic Capacity, Feet.	Weight, Lbs.	Each.
4	15	32	29	7	5	19½	3	70	$10 75
4½	14	32	29	7	5	19½	3	75	11 50
5	14	35½	28½	8½	6	21½	4	78	13 50

TUBULAR STEEL WHEELBARROWS

Packed for Export, One Dozen.

FIGS. 5442, 5456 AND 5457

Sizes of Bar'w, Nos.	Number of Pkgs., Crate.	Contents of Each Package.	Dimensions, Inches.	Net Weight Each Pkg.	Gross Weig't Each Pkg.	Cubic Feet in 1 Doz.
4	1	12 Frames, legs and wheels	27 x 29 x 70	602	696	41½
4	1	12 Trays	15 x 32 x 35	320	365	
4½	1	12 Frames, legs and wheels	27 x 29 x 70	602	696	41½
4½	1	12 Trays	15 x 32 x 35	320	365	
5	1	12 Frames, legs and wheels	27 x 29 x 70	602	696	43
5	1	12 Trays	16 x 32 x 38	334	398	
7	1	12 Frames, legs and wheels	27 x 30 x 70	654	759	44
7	1	12 Trays	16 x 32 x 38	334	398	
10	1	12 Frames, legs and wheels	27 x 31 x 70	678	788	51
10	1	12 Trays	19 x 35½ x 43½	496	556	
12	1	12 Frames, legs and wheels	27 x 31 x 70	678	788	51
12	1	12 Trays	19 x 35½ x 43½	400	460	

BARROWS FOR PIG METAL

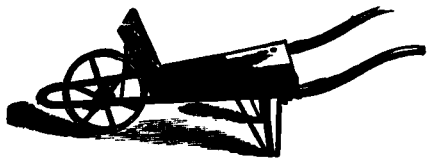


FIG. 5460

Size H. Weight 78 pounds. Each.....$16 00
Fitted to receive wooden sides. Each..... 17 50

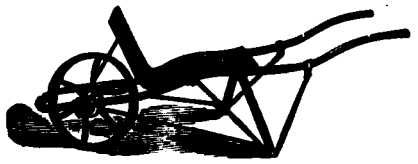


FIG. 5461

Size I. Each.....$20 00

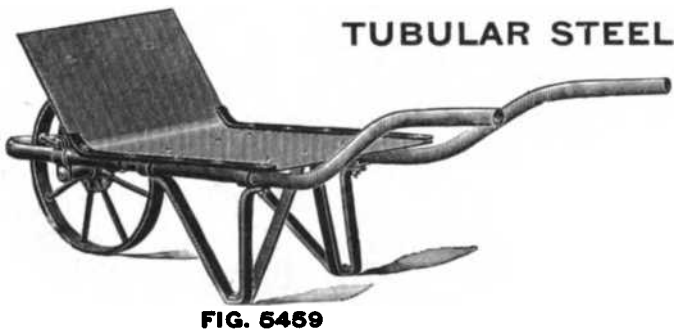


FIG. 5459

TUBULAR STEEL PIG METAL BARROW

DESCRIPTION, FIG. 5459

For pig iron, zinc, tin, lead, etc.

Bottom ¼ inch steel, 23 inches long by 22 inches wide at handles by 20½ inches wide at dash. The dash is 20½ inches wide at bottom, 20 inches wide at top, 13 inches high. Side straps iron, 1⅜ x ⅜ inches.

Greatest length, 67½ inches; greatest height, 23 inches.

Steel wheel, diameter 16½ inches; tire, 1¾ x ⅜ inches; steel spokes, ½ inch round; malleable iron hub, ⅝ inch axle bolt. Weight, 115 pounds. Each, $18.00.

PIG IRON BARROWS

WITH ONE WHEEL

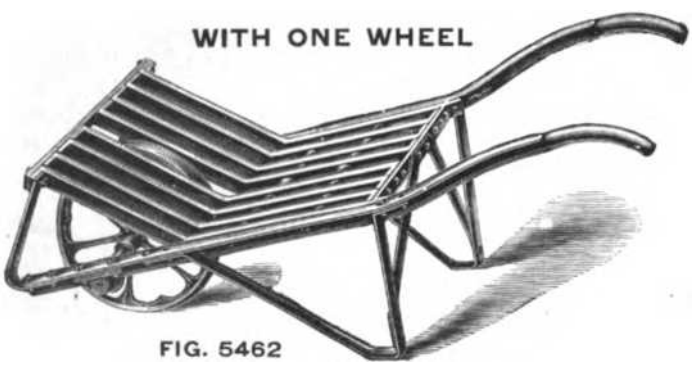


FIG. 5462

No. 16. Each.....$25 00

This Pig Iron Barrow is constructed especially for the handling of pig iron and very heavy castings. In the manufacture of these barrows iron strips are set edgewise and securely fastened together. The platform thus presented is stiff and firm, with great durability.

WITH TWO WHEELS

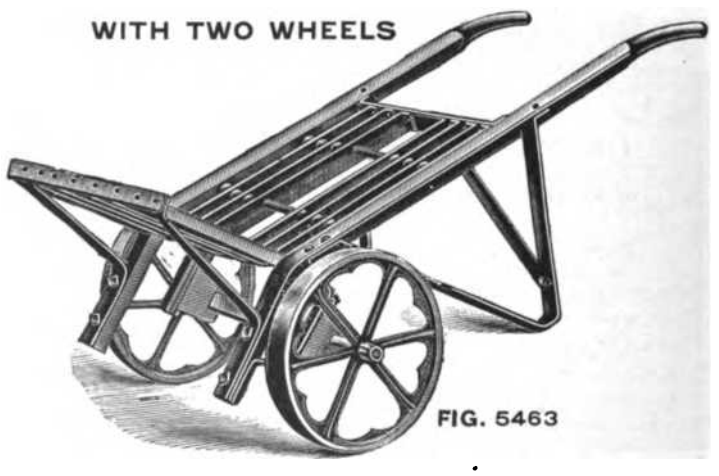


FIG. 5463

No. 17. Each.....$35.00

For use in foundries or iron mills where large and heavy loads are carried we recommend the Pig Iron Barrows with two wheels.

These Barrows are provided with paper sheaths on the handles.

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PIG METAL AND INGOT BARROW

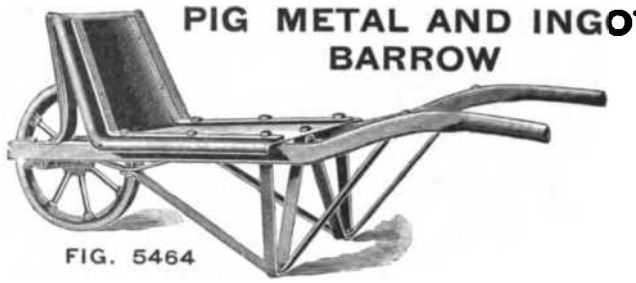


FIG. 5464

Suspension Braces. Bed, Front and Front Braces of One Plate.

PRICE

C No. 1. Bed, No. 12; handles, No. 10; weight, 120 pounds; each, $18.00.
Wheels, 16 inches diameter, extra heavy.

BRICK BARROW

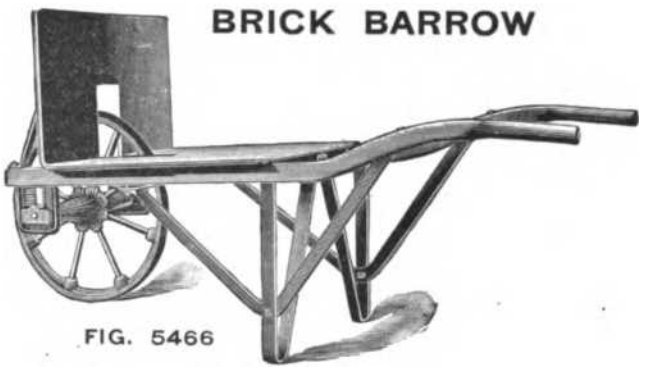


FIG. 5466

Nos.		Bed, Nos.	Handles, Nos.	Wheels, Diameters Inches.	Weight, Pounds.	Each.
1	Solid bed, rigid bearings	14	10	16	95	$14 00
2	Open " " "	14	10	20	115	17 00
3	" " spring "	14	10	20	135	20 00

STEEL BOTTOM STONE BARROW

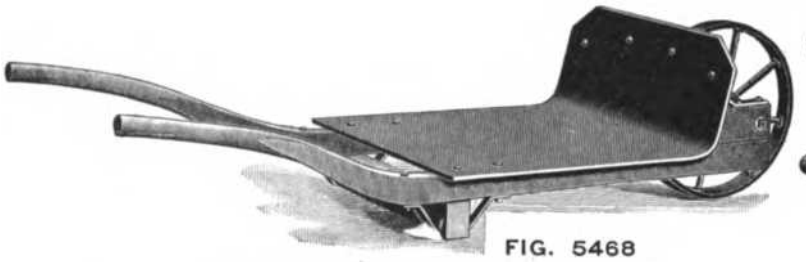


FIG. 5468

For Stone or Pig Metal.

Bottom and dash formed of one plate of steel, ¼ inch thick, 26 inches wide by 27 inches long. Dash, 9 inches high. Handles, 2 x 3 inches, 6 feet long. Wheel, 16½ inches diameter; tire, 1¾ x ⅝ inches, and painted black. Axle bolt, ⅝ inch. Weight, 100 pounds. Each, $8.00.

BENT HANDLE STONE BARROW

WITH WOOD WHEEL



FIG. 5470

Bent handles. Thoroughly bolted. Well ironed. Handles, 6 feet long. Cross piece at legs, 2 x 3 inches. Bottom, 1¼ inches thick by 26 inches wide by 27 inches long. Dash, 11 inches high. Wheel, 17 inches diameter; tire, 1¾ x 3/16 inches; spokes, 1 x 1¼ inches. Axle bolt, ⅝ inch.

Painted dark red. Wheel, lead color. Weight, 72 pounds.

Furnished with steel spoke wheel, when so ordered, 16½ inches diameter; tire, 1¾ x ⅜ inches.

Per dozen, wood wheel, $50.00; steel wheel, $55.00.

Stone barrows are always shipped set up complete, except wheels off.

PIG METAL AND INGOT BARROW

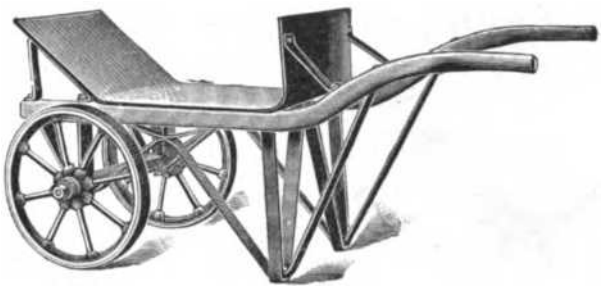


FIG. 5465

Suspension Braces. Bed, Front and Back of One Plate, 14 Inches Wide.

PRICE

C No. 2. Bed, No. 4; handles, No. 10; weight, 120 pounds; each $30 00
Wheels, 16 inches diameter, extra heavy.

STEEL BRICK BARROW

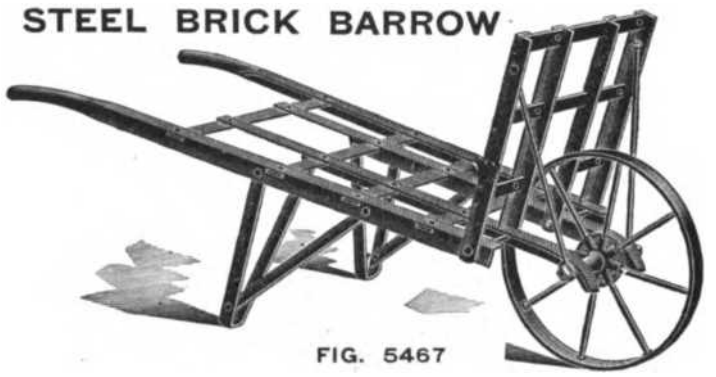


FIG. 5467

Open bottom. Folds for shipping. Not affected by the weather.

Handles of steel angles, 1¾ x ¼ x 52 inches long. Wheel arms of steel angles, 1½ x ¼ inches. Four bottom slats of steel angles, 1½ x ¼ inches. Dash of steel angles, 1½ x ¼ inches.

Bottom, 23 inches wide at handhold; 20 inches wide at dash; 32 inches long. Dash, 20 inches wide by 18 inches high. Steel wheel No. 15X, 19 inches diameter, 1¾ inch tire. Painted black.

Barrow painted Venetian red. Weight, 92 pounds. Each, $10.75.

STRAIGHT HANDLE STONE BARROW

WITH WOOD WHEEL



FIG. 5469

For Stone or Pig Metal.

This is a strong, well made barrow, iron strapped over the bottom, and well bolted together. The iron straps are put on crosswise, as in cut.

Handles, 6 feet long. Legs, 12 inches long. Bottom, 1¼ inches thick by 28 inches wide by 27 inches long. Dash, 10 inches high. Wheel, 17 inches diameter; tire 1¾ x 3/16 inches; spokes 1 x 1¼ inches. Axle bolt, ⅝ inch.

Painted dark red. Wheel, lead color. Weight, 64 pounds.
Per dozen, wood wheel, $45.00; steel wheel, $50.00.

STEEL TRAY HAND BARROW



FIG. 5471

Size, 20 x 40. Weight, 27⅞ pounds each.

Tray stamped from a single sheet of steel without joint, seam or rivet. Just the thing for carrying castings, bolts, etc., and for general factory use. Its solid steel tray makes it suitable for transporting liquids, cement, mortar, etc., either hot or cold.

Finished, painted or galvanized, as ordered.

Made in 6 different sizes: 16 x 24 x 6. 18 x 36 x 6, 20 x 36 x 6, 18 x 30 x 6, 20 x 30 x 6, 20 x 40 x 6 inches.

Prices on application.

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ALL STEEL CANAL BARROW



FIG. 5472

PRICES, FIG. 5473

These barrows are well braced and balanced perfectly. They knock down completely for shipment and storage, and can be set up quickly and easily by any one. Corresponding parts being alike, any part broken can easily be replaced.

No. 4—Capacity, 3 cubic feet, each, $7 25
No. 5—Capacity, 4 cubic feet, each, 8 50

PRICES

No. 1—Width of tray, 30 inches; depth of tray, 10 inches; capacity, 2½ cubic feet of earth. 15 inch wheel. Tray of No. 16 steel, each, $10 00
No. 2—Width of tray, 32 inches; depth of tray, 10 inches; capacity, 3 cubic feet of earth. 15 inch wheel. Tray of No. 16 steel, each, 11 00
No. 3—Width of tray, 34 inches; depth of tray, 12 inches; capacity, 3¾ cubic feet of earth. 15 inch wheel. Tray of No. 16 steel, each, 12 00
No. 3A—Size and capacity same as No. 3. Tray made of No. 14 steel, each..... 13 00

These barrows can be taken apart and nested for shipment.

SAND OR MORTAR BARROW



FIG. 5473

STAR STEEL TRAY WHEELBARROW



FIG. 5474

Tray stamped from a single sheet of steel without joint, seam or rivet. Edges of tray bound over a quarter inch round steel rod. Supplied with wood wheel, or round spoke steel wheel, as desired.

Weight with wood wheel, 39 pounds each; with steel wheel, 41 pounds each.

Wood wheel, each.....$6 00
Steel " " 6 50

STEEL TRAY WHEELBARROWS



No. 2. For coal or manure.

FIG. 5475



No. 3. Coal or coke barrow.

FIG. 5476

DESCRIPTION, FIGS. 5475 AND 5476

Capacity, 400 to 450 pounds coal, or 5 bushels coke or charcoal, or 6 cubic feet of earth. Weight, 65 pounds. The frame is strongly made of seasoned hardwood lumber, well finished and painted brown. Barrows knock down completely for shipment and storage, same as railroad barrows, and can be set up quickly and easily by any one. The corresponding parts of barrows being alike, any piece lost or broken can be easily replaced. These barrows, while much lighter than those having iron frames, are equally strong for all practical purposes, and will stand the roughest usage. The trays, or bowls, are stamped from a solid plate of steel without seam or rivets, and have great strength and stiffness without unnecessary weight.

PRICES, FIGS. 5475 AND 5476

Nos.	Length on Top, Inches.	Width on Top, Inches.	Depth at Wheel, Inches.	Depth at Handle, Inches.	Greatest Length, Inches.	Greatest Height, Inches.	Capacity, Cubic Feet.	Weight, Lbs.	Each.
1	32	29	7	5	65	19	3	57½	$6 50
2	35½	28½	8½	6	65	20½	4	59	7 50
3	41½	33	11½	8	65	24	6	66	8 50

All trays No. 15 steel.

The flange of tray is turned over a 5/16 steel rod, which passes entirely around tray, giving a smooth finish to the edge of bowl, preventing breaking, and stiffening and strengthening it. Round spoke steel wheel, 16½ inches diameter; tire, 1⅜ x ⅝ inches. Tray and wheel painted black; frame, brown.

PAN-AMERICAN STEEL TRAY BARROW



FIG. 5477

No. 2 wood wheel.
Specially designed for the export trade.



Specially adapted for heavy work.

With round steel spoke wheel.

FIG. 5478

DESCRIPTION, FIGS. 5477 AND 5478

The tray of No. 14 best steel pressed from a single sheet, without joint, seam or rivet. The flange of tray is turned over a 5/16 steel rod, which passes entirely around the tray, giving a smooth finish to the edge of the bowl, preventing breaking, and stiffening and strenthening it. Size of tray: Greatest length, 32 inches; greatest width, 33 inches; depth at wheel end, 11 inches; depth at handle end, 7½ inches.

The wheels are so constructed, having the spokes tightened from the center, that it is impossible for tires to come off or spokes to be loosened. These wheels revolve on a fixed shaft or axle bolt, similar to a buggy wheel, and run true and evenly, and the axle shaft serves as a brace to the handles. Wood wheels, 17 inches diameter; tire, 1⅛ x 5/16 inches. Steel wheel, 16 inches diameter; tire, 1⅜ x ⅜ inches; steel spokes, ⅜ inch round.

PRICES

Fig. 5477, each.....$5 00
" 5478, " 5 50

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STEEL TRAY COAL BARROW



FIG. 5479

Oak frame, steel tray, heavy wheel, thoroughly braced and bolt fastened.

Capacity, 300 lbs. coal.....Each, $10 00

BOLTED ORE BARROW

WITH WOOD WHEEL



FIG. 5481

For ore, coal, sand or dirt. All hardwood. The side and end pieces of tray, being dovetailed together and firmly strapped and nailed, can not come apart. Edges of tray iron strapped.

The legs extend upward as a brace to the bowl, and are bolted to both bowl and handles. Handles, 5 feet long.

Size of tray: 8 inches deep at handles and 11½ inches at wheel; bottom, 17½ x 19 inches; top, 27½ inches wide by 29 inches long.

Wheel, 17 inches diameter; tire, 1⅛ x 5/16 inches; spokes, ⅞ x 1 inch. Axle bolt, ½ inch. Painted brown. Wheel, lead color. Weight, 53 lbs.

Prices, per dozen, wood wheel, $50.00; steel wheel, $53.00.

WOOD TRAY COAL BARROW

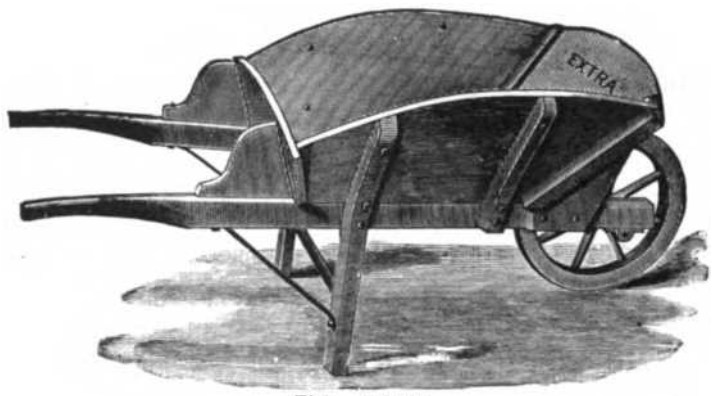


FIG. 5480

For coal, ore, mortar, etc. Very strong and thoroughly bolted.

Sizes, Nos.	Capacity, Lbs.	Prices.
1	250	$9 00
2	300	9 50
3	350	10 00

JUMBO COAL OR ASH BARROW

WITH WOOD WHEEL

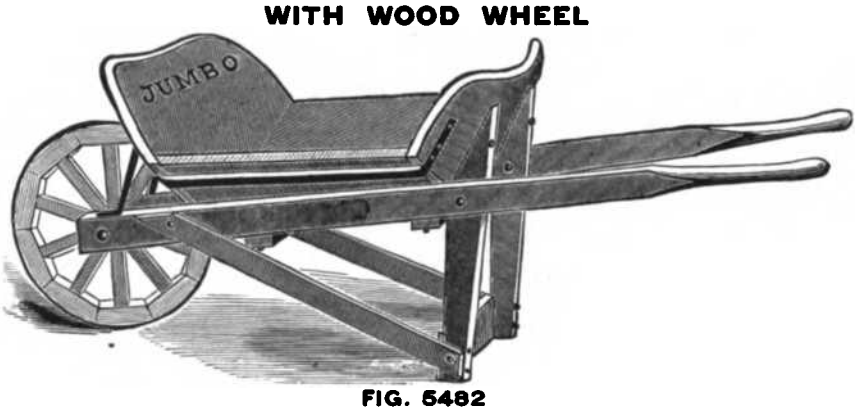


FIG. 5482

For corn, coal, sawdust, manure, ashes, etc. Bent elm tray, 11½ inches deep at handles and 14½ inches at wheel by 42 inches wide by 32 inches long on top.

Wheel, 17 inches diameter; tire, 1½ x 5/16 inches; spokes, 1 x 1 inch. Axle bolt, ½ inch. Weight, 60 lbs. Capacity, 9 cubic feet. Furnished with steel spoke wheel, when so ordered, 16½ inches diameter; tire, 1⅝ x ⅜.

Prices per dozen, wood wheel, $70.00; steel wheel, $75.00.

PALMETTO R. R. BARROW

FULL BOLTED

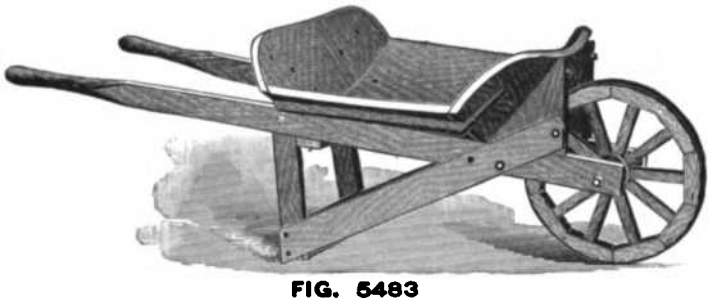


FIG. 5483

This barrow is made for very heavy work. Tray block braced at front.

Furnished with wood wheel or steel wheel, as ordered. Steel wheel has tire 2 x 5/16 inch. Wood wheel has tire 1½ x 3/16 inch. Diameter of wheels, 17 inches.

The tray is strapped with ⅛ inch iron, riveted to tray on each end. Extra heavy legs and leg braces, the latter bolted to legs and handles with two bolts at each end of brace. These braces extend upward at wheel and are bolted to the tray blocks.

The cross piece at foot of legs is extra wide and fastened to leg by two bolts at each end.

Weight, 56 pounds.

Per dozen, wood wheel, $38.00; steel wheel, $41.00.

AJAX STAVE TRAY BARROW

FULL BOLTED R. R. BARROW

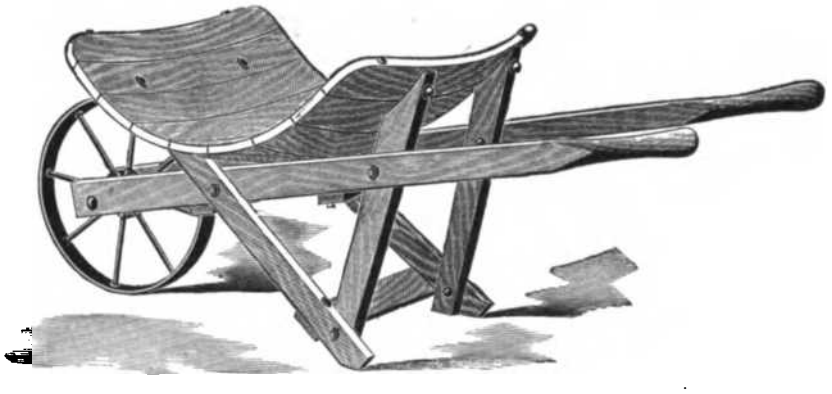


FIG. 5484

This barrow has a full sized tray of ten staves of seasoned hardwood lumber bent to form. The staves held firmly in place by two iron rods or bolts, extending through each stave, and in this manner are drawn tightly together. Tray bolted securely to frame. Legs, handles and braces of hardwood well seasoned, planed and smoothly finished. Furnished either with steel wheel or wood wheel, as ordered. Weight, 600 pounds to the dozen.

Per dozen, wood wheel, $58.00; steel wheel, $62.00.

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SCIOTO BOLTED RAILROAD OR CANAL BARROW

WITH WOOD WHEEL

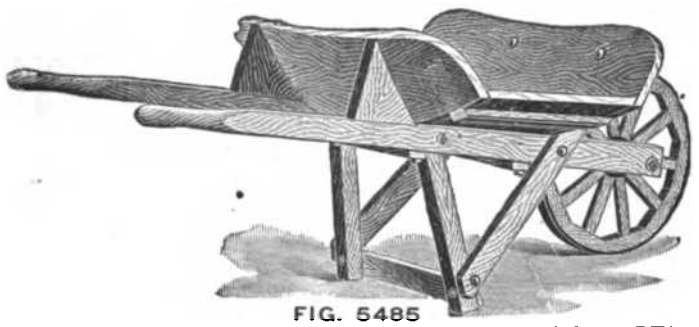


FIG. 5485

WITH STEEL SPOKE WHEEL

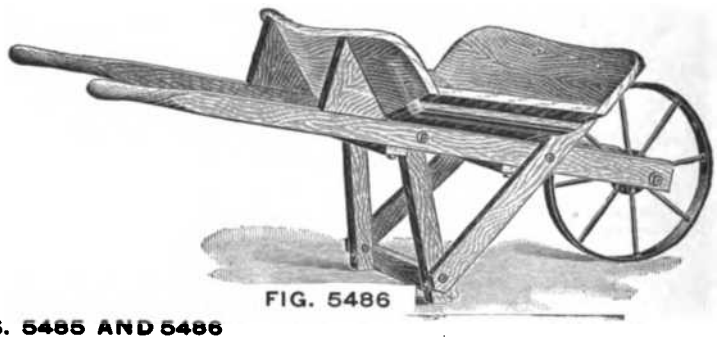


FIG. 5486

DESCRIPTION, FIGS. 5485 AND 5486

Full sized bent tray, well planed, cleated, braced and bolted, as shown in cut. Legs and cross pieces gained, leg braces extending beyond the handles, forming braces for the tray, and bolted to it.

PRICE, FIG. 5485

Diameter of wheel, 17 inches; tire, 3/16 by 1¼ inches; spokes 7/8 by 1 inch; ½ inch axle bolt. Unpainted. Weight per dozen, 576 pounds. Knocks down completely for shipping and is easily set up. Per dozen $22 00

PRICE, FIG. 5486

Same as Fig. 5485, except furnished with steel spoke wheel. Diameter of wheel, 16½ inches; spokes, ⅝ inch round; tire, 1⅜ by ⅝ inch; ½ inch axle bolt. Painted black. Weight per dozen, 594 pounds. Per dozen $25 00

BOLTED RAILROAD OR CANAL BARROW

WOOD WHEEL

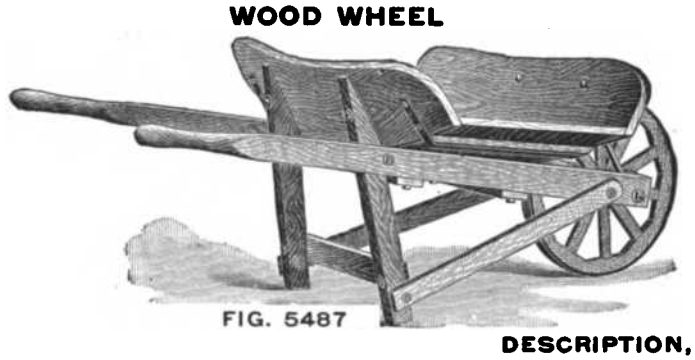


FIG. 5487

STEEL SPOKE WHEEL



FIG. 5488

DESCRIPTION, FIGS. 5487 AND 5488

The barrow for railroad contractors. Full sized bent tray, planed, cleated and strapped together, and well finished. Bolted securely to frame. The legs extend upward, serving as a brace to the bowl, to which they are bolted. They are also bolted to handles. The wheel revolves on a fixed axle bolt, ½ inch in diameter, similar to a buggy wheel, and runs true and evenly. The axle bolt holds the barrow firmly together. Knocks down completely for shipping and is easily set up.

PRICE, FIG. 5487

Diameter of wheel, 17 inches; tire, 3/16 by 1¼ inches; spokes, 7/8 by 1 inch; ½ inch axle bolt. Weight per dozen, 600 pounds. Per dozen $25 00

PRICE, FIG. 5488

Same as Fig. 5487, except furnished with steel spoke wheel. Diameter of wheel, 16½ inches; spokes, ⅝ inch round; tire, 1⅜ by ⅝ inch; ½ inch axle bolt. Painted black. Weight per dozen, 650 pounds. Per dozen $28 00

NAVVY WHEELBARROW

ENGLISH PATTERN. WOOD WHEEL

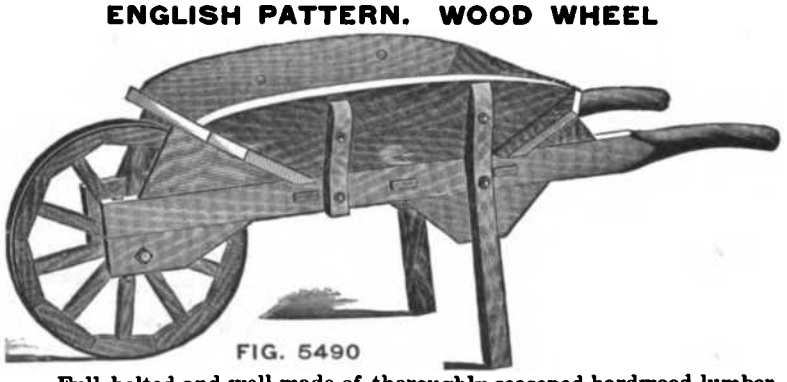


FIG. 5490

Full bolted and well made of thoroughly seasoned hardwood lumber. It is furnished either with wood wheel or tension and torsion round spoke steel wheel, as desired.

PRICE

Per dozen, wood wheel $33 00

ROYAL CANAL BARROW

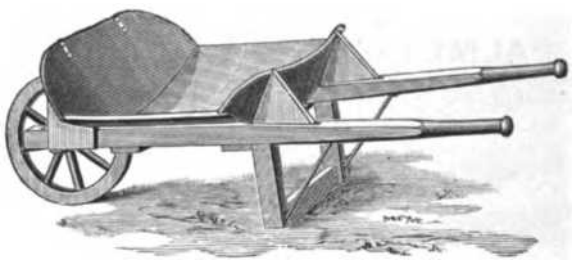


FIG. 5491

Oak frame, thoroughly fastened and braced; an exceedingly durable barrow. Specially recommended for severe use on long contracts. Best wood wheels, with 1½ inch tires.

PRICE

Per dozen $36 00

RAILROAD OR CANAL BARROWS

PACKED FOR SHIPMENT

	Number of Packages.	Contents of Each Package.	Dimensions in Inches.	Total Weight Each Pkg.	Gross Weight Each Pkg.	Total Cubic Feet in One Dozen.
Figs. 5485 and 5486	1 bundle	12 No. 2 wood wheels	10 x 17 x 54	112	112	With wood wheel, 35
	1 "	12 Scioto handles	15 x 15 x 60	270	270	
	2 nests	6 Scioto trays	21 x 28 x 32	109	218	With steel wheel, 35
	1 bundle	12 No. 13 X steel wheels	10 x 17 x 54	132	140	
Figs. 5487 and 5488	1 "	12 No. 2 wood wheels	10 x 17 x 54	112	112	With wood wheel, 35¼
	1 "	12 Boss handles	15 x 15 x 62	280	280	
	2 nests	6 Boss trays	21 x 28 x 32	111	222	With steel wheel, 35¼
	1 bundle	12 No. 13 X steel wheels	10 x 17 x 54	132	140	

732

SHOWING BARROWS PACKED FOR EXPORT

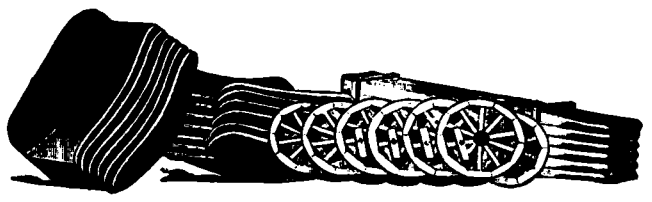


FIG. 5492

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TWO WHEEL RUN BARROW

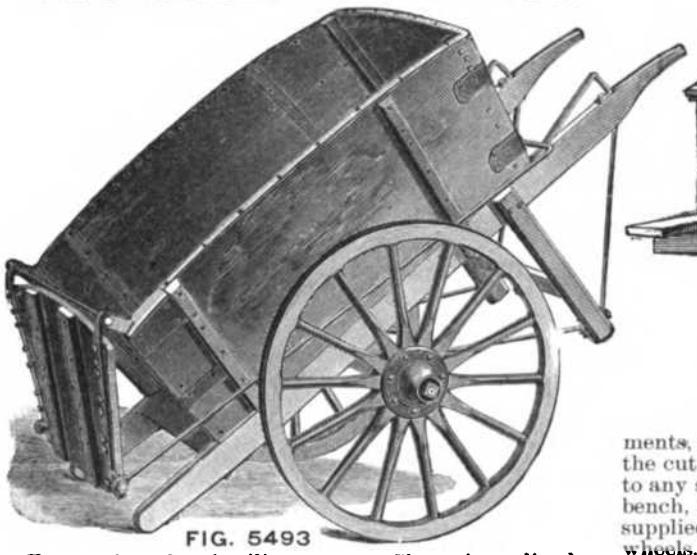


FIG. 5493

For coal, salt, fertilizer, etc. Sheet iron lined, thoroughly iron strapped, bolted and braced.

PRICES

Large size, capacity, 1,300 pounds; each.....$48 00
Small " " 800 " " 42 00

ONE WHEEL BARROW

Capacity, 550 pounds; each..... ..... 17 00

CONTRACTOR'S TOOL CART

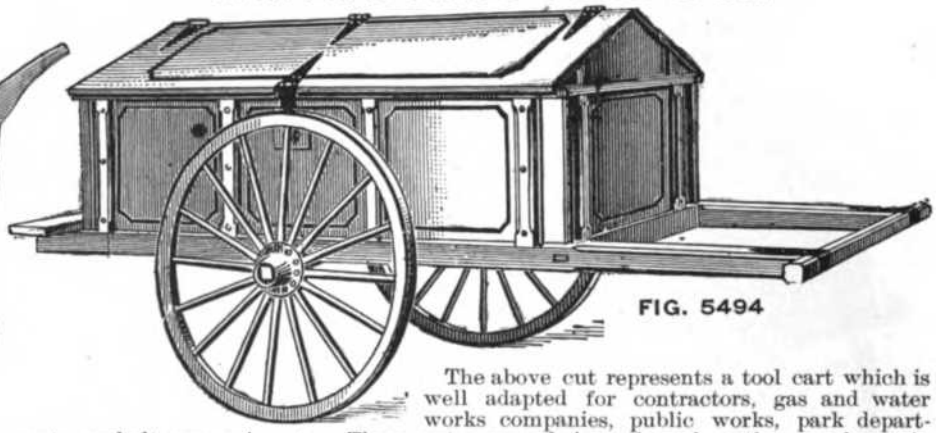


FIG. 5494

The above cut represents a tool cart which is well adapted for contractors, gas and water works companies, public works, park departments, asphalt companies, etc. These carts are made in various sizes, the one shown in the cut being 85 x 35 inches. In order to meet special requirements they can be made up to any size needed. Across the back of the cart is a board which can be used as a work bench, and to which may be attached a vise or small pipe machine when required. It is supplied with a heavy hinge, so that it may be locked, and also with a chain to lock the wheels. The cart is very carefully balanced to secure easy running, and is fitted with Sarven pattern wheels. Contractors and companies using boxes for storing their tools will find a cart of this kind very convenient, as it can be transported from place to place with little or no difficulty by simply attaching the handles to the rear of a cart or wagon. If it is desired, the cart can be fitted with shafts in place of handles. Length of body, outside dimensions, 7 feet 1 inch; length over all, 10 feet 10 inches; width of body, outside, 2 feet 11 inches; width over all, 5 feet; diameter of wheel, 3 feet 8 inches; tire, ½ inch; height of box, inside at the side, 1 foot 8 inches; total height of box, 2 feet 6 inches. Special sizes made to order. Prices on application.

RAILROAD CART

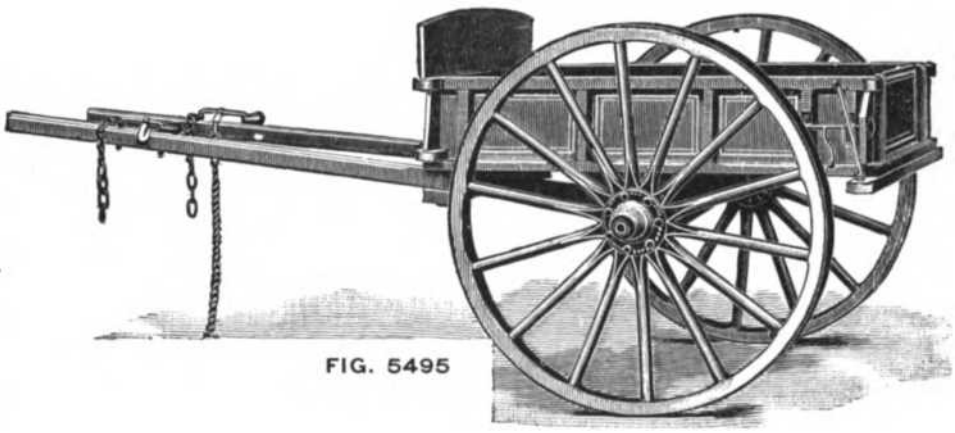


FIG. 5495

DESCRIPTION AND PRICES, FIG. 5495

Contractors are thoroughly conversant with the strength and durability of these railroad carts. The improved iron hub wheels are bolted between the spokes, and have a retaining nut on end of pipe box to keep the flange up tight to the spokes. The light gravel cart is suitable for use in the South. Wood hubs furnished if desired.

RAILROAD CART

Body: Inside, 5½ feet long by 3½ feet wide by 12 inches deep; axles, 2 inches, steel; tires, 4 inches. A rugged cart for general contract work.....Each, $54 00

EXTRA RAILROAD CART

Body: Inside, 5½ feet long by 3½ feet wide by 12 inches deep; steel plated on top of rave and under rear shetlock; axles, 2¼ inches steel; tires, 4 inches. Will fulfill any requirements of contract work..Each, 60 00

LIGHT GRAVEL CART

Body: Inside, 5 feet long by 3¼ feet wide by 12 inches deep; axles, 1¾ inches, steel; tires, 2½ inches..Each, 43 50

CONTRACTOR'S CARTS

DESCRIPTION, FIGS. 5496 AND 5497

For pavers, city works, and wherever very durable carts are needed for constant use on all kinds of work. These carts are most substantially made and extra ironed, strongly reinforced by braces, bolts and platings.

PRICE, FIG. 5496

TWO WHEEL CART

Body: Inside, 5½ feet long by 3⅓ feet wide by 11 inches deep, with 4 inch shifting boards; axles, steel, 2½ inches; tires, 4 inches; seat stakes..Each, $82 50

TWO WHEEL

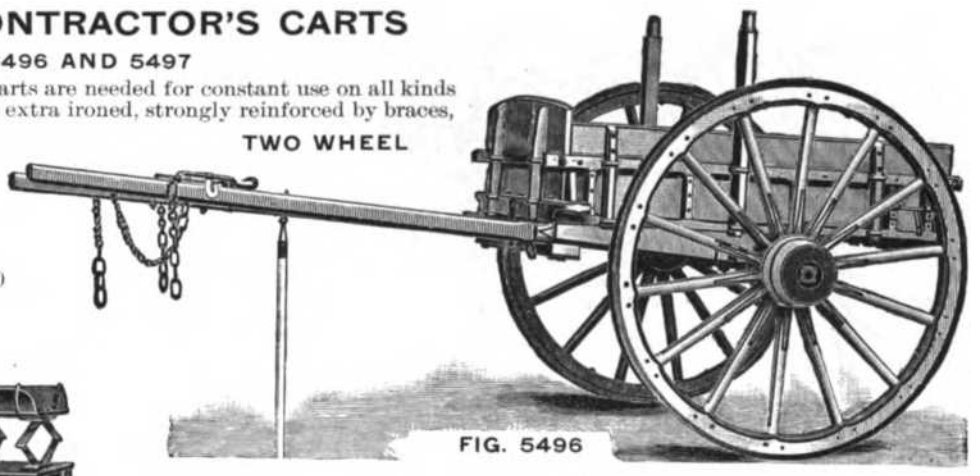


FIG. 5496

FOUR WHEEL

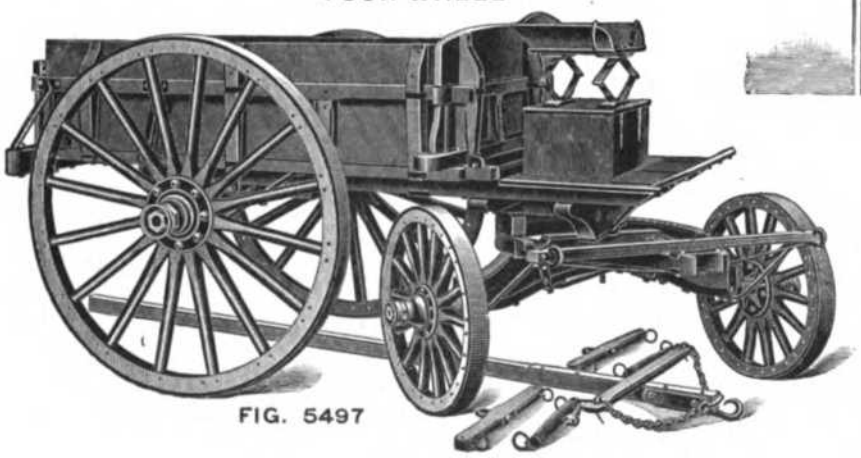


FIG. 5497

PRICES, FIG. 5497

FOUR WHEEL PARK CART

Body: Inside, 6¼ feet long by 3¾ feet wide by 13 inches deep, with 7 inch shifting boards; axles, steel, rear 2½ inches, front 2 inches; tires, rear 4 inches, front 3 inches; tool box, spring seat, whiffletrees, neck yoke, spreader and chains.....Each, $150 00

FOUR WHEEL CITY CART

Body: Inside, 6½ feet long by 3¾ feet wide by 13 inches deep, with 7 inch shifting boards; axles, steel, rear 3 inches, front 2 inches; tires, rear 4 inches, front 3 inches; tool box, spring seat, whiffletrees, neck yoke, spreader and chains.....Each, 185 00

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CONTRACTORS' LIGHT AND HEAVY DUMP CARTS

Heavy cart: Capacity, 24 cubic feet.
Light cart: Capacity, 21 cubic feet.

Made throughout of hardwood, strongly bolted and braced. Specially adapted for the hardest usage, in hauling rock, gravel, clay, and other heavy material. Parts easily replaced when worn out. Heavy cart: Bed—Size of inside, 66 inches long, 44 inches wide, 14 inches deep.



Heavy cart with wing boards or hopper.
Weight, 890 pounds.

FIG. 5499

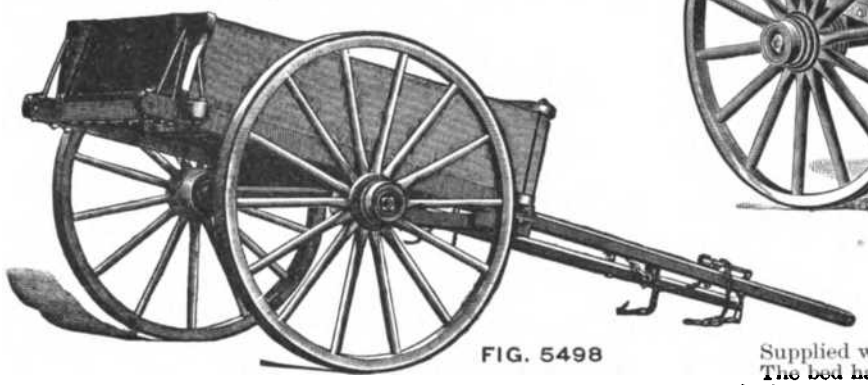


FIG. 5498

Supplied with necessary chains and hooks, as in cut.

Light cart: Same length and width, 12 inches deep.
Wheels—54 inches diameter.
Hubs—9 inches diameter, 12 inches long.
Spokes—Fourteen 2½ inch best second growth oak.
Tires—3 x ½ inch.
Steel axle—2¼ inches square.
Spindle—2¼ x 10 inches.
Wood axle bed—3¼ x 8 inches.
Shafts—Oak or ash, 2¾ x 3¼ inches, with heavy cross bar, 2½ x 8 inches.

The bed has two heavy sills, 2¾ x 4 inches, with heavy cross piece, 2¾ x 3 inches at rear end. The sides, ends and bottom are all 1⅜ inches thick. The front end board has cross piece on top, 1¾ x 4 inches, bolted down through the sills, and these bolts firmly bind together the front end of the bed. There are also four heavy anchor bolts inside on each side board, firmly securing them to the side sills, and the side boards have heavy iron straps along the upper edges. The rear ends of sides and the tail gate have heavy iron braces.
The cart is painted Venetian red.
The wheels are set to standard wide track, 5 feet 2 inches. Heavy cart: Weight, 800 pounds. Light cart: Weight, 650 pounds.

PRICES

Fig. 5498, light, each	$60 00
" " heavy, "	66 00
" 5499 "	73 00

STANDARD RAILROAD DUMP CART, WITH CAST SKEINS

Track: 4 feet 6 inches, center to center of tires on ground.

PRICES, FIG. 5500

No.	Size of Skeins, Inches.	Height of Wheels, Ft.	In.	Size of Tire, Inches.	Inside Dimensions of Bed. Length, Ft.	In.	Width in Front, Inches.	Width in Rear, Inches.	Depth, Inches.	Approximate Weight, Lbs.	Capacity, Lbs.	Each.
35	3½ x 11	4	6	2½ x ½	5	4	33½	36½	13¾	700	1800	$58 00

These carts are fitted with back and draft chains, and are especially designed for railroad grading and rock hauling.

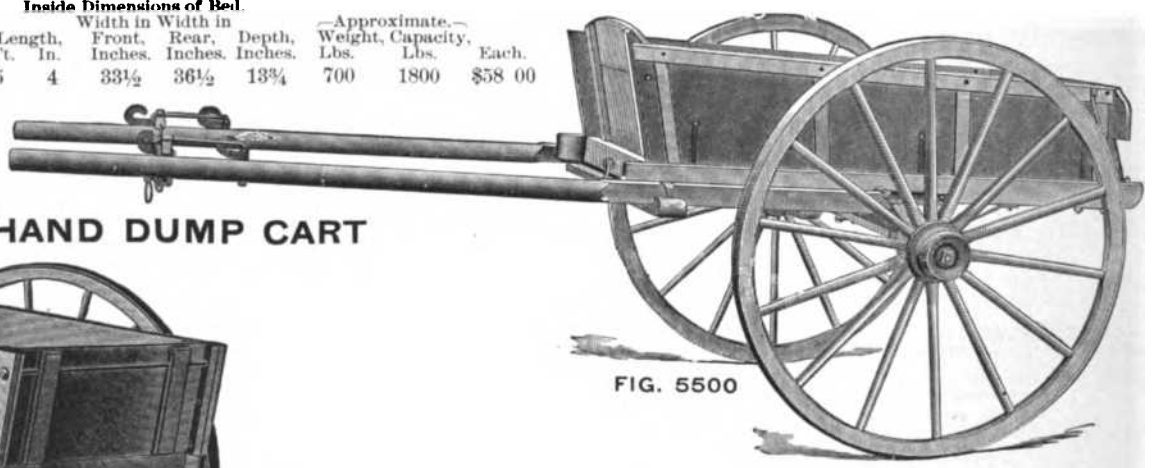


FIG. 5500

CONTRACTORS' HAND DUMP CART

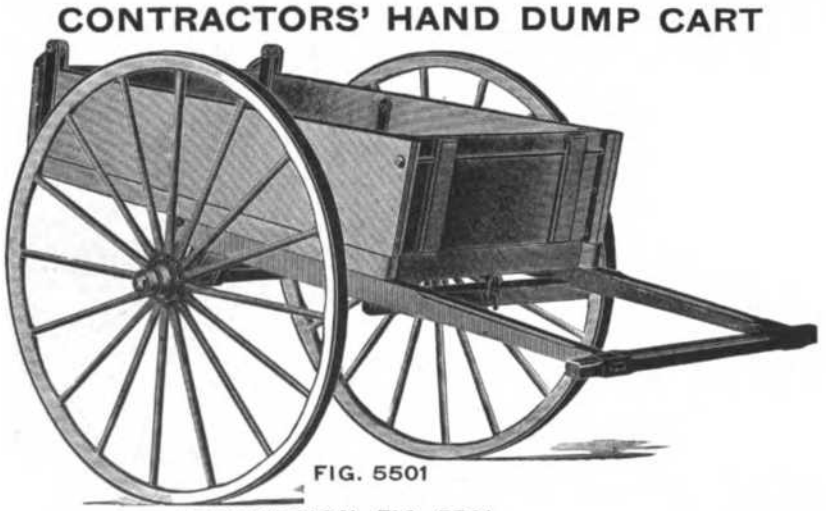


FIG. 5501

DESCRIPTION, FIG. 5501

Capacity, 12 cubic feet.

These carts are used extensively in making railway road beds in Brazil and other South American countries.

Size of bed: Length, 50 inches; width, 35 inches. Depth, front, 12 inches; rear, 9 inches, inside measurement. Length over all, 86 inches.

Buggy wheels, 48 inches in diameter; tire, 2 by ¼ inches; axle boxes, 6 by 1½ inches. Axle, 1½ inch square steel.

This cart has an improved automatic tail gate operated from front end by unlocking rod, which opens the tail gate as the bed is tipped backward on the axle and the load is dumped.

The cart is painted Venetian red, not varnished. Weight, complete, 276 pounds.

Price.....$60 00

SPRINGLING CART



FIG. 5502

This cart may be used for carrying water, spraying trees, etc. There is a valve in the bottom of tank operated by lever within easy reach of driver.

Capacity, about 160 gallons.

Price.....$90 00

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CONTRACTOR'S CART

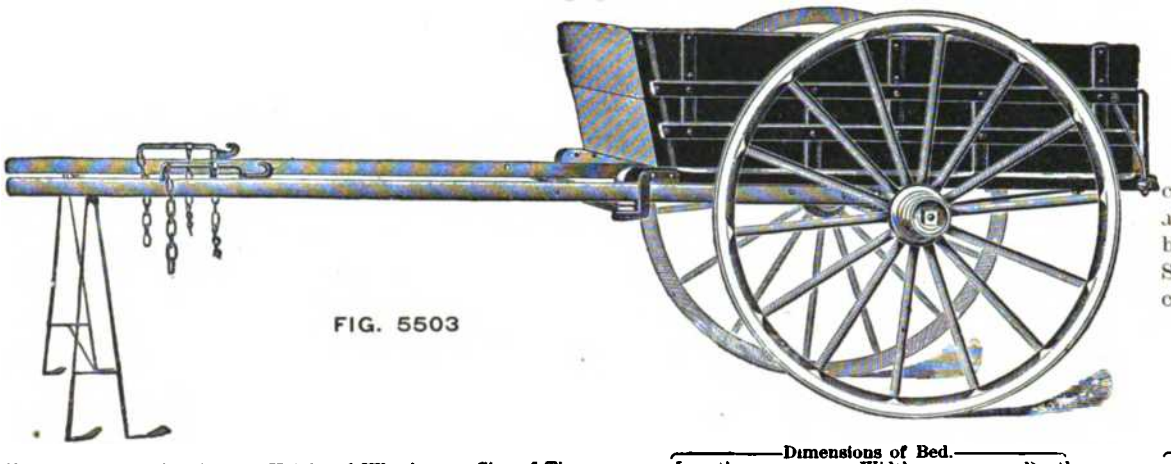


FIG. 5503

DESCRIPTION, FIG. 5503

Track: 4 feet 6 inches, center to center of tires on ground. Steel axle, wood hub wheels, hardwood body. Gear painted red, body blue. Shafts fitted with back and draft chains complete.

No.	Size of Axle.	Height of Wheels.	Size of Tire.	Dimensions of Bed. Length.	Width.	Depth.	Approximate Weight.	Capacity.	Price Complete, Each.
393	2 x 11 in.	4 ft. 10 in.	3 x ½ in.	5 ft. 8 in.	3 ft. 2 in.	19 in.	700 lbs.	2,500 lbs	$67 00

CONTRACTOR'S WAGON

DESCRIPTION, FIG. 5504

Made only with stiff tongue. Track: 4 feet 6 inches, center to center of tires on ground. Specifications include whiffletrees, stay chains, tongue chains and wrench. The gear is painted yellow, with black stripes; the bed blue. Bottom boards: 3 inches thick, 4 inches wide. Side boards: 1¾ inches thick, 15 inches wide. Extra top sides: 1¾ inches thick, 6 inches wide.

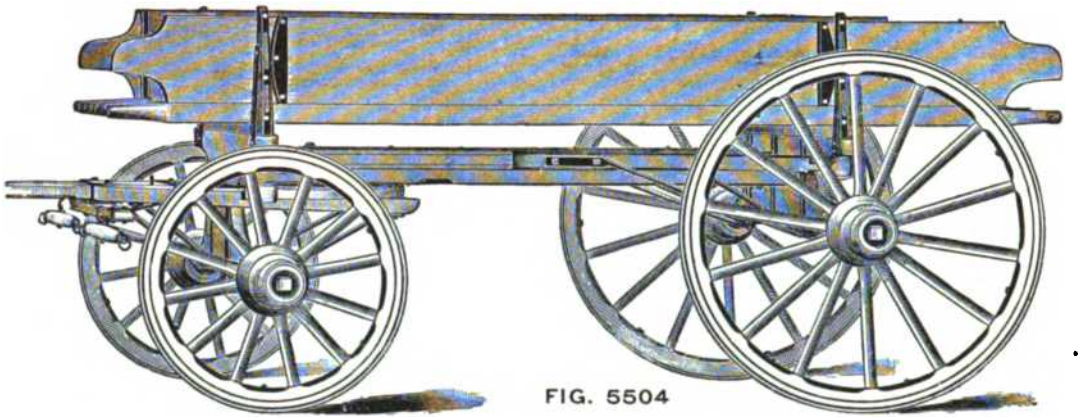


FIG. 5504

No.	Size of Axles.	Height of Wheels. Front.	Hind	Size of Tire.	Inside Dimensions of Bed. Length.	Width.	Depth.	Approximate Weight. Gear Only.	Dump Boards Only.	Approx. Capacity.	Price Complete, Each.
395	2 x 11 in.	3 ft. 1 in.	4 ft. 3 in.	2 x ¾ in.	9 ft. 3½ in.	2 ft. 11½ in.	12 in.	1,100 lbs	375 lbs.	4,500 lbs.	$132 00

DUMP WAGONS

In addition to the regular line of wagons fitted with dump boards we furnish a variety of dump wagons, among which is a steel tray body dump wagon, for garbage, cinders, coal, etc. Information regarding which, or any style of dump wagon, will be supplied on request.

STEEL SKEIN LOG WAGON

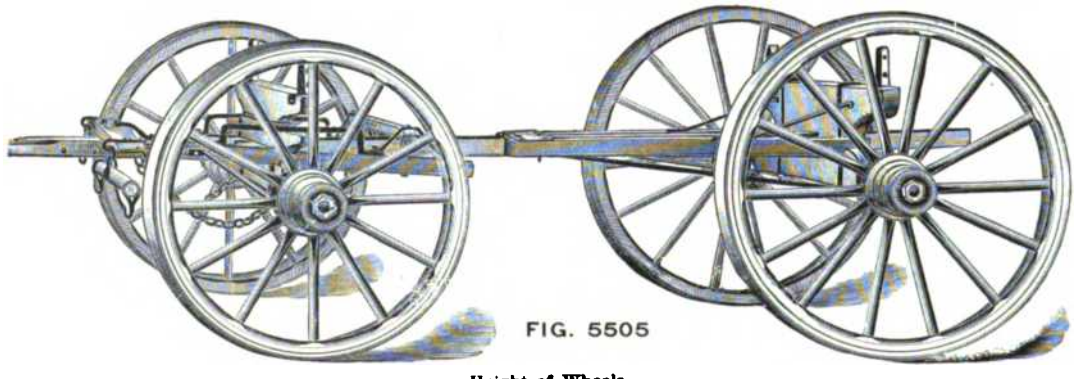


FIG. 5505

DESCRIPTION, FIG. 5505

Furnished wide or narrow track. Standard track: Wide, 5 feet; narrow, 4 feet 6 inches, center to center of tires on ground. Specifications include whiffletrees, stay chains, neck yoke and wrench.

This wagon is intended for use as a log and farm wagon combined. It is made with 4 inch standards. Made in steel skein axles only, and with drop or stiff tongue.

Nos.	Sizes of Skeins.	Height of Wheels. Front.	Hind.	Sizes of Tires.	Approximate Weight.	Capacity.	Prices, Narrow or Wide Track.
83	3½ x 11 in.	3 ft. 6 in.	3 ft. 10 in.	3 x ⅝ in.	1,100 lbs.	6,000 lbs.	$95 00
84	3¾ x 12 in.	3 ft. 6 in.	3 ft. 10 in.	3 x ¾ in.	1,250 lbs.	7,000 lbs.	110 00

STANDARD LOG WAGON

DESCRIPTION, FIG. 5506

Made only with steel skeins. Track: 5 feet, center to center of tires on ground. Specifications include bunks and skid irons, whiffletrees, stay chains and wrench.

Made with stiff tongue only.

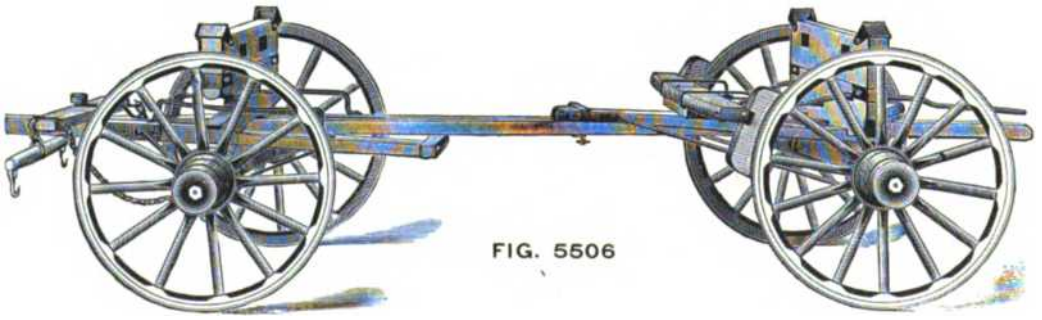


FIG. 5506

Nos.	Sizes of Skeins.	Height of Wheels. Front.	Hind.	Sizes of Tires.	Approximate Weight.	Capacity.	Prices, Each, Wide Track.
81	3¾ x 12 in.	3 ft. 5 in.	3 ft. 5 in.	3 x ¾ in.	1,650 lbs.	7,500 lbs.	$150 00
82	4 x 12 in.	3 ft. 5 in.	3 ft. 5 in.	4 x ¾ in.	1,950 lbs.	8,500 lbs.	170 00

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SENSIBLE STEEL SKEIN LOG WAGON

DESCRIPTION, FIG. 5507

Track: 5 feet, center to center of tires on ground.

Furnished regularly with drop tongue only. We furnish swivel reaches when desired.

Made with superior steel skeins; for use with either horses or oxen.

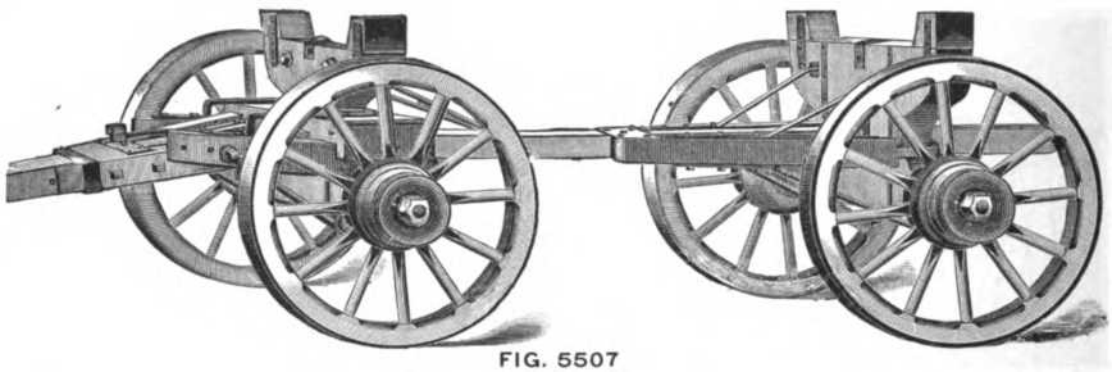


FIG. 5507

PRICES

Nos.	Sizes of Skeins, Inches.	Height of Wheels.—Front. Ft.	In.	Hind. Ft.	In.	Sizes of Tire, Inches.	Approximate Weight, Lbs.	Approximate Capacity, Lbs.	Wide Track. Each.
86	3¾ x 12	3	5	3	5	4 x 5/8	1700	7500	$190 00
87	4 x 12	3	5	3	5	4 x ¾	2100	8500	210 00
88	4½ x 13	3	5	3	5	4 x ⅞	3000	10500	275 00

STEEL SKEIN PIPE LINE WAGON

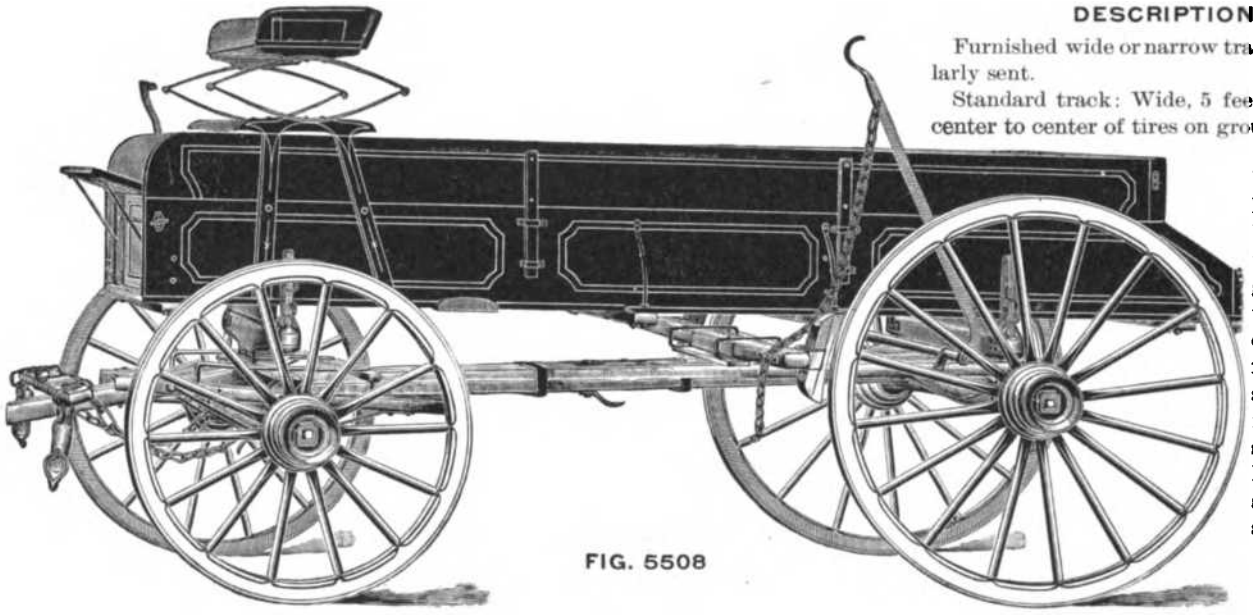


FIG. 5508

DESCRIPTION, FIG. 5508

Furnished wide or narrow track; narrow track only regularly sent.

Standard track: Wide, 5 feet; narrow, 4 feet 6 inches, center to center of tires on ground.

Specifications include: Drop tongue, bent hounds, long roller Bernhard brake bolted on top of hound, wheels with 14 and 16 staggered spokes, hind gear with tight reach and with extra 14 foot long chaser reach, eight inch standards, seat on wood risers, whiffles, neck yoke with backers, stay chains and wrench. Painting—Body green, red stripe; gear red, black stripe.

PRICES, FIG. 5508

Nos.	Sizes of Skeins, Inches.	Height of Wheels.—Front. Ft.	In.	Hind. Ft.	In.	Sizes of Tire, Inches.	Dimensions of Box, including Boot. Lower, Inches.	Top, Inches.	Length. Ft.	In.	Approximate Weight, Lbs.	Approximate Capacity, Lbs.	Complete Wagons, Narrow or Wide Track, Each.	Gears and Brakes only, Each.
778	3	3	6	4	4	1⅝ x 5/8	12	8	11	6	1050	3500	$112 00	$90 00
779	3¼	3	6	4	4	1¾ x ¾	12	8	12	6	1190	4000	121 00	99 00
780	3½	3	6	4	4	1¾ x ¾	12	8	12	6	1300	5000	129 00	107 00

ORE WAGONS AND ORE GEARS

DESCRIPTION, FIG. 5509

We can furnish ore wagons of all descriptions suitable for the different mining camps in all sections of the country, and for heavy hauling where wagons of superior quality and extraordinary strength are required. We can furnish them wide or narrow track.

We furnish them with patent superior steel skein axles in sizes 3¾ to 4½ inches, or with solid steel axles 2⅛ to 3 inches, wood hub or Archibald patent wheels.

These wagons are built on order only, and can be furnished either complete or gears only. Prices furnished on application.

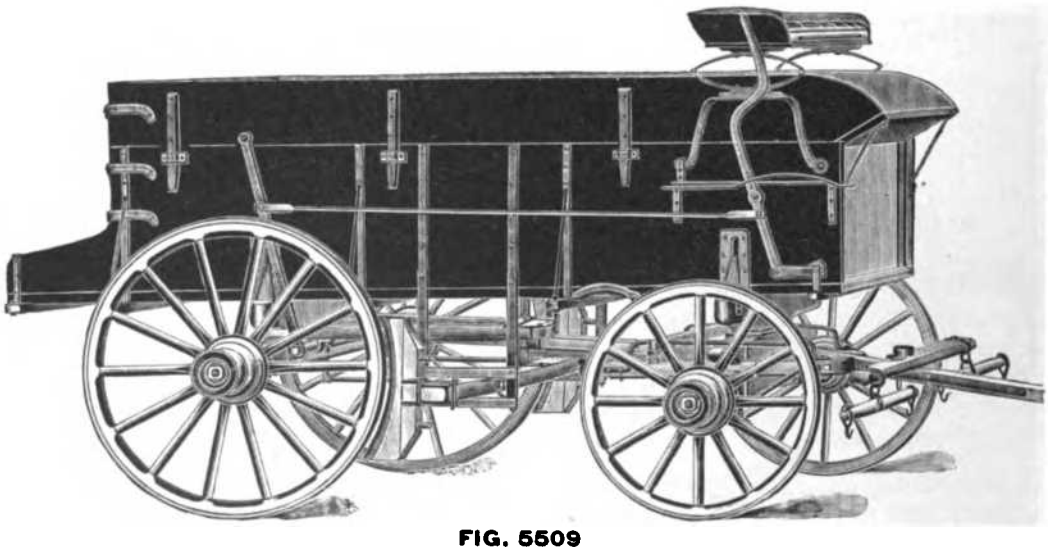


FIG. 5509

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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SPRINKLING CART

WITH AND WITHOUT SPRINGS

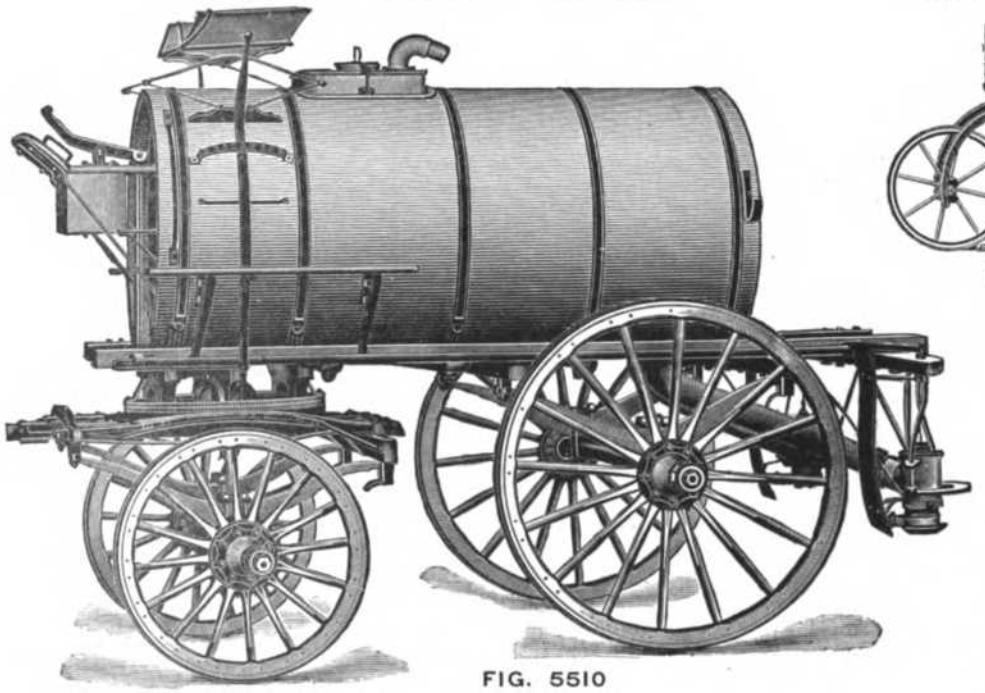


FIG. 5510

PRICES

Capacity, Gallons.	Sizes of Axles—Front, Inches.	Sizes of Axles—Hind, Inches.	Sizes of Tires, Inches.	Weight, Pounds.	With Springs, Each.	No Springs, Each.
1,000	2¾	3	3	3,600	$820 00	
750	2½	2¾	3	3,200	680 00	$475 00
600	2¼	2½	3	2,700	620 00	410 00
450	1⅞	2	3	2,300	570 00	380 00

HAND CART

WITH THIRD WHEEL AND SPRINGS

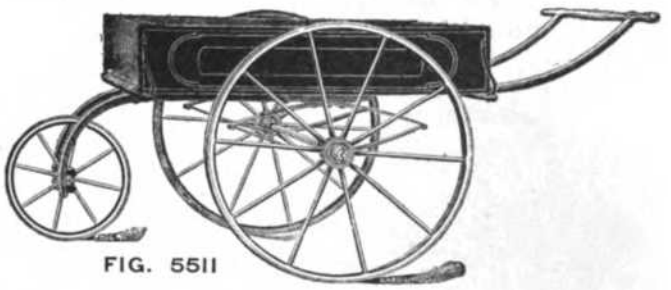
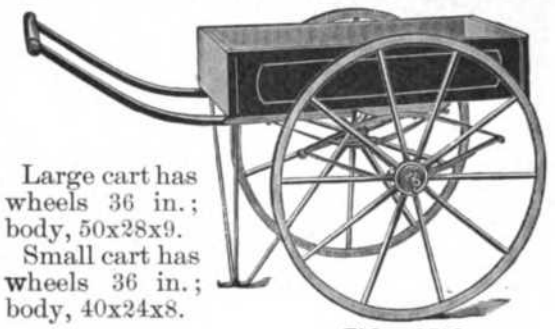


FIG. 5511

NO. 2. SMALL HAND CART



Large cart has wheels 36 in.; body, 50x28x9.
Small cart has wheels 36 in.; body, 40x24x8.

FIG. 5512

PRICES

	No. 3, Fig. 5511.	No. 2, Fig. 5512.
Without springs	$9 00	$7 50
With springs	11 50	10 00
With third wheel	12 50	11 00
With third wheel and springs	14 50	13 00

DESCRIPTION, FIG. 5510

Complete with wooden tanks, furnished with one large valve wrench, and fitted with special patent slope shouldered spoke wood hub wheels, or patent wheels, pole or shafts; extra if both are wanted. Extra for brake, filling valve and hose, or sunshade.

SANITARY STREET CART

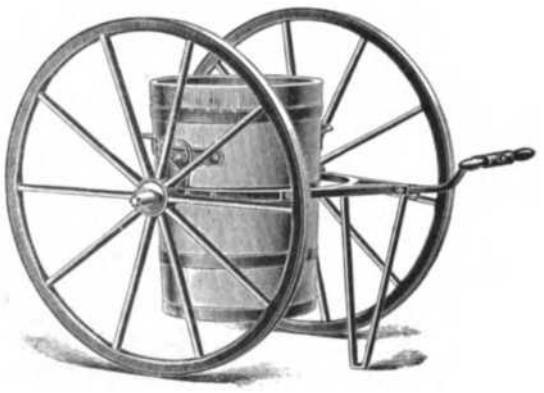


FIG. 5513

This cart is used for the collection of street sweepings and garbage. It has a strong steel frame, an oak barrel, and strong wheels. The barrel is readily removed and replaced.

PRICES

Complete, as illustrated..... $25 00
Extra barrel..... 4 50

WATER BARREL CART

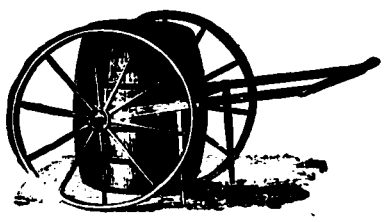


FIG. 5514

For carrying water and innumerable other purposes. A very useful cart. The barrel can be readily detached from the frame, and thus several barrels can be utilized, if required. Can also furnish hand cart body, to be used in place of barrel, at an extra charge.

Price, $10.00.

ST. LOUIS HAND CART

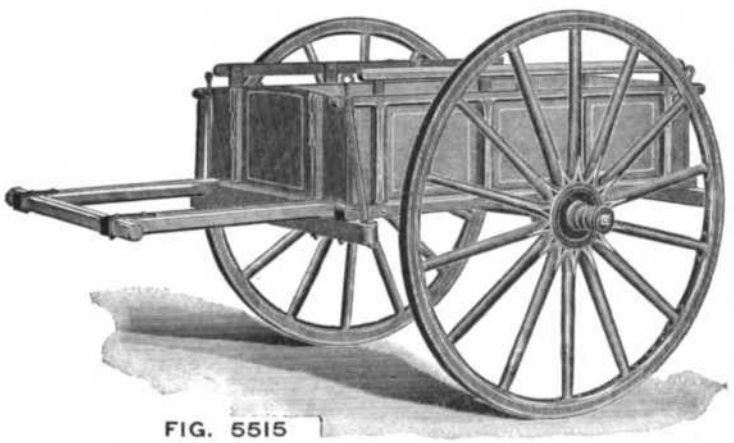


FIG. 5515

Frame and top rails of hickory. Bed of linn or poplar. Size of bed inside, 50 inches long x 33 inches wide x 11 inches deep. Rails, ⅝ x 1½ x 4½ inches high—3 inch space between top of bed and rail. Buggy wheels, 48 inches diameter; tire, 1¼ x ¼ inch. Steel axle, 1½ inches square. Cart and wheels painted vermilion. Bed pale green inside. Wheels and panels black and white striped.

Weight, 237 pounds. Weight crated, 307 pounds.

This cart is made expressly for the export trade, and is very substantial and durable.

Prices on application.

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SELF DUMPING AND SELF RIGHTING COAL BUCKETS

SIDE CATCH

FRONT VIEW, UPRIGHT POSITION



FIG. 5516

DESCRIPTION, FIG. 5516

These buckets are designed to secure strength and durability, with easy handling, rapid filling, quick dumping and righting, and a free discharge. They are made of open hearth steel. The sides of the buckets are nicely fitted to the bottom sheets; then carefully and securely fastened by machine driven Norway iron rivets of proper size, and in sufficient numbers. Strong steel brackets are fastened to bottom of the buckets, which carry large, wide wheels, containing self-oiling bearings; the wheels are rounded on the edges to facilitate the turning of the buckets, and of sufficient diameter to give ample clearance for the bottom of the bucket to pass freely over pieces of coal.

The bail is made of the best refined iron, of ample size to carry at least six times the loads. The side catch bail is carefully swelled near the catch to twice the ordinary thickness, thereby making it doubly strong. The catch is strong with a long and wide surface to prevent wear, and to guard against danger of accidentally unfastening itself in transit. The trunnions are large and well formed, and are located to insure a perfect balance, thereby permitting the bucket, when the catch is unfastened by the operator, to quickly dump its load and immediately right and lock itself to the bail automatically. The handles are strong and have ample room for their easy operation.

SIDE VIEW, TIPPED POSITION



FIG. 5516

PRICES, FIG. 5516

Size Nos. of Bucket.	Coal Capacity, Lbs.	Handled by Horse Power.	Capacity. Cubic Feet.	Approximate Weight of Bucket, Lbs.	Each.
1	280	⅛ of a ton.	5⅝	152	$27 00
2	320	⅐ of a ton.	6⅜	155	28 00
3	370	⅛ of a ton.	7⅜	165	29 25
4	400	⅛ of a ton.	8	190	31 50
6	450	⅛ of a ton.	9	200	32 00
		Horse and Steam Power.			
7	500	¼ of a ton.	10	225	35 75
5	400	Steam power.	8	245	35 75
8	500	"	10	275	38 50
9	560	"	11	295	40 00
10	600	"	12	320	48 00
11	600	"	12	375	53 00

Size Numbers of Bucket.	Coal Capacity, Lbs.	Capacity, Cubic Feet. All Handled by Steam power.	Approximate Weight of Bucket, Lbs.	Each.
12	650	13	380	$54 00
13	700	14	395	57 50
14	750	15	400	61 00
15	800	16	428	65 00
16	850	17	430	67 25
17	900	18	450	69 50
18	1,000	20	465	72 00
19	1,120	22⅜	495	73 00
20	1,200	24	515	81 00
21	1,300	26	550	95 00
22	1,500	30	630	105 00
23	1,750	35	750	112 00
24	2,000	40	810	114 00
25	2,240	44	850	121 00
26	2,500	50	900	145 00
27	3,000	60	1,000	170 00
28	3,360	67	1,100	180 00

When ordering buckets state size number of bucket and number of catalogue. Dimensions of buckets given on application.

SELF DUMPING AND SELF RIGHTING COAL BUCKETS

BACK LEVER CATCH



FIG. 5517



FIG. 5517

PRICES

Size Nos. of Bucket.	Coal Capacity, Lbs.	Handled by Horse Power.	Capacity, Cubic Feet.	Approximate Weight of Bucket, Lbs.	Each.
29	280	⅛ of a ton.	5⅝	157	$27 00
30	320	⅐ of a ton.	6⅜	160	28 00
31	370	⅛ of a ton.	7⅜	170	29 25
32	400	⅛ of a ton.	8	195	31 50
34	450	⅛ of a ton.	9	210	32 00
		Horse and Steam Power.			
35	500	¼ of a ton.	10	230	35 75
33	400	Steam power.	8	255	35 75
36	500	"	10	285	38 50
37	560	"	11	310	40 00
38	600	"	12	330	48 00
39	600	"	12	385	53 00
40	650	"	13	390	54 00
41	700	"	14	400	57 50
42	750	"	15	420	61 00
43	800	"	16	440	65 00
44	850	"	17	445	67 25
45	900	"	18	460	69 50
46	1,000	"	20	485	72 00
47	1,120	"	22	510	73 00
48	1,200	"	24	525	81 00
49	1,300	"	26	565	95 00
50	1,500	"	30	600	105 00
51	1,750	"	35	785	112 00
52	2,000	"	40	835	114 00
53	2,240	"	44	860	121 00
54	2,500	"	50	920	145 00
55	3,000	"	60	1,050	170 00
56	3,360	"	67	1,175	180 00

When ordering buckets state size number of bucket and number of catalogue. Dimensions of buckets given on application.

AUTOMATIC DUMPING COAL BUCKET



FIG. 5518

DESCRIPTION

This bucket is used for automatic coal elevators with inclined booms. The back lever catch is extended forward underneath and clear of the bail, to operate as an automatic tripping device. The bucket is carried on a trolley running on the inclined boom, and after it is raised the limit of its vertical hoist, while the trolley remains at rest, the further pull of the hoisting rope pulls the trolley with the bucket up the inclined boom. A roller attached to a movable hanger extends downward from the boom, and when the extended back lever catch strikes the roller, it is released, and the bucket automatically dumps its load. When the bucket is empty it rights itself to its former upright position, and the back lever catch at the same time secures itself in place.

PRICES

Size Numbers of Bucket.	Coal Capacity, Pounds.	Coal Capacity, Cubic Feet.	Each.
57	370	7⅜	$22 00
58	450	9	35 00
59	560	11	42 00
60	750	15	56 00
61	1,120	22	82 00
62	1,500	30	110 00
63	2,000	40	125 00
64	2,240	44	130 00

Dimensions of buckets given on application.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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SELF DUMPING AND SELF RIGHTING COAL HOISTING BUCKETS

FITTED WITH DOUBLE CATCH FOR DUMPING FROM EITHER SIDE

MEASURES, WEIGHTS AND EQUIVALENTS

18 cubic feet of gravel in bank equal		1 ton
27 " " " when dry equal		1 "
25 " " sand equal		1 "
18 " " earth in bank equal		1 "
27 " " " when dry equal		1 "
17 " " clay equal		1 "
44.8 " " bituminous coal, when broken down, equal (1 gross ton)	2,240	lbs.
42.3 " " anthracite coal, when broken down, equal (1 gross ton)	2,240	"
123 " " charcoal, equal (1 gross ton)	2,240	"
70.9 " " coke, equal (1 gross ton)	2,240	"
1 " foot of anthracite coal equals	50 to 55	"
1 " " bituminous coal equals	45 to 55	"
1 " " Cumberland coal equals	53	"
1 " " cannel coal equals	50.3	"
1 " " charcoal (hardwood) equals	18.5	"
1 " " " (pine)	18	"
1 " " water equals	62½	"
1 " " " "	7½	gals.
1 gallon of water equals	231	cubic inches.
31½ gallons equal	1	bbl.
2,150 42/100 cubic inches equal	1	bushel.

1 cubic yard of earth is called a load.

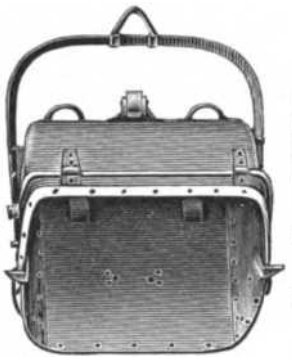


FIG. 5519



FIG. 5519

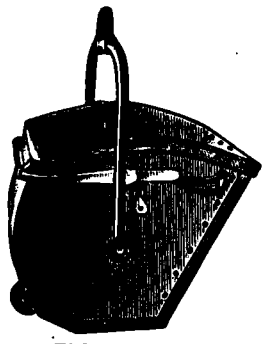


FIG. 5519

DESCRIPTION AND PRICES, FIG. 5519

The bucket is provided with a connecting latch which secures both sides to the bail, thereby enabling the bucket to be dumped from either side. It is constructed of the best brands of steel and iron, in the most thorough manner.

Size Nos. of Bucket.		Capacity of Tub.	Each.
Horse Power	73	⅛ of a ton	$27 50
	74	⅙ "	30 00
	75	⅕ "	32 50
	76	¼ "	37 50
Steam Power	77	560 pounds of coal	50 00
	78	600 " "	55 00
	79	700 " "	60 00
	80	800 " "	65 00
	81	900 " "	70 00
	82	1,000 " "	75 00
	83	1,120 " "	80 00
	84	1,200 " "	85 00
	85	1,500 " "	110 00
	85½	2,240 " "	130 00

STANDARD SELF DUMPING AND SELF RIGHTING CONTRACTOR'S BUCKET

FLARING SIDES

Side View, Upright Position.

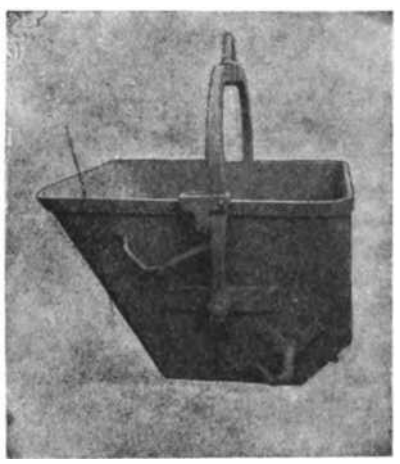


FIG. 5520

This bucket is adapted for handling stone, sand, clay, mortar, concrete, etc. The top of the bucket is from eight to ten inches wider than the bottom, which permits the bucket to be quickly filled and the load cleanly and rapidly dumped. It is simple in construction, easily handled, and well adapted for sinking shafts, sewer work, and similar operations. We furnish these buckets of capacities and dimensions as tabulated below, but can vary the dimensions and retain the capacities given to suit the purchaser. We furnish buckets of larger capacities and varying dimensions to suit the requirements of any service.

Size Nos. of Bucket.	Capacity in Cubic Feet.	Width Over All, Inches.	Lengths, Inches.	Depth, Inches.	Prices, Each.
86	3	30	26	15	$25 00
87	4½	32	29	18	28 00
88	6	34	31	19	32 00
89	8	36	33	20	35 00
90	10	41	36	21½	40 00
91	12	44	40	23	45 00
92	14	46	42	25	55 00
93	21	48	47	28	75 00
94	27	53	50	31	90 00
95	36	65	58	33	110 00
96	42	66	59	34½	120 00

Side and Rear View, Tipped Position.



FIG. 5520

STANDARD SELF DUMPING AND SELF RIGHTING CONTRACTOR'S BUCKET

CLASS B, STRAIGHT SIDE

Side View, Upright Position.

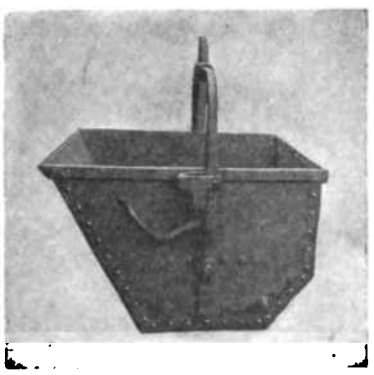


FIG. 5521

This Straight Side Class B Bucket is equal width both top and bottom. The best steel and iron are used in its construction. It is nicely balanced, has double bottom, strong bail, trunnions and reliable latch. The standard sizes are tabulated below. For buckets of greater or lesser capacity and of varying dimensions, estimates will be furnished.

Size Nos. of Bucket.	Capacity in Cubic Feet.	Width Over All, Inches.	Lengths, Inches.	Depth, Inches.	Prices, Each.
97	3	28	26	15	$25 00
98	5	31	28	18	27 00
99	6	31½	29	19	29 00
100	7	34	30	19	31 00
101	8	35	31	19	32 00
102	10	36	35	21	36 00
103	12	38	38	23	40 00
104	14	38	40	25	50 00
105	18	43	43	27	60 00
106	21	45	46	28	70 00
107	27	47	50	30½	84 00
108	36	52	54	33	94 00
109	41	54	58	36	108 00

Side and Rear View, Tipped Position.



FIG. 5521

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SELF DUMPING AND SELF RIGHTING CONTRACTOR'S BUCKET

CLASS C, STRAIGHT SIDE, ROUNDED BACK

SIDE VIEW, UPRIGHT POSITION



FIG. 5522

PRICES

Size Numbers of Bucket.	Capacity in Cubic Feet.	Width over all in Inches.	Length in Inches.	Depth in Inches.	Each.
110	3	28	26	15	$25 00
111	5	31	28	18	27 00
112	6	31½	29	19	29 00
113	7	34	30	19	31 00
114	8	35	31	19	32 00
115	10	36	35	21	36 00
116	12	38	38	23	40 00
117	14	38	40	25	50 00
118	18	43	43	27	60 00
119	21	45	46	28	70 00
120	27	47	50	30½	84 00
121	36	52	54	33	94 00
122	41	54	58	36	103 00

SIDE AND REAR VIEW TIPPED POSITION



FIG. 5522

TROLLEY TRACK TIPPING BUCKET

UPRIGHT POSITION



FIG. 5523

This bucket is used with overhead trolley track for carrying coal and ashes through narrow passages, to and from boiler rooms, gas retort houses, and storerooms generally. It is also useful for handling stone and other material on sewer and general construction work. The body of bucket is made low for easy filling, and long and narrow to facilitate working in trenches. It is neatly and strongly designed, with double bottom. Below we give a list of the regular sizes. Estimates for buckets made of light material and varying dimensions and capacities will be furnished.

PRICES

Size Nos. of Bucket.	Coal Capacity in Lbs.	Capacity in Cubic Feet.	Length of Bucket in Inches.	Width Over all in Inches.	Depth in Inches	Each.
123	300	6	33	26	19	$29 00
124	400	8	36	27	22	32 00
125	500	10	41	30	24	36 00
126	600	12	42	33	25	40 00
127	700	14	48	33	27	50 00
128	900	18	48	37	29	60 00
129	1,050	21	48	43	30	70 00
130	1,350	27	46	46	31	84 00
131	1,350	27	58	43	29	84 00
132	1,800	36	58	54	33	94 00
133	2,100	42	60	58	33	103 00

TIPPED POSITION

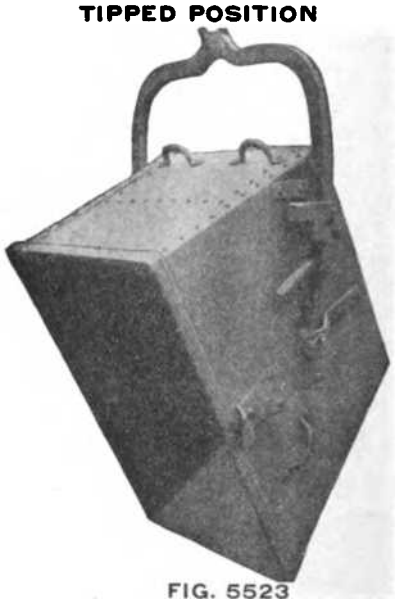


FIG. 5523

ROUND BUCKET

UPRIGHT POSITION



FIG. 5524

The illustrations show a Round Bucket, which is used for handling all sorts of material. It is built of steel and iron and the bottom is made of stock double the thickness of the sides, thereby equalizing the wear. To secure stiffness and strength the bottom and sides are joined by an angle iron ring. Regular sizes are made as tabulated below; for buckets made of special dimensions, etc., estimates will be furnished.

PRICES

Size Nos. of Bucket.	Coal Capacity in Lbs.	Capacity in Cubic Feet.	Width Over all in Inches.	Height from Bottom of Bucket to Top of Bail.	Depth of Bucket in Inches.	Weight of Bucket in Lbs.	Each.
134	300	6	31	37	21	150	$20 00
135	400	8	34½	41	22	175	25 00
136	550	11	39	44	22	220	30 00
137	700	14	44	49	25	285	35 00
138	850	17	46½	51	26½	320	40 00
139	1,050	21	48	56	30½	416	45 00
140	1,350	27	50½	60	33½	500	55 00
141	2,100	42	58½	71	40	750	75 00

TIPPED POSITION



FIG. 5524

MINING BUCKET

UPRIGHT POSITION

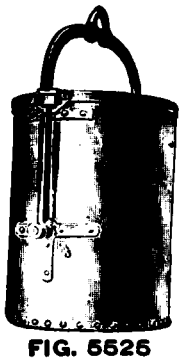


FIG. 5525

The cuts represent a Mining Bucket, which is made in the best possible manner of heavy steel plates, and re-enforced with a band at the top. The bail and trunnions are heavy, while the catch is strong, reliable and simple in operation. Buckets of special sizes, or of lighter material, made to order

PRICES

Size Nos. of Bucket.	Coal Capacity in Lbs.	Capacity in Cubic Feet.	Diameters in Inches.	Depth in Inches.	Each.
142	300	6	22	28	$17 50
143	400	8	25	30	22 00
144	500	10	26	32	27 00
145	600	12	28½	33	29 00
146	700	14	30	35	32 00
147	800	16	32	35	37 00
148	1,000	20	34	40	45 00
149	1,200	24	35	43	47 00
150	1,500	30	37	48	53 00

TIPPED POSITION

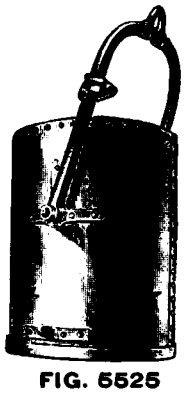


FIG. 5525

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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BOTTOM DUMPING BUCKET



FIG. 5526

This bottom dumping bucket is adapted for coaling locomotives. They are divided vertically with a hinge near the top; the rear half is provided with a connecting latch, which secures both sides to the front of bucket. The handles allow the buckets to be opened and closed from either side.

They are carefully made of the best steel, and are provided with strong bails and large wheels.

PRICES

Size Numbers of Bucket.	Coal Capacity Pounds.	Capacity, Cubic Feet.	Each.
172	750	15	$95 00
173	1,120	22	115 00
174	2,240	44	175 00



FIG. 5526

OVERHEAD TRAM RAIL BOTTOM DUMPING BUCKET

BOTTOM CLOSED

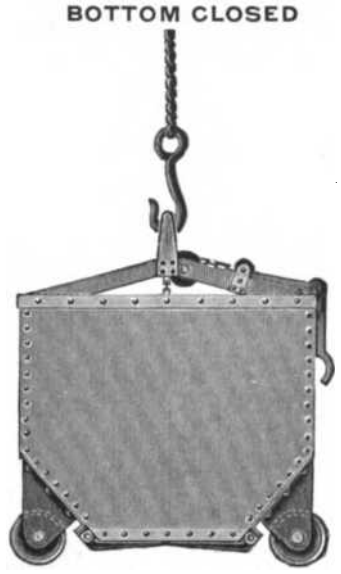


FIG. 5527

In some situations it is desirable to use an overhead tram rail for transporting coal and ashes, and where the overhead room is not sufficient to operate tipping buckets. For such situations this bottom dumping bucket is well adapted.

It is rectangular in form with inclined bottom plates, fitted with hopper doors actuated by a hoisting and lowering chain, with suitable lever.

This style of bucket is also used for coaling locomotives allowing the filling of tender without loss of fuel.

PRICES

Size Numbers of Bucket.	Coal Capacity, Pounds.	Capacity, Cubic Feet.	Each.
175	700	14	$90 00
176	1,120	22	110 00
177	1,500	30	140 00
178	2,240	44	160 00

BOTTOM OPENED

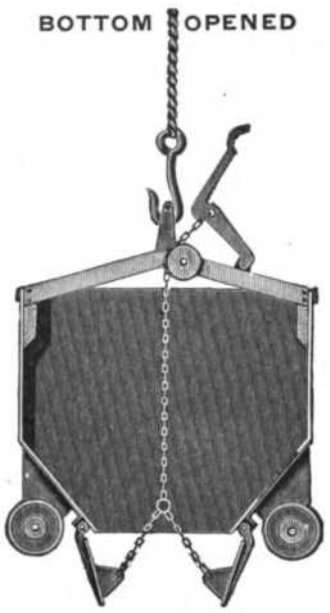


FIG. 5527

MINERAL CAR OR BUCKET

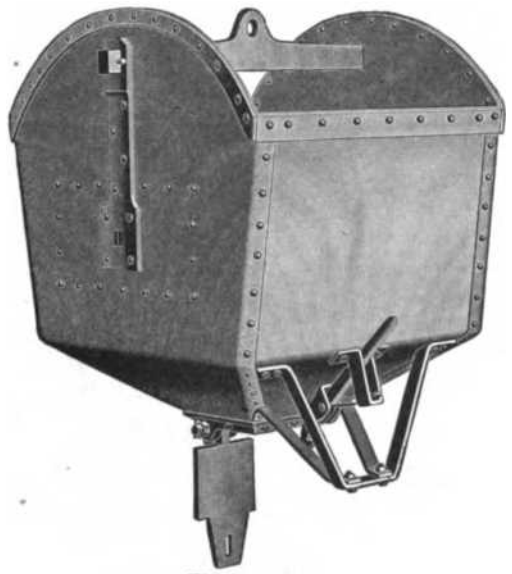


FIG. 5528

Bottom Dump. For Smelting Works.

Capacity, 18¾ cubic feet. Load, 3,100 pounds.
Bucket, 40 x 30 inches, average size.
Depth, 40 inches.
Made of No. 8 steel plate.
Top end bands, 2 x ¼ inches.
Top side bands, 1½ x ¼ inches.
Lifting beam, 3 x 1¼ inches.
Steel bottom door, operated by spring handle ratchet, as shown in cut.
Painted steel blue.
Weight, 428 pounds.
Prices on application.

SELF FILLING DROP BOTTOM SCRAPER BUCKET

HORIZONTAL POSITION
READY TO FILL

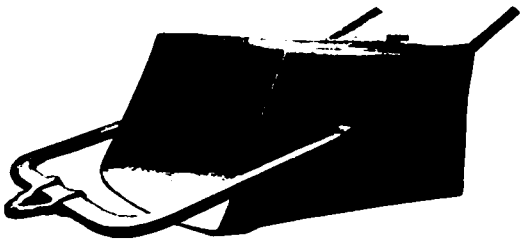


FIG. 5529

PRICES ON APPLICATION

UPRIGHT POSITION
BOTTOM OPEN



FIG. 5529

TUB HOOKS

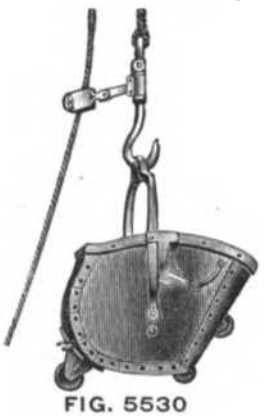


FIG. 5530

Showing Application.

OPEN

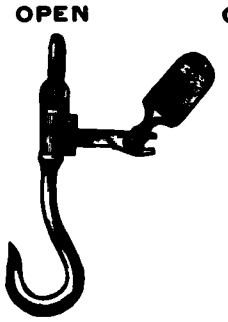


FIG. 5531

CLOSED

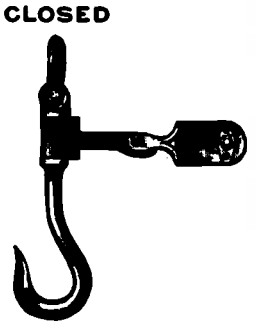


FIG. 5531

This cut shows a tub hook which is especially constructed for single whip hoisting. The guy line is fastened to the gaff and runs through a small pulley block attached to the end of an arm; the latter is connected to the body of the hook with a loose or swinging joint which allows the tub and hook to rotate without disturbing the position of the block, which at all times is in a direct line with the guy man. The device effectually prevents the guy line from winding around the "fall."

PRICE, $11.50

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TAPER WAGON CHUTE

For Soft Coal.

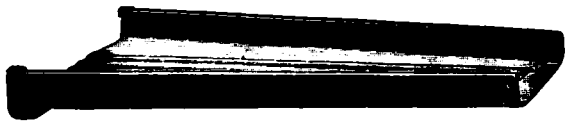


FIG. 5532

No.	8s.	8 ft. long	21 ins. wide at top	Each...	$6 00
"	10s.	10 "	12 " " bot-	" ...	7 50
"	12s.	12 "	tom.....	" ...	9 00

TELESCOPE WAGON CHUTE

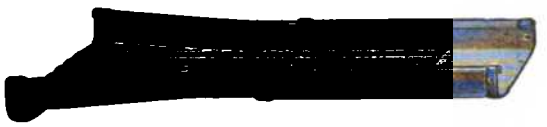


FIG. 5533

Nos.	Feet Long.	Feet Slide.	Available Length, Feet.	Each.
80	8	5	12	$13 50
100	10	7	16	18 00
120	12	9	20	22 50

The Telescope Chute, with an extension piece that slides over the outside of the straight section, permits adjustment to any desired length within the limit of the extension. Slides are uniform width, 12 ins.

WAGON CHUTE

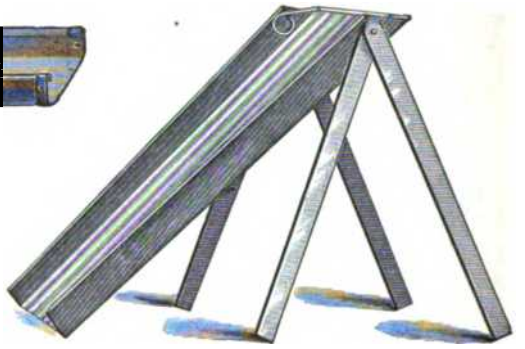


FIG. 5534

24 inches wide at large end, 15 inches at small end. These are intended to be used where it is not practicable to use a taper or telescope chute. The legs support it independent of the wagon. They are frequently found useful when coal is unloaded by baskets or bags through a window.

No. 5, tapered, 5 feet long, with folding legs and window stop. Each.....$6 00

TRUSS BEAM HARD PAN MACADAM PLOW OR POWER PICK



FIG. 5535

This plow is for the special use of contractors in tearing up macadam and other forms of roadbed. The point is a straight bar of tool steel drawn down at the point and can be easily repaired by any blacksmith. We furnish this plow with shoe under the beam as illustrated, or with wheel, as may be desired. Each, $25.00, with shoe under beam and one extra tool steel point.

CONTRACTOR'S AND ROAD PLOW

Grader, Truss Beam.



FIG. 5536

For use by four to eight horses on all contract work. Has been used in cemented gravel, street pavements and other hard materials. The illustration shows the plow rigged for grading. We furnish it specially arranged for plowing into sewers and ditches rigged with short mold board, wheel and cutter when desired. Has steel point and yoke for handle. Each, $25.00.

SWIVEL ROAD PLOW

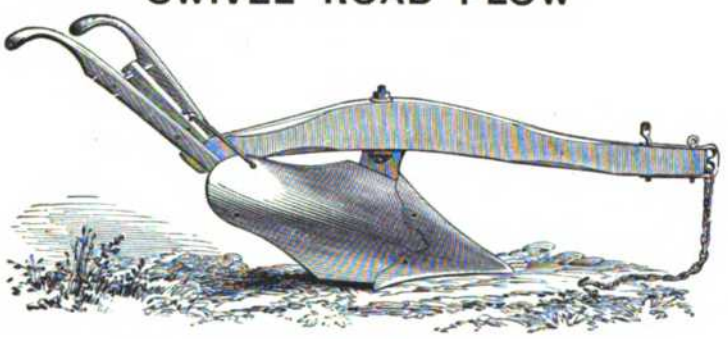


FIG. 5537

Especially designed for rough road work and extensively used for this purpose. We furnish the woodwork of these plows ironed, when so desired. Each, $13.75.

COULTER ROAD PLOW

Made very strong in all its parts and additionally braced. Are capable of standing the roughest work. We also iron the wood work of these plows when desired. Can rig them with a high plate iron mold board for use in plowing snow out of gutters in city streets. Many are used with satisfaction for this purpose. Each, $17.50.

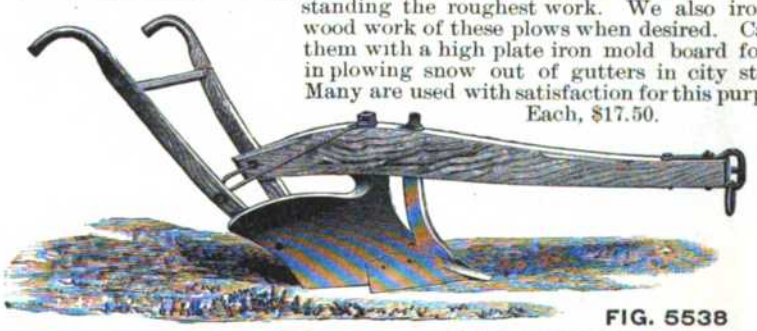


FIG. 5538

CONTRACTOR'S PLOW

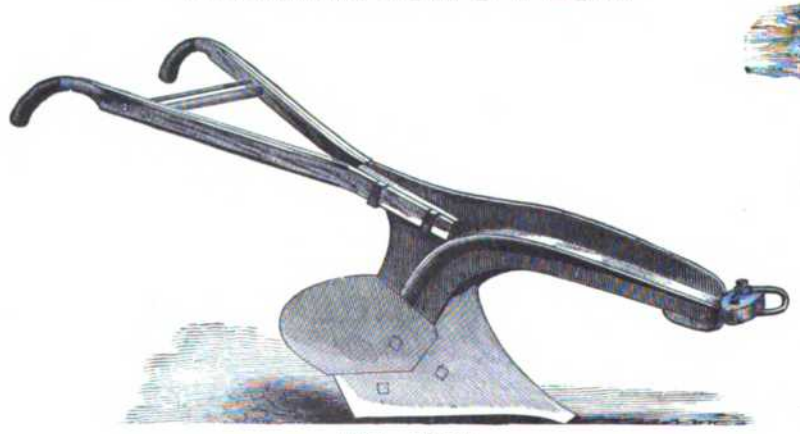


FIG. 5539

For Public Works, Canals, Railroads, etc.

Weight, 200 lbs. Each.....	$15 00
Extra Share, each.....	1 00

GRADING PLOW

For road work and also well adapted for breaking up hard soils. Weight, 135 lbs. Each, $10.00. Extra Shares, each $0.50.

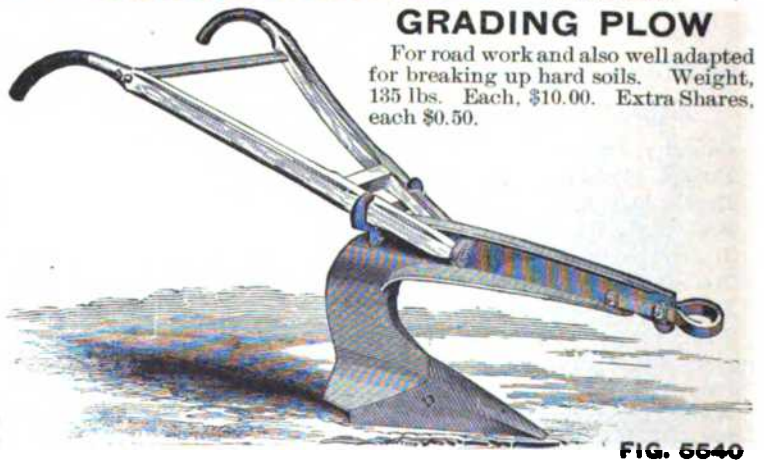


FIG. 5540

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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GREAT WESTERN RAILROAD PLOWS

DESCRIPTION, FIGS. 5541 AND 5542

The standard, mold board and point are made of extra quality of wrought steel. The mold board and point are made of the best plow steel, and both double shinned. The handles and beam are of the best second growth hardwood lumber, with handholds solid steel. Plows Nos. 101 and 103 are also provided with a heavy improved steel shoe, or runner, upon the side to protect the handles when the plow is dragging. Made in four sizes, and right or left hand. All sizes are provided with best reversible steel cutters. The principal strain is carried by heavy steel draft rod underneath the beam, and the entire plow is constructed to stand the very hardest usage. They cut 12 inches with light draft.

TWELVE HORSE PLOW, NO. 103

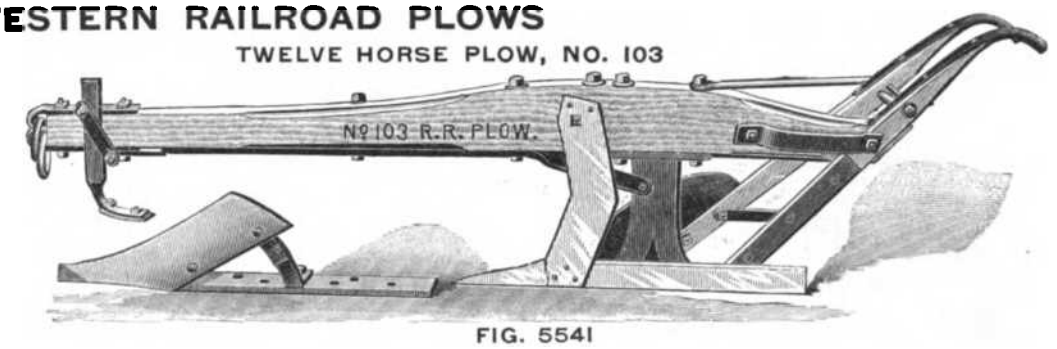


FIG. 5541

FOUR HORSE PLOW, NO. 105

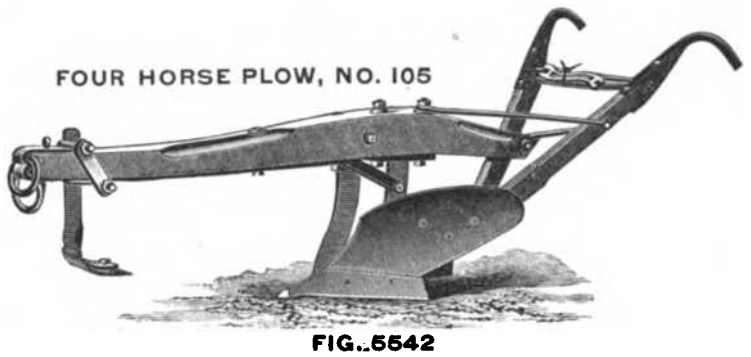


FIG. 5542

DESCRIPTION, FIG. 5542

This plow is medium size between Nos. 101 and 106. It cuts 10 inches, and while not intended for extremely hard material, is strong enough for any material that four horses can break. In ordering, please specify whether right or left hand plow is wanted.

GREAT WESTERN GRADING PLOWS

FOUR HORSE PLOW, NO. 105



FIG. 5543

TWO HORSE PLOW, NO. 106

This plow is ironed same as the larger sizes.

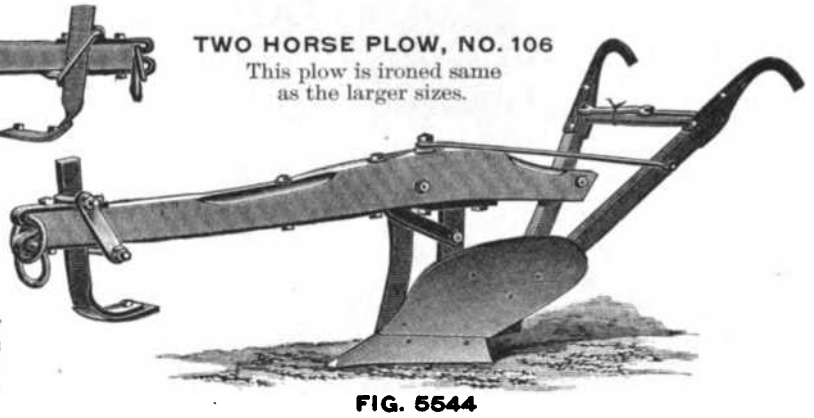


FIG. 5544

The twelve horse plow, No. 103, Fig. 5541, is strong enough for fourteen horses. It will work in the hardest material for months without injury, except the wear on the share, mold board, etc., incident to that kind of work. We recommend No. 103 plow for hard pan, frost, loose rock, etc. The six horse plow, No. 101, is really strong enough for eight horses. No. 105, Fig. 5543, is a four horse plow, and strong enough for use in any material that number of horses can break. No. 106 plow, for light soil, requires only two horses, but is strong enough for four; cuts 10 inches.

In ordering any plows in this list, it is necessary to state the size by number, and whether they are desired right or left hand. We can supply contractors on any kind of work with just such a plow as they desire, they deciding for themselves how large a plow their work requires.

PRICES, FIGS. 5541 TO 5544

Nos.	Horse Power.	Weight.	Each.	Landside Points, Weight.	Each.
106	2 to 4	135 lbs.	$25 00	19 lbs.	$4 50
105	4 " 6	170 "	30 00	21 "	5 00
101	6 " 8	220 "	38 00	33 "	6 00
103	12 " 14	300 "	45 00	43 "	7 50

Prices for plows include one extra landside point.
A wrench goes with every plow.

RAILROAD OR GRADING PLOWS

DESCRIPTION, FIGS. 5545 AND 5546

No. 3, left hand; weight, 180 pounds. No. 13, right hand; weight, 180 pounds. This plow is of great strength and remarkable lightness of draft. The beam is the toughest butt cut white oak, carefully selected; length, 7 feet and 3¼ x 7 inches at standard. Handles braced. The standard is of wrought iron, V shaped, secured to beam by two strong bolts, and will not twist or break. The point, landside, mold board and cutter are of the very best wrought steel. It has an adjustable gauge wheel 3 x 6½ inches.

IRON HAND HOLD AND HANDLES IRONED, WITH GAUGE SHOE

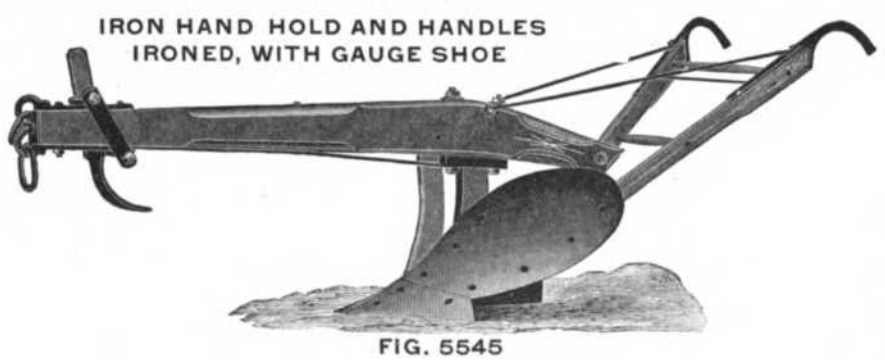


FIG. 5545

WITH GAUGE WHEEL

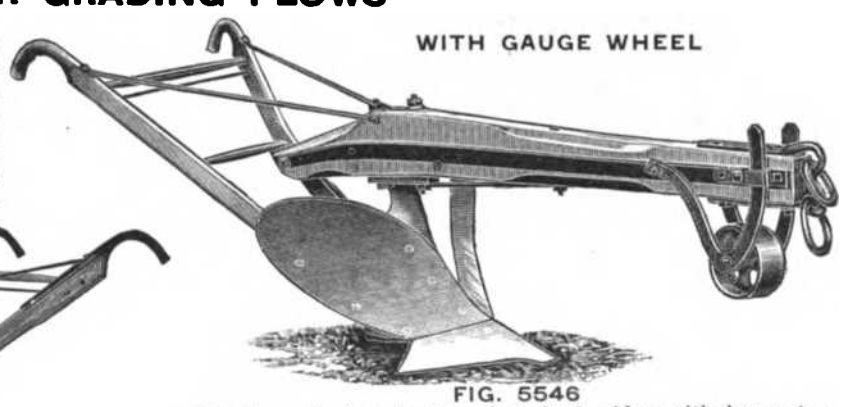


FIG. 5546

The beam is heavily ironed on both sides, with heavy iron strap underneath, extending from standard to clevis, and securely bolted to both. Is made with wrought iron clevis, having two strong rings, as shown in cut. The extra long handles give the holder perfect control. Owing to the peculiar shape of the mold board, these plows can be drawn easily by two horses, but are strong enough for six or eight, and they will scour well. This plow is made to cut a deep rather than a wide furrow, and can be regulated to any depth required. It does not turn the soil over, but loosens it, leaving the trash on top, so that it will not interfere with the scraper when filling. Each, $30 00. Extra points, each, $3 00.

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ROAD LEVELER



FIG. 5547.

Steel blade ¼ inch thick by 4 x 72 inches, and stamped steel seat.

For smoothing rough roads of any kind, dirt or gravel, and for use on turnpikes. It is largely used in the spring, when the frost is first out of the ground and before the regular road work is done. By merely driving once or twice over the roughest roads the ridges are cut down, the ruts filled up, and the roadbed put in temporary good order. Weight, 150 lbs. Prices on application.

SURFACE GRADER

DESCRIPTION
FIG. 5548

Steel blade ¼ in. thick, 15 in. wide and 30 in. long.

This is intended for one horse only, and is used for removing the plowed ground from the sides of the road to the roadbed immediately opposite. It is worked by either backing the horse up to the place of filling or by crossing over from side to side, the driver retaining his load until the proper place is reached, or gradually losing it from beneath, as he may wish. It is also of great service in grading and leveling off after the scraper, leaving the roadbed level or rounded up, as desired. The beam is made of oak wood and two substantial wrought steel standards, as shown in cut. It is light, but strong and durable. Weight, 60 lbs. Prices on application.



FIG. 5548

BOSS SOLID STEEL DRAG SCRAPER

NOS. 1 AND 2 SCRAPER WITH RUNNERS



FIG. 5549

NOS. 1 AND 2 SCRAPER WITH BOTTOM PLATE

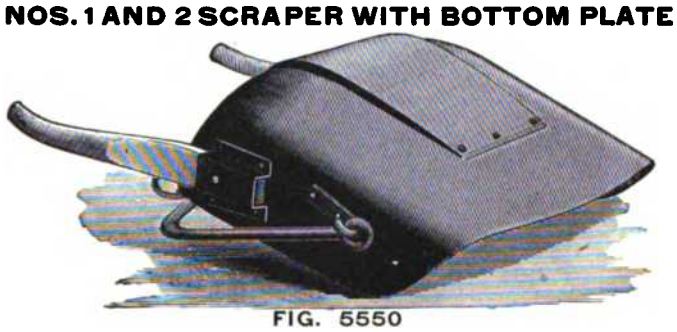


FIG. 5550

NOS. 1 AND 2 SCRAPER WITHOUT RUNNERS

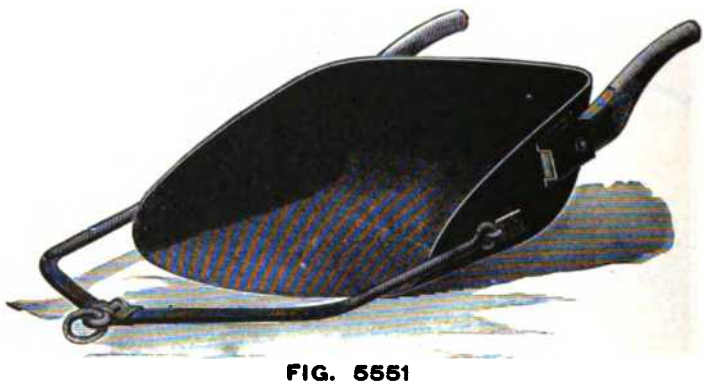


FIG. 5551

These scrapers are made from heavy plates, of specially hardened steel, and are stamped from one sheet without joint, seam or rivet. Owing to the sharp, rounded nose they will enter the ground very readily. The bails are steel, with perfect working swivels, and handles of hardwood.

PRICES, FIGS. 5549 TO 5551

No. 1.	Capacity, 7 cubic feet; weight, 90 pounds; each	$12 00
No. 2.	Capacity, 5 cubic feet; weight, 80 pounds; each	11 00
	With steel runners, extra weight, 8 pounds; each extra	60
	With steel bottom plate, extra weight, 15 pounds; each extra	1 00

COLUMBUS SOLID STEEL SCRAPER

WITH RUNNERS



FIG. 5552

WITH DOUBLE BOTTOM



FIG. 5553

We ship always without runners unless otherwise directed.

WITHOUT RUNNERS



FIG. 5554

The entire bowl of the scraper is made of one sheet of heavy steel. The bails are of steel and of improved pattern, with strong and perfect working swivels.

PRICES, FIGS. 5552 TO 5554

No. 1.	Carries 7 feet of earth. Used for long haul or down grade. Size of bowl: Top of back to cutting edge, 33½ inches; width, 32 inches; depth, 11½ inches; weight, 102 pounds. Each	$12 50
No. 2.	Carries 5 feet of earth. For all ordinary grading, farm, road or township work. Size of bowl: Top of back to cutting edge, 31½ inches; width, 29 inches; depth, 11½ inches; weight, 94 pounds. Each	11 50
	With runners, weight, 8 pounds; extra, per scraper	60
	With double bottoms; weight, 8 pounds; extra, per scraper	2 00

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SOLID STEEL DITCHING SCRAPER



FIG. 5555

This improved Ditching Scraper is made with extra long nose, and the cutting edge is well sharpened, so that it enters the ground as readily as a plow, and it will work well in any kind of soil, whether plowed or not. It is easy on a horse and can be used for general light road work as well as for ditching purposes.

DESCRIPTION AND PRICES

No. 3, Columbus. Capacity, 3 cubic feet. Intended for work on narrow ditch with one horse. Size of bowl: Top of back to nose, 32 inches; width, 25 inches; greatest depth, 10¾ inches; weight, 70 pounds. The entire bowl of the scraper is made of one sheet of heavy steel. Price, $10.00.

No. 3, Boss. Capacity, 3 cubic feet. We also furnish this scraper with handle sockets on the side of the bowl, and the bail attached same as the Boss scrapers, Figs. 5549 to 5551. The size and thickness of bowl are the same as No. 3, Columbus, above described. Weight, 67 pounds. Price, $7.00.

Both the Boss and the Columbus Ditching Scrapers are furnished when so ordered, with steel shoes or runners, or with extra steel bottom plate. The runners weigh 8 pounds, and bottom plates 12 pounds per scraper.

TONGUE SCRAPER

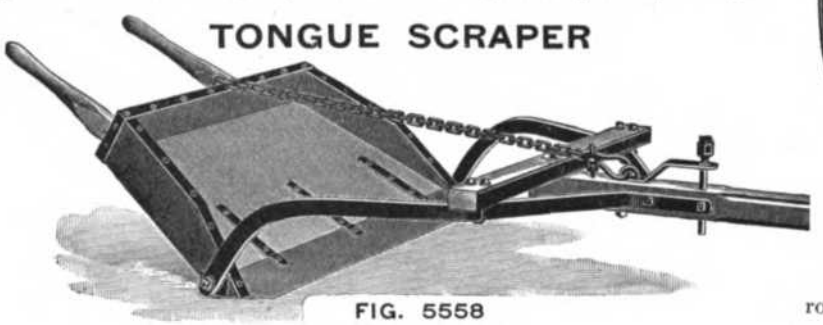


FIG. 5558

DESCRIPTION AND PRICES

The driver fills and dumps his own load with ease. These scrapers have steel bottoms, with ground edges, and best steel shoes. No whiffletrees or neckyokes furnished with scrapers.

No. 1 Scraper and Ditcher, 48 inches wide, weight 123 pounds, price $14.00.
No. 2 Scraper and Ditcher, 36 inches wide, weight 113 pounds, price $13.00.

AUTOMATIC REVOLVING ROAD SCRAPER

STEEL BOTTOM



FIG. 5556

WOOD BOTTOM

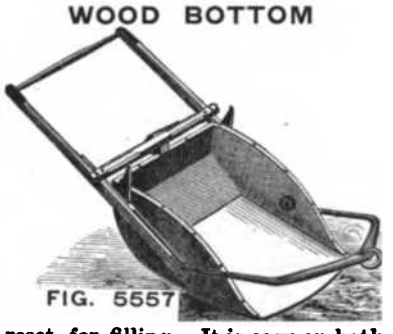


FIG. 5557

It revolves, losing no time to reset for filling. It is easy on both man and beast. The handles, sides, and back boards are of selected and thoroughly seasoned oak, the bottom plates of steel. Steel laid runners, Improved side bars and malleable grab irons. We furnish the scrapers with wood bottom to order only.

PRICES, STEEL BOTTOM SCRAPERS FIGS. 5556 AND 5557

	Weight, Lbs.	Each.
30 Inch Scraper	127	$18 00
33 " "	132	20 00
36 " "	142	22 00

THE BUCK SCRAPER

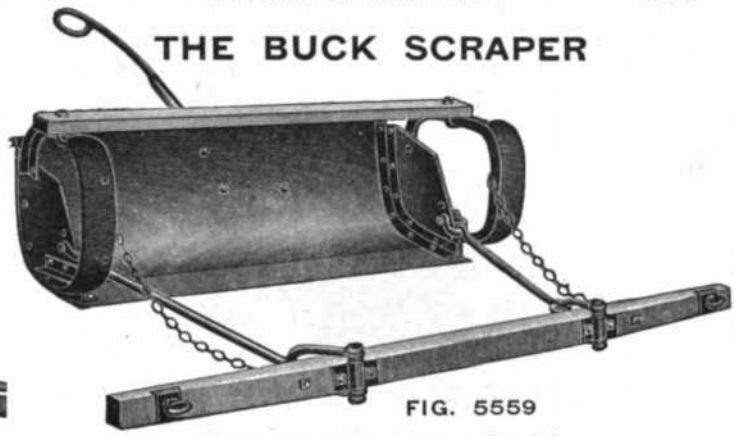


FIG. 5559

DESCRIPTION AND PRICES

This scraper is designed for use in leveling lands, building canals, railroads, and for all construction work on which drag scrapers can be used.

No. 1. 5 foot cutting edge; capacity, 18 cubic feet; weight, 316 pounds. Each $37.00

No. 2. 4 foot cutting edge; capacity, 14 cubic feet; weight, 295 pounds. Each, $32.00.

No. 3. 3 feet 8 inches cutting edge; capacity, 12 cubic feet; weight, 215 pounds. Each, $28.00.

Having a capacity of from 12 to 18 cubic feet, one man with 2 large or 4 ordinary horses can move 150 to 225 cubic yards of earth every 10 hours.

PRESSED BOWL WHEEL SCRAPERS

WITH SAND PROOF HUB WHEELS

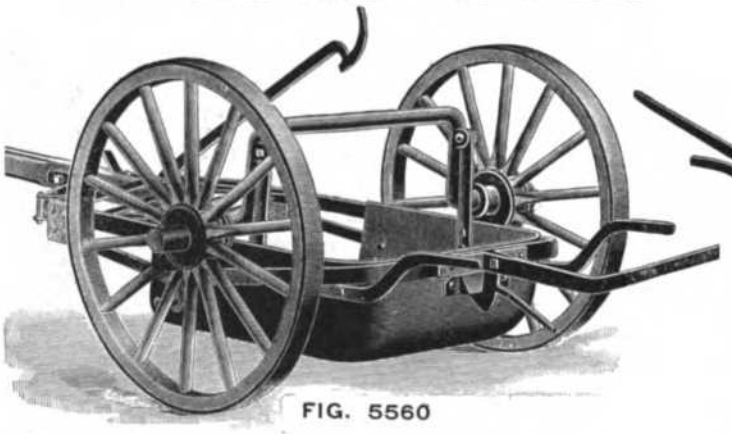


FIG. 5560

WITH METAL WHEELS

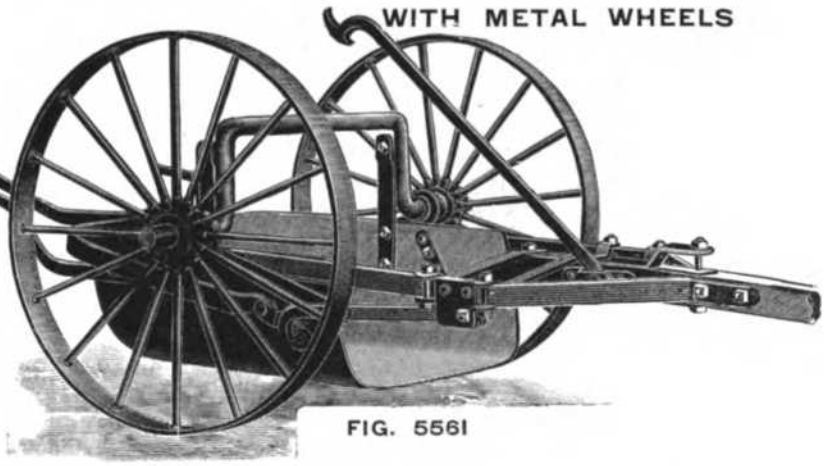


FIG. 5561

The bowls are best steel plate, 5/16 inch thick. The bottoms of all pressed bowl scrapers are oil tempered. All metal working parts of best soft steel. The largest size scraper, capacity 17 cubic feet, is easily operated by one man. No strain on horses' necks.

DESCRIPTION AND PRICES

No. 2. Capacity, 13 cubic feet; wheels, 40 inches in diameter; tire, 3 x ¼ inches. Size of bowl: Length, 36 inches; width, 38 inches; depth, 13½ inches—all inside measurements. Tracks, 4 feet 7 inches. Weight, 600 pounds. Each, $66.00.

No. 3. Capacity, 17 cubic feet. Wheels 46 inches in diameter; tire, 3 x ¼ inches. Size of bowl: Length, 42 inches; width, 42 inches; depth, 16 inches—all inside measurements. Tracks, 5 feet 2 inches. Weight, 744 pounds, Each, $80.00. No. 3 has draft rod. No. 2 sent with draft rod only when specially ordered.

Tires 4 inches wide. The metal wheels are specially intended for scrapers for hot and very dry climates, where wood wheels will not stand exposure to the elements.

DESCRIPTION AND PRICES

No. 2. Capacity, 13 cubic feet. Metal wheels, 40 inches diameter; tire, 4 x ½ inches. Size of box: Length, 36 inches; width, 38 inches; depth, 13½ inches—all inside measurements. Gauge of track, 4 feet 7 inches. Weight, 693 pounds. Each, $74.00.

No. 3. Capacity, 17 cubic feet. Metal wheels, 46 inches diameter; tire, 4 x ½ inches. Size of box: Length, 42 inches; width, 42 inches; depth, 16 inches—all inside measurements. Gauge of track, 5 feet 2 inches. Weight, 850 pounds. Each, $88.00.

No. 3 has draft rod for snatch team.

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WHEEL SCRAPER

SQUARE BOWL SCRAPER

In Carrying Position.

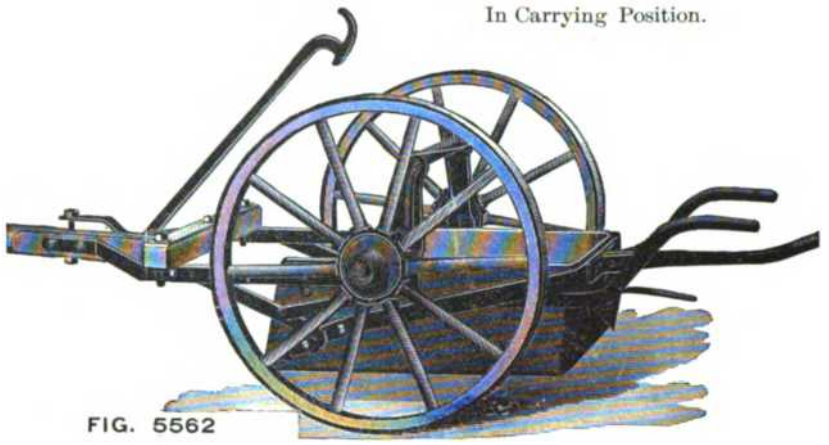


FIG. 5562

PRESSED BOWL SCRAPER

In Carrying Position.

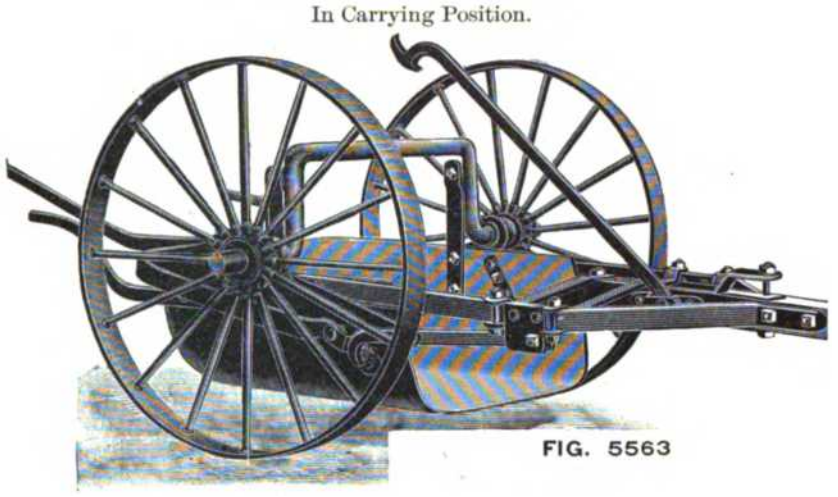


FIG. 5563

DESCRIPTION, FIGS. 5562 TO 5564

Furnished with heavy hardened iron hub wheels, 34 inches in diameter; tire, 3 inches wide. This wheel scraper has automatic lock hooks, independent steel axle, bifurcated compound lever, steel bowl and improved iron hub wheels. The bowl, which is the hardest and best steel, is 34 inches long by 34 inches wide by 11½ inches deep; capacity, 9 cubic feet level full, but will carry an average load of 10 cubic feet; gauge of track, 4 feet 2 inches. We furnish either pressed bowls or square boxes as ordered. Prices on application.

Square bowl scraper weighs 390 pounds. Pressed bowl scraper weighs 381 pounds.

STEEL CHAMPION REVERSIBLE ROAD MACHINE

For Cutting Down Banks, Widening Roads and Cleaning Ditches. Prices on application.

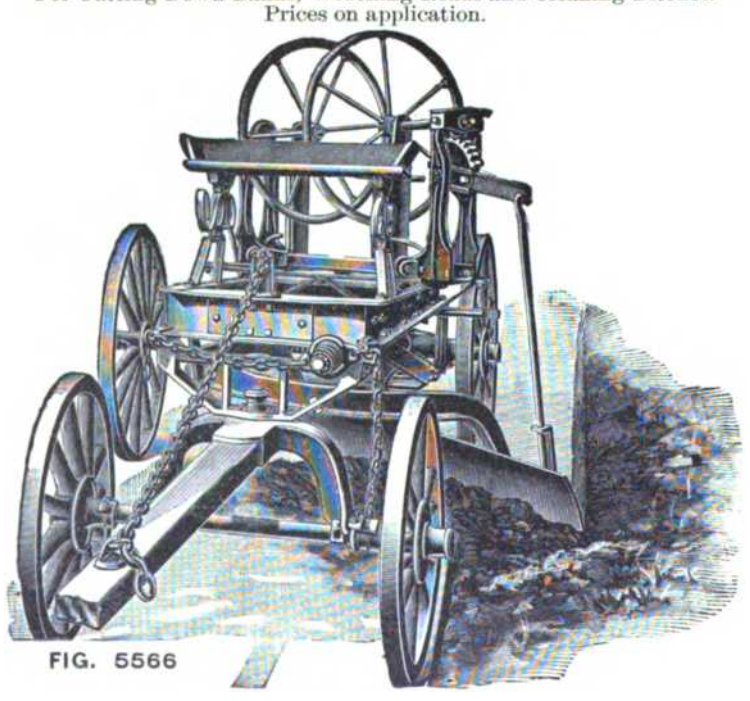


FIG. 5566

AUTOMATIC FRONT END GATE

In Carrying Position.

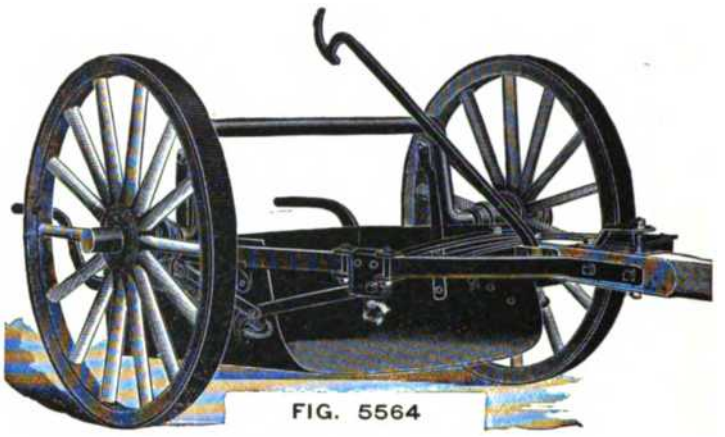


FIG. 5564

END GATE



FIG. 5565

This End Gate Attachment is automatic in action, simple in construction, cannot get out of order, and can be easily attached or detached. The end gate is bolted to the bowl in rear of hangers on side of scraper with two bolts. In ordering wheel scrapers, Figs. 5560, 5561 and 5563, please state whether they are wanted with or without end gates. The price is $8.00 extra.

When scraper is lowered to fill the axle arms, raise the end gate up, as shown in cut, and when scraper is loaded and lifted into carrying position the gate falls with its own weight, closing the front of scraper, and thus preventing the contents of bowl from sliding out. When scrapers are working on long or down hill hauls, or in gravelly or buckshot material, it will save from three to four feet every load. It is readily attached to either pressed or square bowl scrapers, all bowls being bored for end gate.

STEEL CHAMPION REVERSIBLE ROAD MACHINE

Showing Steel Champion Carrying Dirt from Side of Road Toward Center of Road.

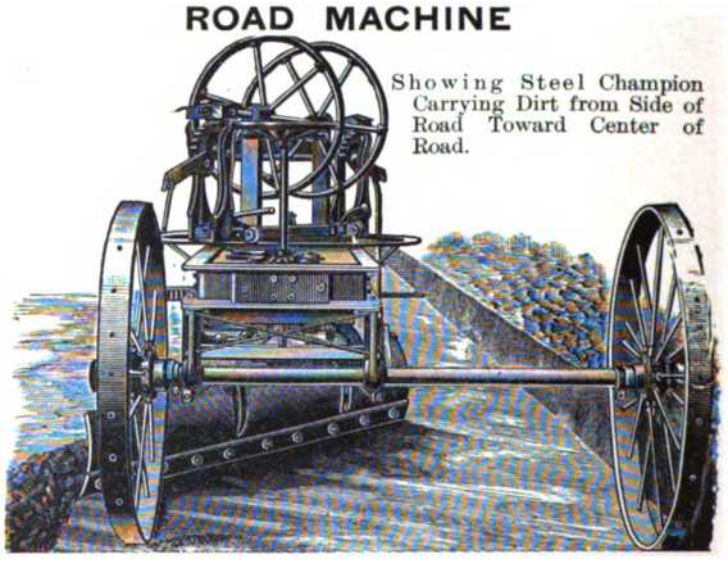


FIG. 5567

The Steel Champion is so simple in construction that any man can do good work with it. It has very few parts to break or get out of order. This machine is extremely light in draft. Four good horses are all that are ordinarily required, although in heavy work six should be used. In smoothing city streets or country roads where the soil is light the machine is sometimes used with but two horses. This machine is frequently used by municipalities for scraping into windrows the dirt and trash that collects on stone, brick or wood streets; for scraping snow, ice and slush from streets and gutters, or for cutting down weeds in outlying streets or alleys. One of its most important uses, however, is that of a ditch or drain builder; for this purpose it is very largely used in South America, Australia and certain parts of the United States.

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APEX ROAD ROLLER

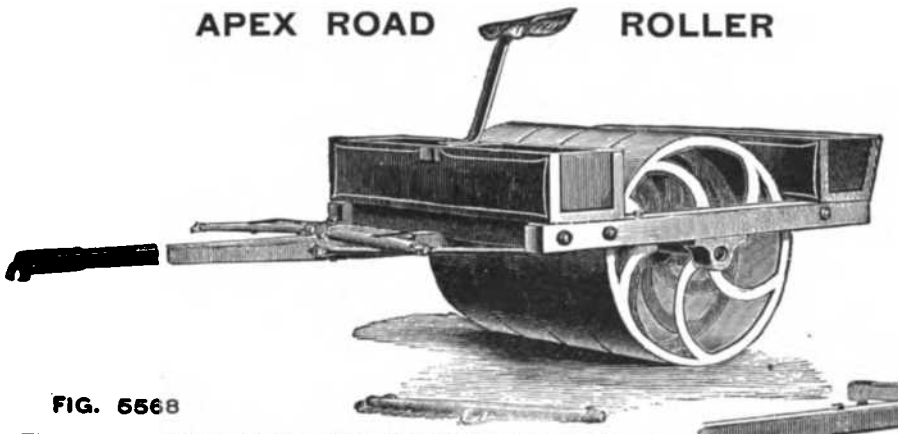


FIG. 5568

They are very substantially made, with heavy oak frame, heavy journal boxes, steel axle and with weight boxes front and rear. All rollers are furnished complete with pole, whiffletrees, neck yoke and seat.

PRICES

No. of Sections.	Width of Each Section, Inches.	Diameter of Each Section, Inches.	Total Width of Roller, Inches.	Approximate Weight, Pounds.	Each.	No. of Sections.	Width of Each Section, Inches.	Diameter of Each Section, Inches	Total Width of Roller, Inches.	Approximate Weight, Pounds.	Each.
4	12	36	48	2,500	$125 00	3	15	48	45	4,500	225 00
4	12	36	48	4,000	200 00	4	15	48	60	6,000	300 00
5	12	36	60	3,500	175 00	5	15	48	75	8,000	400 00
5	12	36	60	5,000	250 00	4	15	60	60	7,500	375 00
6	12	36	72	4,200	210 00	5	15	60	75	10,000	500 00
6	12	36	72	6,000	300 00						

Scraper for any of above sizes, $6.00 extra.

ASPHALT HAND ROLLER

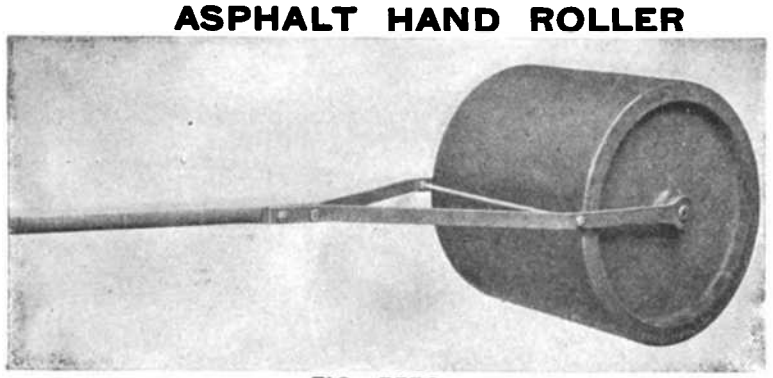


FIG. 5570

This shows a hand roller for asphalt pavement repairing. We furnish them of any weight from 500 pounds to 3,000 pounds, well finished surface and long handles. Prices on application.

CLIMAX REVERSIBLE STREET HORSE ROLLER

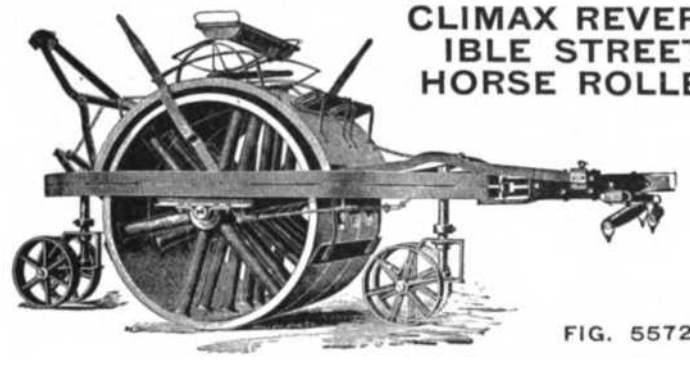


FIG. 5572

The frame is steel angles riveted together and the front end rests on a two wheel truck. In the front of the frame the pole rests and is firmly held in place by two clamps, each of which is operated by a lever from the driver's seat.

To effect the reverse the clamps or locks are raised from the tongue and it is drawn by the horses to the other end of the frame and again locked. It is unnecessary to move the truck wheels, simply the tongue.

The rolls, three in number, are loose on the main shaft and turn independently of each other. This avoids friction when turning into a side street or going around a curve.

The reverse and mechanism of the roller are in the frame at the center. This does away with top heaviness and removes from the driver's position all impediments to his control of the double brake operated by levers. By reason of the pole and whiffletrees only reversing in the frame, the roller can be reversed in a place so narrow that there is but room for the horses to walk alongside the roller. The frame projects but a few inches outside the rolls, thus allowing the roller to work close to a fence, curbing, trees or poles.

Regular sizes are, 4, 4½, 5, 5½ and 6 ton rollers; heavier ones built to order. Diam. of roller, 56 in., width, 54 in. Prices on application.

ROAD ROLLER

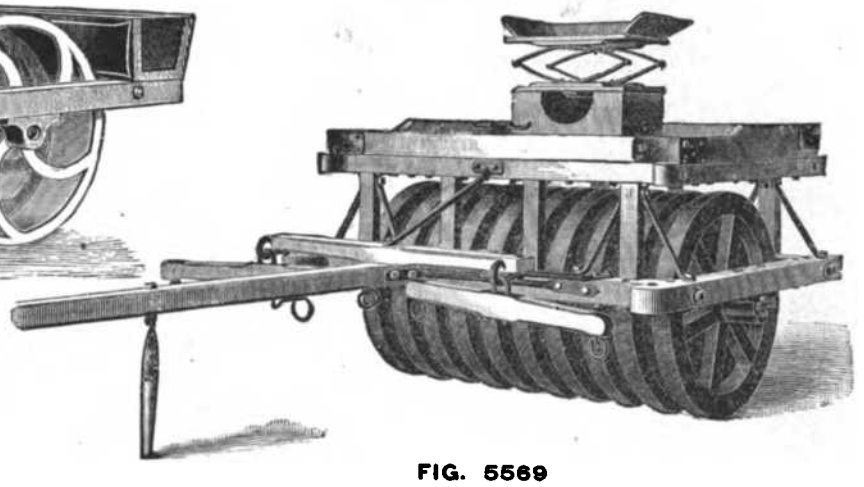


FIG. 5569

This Road Roller is for roadways, streets, etc.; especially desirable in macadamizing. The roller has nineteen narrow sections, ten large ones 35 inches in diameter, and nine smaller ones 32 inches in diameter, set alternately, for the purpose of bringing more weight on the crushed stone or earth, and thus preparing a more evenly and compactly pressed road bed than can be obtained with a wide flat section roller. The sections act independently on the axle, and are self-clearing. Width of roller on the ground, five feet. The bearings sustain weight of frame and driver only.

PRICES

Complete with Neck Yokes, Spreader, Chains and Whiffletrees.

2½ tons, Two Horse, Pole Ironed for Leaders	$225 00
3 " " " " " " "	265 00
Three Horse Hitch, with 2½ and 3 ton Rollers, interchangeable with 2 Horse Hitch, extra	12 00
3½ tons, 3 Horse Hitch, interchangeable with 2 Horse Hitch, Pole Ironed for Leaders	325 00
One Horse, weight 2,250 pounds, Shafts Ironed for Cart Harness; 5 large and 4 small sections	135 00

CHAMPION STEEL REVERSIBLE ROAD ROLLER

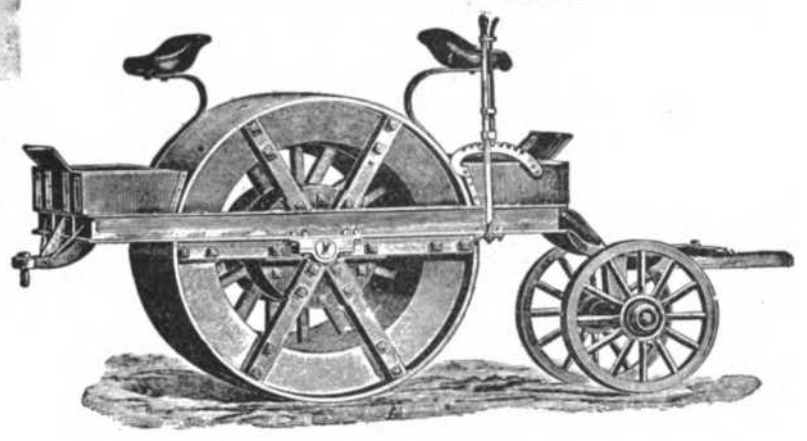


FIG. 5571

The Champion roller is built of steel throughout. It is constructed in two sections, with a five foot face (giving a rolling width of five feet), and is five feet in diameter. Each roll revolves independently of the other on a steel axle four inches in thickness. The pole is not attached to the roller direct, but to a truck, which is attached to the steel frame of the roller by means of gooseneck irons. These gooseneck irons are attached to either end of the roller, and by simply removing a king bolt and transferring the trucks from the front to the rear end of roller, it is reversed.

The roller is supplied with two seats, one at either end, and a brake which will effectually stop the roller on the steepest grade. The champion rollers are all built the same size, but in four different weights, viz.: 2½, 3½, 4½ and 5½ tons. Each roller is supplied with two steel boxes on top, each one of which will hold about one ton of pig iron, thus converting each roller from a light weight to a medium or heavy weight. A Champion roller 2½ tons in weight will exert a pressure of 84 pounds per lineal inch on the road bed, and to arrive at the amount of pressure the heavier rollers would exert, add 34 pounds for each ton; thus, it will be seen that a roller 5½ tons in weight, with the boxes loaded, making it 7½ tons in weight, will exert a pressure of 255 pounds per lineal inch.

Prices on application.

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STEAM ROLLER

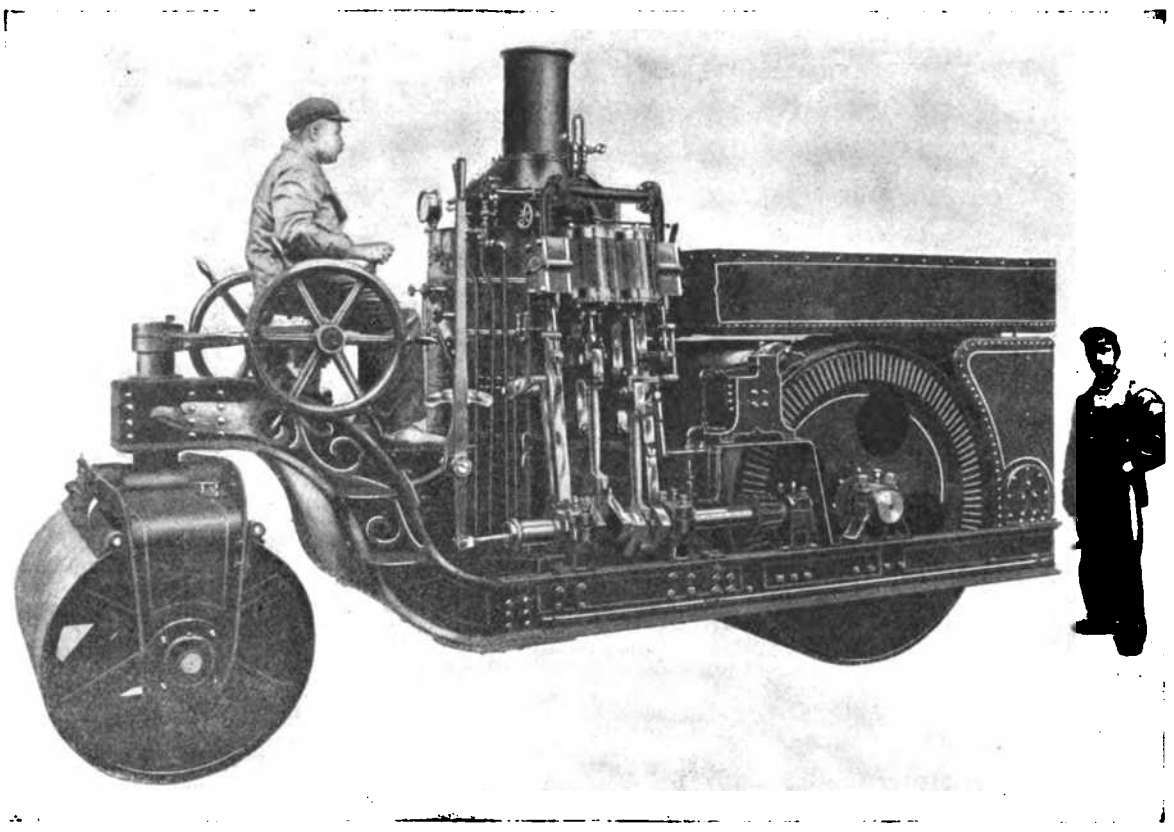


FIG. 5574

DESCRIPTION FIG. 5574

We furnish seven different weights of rollers, ranging from less than three tons to fifteen tons. The simplicity of design, strength, ease of handling, combined with the ample use of steel in construction, make these rollers very desirable.

PRICES ON APPLICATION

DOUBLE CYLINDER STEAM ROAD ROLLER

DESCRIPTION, FIG. 5575

This Roller has two cylinders, with no dead centers, no pulling on the fly wheel, and consequently no shocks to shafts or gearing in starting; locomotive link motion with no side strains; case hardened links, die blocks and pins. Boiler has great effective heating surface, insuring abundance of steam and economical consumption of fuel. Cylinder, as it were, inside the boiler, reduces condensation to a minimum and insures dry steam. Governor regulates the speed of the engine to the requirements of the work, without the close attention of the operator. It is provided with rocking grates and dumping ash pan, enabling the engineer to keep the grates free from clinkers, and the ash pan free from ashes without the use of poker or hoe. Has water and fuel capacity for long and continuous work. Everything is arranged to be operated from the platform. It is arranged for two speeds, greatly increasing the power. The steel yoke, steel boiler and steel shafting make it practically a steel roller.

We furnish this roller in four regular sizes, viz.: Eight, ten, twelve and fifteen tons.

PRICES ON APPLICATION

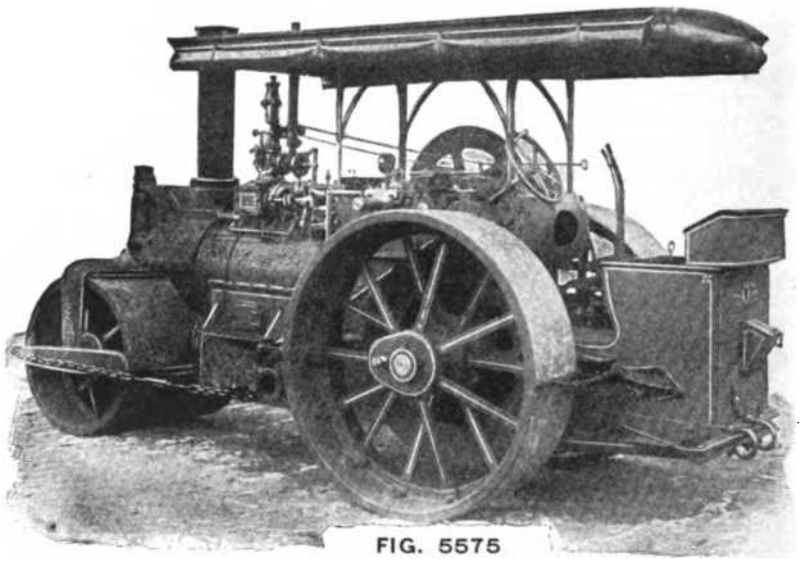


FIG. 5575

PORTABLE CONCRETE MACHINE

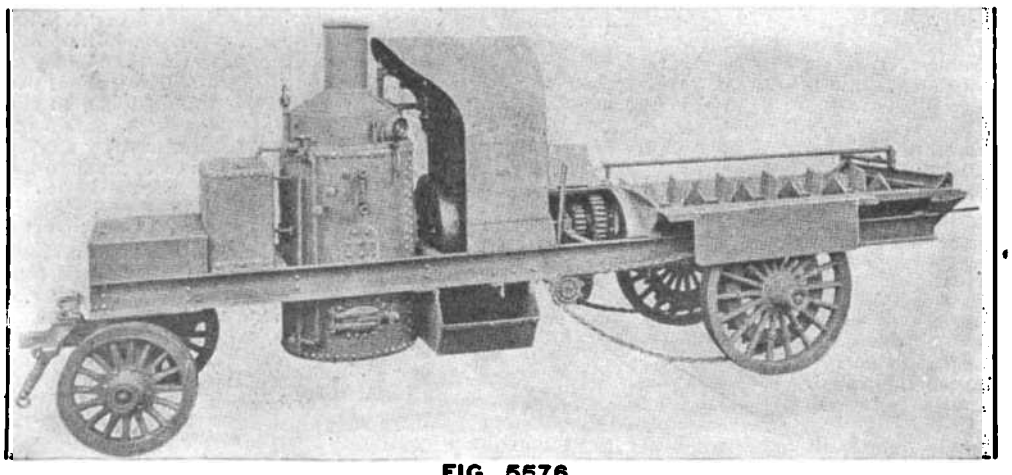


FIG. 5576

DESCRIPTION, FIG. 5576

For mixing concrete when forming the bed of asphalt paved streets and other foundations. Boiler, engine and mixer. This machine can lay 800 to 1,000 square yards, 6 inches to 8 inches thick, per day, depending upon accompanying organization. It readily handles all that six or eight men, at broken stone, and four to six men, at sand and cement, can shovel into it. Has water connections from hose. It propels itself through a street as the work progresses.

We furnish two sizes, six feet and eight feet, weighing from 3½ tons to 5 tons, according to boiler and engine capacity.

PRICES ON APPLICATION

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ASPHALT REPAIR TRUCK

EMPTY

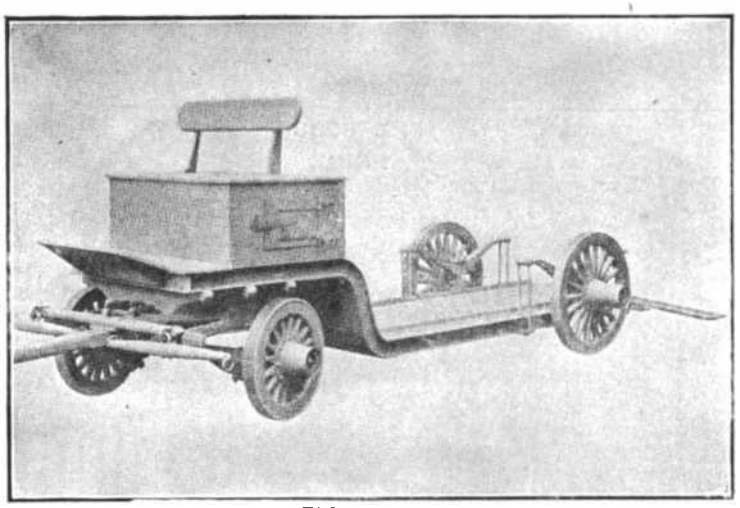


FIG. 5577

SHOWING TRUCK LOADED

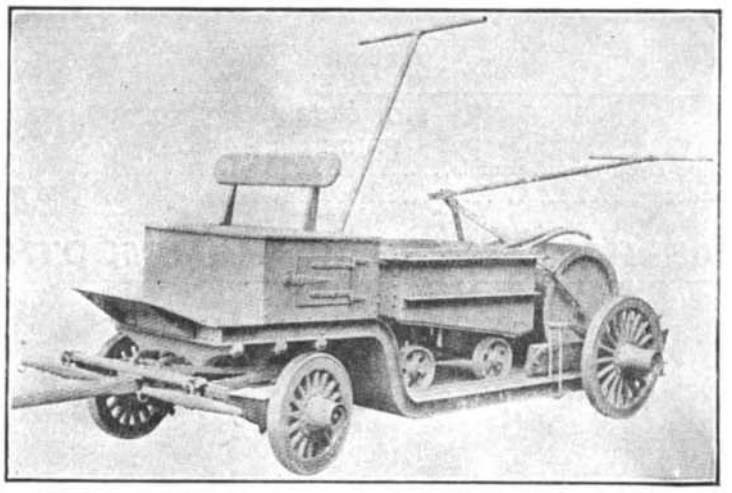


FIG. 5577

PRICES ON APPLICATION

PORTABLE TAR KETTLE

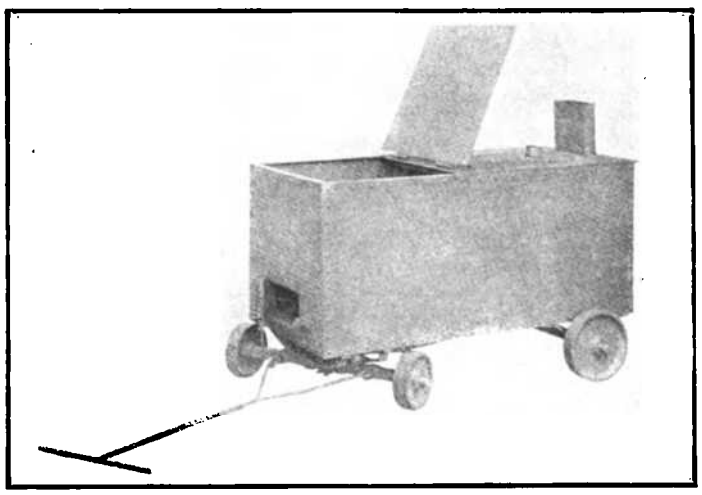


FIG. 5578

PRICES ON APPLICATION

ASPHALT OR TAR KETTLE

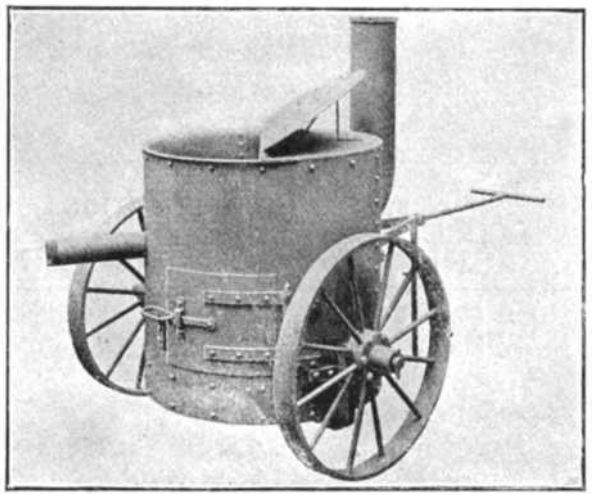


FIG. 5579

PRICES ON APPLICATION

DETACHABLE GRAVEL DRIER

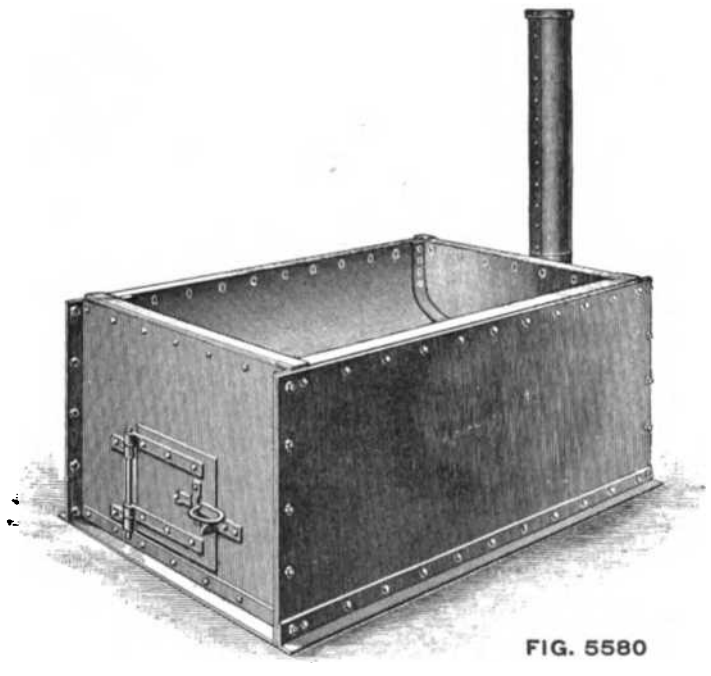


FIG. 5580

PRICES ON APPLICATION

STREET TAR OR ASPHALT KETTLE

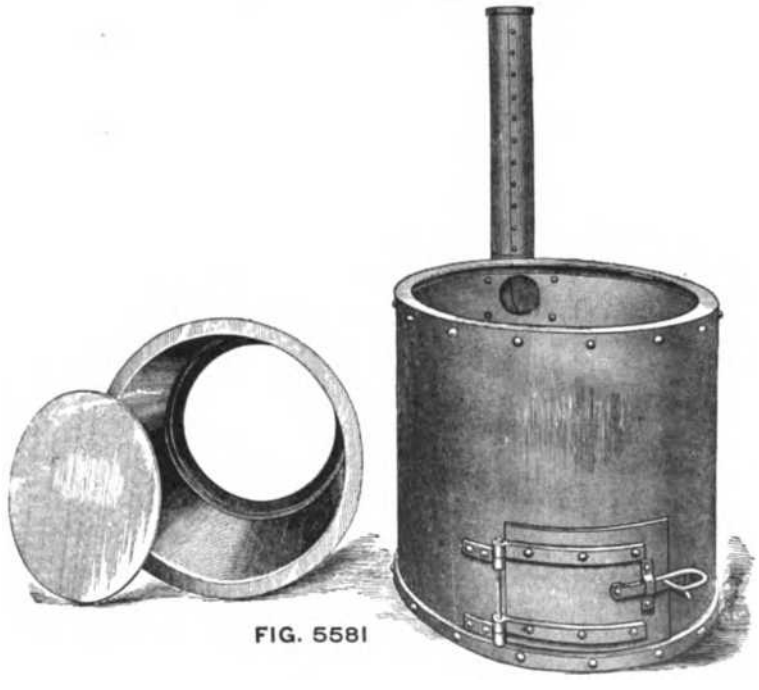


FIG. 5581

PRICES ON APPLICATION

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ASPHALT CUTTERS

CLAY PICK EYE

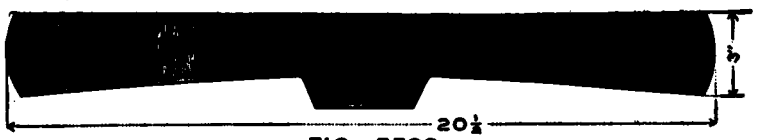


FIG. 5582

PRICE

Single Eye, weight, pounds..... 10
Per dozen.....$20 00

DOUBLE EYE

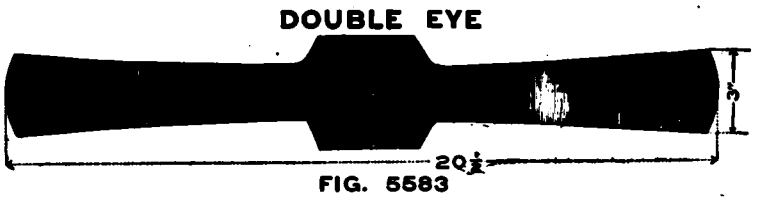


FIG. 5583

PRICE

Double Eye, weight, pounds..... 10
Per dozen.....$25 00

ASPHALT TAMPERS AND SMOOTHERS

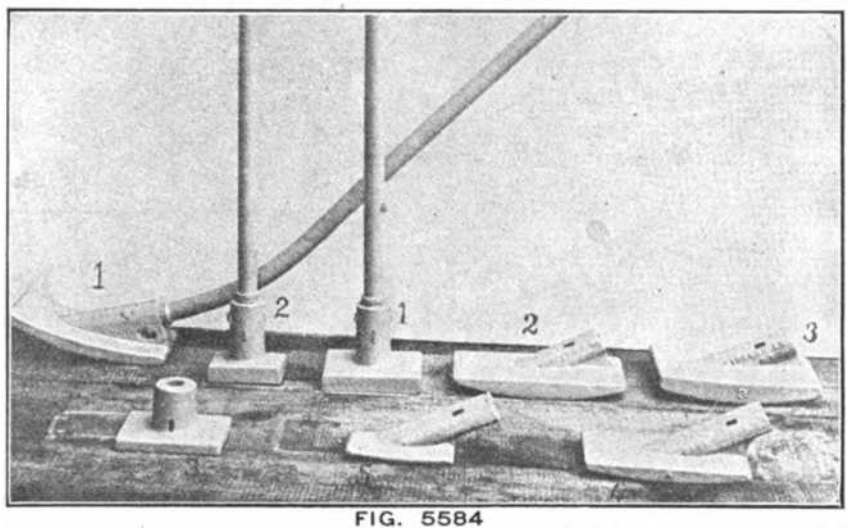


FIG. 5584

PRICES ON APPLICATION

ASPHALT OR TAR RAKE

BLUE FINISH

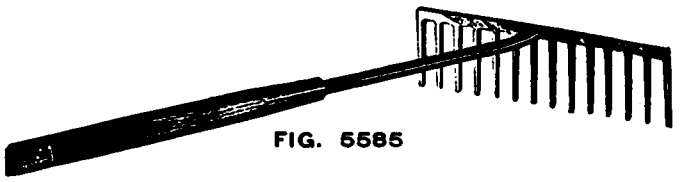


FIG. 5585

PRICE

No.		Per Doz.
14A	14 tooth Asphalt Rake, polished, 18 inch shank, 4½ foot handle	$25 00

These Rakes are made of solid cast steel, with long straight teeth, extra heavy, and are designed for heavy work, such as paving, grouting, working in cinders or crushed rock, walk building and contractors' uses.

ASPHALT TOOL HEATER

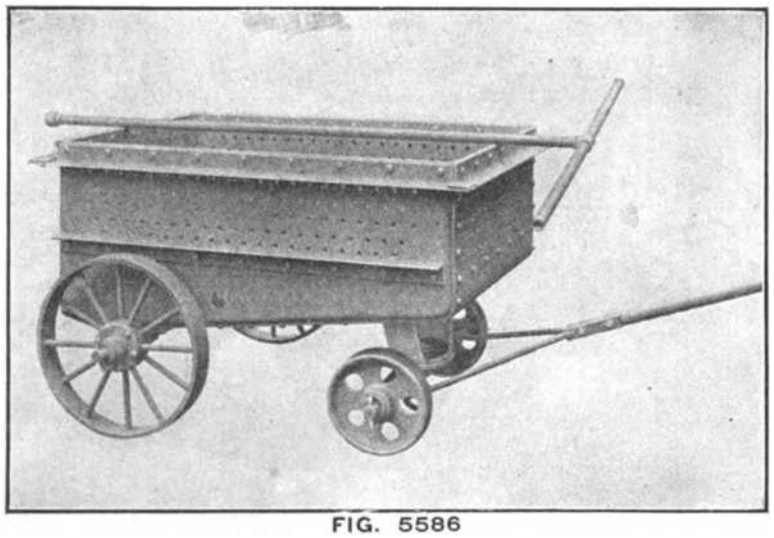


FIG. 5586

PRICES ON APPLICATION

ASPHALT TOOL HEATER

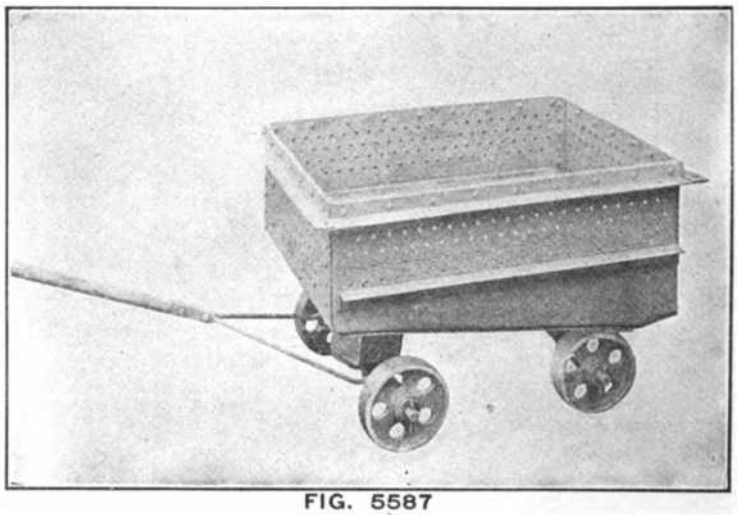


FIG. 5587

PRICES ON APPLICATION

STREET FURNACE OR TOOL HEATER

DESCRIPTION, FIG. 5588

All street paving contractors require numerous tools heated for smoothing, pounding, etc., in connection with asphalt or other mixtures, while working in the vicinity of car tracks or curbs. This simple furnace box has been largely adopted for this purpose.

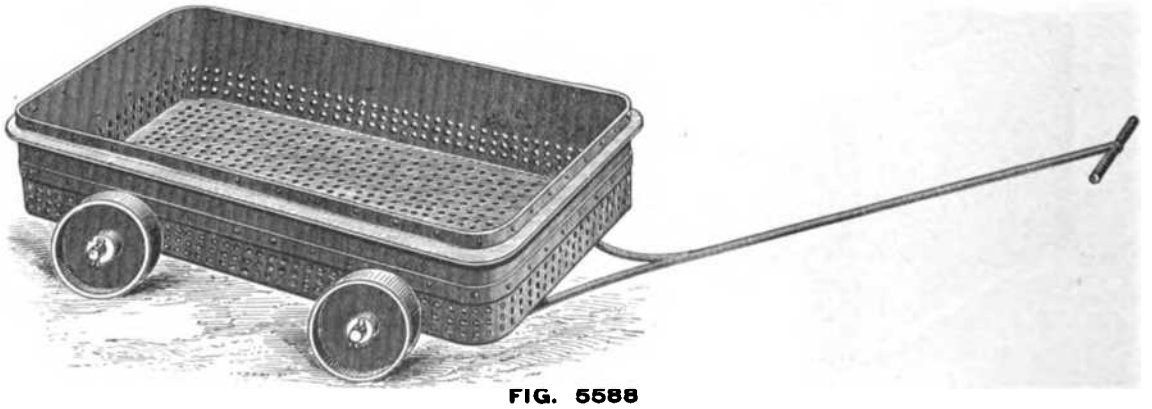


FIG. 5588

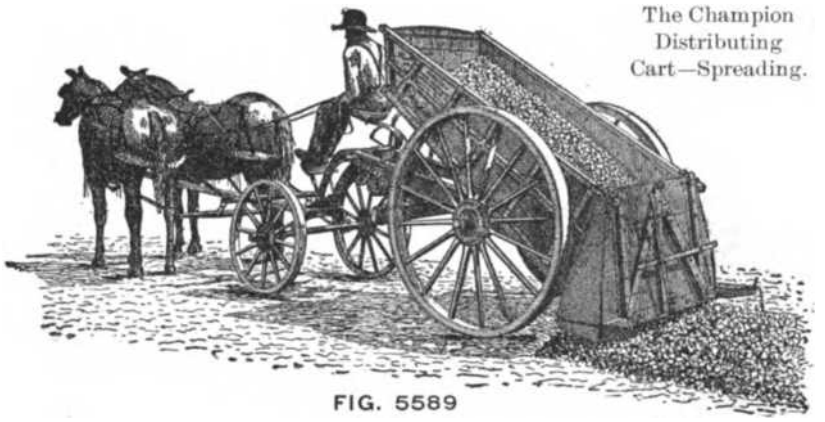
PRICES ON APPLICATION

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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CHAMPION CRUSHED STONE DISTRIBUTING CART

The Champion is a dump cart, mounted on four wheels, the weight being well distributed on both front and rear wheels, thus avoiding either upward or downward pressure on the team. The tilting of the cart is effected by means of a crank and gear mechanism in connection with a rack and pinion. The cart can be firmly held in any position from level to completely dumped. The tail board is hinged at its upper edge, allowing the lower edge to swing out. Two adjusting chains limit the outward swing. Steel wings are attached to either side of the cart at the tail board for the purpose of spreading the stone to the entire width of the track of wheels. The stone as it escapes from cart is leveled by means of a steel scraper attached to bottom of tail board. The scraper is pivoted in the center, and is adjustable at either end by means of a horizontal lever on back of tail board. This cart can be drawn by two horses. It spreads to a width of 5 feet and holds 1½ yards of stone. It will spread a load of broken stone, gravel or other road material to any depth required. It can be arranged to spread over any width of road desired, and can also be adjusted to spread thicker on one side than the other. Prices on application.



The Champion Distributing Cart—Spreading.

FIG. 5589

CLIMAX AUTOMATIC BROKEN STONE DISTRIBUTING WAGON



FIG. 5590

This wagon is an indispensable auxiliary in the construction of stone roads or in grading. It is so arranged that all the material placed in the box is evenly and uniformly distributed over the road. The driver does not leave his seat or even stop his team to discharge the load. The wagon is simple in construction. The wheels are made of the best material throughout, having spokes of the best second growth oak, hubs of best black birch, and heavy bent rims with ⅝ inch steel tire. The box is made of ash, black birch and oak, all thoroughly seasoned, lined with steel plates. All wood work is well painted and varnished, special attention being given to the wearing qualities. The forward wheels are so hung as to prevent all whipping of the pole on rough ground, the box is pivoted forward so that the wheels may run over an obstruction 16 inches high without turning the box out of level, and the pole is supported by a spring, taking all the weight off the horses' necks.

Table of Dimensions.

Height of Rear Wheels... 4 feet 4 inches.
" " Forward Wheels 3 " 4 "
Width of Tire..... .....4 "
Capacity of Box .....2 cubic yards.
Length of Body.....10 feet 6 inches.
Weight complete with Pole and Whiffletrees, 1,900 pounds.
Prices on application.

STONE AND ORE CRUSHER

ECCENTRIC PATTERN

Mounted.

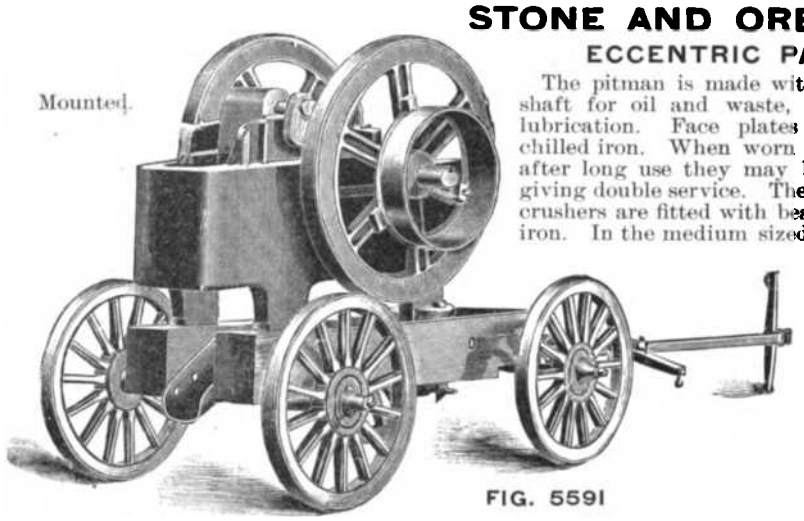


FIG. 5591

The pitman is made with reservoir under shaft for oil and waste, insuring perfect lubrication. Face plates of jaws are of chilled iron. When worn at the lower end after long use they may be inverted, thus giving double service. The 10 x 7 and 15 x 9 crushers are fitted with bearings of wrought iron. In the medium sized crushers we can furnish engine and boiler on same wagon, making a very handy machine for city street work.

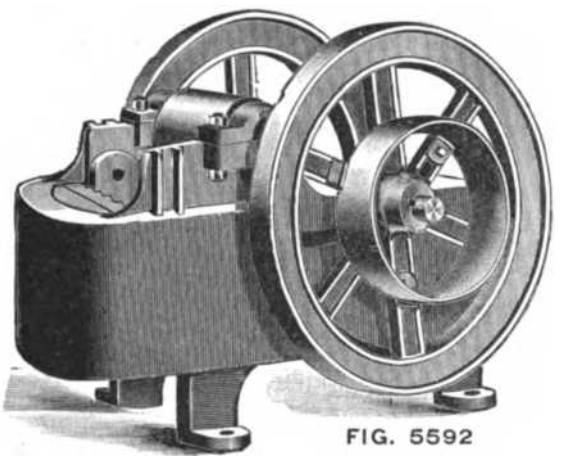


FIG. 5592

Sizes or Receiving Capacity, Inches.	Product per Hour in Cubic Yards. (See Note.)	Weight of Heaviest Piece.	Total Weight.	Extreme Dimensions—Lengths. Ft.	In.	Breadth. Ft.	In.	Height. Ft.	In.	Driving Pulley—Diameters. Ft.	In.	Face. Inches.	Proper Speed.	Horse Power Required.
3x1														
10x4	Three	1695	4000	3	11	3	3	3	9	1	8	6	250	4
10x7	Five	4339	8000	5	3½	3	8	4	5	2	0	7½	250	6
15x9	Seven	6500	15000	6	5	5	0	5	11	2	6	9	250	9
20x12	Ten-twelve	10000	21000	7	0	5	6	6	3	2	6	12	250	15
20x15		8450	32600	8	6	5	0	6	7	3	6	10	150	12
24x18	Course or Preliminary Breaker.	9425	37500	9	10	5	1	6	10	6	0	12	125	12

PRICES ON APPLICATION

Note.—The amount of product depends on the distance the jaws are set apart and the speed. The product given in the table is due when the jaws are set 1½ inches open at the bottom, and the machine is run at its proper speed and diligently fed. But it will also vary somewhat with the character of the stone. Hard stone or ore that breaks with a snap will go through faster than sand stone. A cubic yard of stone is about 1⅛ tons.

In getting an engine to drive one of these Crushers, it is advised to have one of greater power than just what is stated in the table, as required. It is much more economical to use 9 horse power from a 12 or 15 horse than from a 9 or 10 horse engine.

Crushers mounted on wheels to order. Prices on application.

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SINGLE LEVER CRUSHER ON FOUNDATION

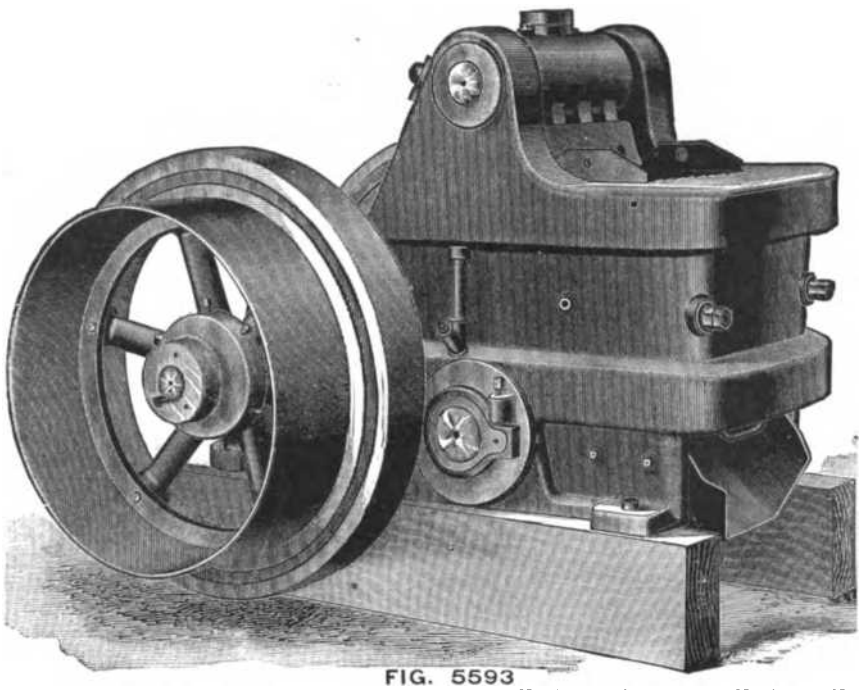


FIG. 5593

DESCRIPTION, FIG. 5593

The face of the crushing plate is of a very hard mixture, while to the back is welded a soft iron possessing the requisite strength. The bed of the crusher and face of the movable jaw are planed smooth and true, so that no lead or zinc is required back of the plates. The plates are reversible, and are changed quickly. The safety friction clutch of the Climax holds the balance and band wheels to the eccentric shaft by frictional contact only, so that in case any very hard substance (a steel sledge) should be dropped in the hopper no damage will be done the machine, as the wheel will simply turn on the shaft. For convenience in feeding, a platform may be built over the entire machine within six inches of the top of the Crusher's mouth, on which carts or wheelbarrows may be run and their contents dumped at the mouth of the machine. This feature alone enables one man to feed a very large amount of stone. These Crushers are all operated upon the lever principle, but are divided into two classes, single and double lever. Single Lever machines are best adapted to stationary or semi-stationary work, while Double Lever machines are more particularly intended for strictly portable purposes. The No. 1 machine is a Double Lever machine, while No. 2 is made in either style, and Nos. 3 and 4 are in Single Lever type only. The No. 1½, while wholly and only portable, is built in the Single Lever style.

Sizes and Capacities of Crushers.	No. 1.	No. 1½.	No. 2.	No. 3.	No. 4.
Sizes of top opening of jaws in inches	7 x 13	8 x 15	9 x 16	10½ x 22	12 x 28
Product per hour in tons when machine closes to 2 inches	7 to 12	10 to 15	12 to 18	15 to 30	25 to 40
Weight, approximate, lbs.	5,000	7,200	9,000	15,500	20,000
" with two wheeled trucks and elevator, lbs.	6,000	8,700	10,500	.....	.....
" mounted on 4 wheels, with 10 foot elevator, lbs.	7,200	9,700	11,500	.....	.....
Speed, revolutions	300	275	275	265	240
Driving pulleys, diameter and face, inches	28 x 8	30 x 8	32 x 9	38 x 10	42 x 12
Horse power required	10	12	15	25	35
Floor space required, length	5 ft.	5 ft. 7 in.	6 ft. 4 in.	7 ft.	8 ft. 1 in.
" " width	4 ft. 4 in.	5 ft.	5 ft. 3 in.	5 ft. 6 in.	6 ft.
Extreme height of machine	2 ft. 7 in.	3 ft. 5½ in.	4 ft. 1 in.	4 ft. 7 in.	4 ft. 10 in.
Sizes of elevator best suited	No. 1	No. 2	No. 2	No. 3	No. 3
Diameters of screen best suited, in inches	30	30	30	36	36

PRICES ON APPLICATION

STONE AND ORE CRUSHER

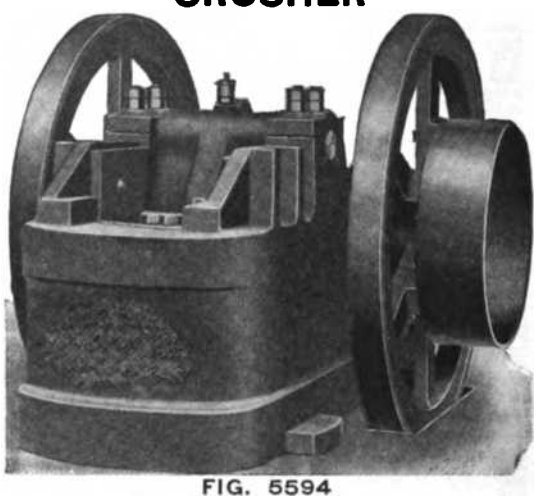


FIG. 5594

DIMENSIONS AND CAPACITIES, FIG. 5594

Nos.	Size of Receiving Capacity, Inches.	Approximate Capacity in Tons, per Day of 10 Hours, to Either One of Sizes Stated. Tons.	In.	Tons.	In.	Tons.	In.	Tons.	In.	Size of Pulley, Inches.	Revolutions of Pulley.	Horse Power Required.	Total Weight, Lbs.
4 B	7 x 10	50 to 2		40 to 1½		25 to 1		15 to ¾		20 x 7½	300	8	8,000
5 B	20 6	100	2	75	1½	60	1	35	½	30 7½	300	12	11,000
7 B	16 10	120	2½	100	2	80	1½	60	1	30 9	300	15	16,400
8 B	20 10	200	3	175	2½	150	2	100	1½	30 12	300	20	19,400
8½ B	24 13	300	3	250	2½	200	2	150	1½	42 13	300	30	29,000
9 B	24 15	375	4	325	3½	.....		.....		42 13	300	30	29,000
10 B	30 13	300	2½	250	2	200	1½	.....		2-36 12	300	40	37,000
11 B	30 15	500	5	450	4	375	3	.....		2-36 12	300	40	37,000
12 B	36 18	500	3	450	2½	400	2	.....		2-42 13	300	65	57,500
14 B	36 24	800	6	650	5	.....		.....		2-42 13	300	65	59,000

Numbers 10 B to 14 B have two pulleys and deep frame, with side lugs. In ordering state kind of rock or ore to be broken, for what purpose, and size of product required. The capacities stated in list are approximate, and based on a rock or ore that is hard and friable, and vary according to the nature of material to be broken; and the horse power varies somewhat also, according to the character of material to be broken, but that given in table is a fair average; but it is always well to arrange for surplus power.

PRICES ON APPLICATION

PORTABLE CRUSHER



FIG. 5595

This Crusher is designed for Contractors, Towns, Cities, etc., where it is required to move the plant from place to place, and is made as light as possible, and consistent with strength and duty required. Is mounted on steel axles and extra strong wheels. The pitman and frame are of steel. Prices on application.

Nos.	Size of Receiving Capacity, In.	Capacity in Tons, per Day of 10 Hours, to Size Stated. Tons.	In.	Tons.	In.	Tons.	In.	Size of Pulleys, Inches.	Revolutions of Pulleys.	Horse Power Required.	Weight Without Mounting, Lbs.
23A	10 x 7	50 to 2		40 to 1½		25 to 1		30 x 7½	300	8	5,000
24A	16 x 10	120	2½	100	2	75	1½	30 x 10	300	15	10,000

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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CLIMAX STONE AND ORE CRUSHERS

NO. 1 1/2 CRUSHER, MOUNTED ON FOUR WHEELS, WITH ELEVATOR HOISTED TO MOVE

NO. 2 CRUSHER IS HANDLED IN SAME WAY

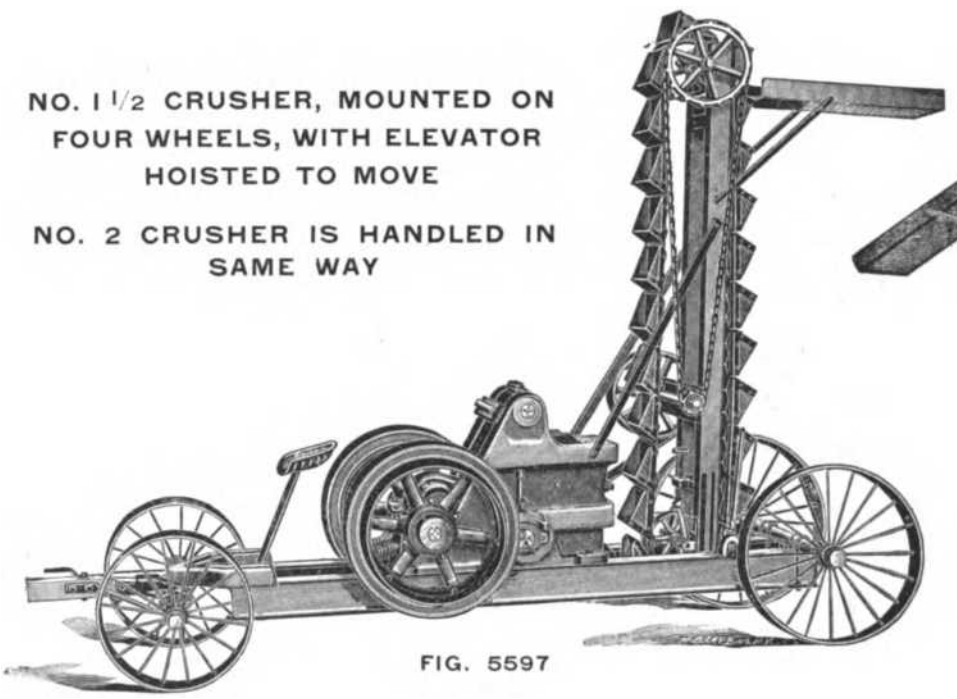


FIG. 5597

SINGLE LEVER CRUSHER ON FOUNDATION TIMBERS, WITH ELEVATOR AND CHUTE SCREEN

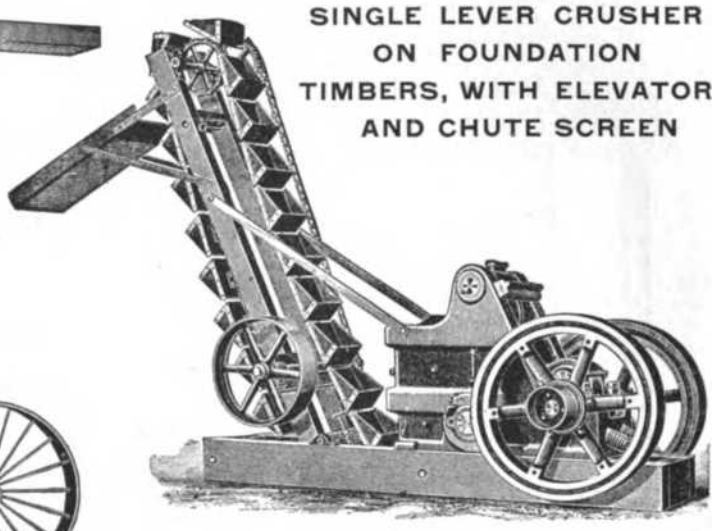


FIG 5598

NO. 1 1/2 CRUSHER, MOUNTED, WITH 10 FOOT ELEVATOR AND CHUTE SCREEN

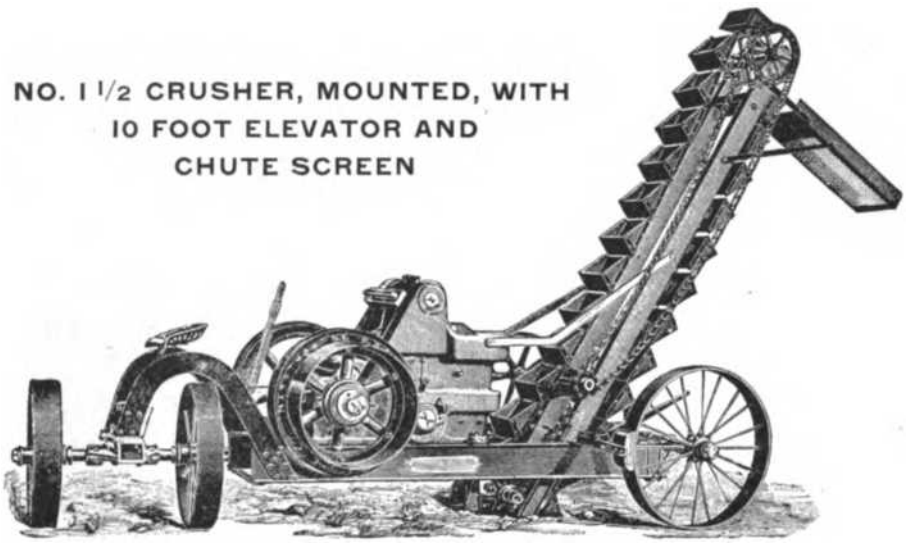


FIG. 5599

The Climax Elevator is made of steel buckets attached to link belting by four bolts. A solid takeup box at the bottom keeps the chain taut. The boxes are all babbitted, perfect lubrication is insured and dust excluded by the use of compression grease cups. The elevator stands at an angle of 70 degrees with the foundation, enabling it to raise the broken stone over 12 feet above the foundation timbers with a 14 foot elevator. The drive from the eccentric to the elevator countershaft is "Gandy belting." In case anything should catch the buckets, this belt will slip before causing any breakage, which makes it preferable to link belting for the purpose. The elevators are made in three sizes, Nos. 1 and 2 fitting the Nos. 1, 1½ and 2 crushers, while the No. 3 is adapted to the Nos. 3 and 4 crushers. We furnish them in any required length. All elevators over 20 feet in length have center drive unless specially ordered otherwise. The price includes belt and all necessary driving connection.

The demand for a bin which is strictly portable is met by the ten ton bin on wheels, Fig. 5600. This bin is a practical device, which has been thoroughly tested. It is supplied with a revolving screen of such length and size of perforations as may be specified, and also with loading chutes, making loading possible from either or both sides at the same time. The wheels and axles are of steel and the entire outfit nicely painted. It can be made ready to move on the road by removing two bolts from the brace which attaches it to elevator frame. As the entire outfit, including screen, only weighs 3,100 pounds, it is easily handled by one team.

GENERAL DESCRIPTION, FIGS. 5597 TO 5600

The Climax Crusher is a jaw crusher, single eccentric, solid frame, and is made of the best material possible to be put into a machine of this kind.

In order that a crusher shall run easily and cool and prove durable, it is indispensable that all of its journals should be in absolute alignment with one another, and that under all circumstances the alignment be maintained. It is for this reason that a solid frame is used, cast from the best gray iron, furnishing great rigidity, strength and sufficient weight to absorb the vibrations produced in crushing. The thickness in the frame has been increased at the points of greatest strain.

In a jaw crusher the rock is broken by the action of a movable jaw, which forces or hammers the stone upon a fixed jaw placed in opposition. In the Climax this jaw is moved by a lever or levers, actuated by a single cam eccentric, which gives one movement of the jaw to each revolution of the fly-wheel. The strain upon the motive power is of necessity intermittent, as all the work is done while the jaw advances and none while it recedes; the power, however, is continuous. Heavy flywheels are placed upon all crushers to utilize the energy exerted by the motive power during the receding movement of the jaw, their efficiency being dependent upon two factors—weight and velocity.

These crushers are all run and thoroughly tested before they leave the works. In order, however, that the purchaser may fully understand how to handle the machine, we send a competent man when desired to superintend starting. Wrenches, oil cans, foundation timbers, etc., are shipped with every crusher.

PRICES, FIGS. 5597 TO 5600 ON APPLICATION

MOUNTED CRUSHER WITH PORTABLE BIN ATTACHED

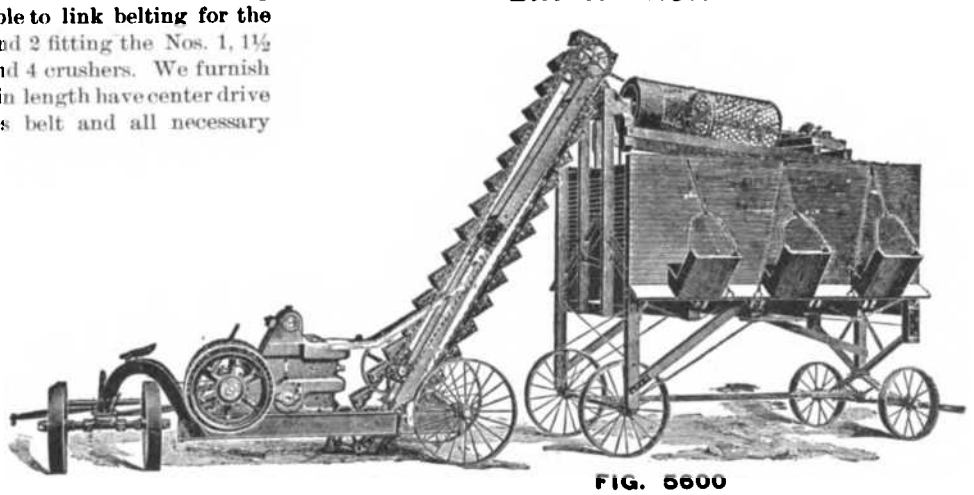


FIG. 5600

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CHAMPION CRUSHER WITH ELEVATOR AND SCREEN ATTACHED

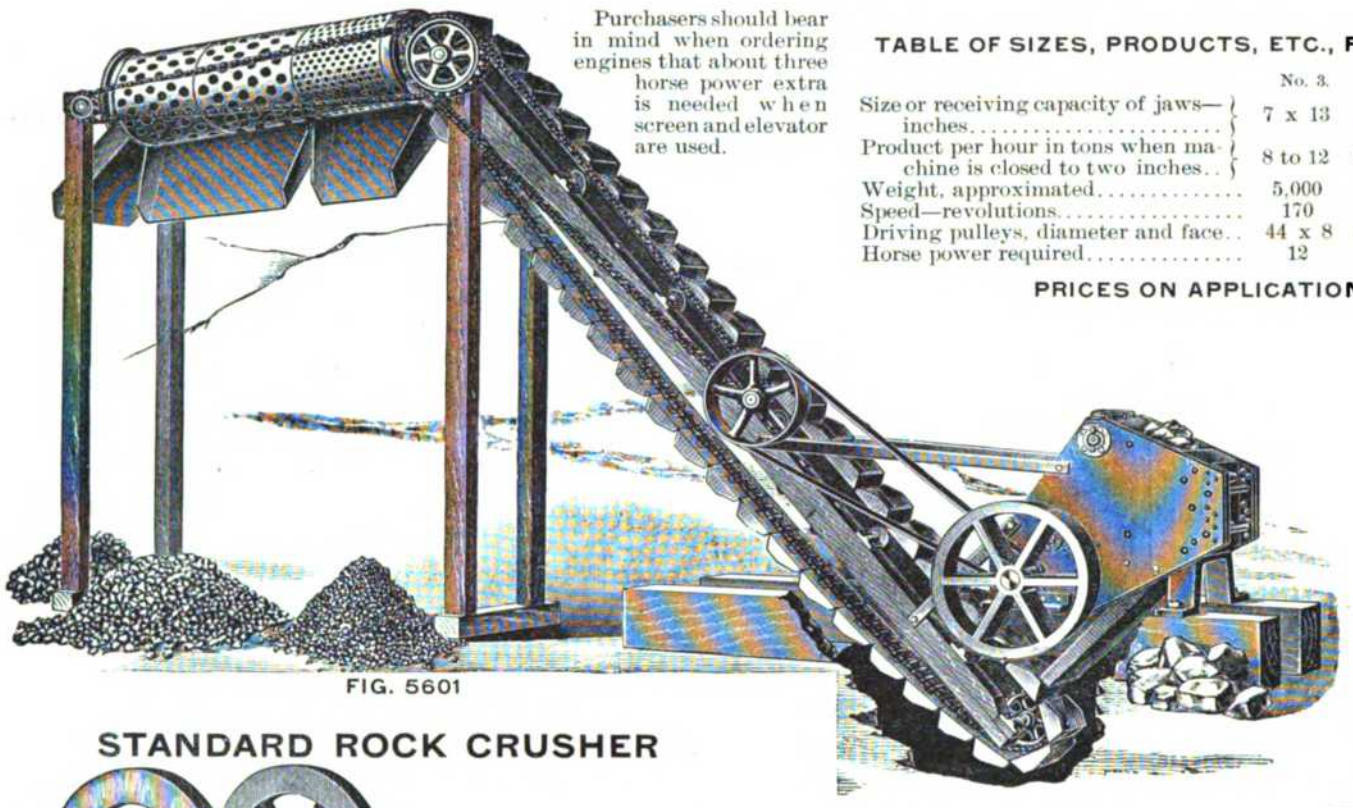


FIG. 5601

Purchasers should bear in mind when ordering engines that about three horse power extra is needed when screen and elevator are used.

TABLE OF SIZES, PRODUCTS, ETC., FOR FIG. 5601

	No. 3.	No. 4.	No. 5
Size or receiving capacity of jaws—inches	7 x 13	9 x 15	11 x 26
Product per hour in tons when machine is closed to two inches	8 to 12	12 to 18	24 to 30
Weight, approximated	5,000	8,000	19,000
Speed—revolutions	170	155	140
Driving pulleys, diameter and face	44 x 8	50 x 8	60 x 10
Horse power required	12	15	25

PRICES ON APPLICATION

STANDARD ROCK CRUSHER

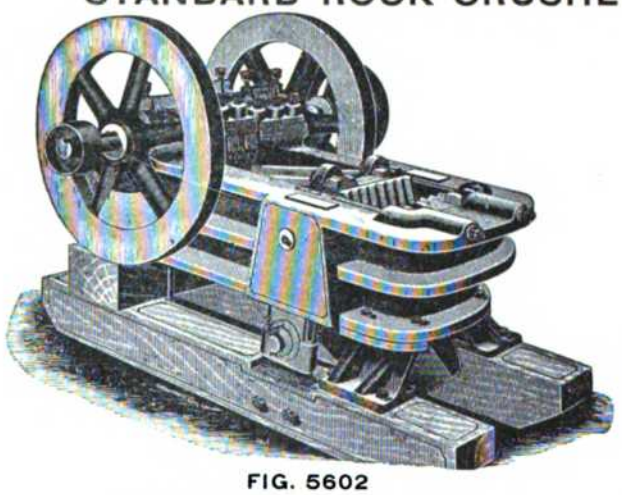


FIG. 5602

PRICES, FIG. 5602

Nos.	Sizes of Jaw Opening	Revs. per Minute.	Capacity in Tons per Hour.	Each.
3	7 x 13 in.	285	10	$600 00
3½	8 x 15 "	275	12	700 00
4	10 x 18 "	265	15	900 00
5	12 x 24 "	260	25	1,650 00
6	15 x 36 "	250	40	2,500 00

Steel trucks for Nos. 3, 3½ and 4, extra, $100.00.
Special crushers built to order. Prices on application.
Estimate of capacity is based on reducing material to pass a 2½ inch ring.
We can furnish this rock crusher, mounted complete, with elevator, rolling or chute screens. Prices for this complete portable plant on application.

CHUTE SCREEN



FIG. 5603

ROLLING SCREEN

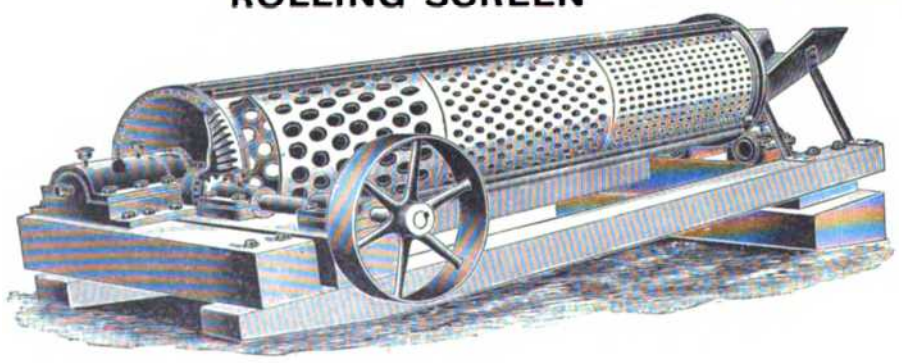


FIG. 5604

STEEL FRAME ELEVATOR

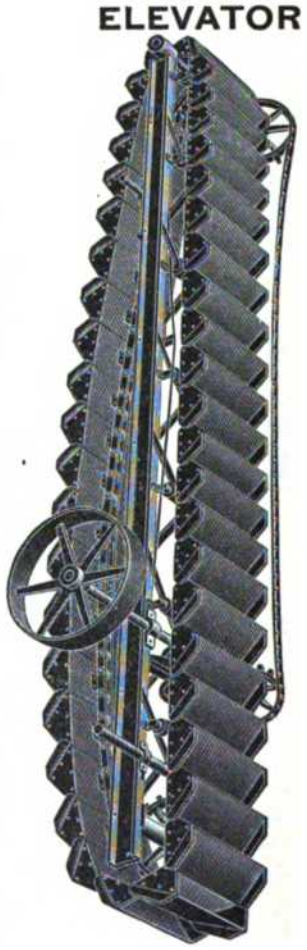


FIG. 5605

DESCRIPTION, FIG. 5605

Elevators for special service furnished to order. These elevators are put up on a strong, rigid steel frame, made with attachments to fit the standard rock crushers of like numbers, have continuous buckets of steel carried either on rubber belt or chain, as desired.

PRICES, FIG. 5605

Nos. of Elevator.	Length of Elevator, Feet.	Width of Bucket, Inches.	Each.
3	14	12	$160 00
3½	14	12	160 00
4	14	14	160 00
5	14	16	235 00
6	14	18	275 00

Prices of additional lengths per foot.
Nos. 3, 3½ and 4 ..... $10 00
Prices of additional lengths per foot.
Nos. 5 and 6 ..... 12 00

PRICES, FIG. 5603

Length, 5 feet, width, 24 inches, each . . $30 00

Screens for special work furnished to order.

PRICES, FIG. 5604

Nos. of Screen.	Length of Screen.	Diams. of Screen.	Nos. of Section.	Each.
1	6 ft.	24 in.	2	$160 00
2	9 "	32 "	3	235 00
3	12 "	36 "	3	320 00

Dust Jacket for No. 1, 24 inches long $30 00
" " 2, 30 " " 35 00
" " 3, 36 " " 40 00

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REVOLVING SCREENS

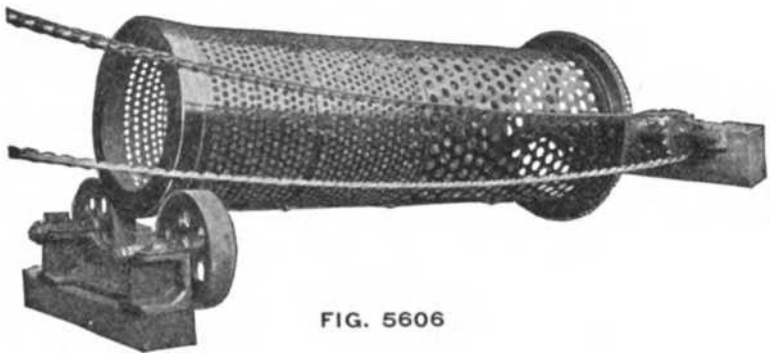


FIG. 5606

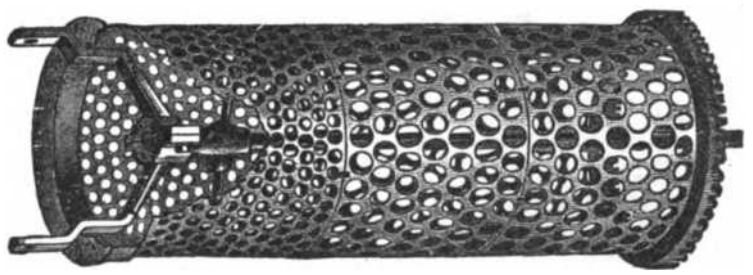


FIG. 5607

DESCRIPTION, FIGS. 5606 AND 5607

High grade road construction demands that the material, as it is broken by crushers, be separated into different sizes, and the necessity for an appliance to secure this result is therefore readily apparent. It is attached to the elevator, and the stone which is deposited into it by the elevator is carried by means of chutes or slides into bins or carts, as desired; but it can be attached direct to the crusher as well. When attached direct to the crusher, it is run by the sprocket chain belting direct from the main shaft of crusher, and can be run parallel with the crusher or at right angles to it, as desired. When the screen is run in connection with the elevator, it is driven by sprocket chain belting to the top shaft of elevator. The screen, as shown in the cut (Fig. 5607), is of rolled steel, 2 feet in diameter and 6 feet long. It is made in three sections—the first section being punched with one inch holes, and the last two sections with two inch holes. This gives three sizes of products: the size passing through the one inch holes, the size passing through the two inch holes, and the larger size passing out at the end.

We can furnish a screen as shown in the cut (Fig. 5606). It is 32 inches in diameter, 8 feet long, and revolves on rollers instead of on a shaft. This screen is of large capacity, as there is no shaft or gearing at the receiving end to interfere with the stone passing into it.

We are prepared to equip any of these screens with a wire or steel dust jacket when desired. Under many circumstances this is an economical arrangement, as it gives an additional size of product without the necessity of increasing the length of screen. We are in a position to furnish, with reasonable promptness, any size screen desired, either in diameter or length, and will perforate screen with any size holes that may be required. On short notice we can furnish screens 40, 48, 51, and 56 inches in diameter, and any length that may be wanted. The large screen will be driven as the requirements may demand, either by chain or belt. We are also prepared to furnish any size flat or chute screen.

PRICES ON APPLICATION

PIG IRON BREAKER

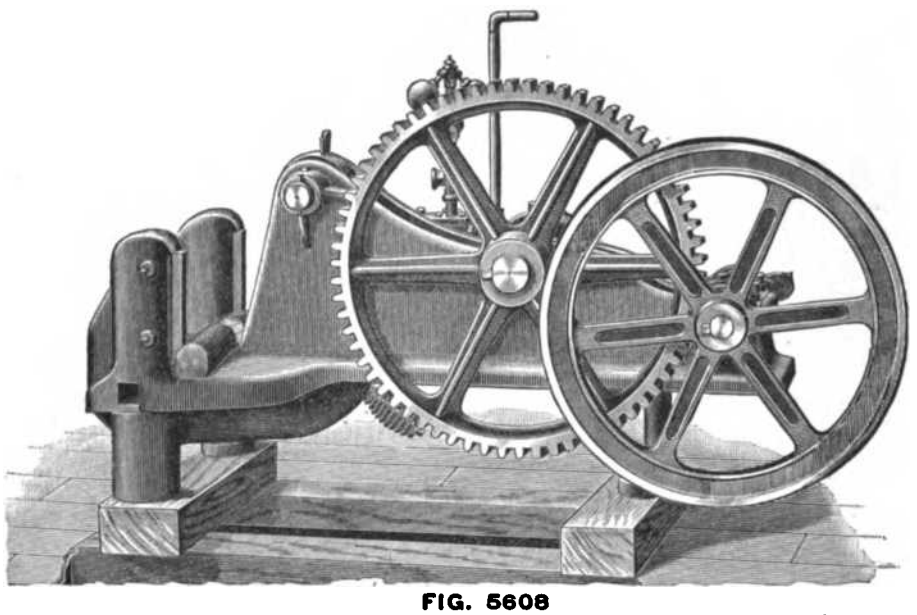


FIG. 5608

DESCRIPTION, FIG. 5608

It will break "pigs" or "sows" into two pieces as rapidly as they can be fed to it, or at the rate of 300 tons per day of ten hours. The movable jaw is actuated by a toggle joint. The space into which the pigs are fed being convergent, it is adapted to breaking pigs of any size. The pieces fall by gravity from the sides of the machine as soon as the pig is broken.

PRICES

Belt driven as shown .....On application.
With engine ..... " "

CONCRETE MIXER

DESCRIPTION, FIG. 5610

It is a horizontal, portable, self-contained mixing machine, with engine attached, which does not require skilled workmen to operate. On the outer end of the crank shaft of the engine a pulley is provided, from which a revolving screen can be driven, if so desired. If engine is not desired, a pulley of suitable size will be provided with the necessary gearing, so that machine can be run from independent portable engine or line shaft.

PRICES ON APPLICATION

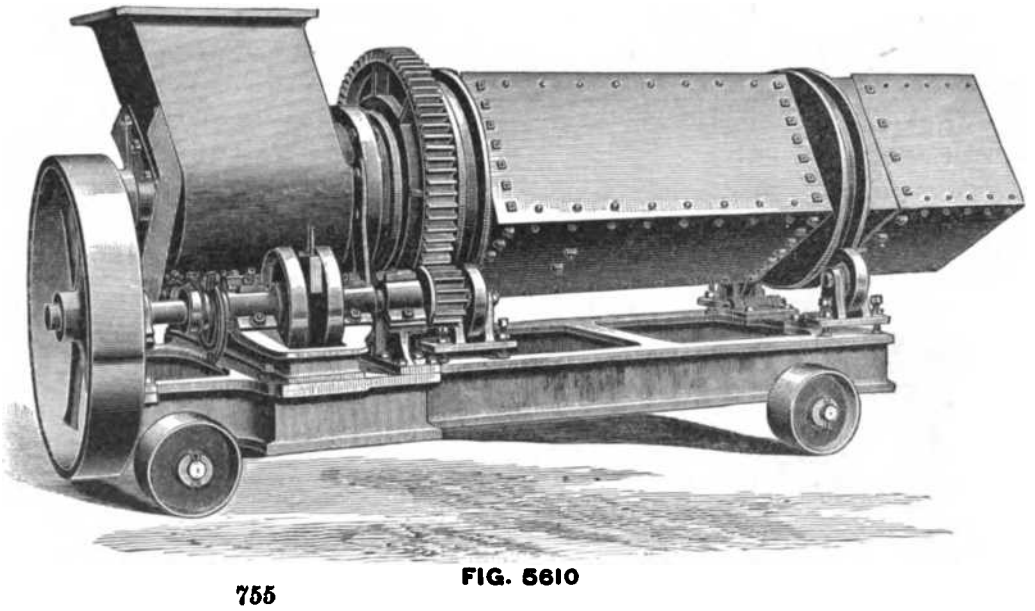


FIG. 5610

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BOGARDUS ECCENTRIC MILLS

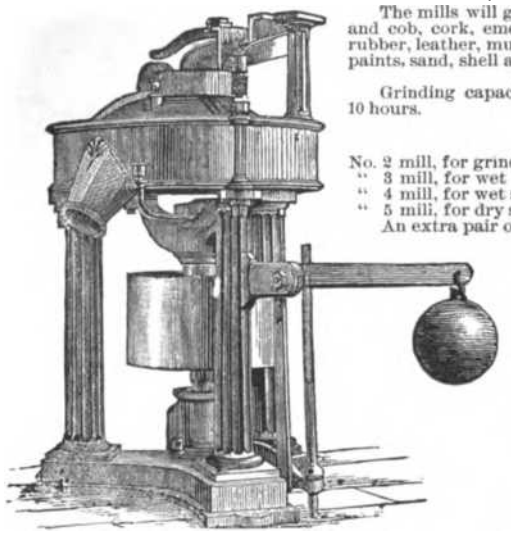


FIG. 5611

The mills will grind asbestos, bones, black lead, charcoal, celluloid, clay, cocoa, corn and cob, cork, emery, enamel, fluid, fire clay, fish, fish scraps, gum, horn, hoofs, india rubber, leather, mustard, mica, old crucibles, oil cake, oyster shells, plaster, printers' ink, paints, sand, shell and slag. The spindle and steps are of hammered steel.

Grinding capacity of No. 2 is about 3 tons per 10 hours; No. 5, about 7 tons per 10 hours.

PRICES, FIG. 5611

No. 2 mill, for grinding dry substances; small plates are 13 inches in diameter		$175 00
" 3 mill, for wet substances		140 00
" 4 mill, for wet substances		325 00
" 5 mill, for dry substances		425 00
An extra pair of plates is sent with the dry mills.		
Ore plates, for sand or slag		$4 00
Large	per pair,	14 00
Bone, black plates, for bones		2 50
Large	per pair,	12 00
Raw bone plates, for woods, roots and leather		4 00
Corrugated raw bone		4 00
Large	per pair,	12 00
Coarse feed plates	"	3 50
Large	"	12 00
Sugar plates	"	5 00
Large	"	16 50
Fire clay plates	"	3 50
Coffee plates	"	5 50
Flaxseed plates	"	6 50

Persons ordering mills should state the substance to be ground, to avoid sending the wrong plates. Drivers and countershaft extra, at market prices, if ordered.

SECTION

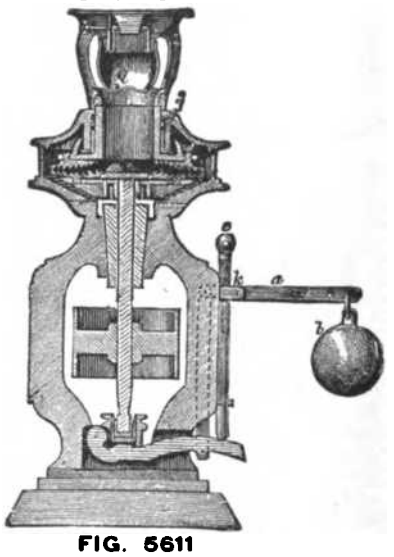


FIG. 5611

NEW PROCESS GRINDING MILL

WITH AUTOMATIC SHAKE FEEDER, SELF-OILING AND PATENT OSCILLATING BOXES

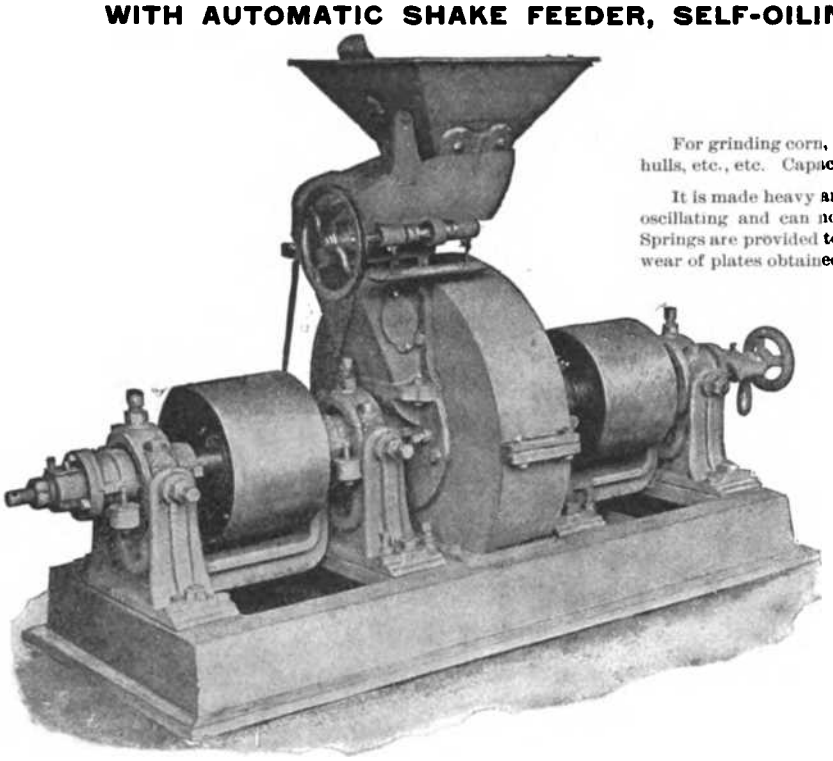


FIG. 5612

DESCRIPTION, FIG. 5612

For grinding corn, corn ears, oats, all cereals, spices, glue, cotton and linseed oil cake, sugar, corn hulls, etc., etc. Capacity, 100 bushels per hour.

It is made heavy and from best material. It can be driven from above or below floor. Journals are oscillating and can not bind shafts. Mill can be set anywhere, and can be driven from level shaft. Springs are provided to allow foreign substances to pass through mill. Belts can be reversed and double wear of plates obtained. It has automatic shake feeder and patent bearings.

PRICES, FIG. 5612

12 INCH MILL

Floor space....20½ x 45 in.	Speed, 2,000 to 2,400 revolutions per minute.
Length over all....4 ft. 6 in.	Capacity, 1,000 to 1,500 lbs. per hour.
Height....2 ft. 6 in.	Horse power required, 10 and upward.
Center to center of pulleys....25 in.	Extra grinding plates, $6 per set.
Size of pulleys....8 x 5 in.	Price of mill, $180.00.
Weight....700 lbs.	

15 INCH MILL

Floor space....23½ x 45 in.	Speed, 2,000 revolutions per minute.
Length over all....5 ft.	Capacity, 1,200 to 1,800 lbs. per hour.
Height....2 ft. 10 in.	Horse power required, 12 and upward.
Center to center of pulleys..2 ft. 5 in.	Extra grinding plates, $8.00 per set.
Size of pulleys....8 x 6 in.	Price, $215.00.
Weight....900 lbs	

18 INCH MILL

Floor space....25 x 55 in.	Speed, 1,700 to 1,800 revolutions per minute.
Length over all....5 ft. 6 in.	Capacity, 1,500 to 3,000 lbs. per hour.
Height....3 ft. 3 in.	Horse power required, 15 and upward.
Center to center pulleys....2 ft. 7 in.	Extra grinding plates, $9.00 per set.
Size of pulleys....10 x 7 in.	Price, $250.00.
Weight....1,250 lbs.	

24 INCH MILL

Floor space....27½ x 60 in.	Speed, 1,500 to 1,600 revolutions per minute.
Length over all....6 ft.	Capacity, 3,000 to 5,000 lbs. per hour.
Height....3 ft. 9 in.	Horse power required, 20 and upward.
Center to center of pulleys....34 in.	Extra grinding plates, $12.00 per set.
Size of pulleys....12 x 8 in.	Price, $300.00.
Weight....1,600 lbs.	

We can furnish a special 24 inch mill using 10½ inch width pulleys; mill is longer and heavier.

30 INCH MILL

Floor space....33 x 79 in.	Speed, 1,200 to 1,300 revolutions per minute.
Length over all....7 ft. 8 in.	Capacity, 6,000 to 7,000 lbs. per hour.
Height....4 ft. 8 in.	Horse power required, 30 and upward.
Center to center of pulleys..3 ft. 7 in.	Oil cake, 50 to 80 tons per day.
Size of pulleys....14 x 10 in.	Price, $500.00.
Weight....3,000 lbs.	

We can supply three pulley drives for mills when desired. No cross belts are needed when these are used.

CENTRIFUGAL PULVERIZING MILL

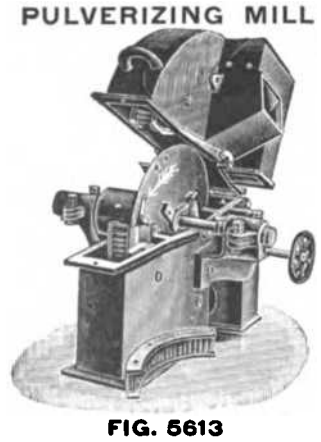


FIG. 5613

DESCRIPTION, FIG. 5613

The principle embodied is the centrifugal force of the substance hitting itself on the sides of the mill, which force does the grinding. All the parts subject to touch or wear are made of steel. The average speed of the mill is 3,500 revolutions per minute. Another decided improvement embodied here is the screens; the frames are one piece, guaranteeing long wear and strength. The mesh or degree of fineness can be regulated by the gauge of the screens placed into the machine.

The screens are made in three styles--fine, medium and coarse--and can be changed in a few minutes. The hammers are made of tool steel, hardened. The disk upon which the hammers are riveted is circular saw steel of the finest grade. It is specially adapted for being changed from one substance to another and is easy of access for cleaning. The air shoot must be connected up outside the receiving box so air can go freely through it. The following are a few of the substances: Ground alum and alkali, in various forms, asphalt, barks, woods, roots, leather, bone, meal, borax, carbon, chicory, cinnamon, clay, coal, cocoa, cork, corn and cob, drugs in their various forms, fish scraps, foundry facings, ginger, glue, guano, oyster shells, pitch, rosin, salt cake, starch, sugar, sulphur, and other substances.

PRICES

No. 1	3,500 revolutions	$130 00
" 2	3,000 "	200 00
" 3	2,500 "	300 00

1, 2 and 3 screens, any grade, $10.00, $15.00 and $20.00.
Beaters, each, 50 cents; per set, $5.00.

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BRICK MACHINES

HAND HAULOUT MACHINE

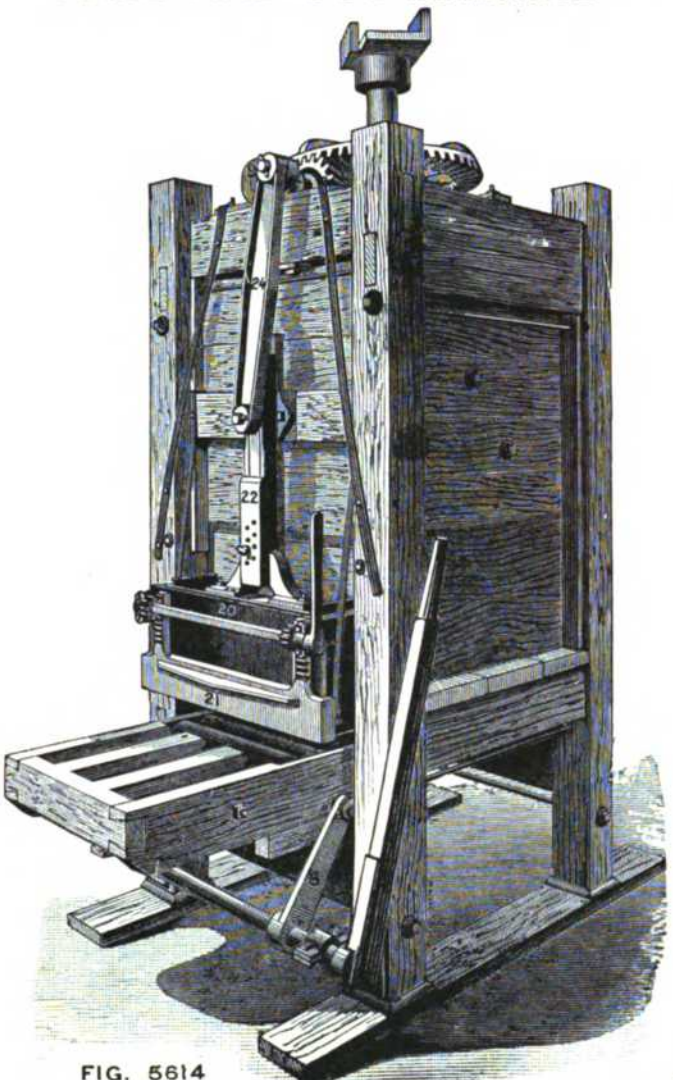


FIG. 5614

This machine is capable of molding a good square cornered brick, and where labor is scarce and only a few brick are desired is well adapted. With this machine the man in front delivers the mold, by pulling lever, shown on right hand side of illustration. Capacity 6,000 to 10,000 daily. Weight 4,000 pounds. Prices on application.

HAND REPRESS

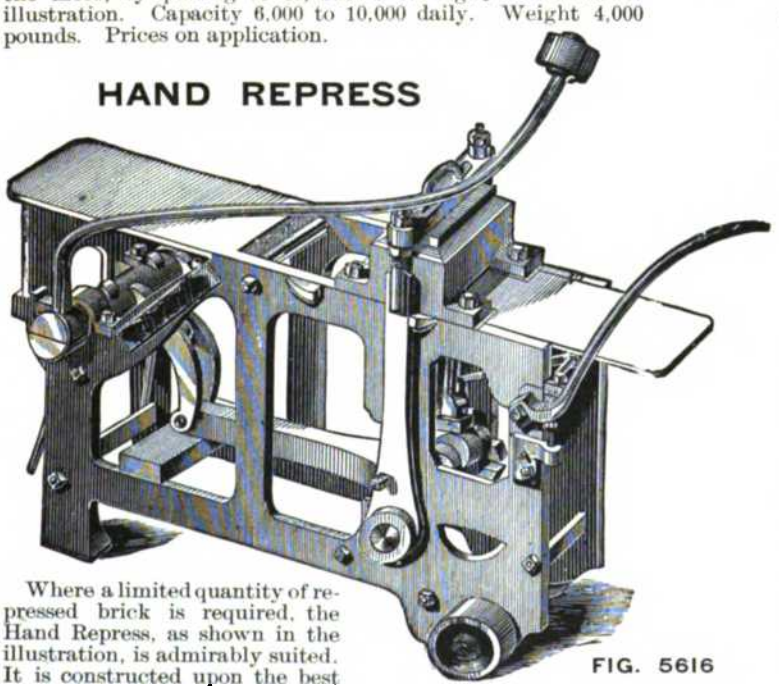


FIG. 5616

Where a limited quantity of repressed brick is required, the Hand Repress, as shown in the illustration, is admirably suited. It is constructed upon the best mechanical principles, yet is very simple and easy to operate, and is adapted for repressing brick of any ordinary size. Each machine is furnished complete with a die, for any desired size, and different sizes can be supplied for the same machine. We can also furnish dies of any circle or shape, such as bay window, wedge, arch, key, etc. With this repress an ordinary workman can easily repress 2,000 or more brick per day, depending upon his skill. Weight 1,000 pounds. Prices on application.

STYLE B, FOR POWER

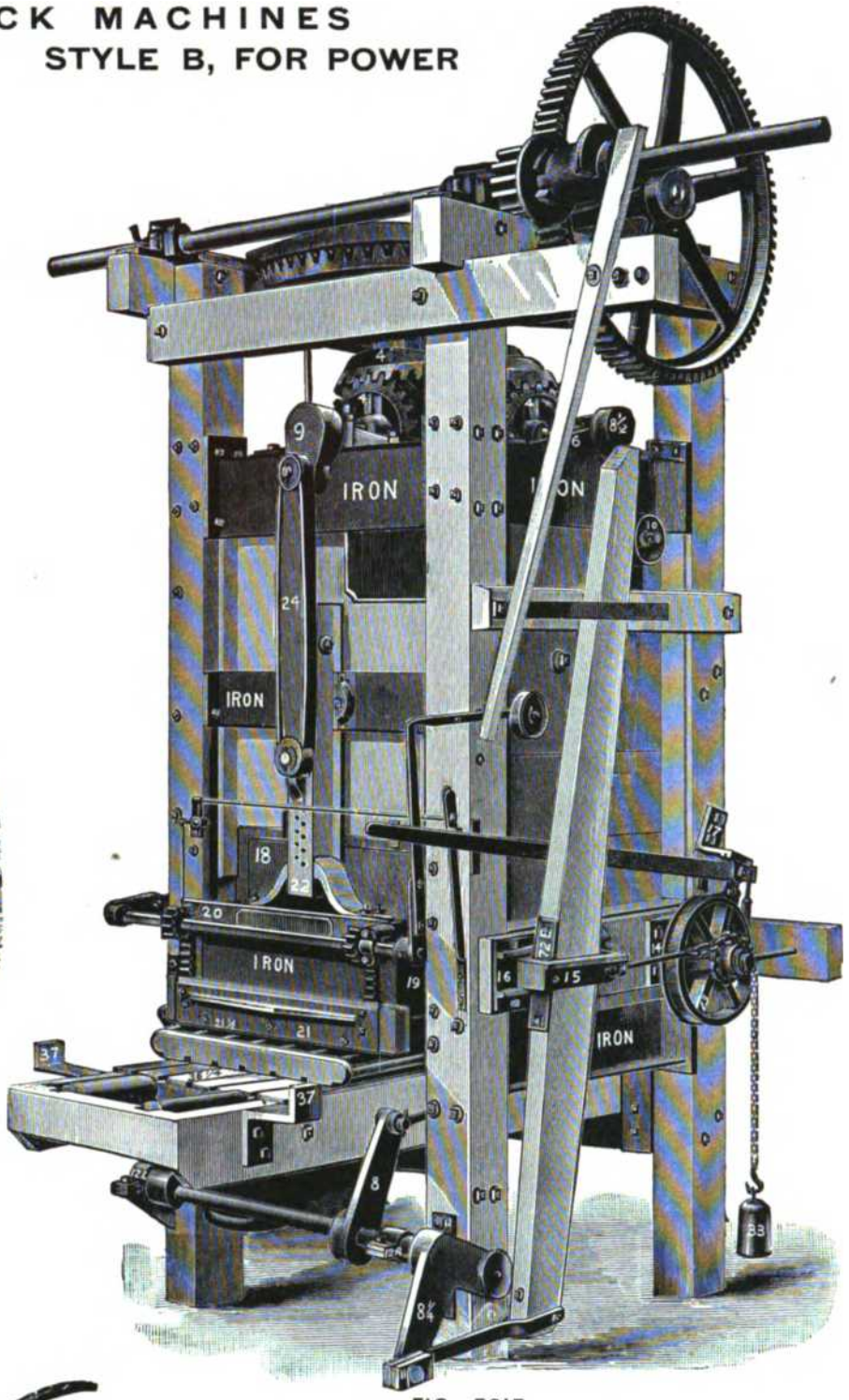


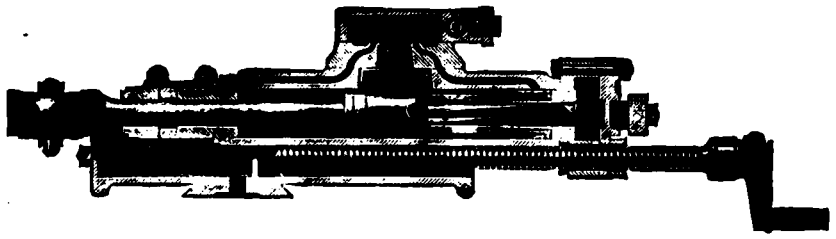
FIG. 5615

DESCRIPTION

This machine is complete within itself, and ready to receive pulley to belt to engine, and do good work from the start. Every machine is correctly adjusted before leaving the shops, being set up and thoroughly tested in the movements. It is built very heavy and strong; the heavy top plate is so arranged as to keep the gears and shafts in line. The frame and tempering box are very large and constructed in the best workmanlike manner, thoroughly braced and will last for many years. The upright or tempering shaft is extra heavy and fitted with wrought iron knives, which are set in such a manner as to aid in forcing the clay toward the press box. All these machines are put together with iron rails; the great advantage in this is that there are no tenons to shrink, causing the machine to twist and get out of line, and the consequent breakage in gears and castings; with these iron rails the machine can be kept rigid and in place. The plunger or press is so arranged that the brick can be molded soft or very stiff, as desired, and is at all times completely under the control of the operator. Each machine is fitted with a die, made to correspond with the size of the molds, and which can easily be removed, and another put in its place, without loss of time. The carriage and mold gauge can be so adjusted that the molds are placed just right beneath the die. When ordering a machine it is well to give the speed of your engine and diameter of its driving pulley; this will enable us to select suitable gears for any number of brick that may be desired per hour. Capacity 35,000 brick per day. Weight 8,000 pounds. Horse power required, 10. Prices on application.

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LITTLE GIANT ROCK DRILL



Section of Valve in Little Giant Drill, Fig. 5619.

The valve of the Little Giant Drill is a plain slide valve, always thrown in the same direction in which the piston is moving. The opening and closing is effected in a positive manner.

A three arm rocker, or lever, operates the valve and is held in place by a pin; the rocker is placed in a recess of the cylinder, between the ends of a double headed piston, and its upper arm, or head, engages into the valve; as the piston reciprocates it shoves the rocker in the direction in which it is going and thus moves the valve with it.

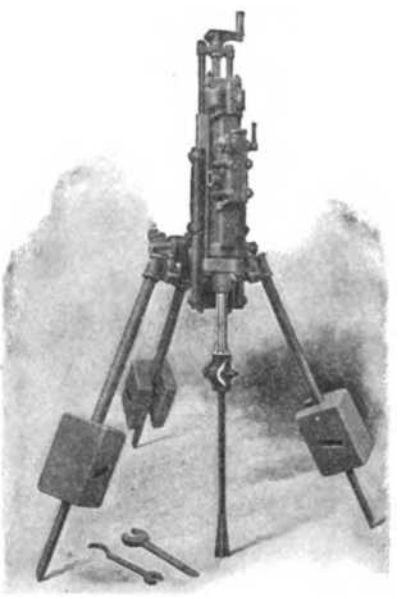


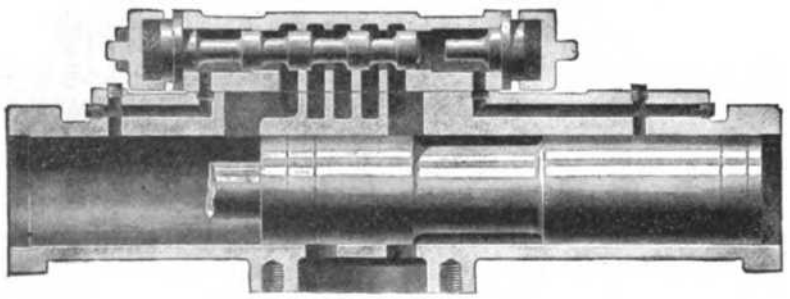
FIG. 5619

DIMENSIONS AND PRICES, FIG. 5619

Name and Number.	Kid Drill for Block Holing.	No. 1.	Nos. 2 and 2-A.	Nos. 3 and 3-A.	Nos. 3¼ and 3¼-A.	Nos. 4 and 4-A.	No. 5.	No. 7.
Dimensions:								
Diameter of cylinder in inches	1⅞	2¼	2⅝	3⅛	3¼	3⅝	4½	5½
Length of stroke, in inches	3⅝	5¼	6¼	6¾	6¾	7½	7½	8½ (extreme)
Length of feed, in inches	10	15	18	24	24	30	36	30
Usual depth of hole drilled, feet	1½	4	6 to 10	10 to 15	15	20	20 to 30	....
Usual diameter bottom of hole, inches	1	1 1/16	1½	1¾	1¾	2	2¼	....
Depth drilled in ten hours, feet	....	50	60	70	70	70	70	....
Diameter of steel, in inches	⅝	¾	1	1⅛	1⅛ or 1¼	1⅜	1½	1⅝
Diameter of hose, in inches	¾	¾	¾	1	1	1¼	1½	1½
Diameter of steam pipe, 150 feet long, inches	¾	1	1¼	1½	1½	2	2	2½
Size of boiler required to run drill by steam, in horse power	3	5	7	10	10	12	15	20 to 23
Weights:								
Drill, unmounted, in pounds	95	150	* 200†	265‡	290	390§	560	860 (including shell)
Adjustable tripod, no weights, pounds	70	70	145	175	175	354	400	....
Set tripod weights (3 to set), pounds	108	210	288	336	336	510	510	....
Drill mounted on tripod with weights, pounds	273	430	633	776	801	1254	1470	....
Drifting column, 6 feet high, pounds	....	185	319	319	319	405	....	....
Shipping measurements (outside):								
Of box for drill alone, in inches	42 x 13 x 10	42 x 13 x 11	45 x 13 x 11	48 x 14 x 11	48 x 14 x 13	58 x 16 x 13	61 x 19 x 14	80 x 25 x 15
Of box for tripod, in inches	36 x 8 x 6	36 x 8 x 6	40 x 8 x 8	45 x 10 x 10	45 x 10 x 10	51 x 14 x 14	....	....
Of box for six lengths of hose, inches	34 x 34 x 24	34 x 34 x 24	34 x 34 x 24	34 x 34 x 24	34 x 34 x 24	34 x 34 x 24	....	....
Prices:								
Adjustable tripod and weights, complete	$125 00	$185 00	$200 00	$250 00	$275 00	$350 00	$400 00	....
Of column 6 feet high	25 00*	30 00	50 00	50 00	50 00	60 00	65 00	....
Of drill with tripod and weights or column, complete	....	50 00	50 00	50 00	50 00	60 00	....	....
	150 00	$215 00 to $235 00	250 00	300 00	325 00	410 00	465 00	....

* Plain tripod. † Weight of 2-A drill is 210 pounds. ‡ Weight of 3-A drill is 275 pounds. § Weight of 4-A drill is 410 pounds.

THE SLUGGER ROCK DRILL



Section of Valve in Slugger Rock Drill, Fig. 5620.

The valve movement on a drill determines the character of work for which the drill is best adapted. The Slugger Drill is designed for a heading drill in mines and tunnels for rapid advancement. It is substantially the Little Giant Drill, Fig. 5619, save the valve mechanism, which is its characteristic feature. The valve is composed of one piece of metal in the shape of a small piston, having at the utmost a movement of only three-quarters of an inch inside of its cylinder; it is made of hardened steel and is ground to fit. The valve does not wear because it is absolutely balanced. The Slugger Drill is designed to strike an uncushioned blow and to use the air expansively.

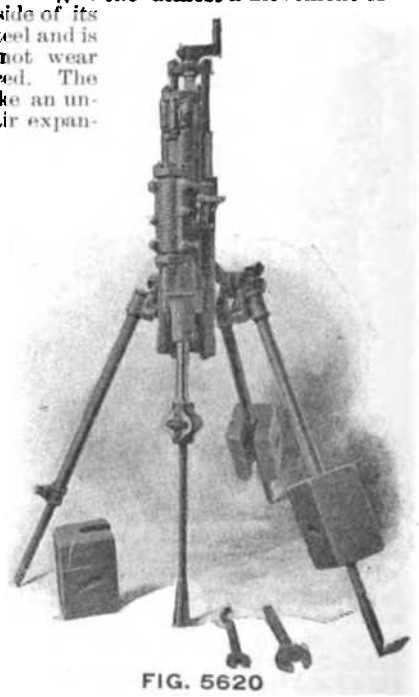


FIG. 5620

DIMENSIONS AND PRICES, FIG. 5620

	No. 12.	No. 13.	No. 14.	No. 33.	No. 34.
Dimensions:					
Diameter of cylinder, in inches	2¾	3 1/16	3⅝	3⅛	3⅝
Length of stroke, in inches	6¼	6½	7¼	6½	7⅜
Length of feed, in inches	18	24	30	24	30
Usual depth of hole drilled, in feet	6 to 10	10 to 15	20	10 to 15	20
Usual diameter of bottom of hole, in inches	1½	1¾	2	1¾	2
Depth drilled in ten hours, in feet	80	90	90	90	90
Diameter of steel, in inches	1	1⅛	1⅜	1⅛	1⅜
Diameter of hose, in inches	¾	1	1¼	1	1¼
Diameter of steam pipe 150 feet long, in inches	1¼	1½	2	1½	2
Size of boiler required to run drill by steam, in horse power	7	10	12	10	12
Weights:					
Weight of drill, unmounted, in pounds	200	275	420	265	405
Weight of adjustable tripod, without weights, in pounds	145	175	354	175	354
Weight of set of tripod weights (three to a set), in pounds	288	336	510	336	510
Weight of drill, mounted on tripod, with weights, in pounds	633	786	1312	776	1207
Weight of drifting column, 6 feet high, in pounds	319	319	405	319	405
Shipping measurements (outside):					
Of box for drill alone, in inches	45 x 13 x 11	48 x 14 x 11	58 x 16 x 13	48 x 14 x 11	58 x 16 x 13
Of box for tripod, in inches	40 x 8 x 8	45 x 10 x 10	51 x 14 x 14	45 x 10 x 10	51 x 14 x 14
Of box for six lengths of hose, in inches	34 x 34 x 24	34 x 34 x 24	34 x 34 x 24	34 x 34 x 24	34 x 34 x 24
Prices:					
Of drill complete, unmounted	$200 00	$250 00	$350 00	$250 00	$350 00
Of adjustable tripod and weights, complete	50 00	50 00	60 00	50 00	60 00
Of column 6 feet high	50 00	50 00	60 00	50 00	60 00
Of drill with tripod and weights or column, complete	250 00	300 00	410 00	300 00	410 00

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DRILL MOUNTINGS

DRIFTING COLUMN

DESCRIPTION AND PRICES, FIGS. 5621 AND 5622

In tunnel work, with a heading or drift from eight to nine feet, these drills are usually mounted upon drifting columns, as shown in cuts. The columns are made of various lengths, a usual length being six feet, measured with jack screws drawn in. The length may be increased ten inches by extending jack screws, and may be still further increased by placing wooden blocking under the screws and over the top of the column. To secure a firm, elastic hold two or three inches of blocking should always be used above and below the column.

Each column can carry two drills, and the number of drills necessary in a heading depends upon the rate of advancement required and the size of the heading. In tunnels twenty-seven feet wide, twenty-four feet high, with a heading eight feet high, it is customary to use four drills on columns in the heading and two on tripods at the bench. In tunnels fifteen feet wide by eighteen feet high, with eight foot heading, three drills are used.

The drill when mounted on this column has a wide range of adjustability. It may be shifted sideways on the arm, raised and lowered on the column, swung completely around the column, and by means of a new clamp, described below, Fig. 5624, which is part of the mounting, its adjustability is further enhanced.

	Length, Feet.	Weight, Pounds.	Each.
Column, with arm and clamp, complete, for Kid Drill....	6	105	.....
" " " " " " No. 1 Drill	6	185	$50 00
" " " " " " 2 "	6	319	50 00
" " " " " " 3 "	6	319	50 00
" " " " " " 3¼ "	6	319	50 00
" " " " " " 4 "	6	405	60 00

NO. 1 DRILL

Mounted on Coulee Column for Drilling Holes in Coal Mines.

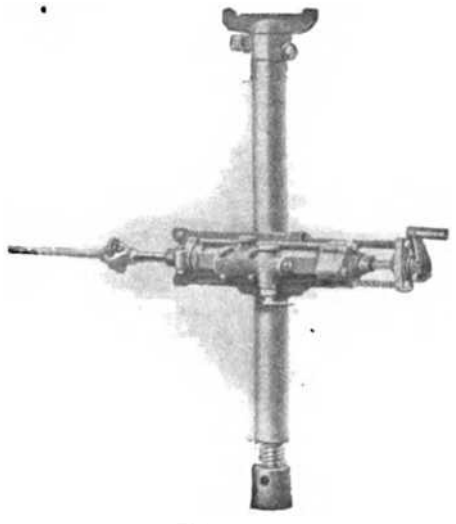


FIG. 5621

ROCK DRILL

Mounted on Tunnel or Drifting Columns.

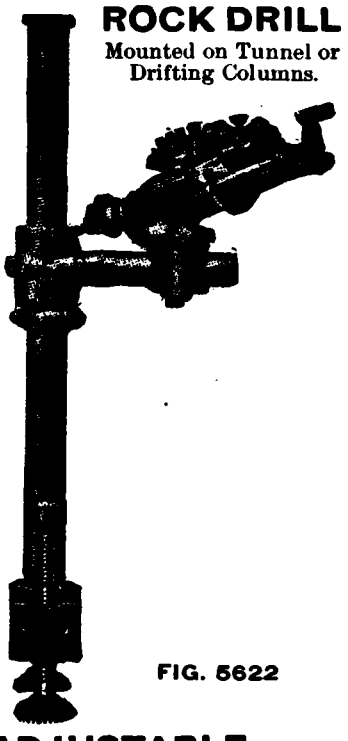


FIG. 5622

TRIPODS

DESCRIPTION AND PRICES, FIGS. 5623 AND 5624

For general outdoor work, and for work in mines where the drifting column has no application, these drills are usually mounted upon tripods shown in cuts. We furnish two kinds of tripods—the plain and the adjustable—both fitted with a clamp. The features possessed by the adjustable tripod give to the drill a wide range of adjustment. When fastened it is fixed and secure. The legs of tripod are telescopic, permitting of adjustment in uneven ground. The clamp permits of changing drills from column to tripod, or vice versa, without disconnecting the feed screw and changing bolts. New clamp shown in both.

	Weight—One Leg, Pounds.	Weight—Plain Tripod, Pounds.	Weight—Adjustable Tripod, Pounds.	Including Three Leg Weights. Plain Tripod.	Including Three Leg Weights. Adjustable Tripod.
Tripod for Kid Drill.....	35	58	..	$25 00	
Tripod for No. 1 Drill.....	73	95	82	.....	$30 00
Tripod for Nos. 2, 2-A, 12 and 200 Drills.....	103	120	145	.....	50 00
Tripod for Nos. 3, 3-A, 3¼, 3¼-A, 13 and 33 Drills..	120	135	175	.....	50 00
Tripod for Nos. 4, 4-A, 14 and 34 Drills.....	112-P / 137-A	270	354	.....	60 00
Tripod for No. 5 Drill.....	137	...	400	.....	65 00

PLAIN TRIPOD

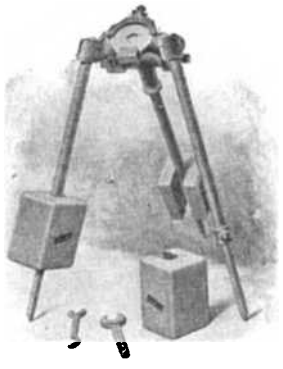


FIG. 5623

ADJUSTABLE TRIPOD

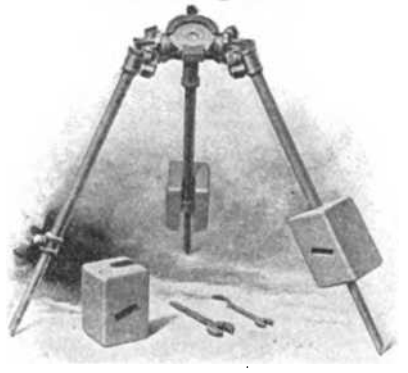


FIG. 5624

STOPING BAR

With No. 8-B Drill.

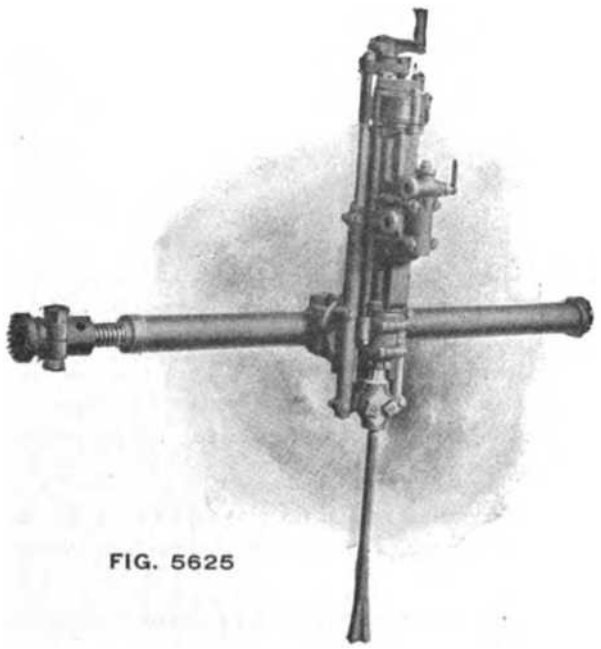


FIG. 5625

DESCRIPTION AND PRICES

For stoping and for drilling in the heading of a drift where a number of holes are put in a row, drills are mounted on a stoping bar, as shown in cut. The stoping bar is fitted with a jack screw which has patented lock nut, and the drill is mounted on the bar by means of a clamp.

Patent stoping bar, with clamp, up to eight feet in length, for either No. 2 or 3 drill, 164 pounds, $40.00.

Patent stoping bar, with clamp, six feet long, for No. 4 drill, 245 pounds, $50.00.

ACROBAT

With Kid Drill.

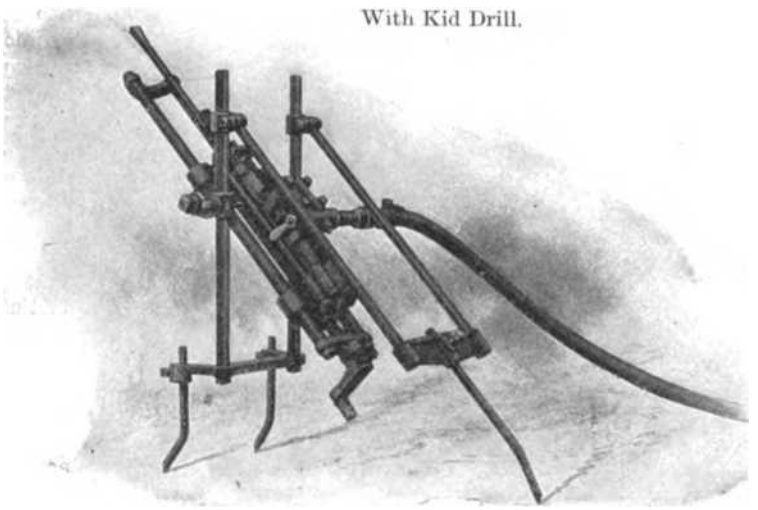


FIG. 5626

DESCRIPTION AND PRICE

For drilling holes horizontally in blocks of stone, or for drilling holes looking upward from the feet of the drill, a new mounting for the Kid Drill has been invented, called the Acrobat, from the fact that it can easily be changed to so many different positions. It is to be noticed that with this device the machine is well braced in drilling horizontal holes by the back legs taking hold of the standards above the drill. The drill itself can be raised or lowered on the standards so as to start a block hole under a detached piece of rock with ease. The whole apparatus is small and commonly used for block holing by placing it on a piece of plank about two feet square, thrown on the spawls surrounding the block. The weight of a man's foot is generally sufficient to keep it in place.

Weight of acrobat, 166 pounds; each, $25.00.

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ROCK DRILL

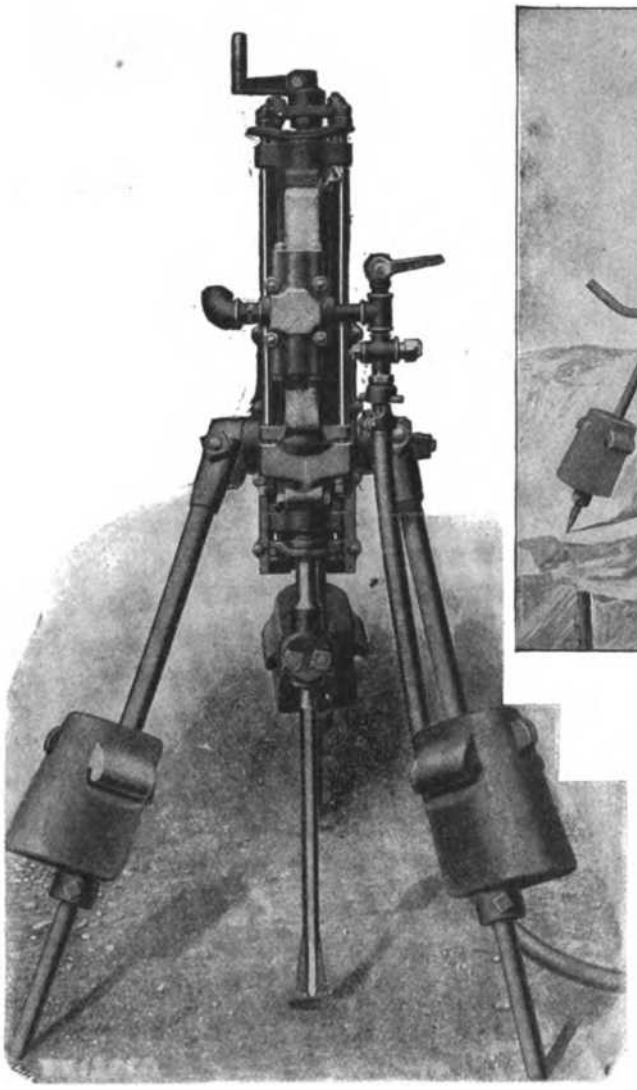


FIG. 5627

Showing drill in operation.



FIG. 5628

DESCRIPTION, FIG. 5627

These drills are made with cylinders from 2 inches to 5 inches in diameter for holes 12 to 15 feet deep and diameters from ¾ to 6 inches. They may be operated by either steam or compressed air, and are mounted on tripods for open work, shaft bars and columns for tunnels, quarry bars and bar channelers for quarry work. Each drill has a shell which fits any of these forms of mountings. They will drill from 60 to 100 lineal feet of hole per day of 10 hours, in granite, including shifting and stops for renewing drill steels.

Every piece is made by machinery to an accurate gauge and the parts are therefore absolutely interchangeable. They are provided with a patent rotation device which permits a straight and powerful forward blow and causes the drill steel to rotate slightly on the return, thus insuring a round hole.

Special flat buffer springs are provided at the back, which prevent any injury to the machine should the drill runner become careless and allow the piston to hit the front or back heads.

The valve motion is such that the operator can use a short quick stroke in starting until the hole is under way, when by running the cylinder back slightly with the feed screw a long, powerful working stroke is secured. There is no cushion in the front head, so that the full force of the blow is expended in striking the rock.

These drills are provided with an improved split chuck key insuring central alignment of drill steel, the improved auxiliary valve permitting a variable stroke and a special form of throttle valve. Unless otherwise specified the drill is shipped complete with tripod, weights and wrenches but without steels.

DRILLS AND COAL CHIPPERS

Letters indicating type of drill	A	B	C	D	E	F	G	H
Diams. of cylinder..in.	2	2½	2¾	3	3¼	3½	4¼	5
Stroke, per minute....	500	360	325	325	300	300	250	250
Length of feed without changing bit.....	12	20	24	24	24	24	30	30
Depth of hole from 1 foot to.....feet.	5	8	10	14	16	20	27	32
Diameters of hole...in.	⅝-1¼	1¼-2¼	1½-2½	1¾-2¾	1¾-2¾	1¾-3	2-4	3-6
Shipping weight complete with tripod, lbs.	262	650	737	751	859	1095	1438	1583
Air consumption of cub. feet free air per min.	65	70	95	110	115	125	140	165
Prices, complete.....	$200 00	$275 00	$300 00	$325 00	$350 00	$375 00	$430 00	$480 00

COAL CUTTER



FIG. 5629

Showing position of operator.

PRICES, FIG. 5629

Letters indicating type	F-4	H-4	H-5
Diameter of cylinder.....inches.	4¼	5	5
Length of machine with pick in place.....	6 ft. 8 in.	7 ft. 0 in.	8 ft. 0 in.
Width of machine over all, inches,	23	24¼	24¼
Height of machine..... "	17⅝	19⅛	19⅛
Weight.....pounds.	550	800	825
Number of strokes per minute....	150 to 200	150 to 200	150 to 200
Depth of under cut.....feet.	4	4 and 5	5 and 6
Air pressure required.....pounds.	60 to 80	60 to 80	60 to 80
Air consumption cub. ft. per min.	70	93	93
Each, complete.....	$350 00	$350 00	$350 00

DESCRIPTION, FIG. 5629

This form of Coal Cutter resembles a powerful compressed air drill mounted horizontally on a pair of wheels, and it consists of a cylinder, a piston into the end of which is fitted a cutter bit and a simple valve motion. The machine strikes from 150 to 225 blows per minute and will undercut from 4 to 6 feet, according to the size. It will work in any kind of coal or other similar material where the veins are not less than 25 inches in thickness and where the angle of dip is not over 15 degrees to the horizontal. It requires from 65 to 100 cubic feet of free air per minute, according to the diameter of piston.

It is easily operated by one man, and on account of its small size and light weight it can be employed in mines where the roof is weak and timbering and propping very close together.

It will get out from 12 to 20 tons of coal on an average per day.

The average production per man by hand pick methods is about 5 tons per day, whereas with this machine a safe average is from 12 to 20 tons per man per day, practically at the same expense as with hand methods.

This machine is made in the following sizes, and the table also suggests full particulars as to its shipping weight, dimensions, etc.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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HAND COAL DRILLS

SIDE GEAR GRIP CYCLONE MACHINE

Q POST DRILL

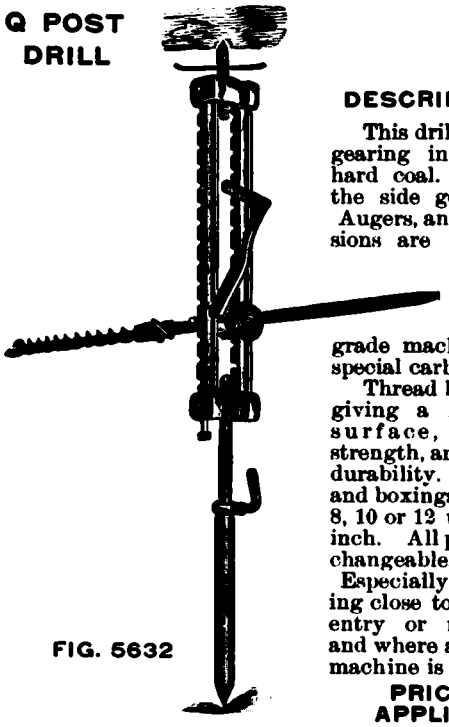


FIG. 5632

DESCRIPTION, FIG. 5632

This drill can be used without gearing in soft or moderately hard coal. In extra hard coal the side gear is better.

Augers, and auger extensions are made of the highest grade tool steel. Thread bar is of highest grade machinery steel of special carbon.

Thread bars are heavy, giving a large bearing surface, increasing strength, and giving great durability. Thread bars and boxings supplied with 8, 10 or 12 threads to the inch. All parts are interchangeable.

Especially useful in drilling close to the rib or in entry or narrow work, and where a strong heavy machine is desired.

PRICES ON APPLICATION



FIG. 5633

DESCRIPTION, FIG. 5633

This drill is intended especially for drilling close to rib. Can be quickly set up; can drill in any position in any coal moderately hard. Weight is saved by using high grade steel. Chair kept tight with a tail nut. Single and double cranks and an extra grip for rib work.

PRICES ON APPLICATION

STEEL NOTCH WOOD POST MACHINE

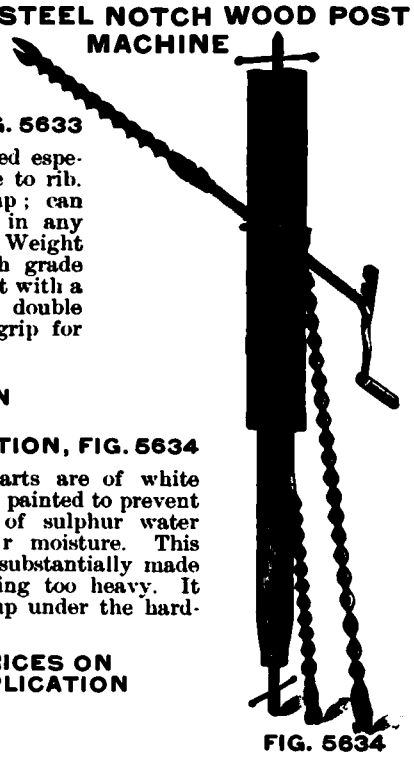


FIG. 5634

DESCRIPTION, FIG. 5634

Wood parts are of white oak, heavily painted to prevent the effects of sulphur water and other moisture. This machine is substantially made without being too heavy. It will stand up under the hardest work.

PRICES ON APPLICATION

POST RATCHET ROCK MACHINE

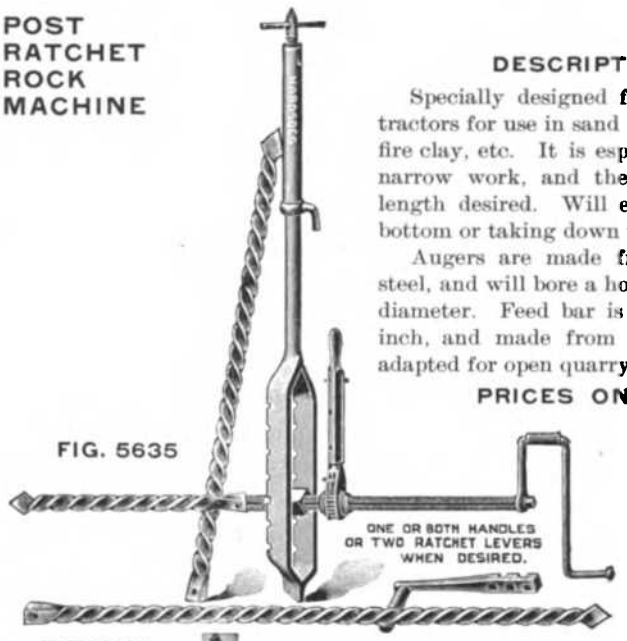


FIG. 5635

DESCRIPTION, FIG. 5635

Specially designed for coal companies and contractors for use in sand rock, lime stone, rock salt, fire clay, etc. It is especially adapted for close or narrow work, and the post is furnished in any length desired. Will exert a saving in taking up bottom or taking down top.

Augers are made from the finest crucible tool steel, and will bore a hole from 1½ to 2½ inches in diameter. Feed bar is cut 10 or 12 threads to the inch, and made from best machinery steel. Not adapted for open quarry work.

PRICES ON APPLICATION

SPRY LITTLE GIANT SLATE DRILL

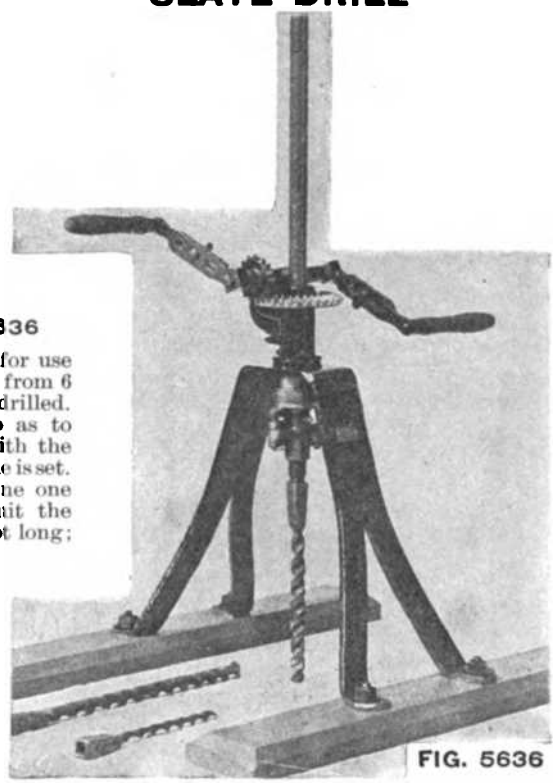


FIG. 5636

DESCRIPTION, FIG. 5636

This machine was designed for use in slate quarries where holes from 6 inches up to 2 feet are to be drilled. The machine is mounted so as to drill holes at right angles with the surface upon which the machine is set.

We furnish with this machine one set (3 drills) of bits to suit the purchaser, usually as follows: One bit ⅞ inch diameter, one foot long; one drill 1 inch diameter, 18 inches long; one drill 1⅛ inches diameter, one foot long. This machine is fitted with a patent ball bearing device which allows the drill to feed forward from ⅒ to ⅒₀ part of an inch at each revolution of the feed bar. It can be easily operated by one man. The operator stands on the side strips to prevent its moving. The weight of machine, complete with bits ready for shipment, is 65 lbs.

PRICE, $35.00

PROSPECTOR'S HAND DRILL

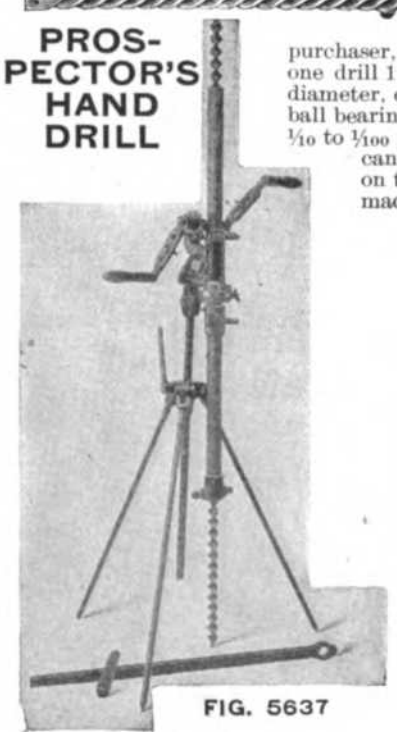


FIG. 5637

DESCRIPTION, FIG. 5637

This machine is designed to meet the demands of prospectors and miners in general, who want to drill holes of uncertain depths. It is built for heavy work, and will drill any depth, limited only by the length of the augers that may be supplied. It has variable feed, from 6 to 100 threads per inch, that can be changed instantly without stopping the machine. This is a very desirable feature when drilling through material with soft and hard strata, such as coal and streaks of slate and sulphur, often found in coal, which indeed is quite impossible to drill with an auger drill without this variable feed.

The machine is adjustable to drill in any angle, and is provided with two cranks, for two men if necessary. It has a detachable feed nut, and can be released and the feed bar withdrawn instantly. It is made of the best material and workmanship, to stand very hard service. It is supplied with any size drills from 1 to 3½ inches in diameter. For slate quarries, plaster, salt mines, gypsum, and any material that can be drilled with an auger drill. It can be supplied with a post, or a wedge bar, or the tripod, as shown in cut. For holes from 1 inch to 2 inches in diameter, we furnish a pipe feed bar with the drill passing through the center, the auger thus drilling a hundred foot hole, if so desired. For holes from 2 to 6 inches in diameter we furnish a solid bar, with auger made to use the connections necessary to drill the required length holes. This Drill makes a most complete machine, that can be used for any purpose where auger drills can be applied.

PRICES

Machine with Tripod and Wedge Bar combined, including Bits to drill 18 feet	$60 00
Without Wedge Bar	55 00
Complete with any Size Post, or Standard Tripod with Weights and Wedge Bar	75 00

Longer Drills than 18 feet, extra.

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COMPRESSED AIR DRILL

With Hollow Feed Bar and Steel Post with Milled Rack and Pinion.

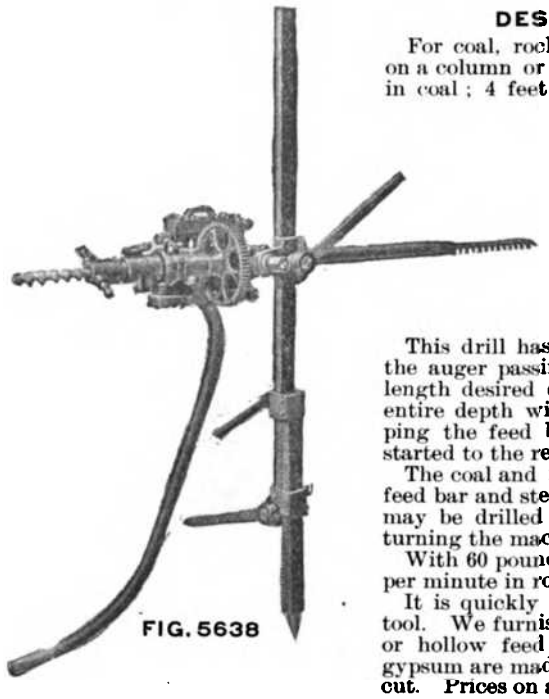


FIG. 5638

DESCRIPTION, FIG. 5638

For coal, rock, rock salt, gypsum, etc., mounted on a column or post. Will drill 7 feet per minute in coal; 4 feet per minute in soft rock. Drills at the rate of 4 to 6 feet per minute in rock salt, fire clay, gypsum or slate.

This drill has a reciprocating high speed motor, mounted on a tubular column, adjustable to any position on the column by the arm clamp; the motor will swing around the column for any horizontal angle, and rotate on the arm for vertical angles.

This drill has a tubular feed bar 4 feet long, and the auger passing through the bar may be of any length desired (usually about 8 feet), drilling the entire depth without being removed; then, by slipping the feed bar back on the auger, the drill is started to the required depth of hole.

The coal and rock drills are the same, with a solid feed bar and steel post. Two vertical rows of holes may be drilled without changing the column, by turning the machine around on each side.

With 60 pounds of air this machine will drill 4 feet per minute in rock salt, fire clay, gypsum or slate.

It is quickly set up, and is a strong and durable tool. We furnish these machines with either a solid or hollow feed bar. All drills for rock salt and gypsum are made with hollow feed bar, as shown in cut. Prices on application.

HAND POWER ROCK DRILL

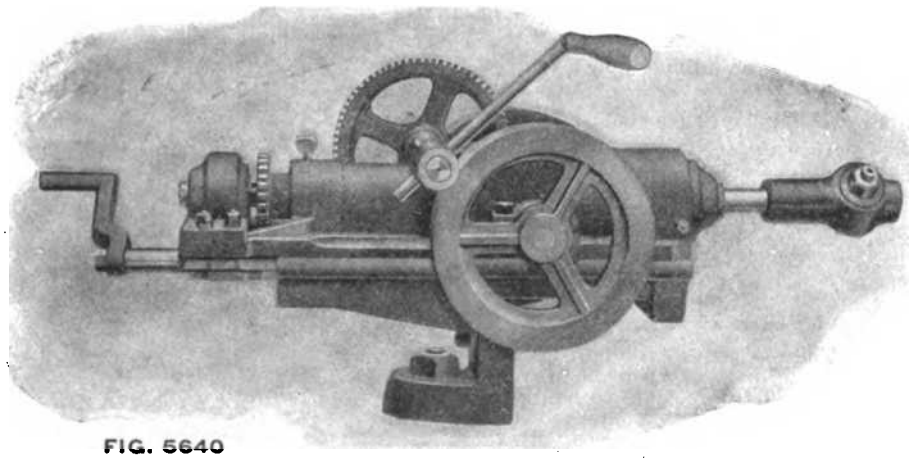


FIG. 5640

TRIPOD HAND DRILL

Used for All Kinds of Soft Drilling. Will Drill Holes at Any Angle. Price of Complete Machine with Set of Bits, $30.00.

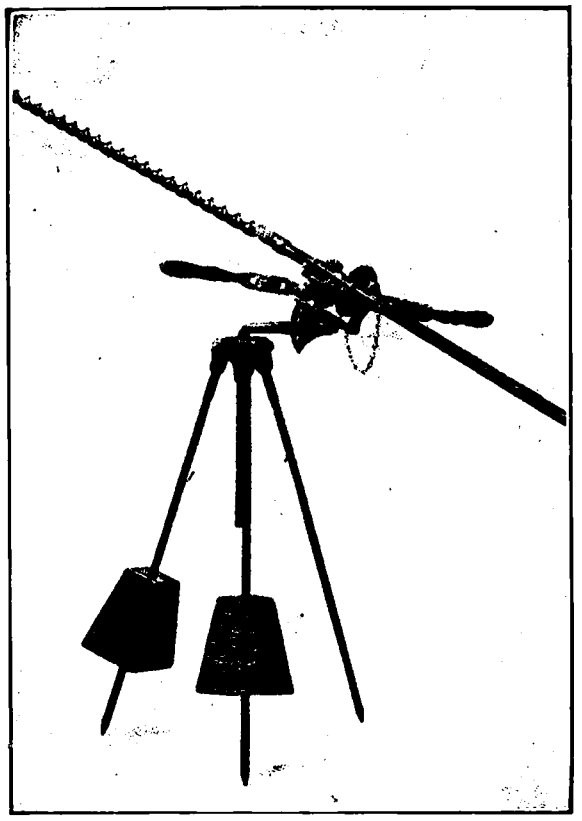


FIG. 5639

DESCRIPTION, FIG. 5640

This drill is handled and operated by one man. It may be employed in mining, for tunneling, sinking and stoping, also for all kinds of quarry and surface stone work, including railroad construction, sewer and cellar excavations. Drill may be mounted on column, cross bar, tripod or quarry bar, as best adapted to the work in hand.

The body is made of high grade cast steel, virtually rendering it unbreakable by ordinary use. The working parts are constructed of machine and tool steel, and are made by special tools, so that the parts of one machine are exact duplicates of same parts in all others. Prices on application.

HAND POWER DRILL

DESCRIPTION, FIGS. 5641 AND 5642

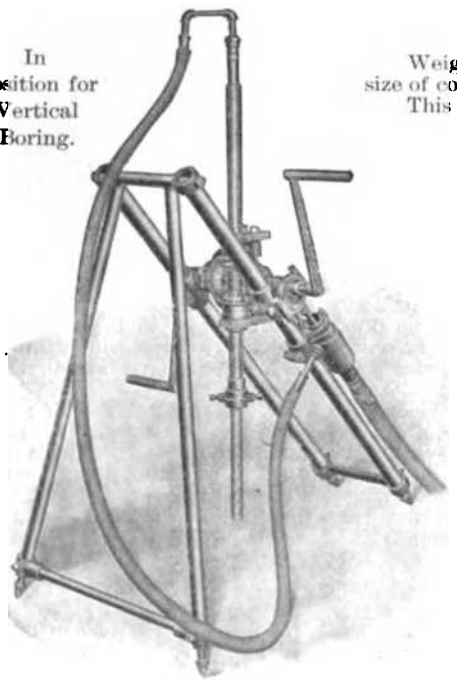
Weight set up as shown, 200 pounds; weight of heaviest single piece, 25 pounds; size of bit, 1 9/16 inches; size of core, 1 inch; capacity, 350 to 400 feet depth; will bore at any angle.

This hand drill was designed to meet a special demand for a light prospecting drill, to be worked by hand or horse power, and capable of being readily taken apart in small pieces for packing on horse or mule back over rough trails. It is simple in design and easy to manipulate; is light but strong, and is capable of boring a 1 9/16 inch hole to a depth of 400 feet, taking out a 1 inch core, and will bore at any angle.

Three sets of feed gears are provided, to change feed from fast to slow, and additional gears for any desired rate of feed can always be furnished.

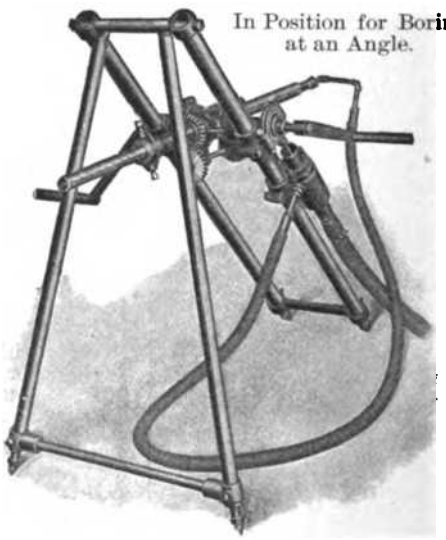
A belt pulley is furnished for use when running the drill by horse power or small engine. If the drill is to be used for underground work, extension screws may be fitted to the top of the two parallel columns, for jacking up against the walls of a tunnel. The remainder of the frame is then removed, and the drill becomes a column drill.

The special pump furnished with this drill is mounted on one of the columns, as shown in cut, and is worked by an eccentric on the main crank shaft. This is an important feature, as it saves the labor of one man, who was formerly needed when a separate hand pump was used. If, however, an independent hand pump is for any reason preferred, it will be furnished instead of the attached pump. Prices on application.



In Position for Vertical Boring.

FIG. 5641



In Position for Boring at an Angle.

FIG. 5642

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HINGED SWIVEL HEAD CLOSED

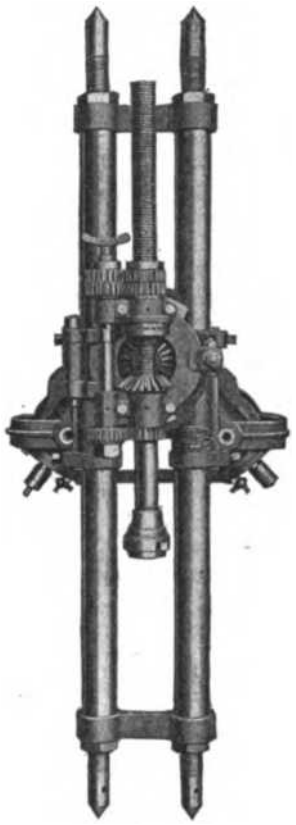


FIG. 5643

UNDERGROUND PROSPECTING DRILL

MOUNTED ON COLUMNS FOR UNDERGROUND WORK

DESCRIPTION, FIGS. 5643 AND 5644

This machine can be run either by steam or compressed air, and is especially valuable in sinking shafts, driving tunnels, or in any possible position where any kind or style of drill can be used. In underground prospecting its lightness, combined with ease of management, makes it particularly valuable, as by its use a great saving of both time and expense can be effected as compared with the ordinary method of cross cutting, sinking winzes, etc. For surface prospecting the drill is mounted on a bed plate which takes the place of the columns used for underground work. The machine is furnished mounted on columns, or on bed plate, or with both mountings, as preferred. The change from columns to bed plate can be made in a few moments' time.

This machine has a capacity of 400 feet depth, for 1 1/16 inch hole, vertically, horizontally, or at any angle. Will bore at any angle. The engines are double cylinder oscillating. The engines run very steadily at a high rate of speed. This drill is also now furnished either with the differential feed as shown in cuts, or with the hydraulic feed, if preferred.

Weight, set up as shown, about.....300 pounds.
Size of Bit.....1 1/16 inches.
" " Core.....1 inch.
Capacity.....400 feet depth.
Size of Boiler required.....8 H.P.

Or may be operated by compressed air.

PRICES ON APPLICATION

HINGED SWIVEL HEAD OPEN

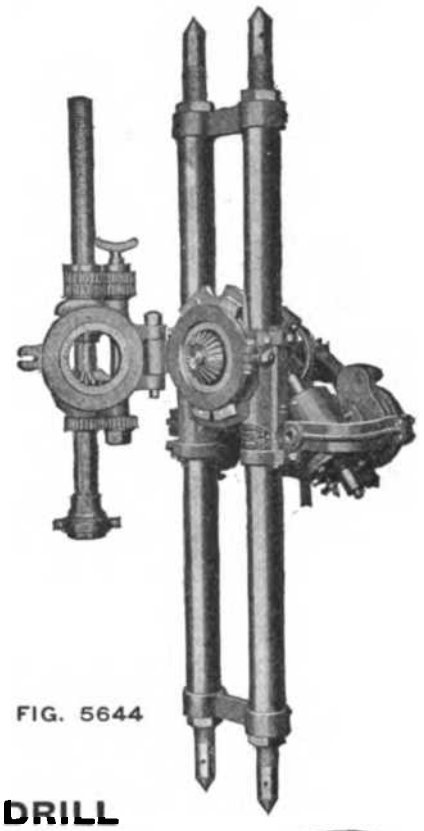


FIG. 5644

DIAMOND BITS

FOR PROSPECTING MINES, TUNNELING, ETC.

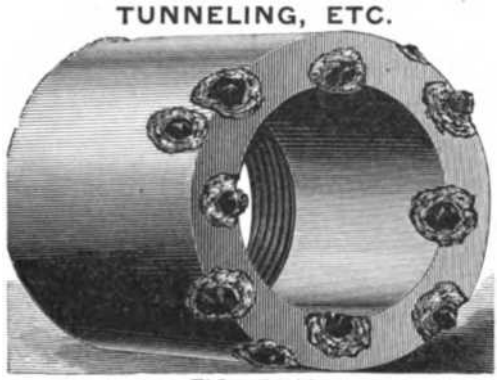


FIG. 5646

SOLID HEAD

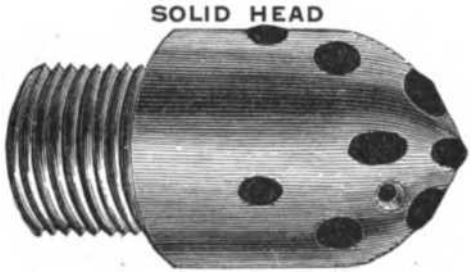


FIG. 5647

CORE BIT

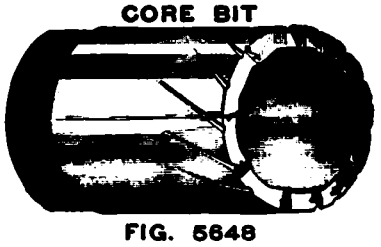


FIG. 5648

These Core Bits and Solid Head furnished of any size, armed with Black Diamonds. Carbon or Bortz.

Parties ordering Bits or Heads will please state the name of the machine, and outside and inside diameter of the Core Bit required, and the outside diameter of the Solid Head, and about the quality of rock to be bored. For small drills the socket should always be sent to have the drill fitted thereto.

PRICES ON APPLICATION

PROSPECTING DRILL

DESCRIPTION, FIG. 5645

This drill has a capacity of from 800 to 1,000 feet depth for 2 1/16 inch hole, and is well adapted either for boring from the surface or for underground work. Will bore at any angle. It has double cylinder oscillating engines, accurately balanced, and can be run at a high rate of speed with very little vibration. The engines work well either with steam or with compressed air. The feed is hydraulic, with hinged swivel head. The spindle has improved roller thrust bearings. The hoisting gear is direct acting, with main drum fitted for wire rope, and slip drum on same shaft for use in driving casing.

When boring at an angle, or horizontally, the hoisting drum and its brackets may be moved around the axis of the machine, and fixed in such position as to pull in a straight line with the hole. The drum is fitted with friction brake for use in lowering rods, and the hoisting gear is thrown out of connection when not in actual use. This is a very handy machine for general work. It has been used to a depth of 1,400 feet, though only rated at 1,000 feet.

Weight, set up about..... 1,350 pounds.
Heaviest piece packed for shipment.....450 pounds.
Size of Bit.....2 1/16 inches diameter.
" " Core.....1½ " "
Capacity.....800 to 1,000 feet depth.
Size of Boiler required.....10 to 12 H.P.

Or may be operated by compressed air.

PRICES ON APPLICATION

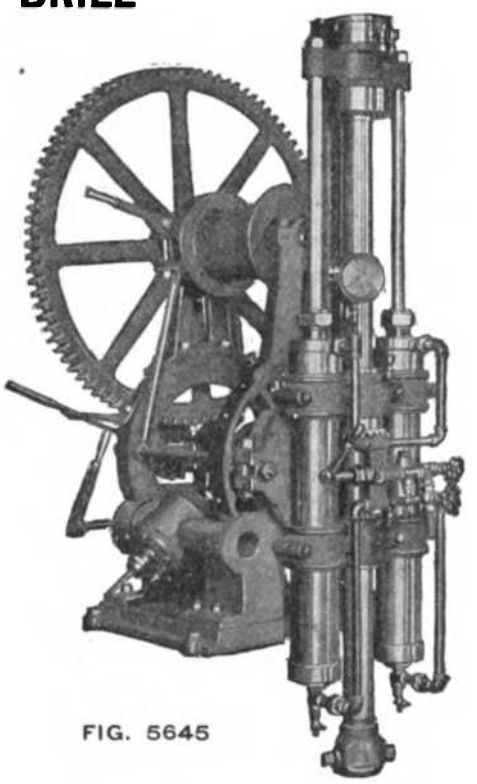


FIG. 5645

CARBON AND BORTZ DIAMONDS

Fig. 1. Fig. 2. Fig. 3. Fig. 4. Fig. 5.



FIG. 5649

DESCRIPTION, FIG. 5649

Two kinds of diamonds are used in setting bits for diamond drill work; carbons and bortz. The carbon is found in opaque nodules of irregular shapes, black on the outside and of various shades of gray when broken open. It has no cleavage plane, differing in this respect from the brilliant, and thus is especially fitted for diamond drill work in hard rock, the diamond simply wearing away gradually without splitting or cleaving. The bort is a semi-transparent diamond, of similar appearance to the rough brilliant, but of different crystallization. It is usually nearly spherical in shape, and of moderate size. The carbons are found in Brazil, the bortz in Brazil and South Africa. For hard rock, bits for diamonds drills are set up with carbons entirely; for medium rock, with half carbons and half bortz; for soft rock, occasionally with all bortz. The bortz are as hard as the carbon, but not as tough. Having a cleavage plane, they may shatter if used in hard rock, while the carbon will very slowly wear away, without danger of breaking. Carbon (black diamonds) or diamond bortz unset supplied of the first quality, of any size and in any quantity, at the lowest market rates.

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AIR COMPRESSORS

Duplex Class J, Belt Driven.

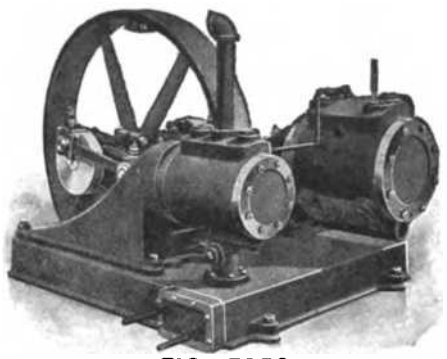


FIG. 5650

Class E, Belt Driven, for Light Duties.

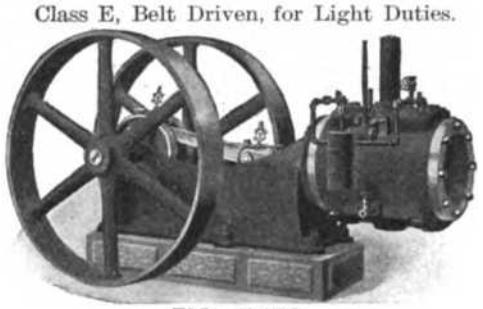


FIG. 5653

Class A, Standard Type, Steam Driven.

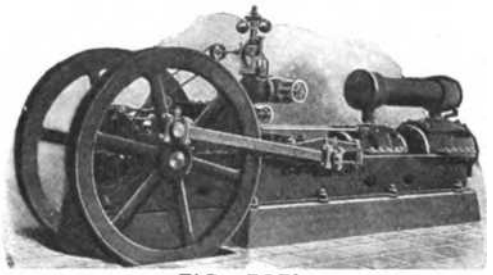


FIG. 5651

We can furnish air compressors, varying in design, for duties requiring an air pressure from a few pounds up to 5,000 pounds to the square inch; from machines of the smallest size up to the largest plants of Duplex Corliss Compound Compressors.

Class A—Direct steam driven Compressor.
Class B—Driven by belt, rope, gear, Pelton water wheel, or turbine.
Class C—Corliss type Air Compressor.
Class D—Driven by belt, rope, gear, Pelton wheel, or turbine.
Class E—Small belt driven Air Compressor, for light duties.

Duplex Class H, Steam Driven.

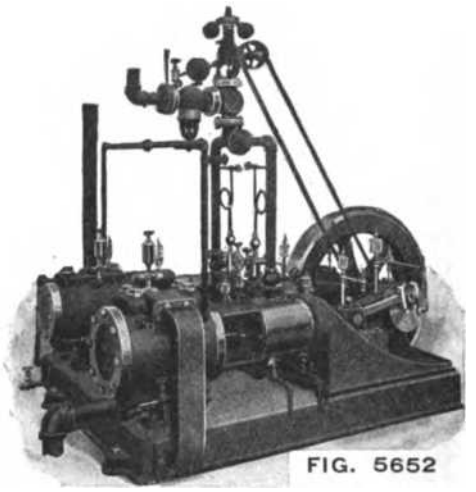


FIG. 5652

Class F—Small steam driven Air Compressor.
Class G—Duplex steam driven Compressor, with Meyer's adjustable cutoff valve gear.
Class H—Duplex steam driven Air Compressor.
Class J—Duplex Air Compressor.

We illustrate herewith several types of air compressors suitable for all the duties required in mining, quarrying or other work in connection with rock drills, pneumatic tools, channelers, hoisting engines, compressed air haulage locomotives and all other apparatus to which compressed air may be applied. Complete catalogue, prices, etc., may be had on application.

PORTABLE MOTOR DRIVEN AIR COMPRESSOR

WITH AUTOMATIC CONTROLLER

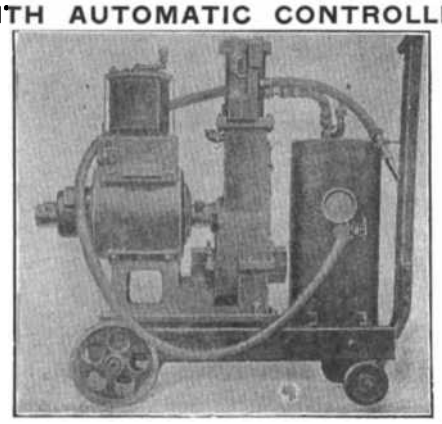


FIG. 5654

It is capable of being run at a pressure of 71 pounds. The whole apparatus is self-contained and dust proof. Crank and crank journals run in oil. Reservoir is supplied at bottom with a drip cock. In ordering state the voltage of your current. Motors are furnished for 110, 220 and 500 volts.

CAN FURNISH THESE WITH BELTS INSTEAD OF MOTOR

Sizes of Compressors.	B	E	C	D
Diameters of cylinder	4 in.	4½ in.	5 in.	6 in.
Length of stroke	4¼ in.	4¼ in.	4¼ in.	6 in.
Diameters of discharge pipe	½ in.	½ in.	½ in.	¾ in.
Number strokes of compressors	125	125	125	150
Size pulley on belt driven machine	10x2½in.	10x2½in.	10x3 in.	10x4 in.
Speed of motor, revolution	900	900	900	750
Voltage of current for speed given	500	500	500	500
Weights of portable machines	800 lbs	800 lbs.	800 lbs.	1000 lbs.
Weights of stationary machines	720 lbs.	720 lbs.	720 lbs.	900 lbs.
Contents, cubic feet	6½	6	6½	9
Free air per minute, cubic feet	8	10	12	30

Prices on application.

ELECTRIC BLASTING APPARATUS

BLASTING MACHINES

PULL UP



FIG. 5655

PRICES, FIG. 5655

No.		Each.
3	will fire 20 to 30 holes	$25 00
4	" " 40 to 50 "	50 00
5	" " 75 to 100 "	75 00

PRICES, FIG. 5656

No.		Each.
3	will fire 1 to 20 holes	$25 00
4	" " 40 to 50 "	50 00

They are especially adapted for submarine blasting, large railroad quarrying and mining works.

UNITED STATES STANDARD



FIG. 5656

VICTOR BLASTING MACHINE



FIG. 5657

No. 1 will fire 5 to 8 holes, price.....$15 00
Weight only 15 lbs.; adapted for prospecting, stump blasting, well sinking, etc.

VICTOR LEADING WIRE REEL

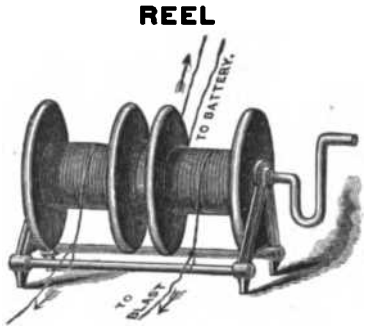


FIG. 5658

Price.....$4 00

CONNECTING WIRE HOLDER



FIG. 5659

Price.....$2 00

CONNECTING WIRE

Price.....40c. per lb.

LEADING WIRE



FIG. 5662

Price.....40c. per lb.

INSULATING TAPE



FIG. 5663

Price.....$1 50 per lb.

DOUBLE STRENGTH

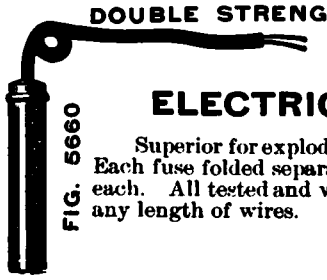


FIG. 5660

VICTOR ELECTRIC PLATINUM FUSES

Superior for exploding any make of dynamite or blasting powder. Each fuse folded separately and packed in neat paper boxes of 50 each. All tested and warranted. Single and double strength, with any length of wires.

SINGLE STRENGTH



FIG. 5661

PRICES, FIGS. 5660 AND 5661. IMPROVED WATER PROOF INSULATION

Wires, feet	4	6	8	10	12	14	16	18	20	22	24	26	28	30
Single strength, ordinary quality, equal to quintuple force, per hundred	$3 00	3 54	4 08	4 62	5 16	5 70	6 24	6 78	7 32	8 32	9 32	10 32	11 32	12 32
Double strength, extra quality, equal to double quintuple force, per hundred	$3 75	4 29	4 83	5 37	5 91	6 45	6 99	7 53	8 07	9 07	10 07	11 07	12 07	13 07

Longer lengths made to order.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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SINGLE CYLINDER FRICTION DRUM PORTABLE HOISTING ENGINE

WITH FOOT BRAKE AND DOCK WHEELS

Specially Adapted for Pile Driving, Railroads, Contractors, Bridge Builders, Coal Yards, Docks, Ships, Quarries, and General Hoisting Purposes.

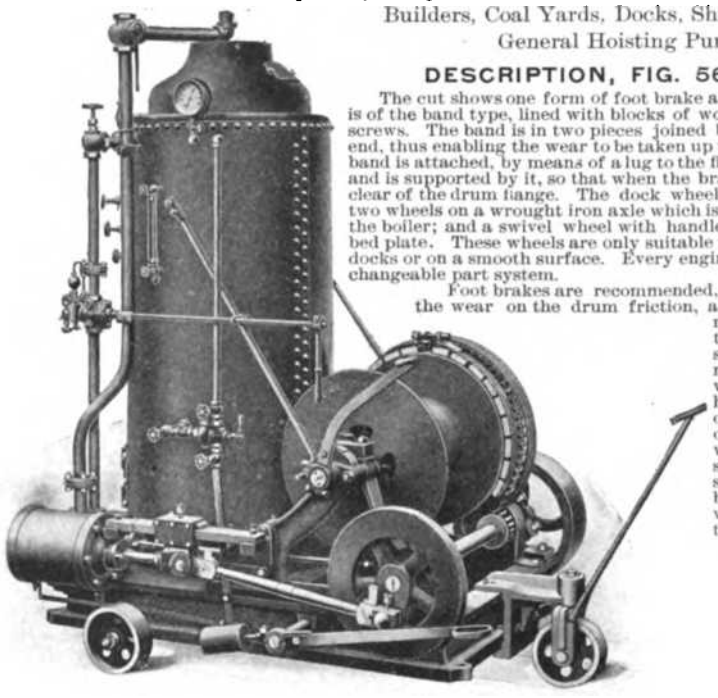


FIG. 5664

DESCRIPTION, FIG. 5664 AND 5665

The cut shows one form of foot brake and dock wheels. The foot brake is of the band type, lined with blocks of wood secured to the band by lag screws. The band is in two pieces joined by a bolt with jamb nuts on the end, thus enabling the wear to be taken up without difficulty. The friction band is attached, by means of a lug to the fixed guard over the gear wheels, and is supported by it, so that when the brake is not in operation it is held clear of the drum flange. The dock wheels are of cast iron and consist of two wheels on a wrought iron axle which is clamped to the bed plate under the boiler; and a swivel wheel with handle, bolted to the front end of the bed plate. These wheels are only suitable for moving the engine about on docks or on a smooth surface. Every engine made to gauge on the interchangeable part system.

Foot brakes are recommended, for the reason that they save the wear on the drum friction, although they are not actually required for ordinary work, as the improved friction drum answers quite as well for all ordinary lowering purposes; but when it is desired to lower heavy weights, or long distances, or to use the engine for other purposes while the weight hoisted hangs suspended, then they should be used. They can be applied to any engine without them at any time.

WITH BOILER AND FIXTURES COMPLETE ON BED PLATE, WITHOUT FOOT BRAKE

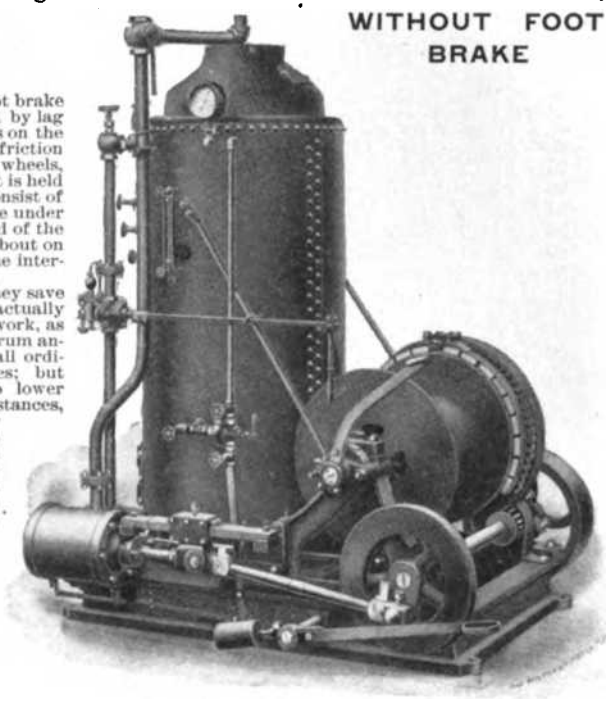


FIG. 5665

CAPACITIES, FIGS. 5664 AND 5665

Size Numbers of Engine.	Horse Power Usually Rated.	Dimensions of Cylinder. Diams. Inches.	Stroke, Inches.	Weight Hoisted Single Rope, Usual Speed, Lbs.	Suitable Weight of Pile Driving Hammer for Quick Work, Lbs.	Dimensions of Hoisting Drum. Diams. Body B'tween Flanges, Inches.	Length Body B'tween Flanges, Inches.	Diams. Flanges, Inches.	Dimensions of Bed Plate. Width, Inches.	Length, Inches.	Dimensions of Boiler. Diams. Shell, Inches.	Height Shell, Inches.	Number of 2 Inch Tubes.	Estimated Shipping Weight Complete, Lbs.
1	4	5	8	1200	1000	10	20	22	38	60	28	63	40	3550
2	6	6¼	8	1500	1250	10	20	22	38	60	28	69	40	3950
2½	8	6¼	10	1750	1500	12	20	24	41	73	30	72	44	4850
3	10	7	10	2500	1800	12	20	24	41	73	32	75	48	5050
3½	11	7	10	2500	2000	14	22	26	45	73	34	78	52	5975
4	12½	8¼	10	4000	2500	14	25	29	47	73	36	75	57	6750
4½	15	8¼	10	4000	2800	14	23	29	47	73	36	81	57	6900
5	20	8½	12	6000	4000	16	26	33	54	84	40	84	80	9650
6	25	10	12	8000	5000	16	26	33	54	84	42	90	88	10000

Reversible link motion and friction drum engines combined made to order. The drums are thereby shortened about two inches.

PRICES ON APPLICATION

DOUBLE CYLINDER FRICTION DRUM PORTABLE HOISTING ENGINE

WITH BOILER AND FIXTURES COMPLETE

Specially Adapted for Pile Driving, Railroads, Contractors, Bridge Builders, Quarries, Docks, Coal Yards, Ships and General Hoisting Duty.

CAPACITIES, FIG. 5666

Size Numbers of Engine.	Horse Power Usually Rated.	Dimensions of Cylinders. Diams., Inches.	Stroke, Inches.	Weight Hoisted Single Rope, Usual Speed, Lbs.	Suitable Weight of Pile Driving Hammer for Quick Work, Lbs.	Dimensions of Hoisting Drum. Diams. Body B'tween Flanges, Inches.	Length Body B'tween Flanges, Inches.	Diams. Flanges, Inches.	Dimensions of Bed Plate. Width, Inches.	Length, Inches.	Dimensions of Boiler. Diams. Shell, Inches.	Height Shell, Inches.	Number of 2 Inch Tubes.	Estimated Shipping Weight Complete, Lbs.
6½	6	5	6	1500	1000	10	20	22	40	57	30	72	44	3765
7	8	5	8	2000	1500	12	22	24	47	67	32	75	48	5050
8	12	6¼	8	3000	2000	14	22	26	50	71	36	75	57	6525
8½	16	6¼	10	4000	2800	14	26	26	54	75	38	81	57	7625
9	20	7	10	5000	4000	14	26	26	54	75	40	84	80	8025
10	30	8¼	10	8000	6000	14	27	29	57	79	42	90	88	9275
11	40	8½	12	10000	8000	16	32	36	70	97	50	102	115	16000
12	50	10	12	12000	9000	16	32	36	70	97	53	102	124	18000

PRICES ON APPLICATION

Reversible link motion and friction drum engines combined made to order. The drums are thereby shortened about three inches.

The double cylinder engines are similar in all respects to the single cylinder engines above, except that they have the special feature of having no centers—the engines being connected at an angle of 90°—thus being much easier to start, handle, etc. This is of special importance for many kinds of hoisting, particularly for quarry and other heavy work, as they are always ready to start the load easily and steadily. We recommend the double cylinder engines for all general hoisting purposes. Injectors are supplied for feeding the boilers. Foot brakes are recommended, although not actually required for ordinary hoisting purposes, except where it is desired to lower heavy weights, or long distances, etc.

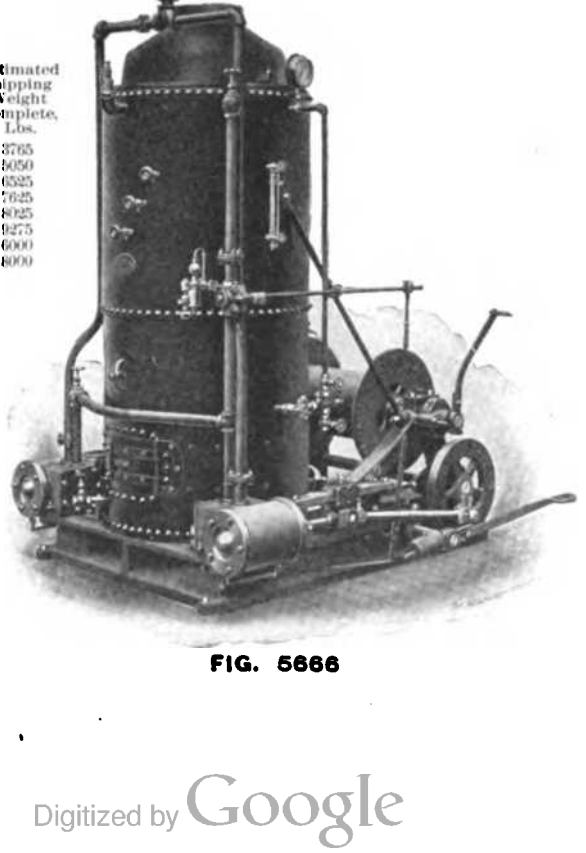


FIG. 5666

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SINGLE CYLINDER IMPROVED PATENT FRICTION DRUM HOISTING ENGINE

WITHOUT BOILER

Specially Adapted for Contractors, Railroads, Docks, Warehouses, Quarries, Coal Yards, Steam Lighters, Sailing Vessels and General Hoisting.

CAPACITIES, FIG. 5667

Size Numbers of Engine.	Horse Power Usually Rated.	Dimensions of Cylinder: Diams., Inches.	Dimensions of Cylinder: Stroke, Inches.	Weight Hoisted Single Rope, Usual Speed, Lbs.	Dimensions of Hoisting Drum: Diams., Inches.	Dimensions of Hoisting Drum: Lengths, Inches.	Sizes of Bed Plate: Width, Inches.	Sizes of Bed Plate: Lengths, Inches.	Estimated Shipping Weight, Lbs.
25	3	5	6	600	8	10	26	44	1,185
26	4	5	8	1,000	10	15	34	59	2,000
27	6	6¼	8	1,500	10	15	34	59	2,080
28	10	7	10	2,000	12	16	38	68	2,500
29	15	8¼	10	3,000	14	18	42	72	3,450
30	20	8½	12	5,000	16	26	54	84	5,500
31	25	10	12	6,000	16	26	54	84	6,000

PRICES ON APPLICATION

The above engines are made with Reversible Link Motion instead of Friction Drum, of same sizes.

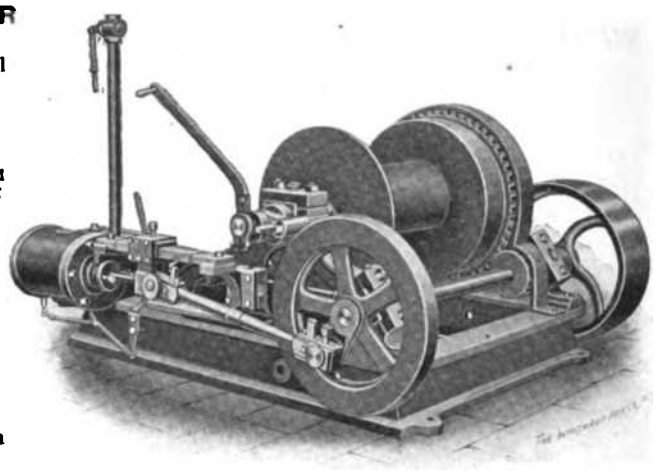
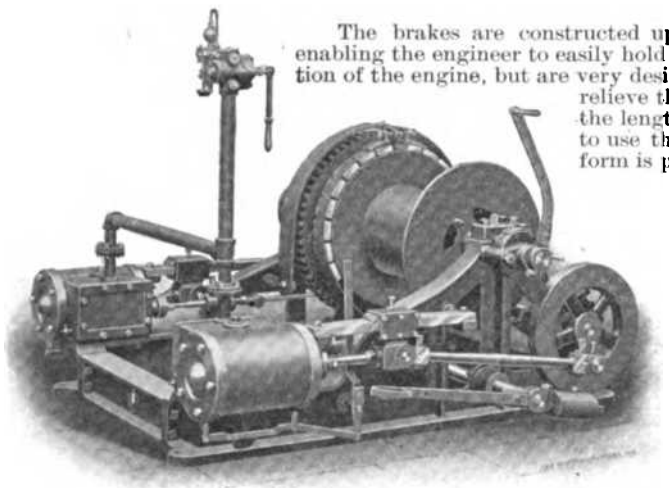


FIG. 5667

DOUBLE CYLINDER PATENT FRICTION DRUM HOISTING ENGINE

WITHOUT BOILER, WITH FOOT BRAKES



The brakes are constructed upon a different principle from the ordinary band brake and have great power, enabling the engineer to easily hold any load the engine can handle. They are not absolutely necessary to the operation of the engine, but are very desirable, and are recommended wherever there is much lowering to be done, as they relieve the drum friction entirely of the wear due to lowering, and therefore tend to increase the length of service of the drum friction. They are, however, necessary when it is desired to use the winch head while a load is hanging on the drum. A winch head of improved form is placed upon the outer end of drum shaft, but is not shown in the engraving.

CAPACITIES, FIG. 5668

Size Numbers of Engine.	Horse Power Usually Rated.	Dimensions of Cylinders: Diams., Inches.	Dimensions of Cylinders: Stroke, Inches.	Weight Hoisted Single Rope, Usual Speed, Lbs.	Dimensions of Hoist'g Drum: Diams., Inches.	Dimensions of Hoist'g Drum: Lengths, Inches.	Sizes of Bed Plate: Width, Inches.	Sizes of Bed Plate: Lengths, Inches.	Estimated Shipping Weight, Lbs.
32	6	5	6	1,000	10	14	34	44	1,750
33	8	5	8	1,650	12	14	36	56	2,200
34	12	6¼	8	2,500	14	16	39	59	2,700
35	20	7	10	3,500	14	18	44	70	3,665
36	30	8¼	10	6,000	16	26	54	72	5,275
37	40	8½	12	10,000	16	24	62	84	8,750
38	50	10	12	12,000	16	24	62	84	9,225

PRICES ON APPLICATION

Every engine made to gauge on the interchangeable part system.

FIG. 5668

DOUBLE CYLINDER, DOUBLE FRICTION DRUM HOISTING ENGINE

WITH BOILER AND FIXTURES, RATCHETS AND PAWLS COMPLETE

Specially Adapted for Pile Driving, Dock and Bridge Building, Quarries, Railroads, Sewer Construction, Small Suspension Cableways, etc.

This engine is the most improved style of engine for use in connection with general hoisting where two independent drums are required. It is of standard double cylinder type, which insures its quickness in starting under a heavy load, as, the cranks being connected at an angle of 90 degrees, there are no centers. The drums contain the latest and most improved form of friction, and are absolutely independent in action.

CAPACITIES, FIG. 5669

Size Numbers of Engine with Boiler.	Horse Power Usually Rated.	Dimensions of Cylinders: Diameters. Inches.	Dimensions of Cylinders: Stroke, Inches.	Dimensions of Hoisting Drums: Diameters, Inches.	Dimensions of Hoisting Drums: Lengths, Inches.	Weight Hoisted Single Rope, Average Speed.	Suitable Weight of Pile Driving Hammer for Quick Work.
70½6	6	5	6	10	20	1,500	1,000
70⅛	8	5	8	12	22	2,000	1,500
70¼	12	6¼	8	14	22	3,000	2,000
70⅜	16	6¼	10	14	26	4,000	2,800
71	20	7	10	14	26	5,000	3,500
72	30	8¼	10	14	27	8,000	5,000
73	40	8½	12	16	32	10,000	8,000
74	50	10	12	16	32	12,000	10,000

Size Numbers of Engine with Boiler.	Dimensions of Boiler: Diameters, Inches.	Dimensions of Boiler: Height, Inches.	Dimensions of Boiler: Number of 2 Inch Tubes.	Dimensions of Bed Plate: Width, Inches.	Dimensions of Bed Plate: Lengths, Inches.	Estimated Shipping Weight with Boiler Complete.
70½6	30	72	44	40	70	4,620
70⅛	32	75	48	47	80	6,500
70¼	36	75	57	50	86	8,000
70⅜	38	81	68	54	89	9,350
71	40	84	80	54	89	9,625
72	42	90	88	57	94	11,485
73	50	102	124	70	117	19,675
74	53	102	150	70	117	20,500

PRICES ON APPLICATION

The above engines can be furnished with Safety Locking Levers, also New Patent Derrick Swinging Gear.

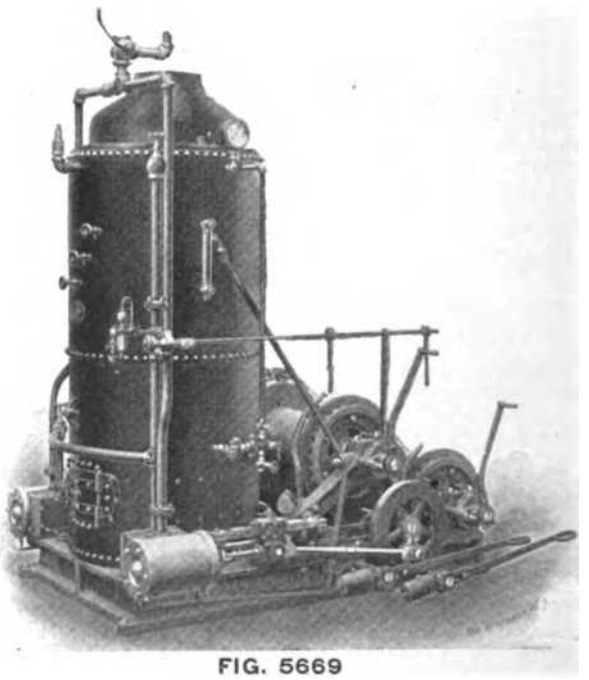


FIG. 5669

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THE 99 DOUBLE DRUM DERRICK ENGINE

WITH NEW PATENT BOOM SWINGING GEAR

Showing New Patent Boom Swinging Gear Attached to Standard Double Drum Engine Without Boiler.

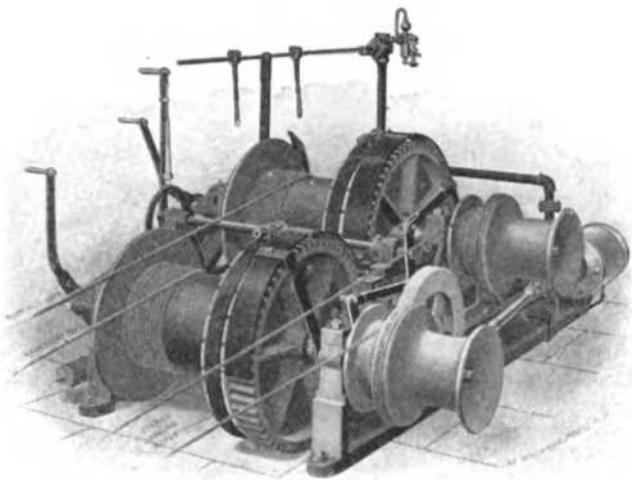


FIG. 5670

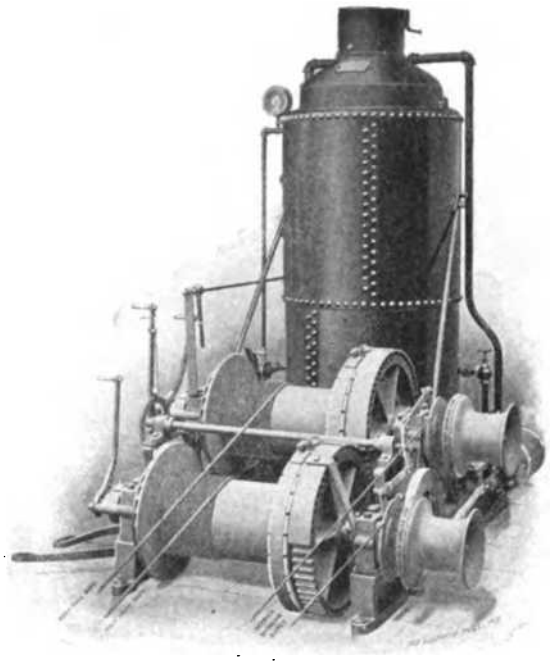


FIG. 5671

The cut illustrates a Standard Double Drum Hoisting Engine, with New Swinging Attachment, which is intended to swing the boom of a derrick. This is a simple and most effective device for swinging a boom. One of its most important features lies in the fact that it can be placed upon any standard double drum hoisting engines, either with or without the boiler. The small friction drums which are used for swinging ropes are placed inside the winch heads and occupy very little space, leaving the winch heads available for use, the same as with an ordinary double drum engine. Both these swinging drums are actuated by a vertical lever, arranged with a detent and quadrant, so that the lever may be applied and held by the detent in its position, without further attention on the part of the operator. By this means the device is easily handled by the operator, and the operations of hoisting the load, raising the boom and swinging the boom can all go on simultaneously with practically no more trouble than in handling an ordinary double drum engine. The winch heads are secured to the shaft by a sliding key or feather, and are of special form, having a sleeve upon which the swinging drum revolves; and a very powerful form of friction is used between the swinging drum and the winch head, so that the full power of the engine can be used.

The advantages of this swinging gear are apparent at once, as it occupies a small amount of space, does not add much to the weight of the engine, can be operated with very little exertion and requires very little time in its operation on account of the detent lever, which holds itself in whatever position placed. It is simpler in construction and costs less than any swinging device yet produced.

It can, without trouble, be put on double drum engines already sold. All that is necessary is to remove the old winches, drill and tap one ⅞ inch hole in the end of each shaft to receive the adjusting studs, and drill and tap two ⅝ inch holes in each frame to secure the brackets that carry the operating shaft and lever.

Directions and drawings for the attaching of the swinging device and for operating the same are furnished with each set.

In writing for prices of swinging boom always give number of engine stamped upon top of back cylinder heads.

We do not recommend this swinging gear for use on lighters and scows.

PRICES ON APPLICATION

DOUBLE CYLINDER DOUBLE FRICTION DRUM HOISTING ENGINE

WITH RATCHETS AND PAWLS, WITHOUT BOILER

Specially Adapted for Contractors, Bridge Builders, Railroads, Pile Drivers, Scows, Lighters, Quarries, etc., and Small Suspension Cableways.

For small suspension cableways this style of engine is well adapted, and by lagging up the drums a fair rate of hoisting speed is attained. In places where economy in first cost is a necessity the engine answers excellently, works well and gives entire satisfaction. Foot brakes are always used in this connection.

CAPACITIES, FIG. 5672

Size Numbers of Engine.	Horse Power Usually Rated.	Dimensions of Cylinders. Diameters, Inches.	Dimensions of Cylinders. Stroke, Inches.	Dimensions of Hoisting Drums. Diameters, Inches.	Dimensions of Hoisting Drums. Lengths, Inches.	Weight Hoisted, Single Rope, Average Speed.	Suitable Weight of Pile Driving Hammer for Quick Work.	Sizes of Bed Plate. Width, Inches.	Sizes of Bed Plate. Lengths Inches.	Estimated Shipping Weight, Lbs.
70¾	12	6¼	8	14	16	2500	2000	39	76	4400
71½	20	7	10	14	18	5000	3500	44	88	5525
72½	30	8¼	10	14	20	8000	6000	47	88	6210
73½	40	8½	12	16	24	10000	8000	62	107	13000
74½	50	10	12	16	24	12000	10000	62	107	13500

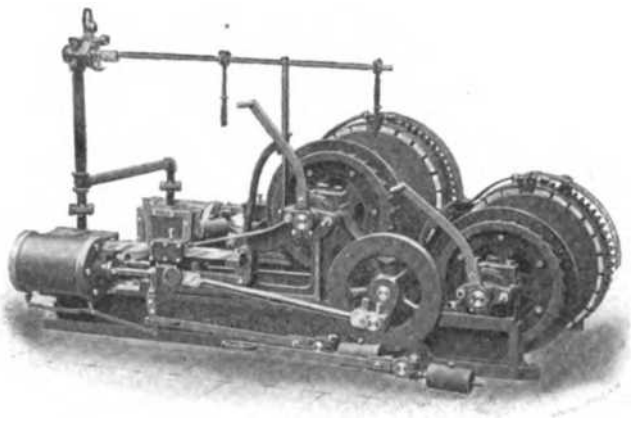


FIG. 5672

The above engines can be furnished with safety locking levers. New patent swinging gear, Fig. 5670, can be furnished with these engines.

PRICES ON APPLICATION

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DOUBLE CYLINDER, DOUBLE FRICTION DRUM HOISTING ENGINE WITHOUT BOILER

Specially Adapted for Use on Steamships, Lighters, Docks, Coal Yards, Small Dredges, etc.

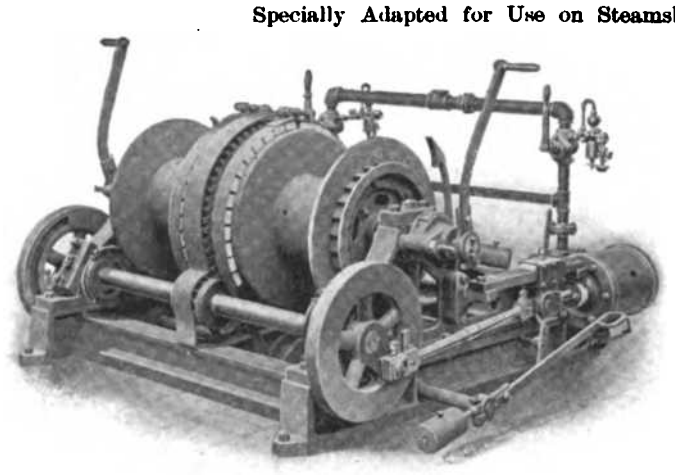


FIG. 5673

The advantage of this style of engine is that, two hoisting ropes being attached to the drums, they are always ready for immediate use, and therefore save the delay of changing the ropes. This type of engine is very simple, compact and effective, and large numbers of them are in use on steamships, where they are especially effective in handling the cargo.

CAPACITIES, FIG. 5673

Size Numbers of Engine.	Horse Power Double Cylinders.	Sizes of Cylinders—Diameters, Inches.	Sizes of Cylinders—Stroke, Inches.	Sizes of Drums—Diameters, Inches.	Sizes of Drums—Lengths, Inches.
100½	8	5	8	12	14
100¾	12	6¼	8	12	14
101½	20	7	10	14	14
102½	30	8¼	10	14	14

Hoisting Capacity Each Drum Worked Together, Pounds.	Hoisting Capacity One Drum Worked at a Time, Pounds.	Sizes of Bed Plate—Widths, Inches.	Sizes of Bed Plate—Lengths, Inches.	Estimated Shipping Weight, Pounds.
1000	2000	57	59	3500
1500	3000	57	59	3750
2000	4000	68	74	5780
3000	6000	68	74	5880

No ratchets and pawls are furnished unless specially ordered, and for which an extra charge will be made.

PRICES ON APPLICATION

DOUBLE CYLINDER REVERSIBLE LINK MOTION HOISTING ENGINE

WITH FOOT BRAKE

Specially Adapted for Mines, Inclines and all Rapid Hoisting.

The engraving represents a Standard Reversible Link Motion Hoisting Engine, which is especially designed and adapted for all general mining purposes. The drum is securely keyed to the shaft, and, the engine being reversible, the hoisting and lowering is done by steam, being absolutely under the control of the operator. A differential band brake is attached to the drum for the purpose of safety, and of ample power to hold the drum fast under any load the engine can raise. It can also be used for holding the load suspended at the top or at any point in the shaft, or as auxiliary to the engines in checking the speed in lowering. This style of engine is generally used in a single compartment shaft, or on a single track incline. It can also be used to advantage in a double compartment shaft, or a double track incline, in which case one loaded cage or car is hoisted while the empty cage or car is being lowered. When used in this manner the length of hoist is limited to the amount of rope the drum will hold in a single coil.

CAPACITIES, FIG. 5674

Size Numbers of Engine.	Horse Power Usually Rated.	Dimensions of Cylinders—Diameters, Inches.	Dimensions of Cylinders—Stroke, Inches.	Sizes of Hoisting Drum—Diameters, Inches.	Sizes of Hoisting Drum—Lengths, Inches.
53	12	5¼	8	23	22
54	20	7	10	29	23
55	30	8¼	10	41	39
56	40	8½	12	47	42
57	50	10	12	53	42
58	75	12¼	15	59	54
59	100	14	18	65	63
59¼	150	16	18	65	63
59⅝	200	18	24	72	70

Sizes of Wire Rope for which Drum is Grooved, Diameters, Inches.	Number of Feet Wire Rope Drum Holds, Single Coil.	Average Weight Engine Hoist, Pounds.	Average Hoisting Speed per Minute, Feet.	Sizes of Base or Engine Bed Plate—Widths, Inches.	Sizes of Base or Engine Bed Plate—Lengths, Inches.	Estimated Shipping Weight of Engine Only, Pounds.
⅝	200	1500	250	49	59	3125
¾	225	2000	275	54	72	5345
⅞	440	3000	350	72	73	7350
1	500	4000	375	83	84	11500
1	550	4500	400	86	89	12620
1	775	6500	450	102	110	21500
1	975	7500	450	117	124	28750
1⅛	900	10000	450	124	138	35000
1⅛	1160	13000	550	183	166	60000

Engines with different size drums from above made to order.

PRICES ON APPLICATION

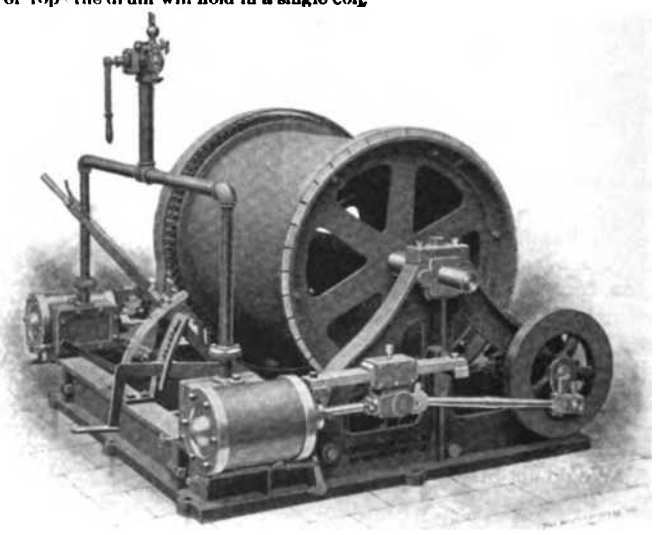


FIG. 5674

DOUBLE CYLINDER FRICTION DRUM HOISTING ENGINE

WITH POWERFUL FOOT BRAKES

Specially Adapted for Mines, Inclines and High Speed Hoisting Duty.

The cut represents the smaller size of Patent Friction Drum and Brake Hoisting Engine, suitable for use in mines, inclines, etc. These engines are not reversible, and are only run while hoisting, the lowering being done by means of the brake, or, if necessary, by the friction drum itself. It will thus be seen that the engine is very economical in the use of steam, and especially recommends itself for single compartment shafts or single track inclines. It is also particularly adapted for all kinds of hoisting where it is desired to have the drum loose on the shaft, so it may be thrown in and out of gear with the engine either in motion or standing still.

PRICES ON APPLICATION

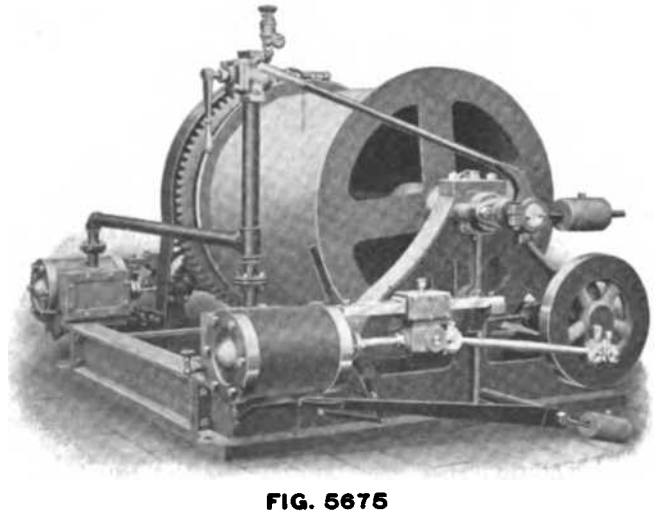


FIG. 5675

CAPACITIES, FIG. 5675

Size Numbers of Engine.	Horse Power Usually Rated.	Dimensions of Cylinders—Diameters, Inches.	Dimensions of Cylinders—Stroke, Inches.	Sizes of Hoisting Drum—Diameters, Inches.	Sizes of Hoisting Drum—Lengths, Inches.
60	12	6¼	8	24	26
61	20	7	10	29	26½
62	30	8¼	10	41	40
63	40	8½	12	47	43
64	50	10	12	53	42
65	75	12¼	15	59	54
66	100	14	18	65	64
66½	150	16	18	65	64
66⅝	200	18	24	72	70

Sizes of Wire Rope for which Drum is Grooved, Diameters, Inches.	Number of Feet Wire Rope Drum Holds, Single Coil.	Average Weight Engine Hoist, Pounds.	Average Hoisting Speed per Minute, Feet.	Sizes of Base or Engine Bed Plate—Widths, Inches.	Sizes of Base or Engine Bed Plate—Lengths, Inches.	Estimated Shipping Weight of Engine Only, Pounds.
⅝	225	1500	250	49	59	3050
¾	240	2000	275	54	72	5125
⅞	450	3000	350	72	73	8050
1	500	4000	375	83	84	13000
1	550	4500	400	86	89	14300
1	775	6500	450	102	110	21750
1	1000	7500	450	117	124	29650
1⅛	910	10000	450	124	138	35000
1⅛	1160	13000	550	183	166	61000

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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FRICTION DRUM AND BRAKE BELT HOIST

Specially Adapted for Factories, Warehouses, Docks, Icehouses, Quarries, Mines, etc.

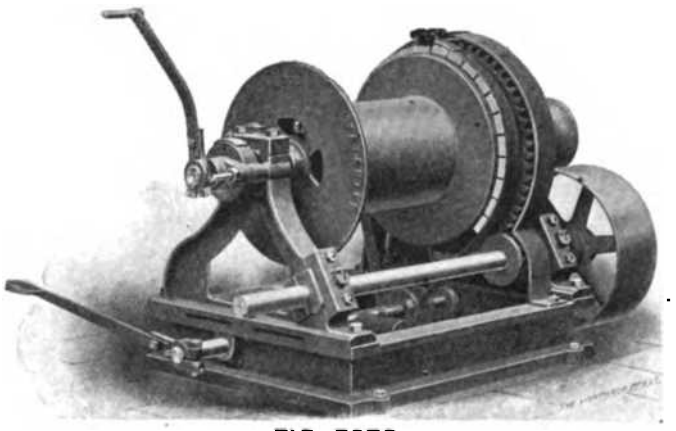


FIG. 5676

CAPACITIES, FIG. 5676

Nos.	Sizes of Drum. Diams., Ins.	Lengths, Ins.	Sizes of Pulley. Diams., Ins.	Face, Ins.	Proportion of Gearing. Pinion, No. of Teeth.	Spur Wheel, No. of Teeth.	Weight Hoisted, Single Rope, Lbs.	Speed of Hoist per Minute, Feet.	Sizes of Bed Plate. Lengths, Inches.	Widths. Inches.	Shipping Weight, Lbs., Single Drum.
191	10	19	20	6½	16	66	1000 to 1500	100 to 150	28½	38	1370
192	14	22	22	8½	13	59	2000 to 3000	150 to 200	36	45	2275
193	16	26	30	8½	16	81	4000	175 to 250	56	54	3620
194	34	26	30	8½	16	81	5000	175 to 300	56	54	4220
195	41	40	36	10½	17	85	6000	200 to 350	61	74	7075
196	47	46	36	10½	15	107	8000	250 to 400	68	88	9500

In ordering, state whether levers are to be connected or independent.
Size of driving pulley and speed of hoist may be changed to suit the conditions.

PRICES ON APPLICATION

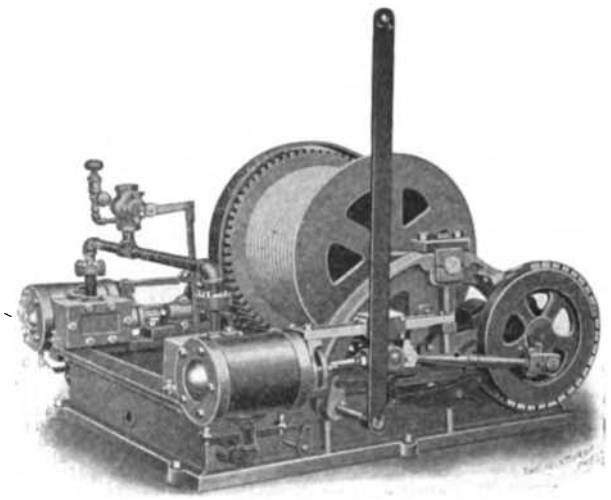


FIG. 5677

DOUBLE CYLINDER REVERSIBLE LINK MOTION AND SAFETY BRAKE COMPOUND GEARED PLATFORM ELEVATOR HOIST

The engraving represents an Improved Platform Elevator Hoisting Engine, which is particularly adapted for platform freight elevators in stores, warehouses, factories, breweries, etc.

PRICES ON APPLICATION

CAPACITIES, FIG. 5677

Size Numbers of Engine.	Horse Power.	Sizes of Cylinder. Diameters, Inches.	Stroke, Inches.	Sizes of Drum. Diameters, Inches.	Lengths, Inches.	Diameters of Rope for which Drum is Grooved, Inches.	Amount of Rope Drum Holds, Single Coil, Feet.
94¼	6	5	6	19	15½	¾	80
95	8	5	8	19	16	¾	90
96	12	6¼	8	23	15½	¾	120

Sizes of Bed Plate. Widths, Inches.	Lengths, Inches.	Proportion of Spur Gearing.	Hoisting Capacity 60 Pounds Steam, Pounds.	Average Hoisting Speed per Minute, Feet.	Estimated Shipping Weight of Engine, Pounds.
38	48	18 to 1	1500	60	2050
39	58	10 to 1	2000	70	2700
39	58	10 to 1	3000	80	2800

DOUBLE CYLINDER REVERSIBLE LINK MOTION ENGINE

The engraving represents an Improved Reversible Link Motion Engine, which is specially adapted for dredges, excavators, boats or cars, for swinging and hoisting spuds, running winch heads, etc.; also for propelling power on boats, scows or cars, and for icehouses, where an auxiliary engine is required to operate the swinging gear, spud hoists, winch heads, etc. It is also adapted for any kind of work requiring a double cylinder engine for driving a line of shafting either by spur gearing or by means of sprocket or chain wheels and link belting. It is a particularly simple, compact and well balanced engine, and is designed for running smoothly and steadily at high speed. An improved throttle valve connection is used, which enables the engine to be handled by means of one lever, and run forward, reversed or held at the will of the operator. The front end of the bed plate is open, so that gearing may be attached directly in front as well as overhead, if desired. It is well adapted for operating a line of shafting with independent drums, for icehouses, docks, warehouses, etc., and, having link motion, the point of cut off may be varied as the work may require, thus enabling the engine to run with the utmost economy. All parts are made to gauge and are perfectly interchangeable, and finished parts can be supplied at a moment's notice.

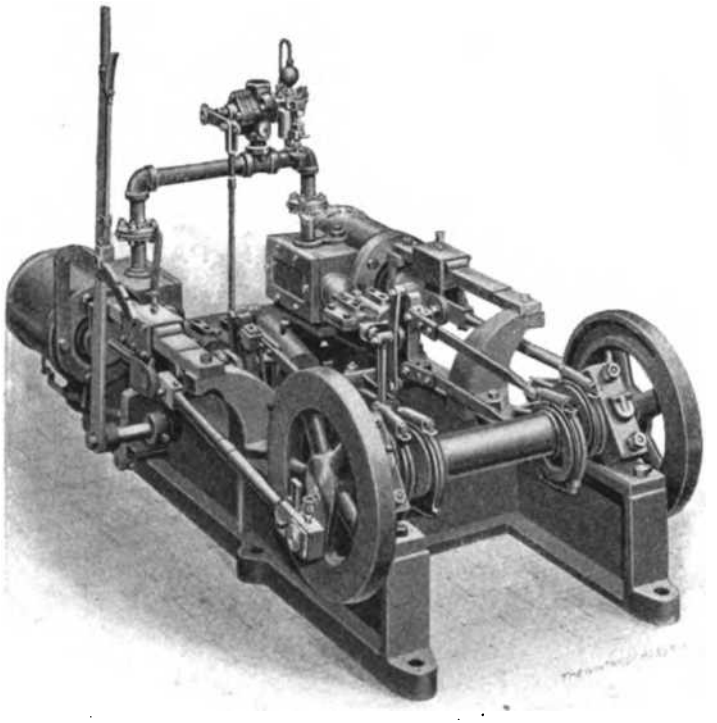


FIG. 5678

CAPACITIES, FIG. 5678

Size Numbers of Engine.	Average Horse Power (60 pounds Steam).	Sizes of Cylinders. Diameters, Inches.	Stroke, Inches.	Sizes of Bed Plates. Widths, Inches.	Lengths, Inches.	Depths, Inches.	Distance from Center of Crank Shaft to Bottom of Bed Plate, Inches.	Average Number of Revolutions per Minute.	Estimated Shipping Weight, Pounds.
113½	6	5	6	27¾	51½	7	10	300	1000
114	10	5	8	28	60½	10	14	250	1875
115	15	6¼	8	28	60½	10	14	225	2000
116	20	7	10	36	72½	10	15	200	3050
117	30	8¾	10	36	72½	10	15	180	3225
118	50	10	12	40½	85	11½	17½	150	5100
118½	75	12¼	15	44	108	15	23	140	8500
118¾	100	14	18	60	126	16	24¾	125	12050

The driving pinion will be furnished to suit customers' gearing, if so ordered and dimensions of same are given us, for which an extra charge will be made, as it is not included in the price of the engine.

The above engines furnished without link motion, if desired.

PRICES ON APPLICATION

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FRICTION DRUM ELECTRIC HOIST
FOR DIRECT CURRENT

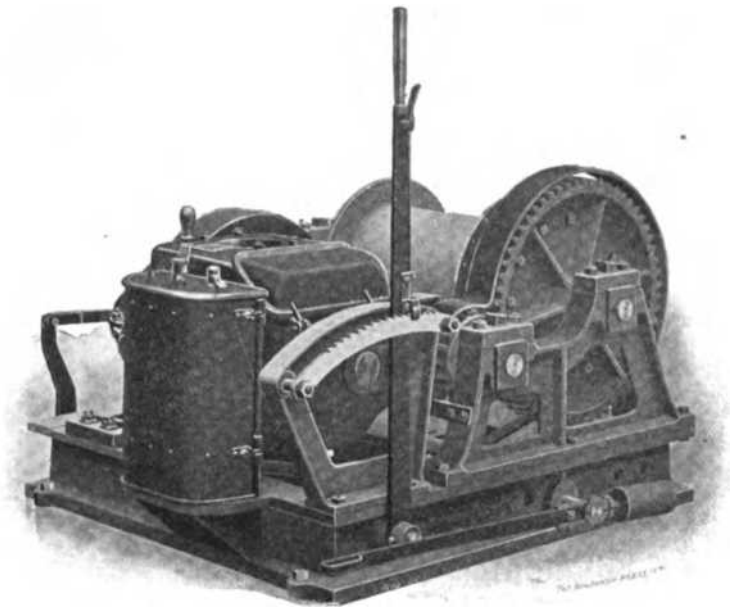


FIG. 5679

ELECTRIC HOIST MOUNTED ON DOCK WHEELS

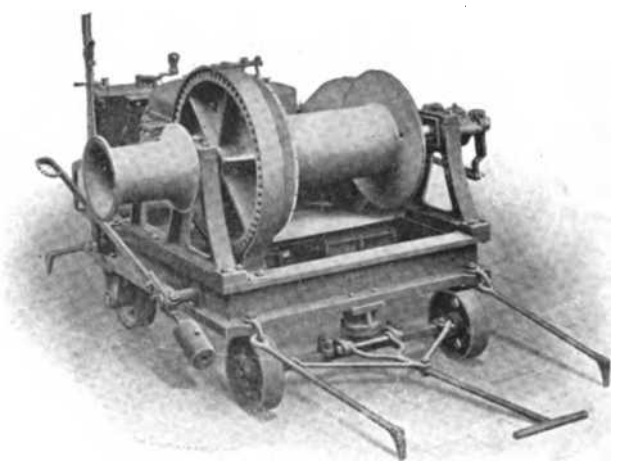


FIG. 5680

DESCRIPTION, FIGS. 5679 AND 5680

Specially Adapted for Docks, Lighters, Railroads, Contractors, Coal Yards, Warehouses, Etc., and General Hoisting Purposes.

The above engraving illustrates Standard Electric Hoist, with Friction Drum and Brake, for all general hoisting purposes, which is practically simple, strong and effective. The friction drum is of standard form, and has all the latest patented improvements. It is loose on the shaft, and engages with the double cone friction by a small end movement along the shaft by means of a screw, pin and crosskey. The screw and pin are encased in an oil box to reduce friction and prevent wear, and add greatly to the efficiency of the drum. The band brake is of regular differential type, is lined with blocks of wood which can easily be replaced when worn out, and a simple means of taking up wear as it occurs by shortening band is provided. The motor is of the armored type, and is strong, simple, efficient and compact. All moving parts are protected by suitable casing, so that they are not liable to injury from dust or moisture, which renders it especially adapted for hoisting purposes. The gearing from motor to intermediate shaft is cut, and is inclosed in an oiltight gear case. The drum gearing is cast from standard iron patterns, is very accurate and smooth and runs well. It is protected by a guard band. The controller is of the railway type, and is mounted so as to be convenient for the operator. Each controller will be provided with a reversing switch, which can be used or not, as desired. The friction and brake levers are mounted in a rack with notched quadrants, and are fitted with thumb latches. The resistance boxes are of special form and are securely packed on the inside of bed plate, so that the hoist is all complete, as shown in engraving, and perfectly portable. Particular attention has been given to the thorough insulation of all the electrical parts of the hoist, and every hoist is thoroughly and completely tested electrically at the works before being shipped. Dock wheels of the type shown in Fig. 5680 are supplied when desired. Winch heads are furnished on outer end of drum shaft if ordered, and are shown also in Fig. 5680. They are designed for use with a direct current of 500 or 250 volts, and ratings in table below apply to either voltage.

PRICES ON APPLICATION

CAPACITIES, FIGS. 5679 AND 5680

Numbers of Hoist.	Motor Horse Power.	Style of Motor.	Sizes of Drum. Diameters, Inches.	Sizes of Drum. Face, Inches.	Hoisting Duty. Weight Hoisted, Lbs.	Hoisting Duty. Speed in Feet per Minute.	Revolutions of Motor per Minute, 500 Volts.	Estimated Shipping Weight, Lbs.
510	8	C. B. 14	12	15	1500	100	500	3700
511	12	C. B. 14	12	16	2000	150	500	3950
512	17	G. E. 52	14	20	2500	175	500	5400
513	25	G. E. 52	14	22	3500	175	600	5800
514	40	G. E. 58	16	24	5000	200	500	7950
515	53	G. E. 57	16	28	7000	200	480	9925

DIRECT CURRENT ELECTRIC MINING HOIST
WITH PATENT FRICTION DRUM AND BRAKE

CAPACITIES FIG. 5681

Numbers of Hoist.	Motor Horse Power.	Style of Motor.	Sizes of Drum. Diameters, Inches.	Sizes of Drum. Face, Inches.	Diameters Rope for which Drum is Grooved.	Hoisting Duty. Weight Hoisted, Lbs.	Hoisting Duty. Speed in Feet per Minute.	Revolutions of Motor per Minute, 500 Volts.	Estimated Shipping Wght. of Hoist Complete, Lbs.
501	8	C. B. 14	12	15	Smooth	1000	150	500	4250
502	15	G. E. 52	24	24	5/8	1500	250	545	5600
503	25	G. E. 52	30	24	3/4	2000	300	435	7400
504	40	G. E. 58	42	30	7/8	2500	400	500	10150
505	50	G. E. 57	48	30	7/8	2500	500	510	13350
506	75	G. E. 51	54	36	1	4000	500	650	18550
507	90	G. E. 55	54	36	1	4000	600	600	20400
508	115	G. E. 55	60	36	1	5000	600	560	26000
509	115	G. E. 55	60	36	1	6000	500	560	26000

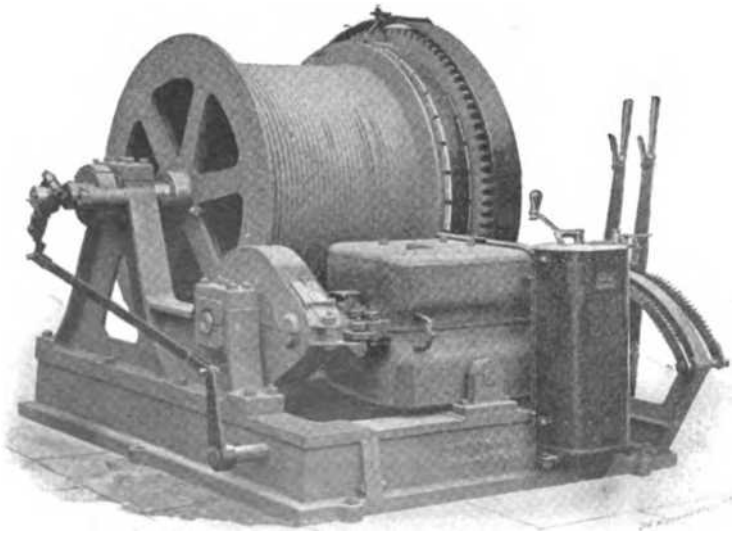


FIG. 5681

DESCRIPTION

The friction drum is of standard form and has all the latest patented improvements. The motor is of the armored type. All moving parts are protected by suitable casing, so that they are not liable to injury from dust or moisture, which renders it especially adapted for hoisting purposes. The gearing from motor to intermediate shaft is cut and is enclosed in an oiltight gear case. The drum gearing is cast from standard iron patterns, is very accurate and smooth, and runs well. It is protected by a guard band. The controller is of the railway type, and is mounted so as to be convenient for the operator. Each controller will be provided with a reversing switch, which can be used or not, as desired. The friction and brake levers are mounted in a rack with notched quadrants, and are fitted with thumb latches. Particular attention has been given to the thorough insulation of all the electric parts of the hoist, and every hoist is thoroughly and completely tested electrically at the works before being shipped.

They are designed for use with a direct current of 500 or 250 volts, and ratings in table above apply to either voltage.

The drum, motor and controller are mounted complete on bed plate. The resistance boxes are usually separate from hoist, being conveniently located so that the heat generated may not be annoying to the operator, but in the case of the smaller sizes it is sometimes desirable to have the machine completely self-contained and portable, and in this case the resistances are of special form and attached to the inside of bed plate.

PRICES ON APPLICATION

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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HORSE POWER HOISTING MACHINES

BELT POWER MACHINE

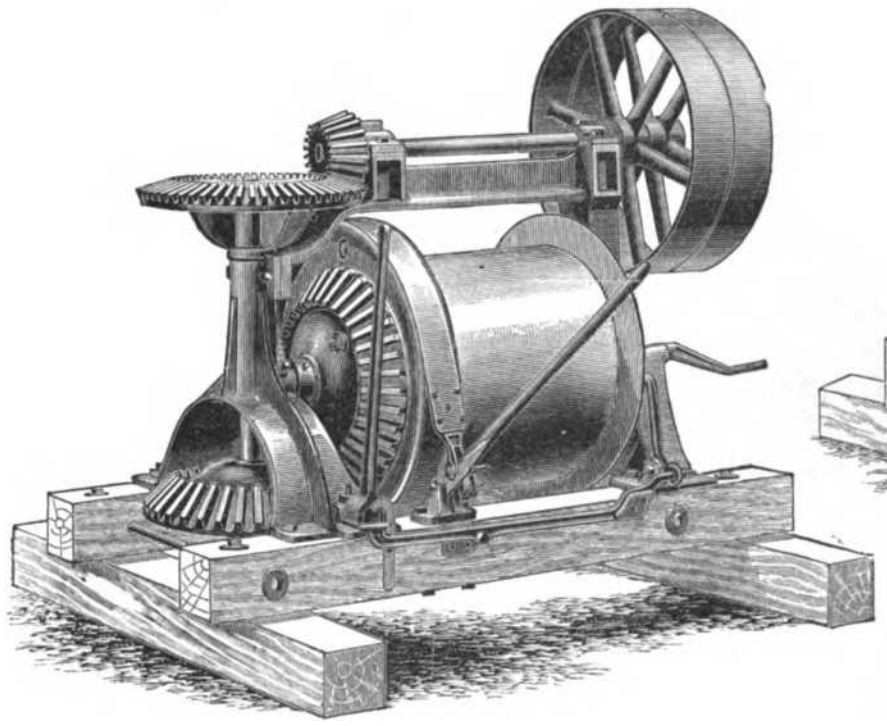


FIG. 5682

Constructed for use with belt power. Has automatic safety attachment and brake for lowering Driving shaft on power should run 25 revolutions per minute. Pulleys, tight and loose, 30 inches diameter, 5 inch face. Belt apparatus can be removed and horse power attachment used, if so desired. Weight, 1,700 lbs. Price, $150.00.

SINGLE DRUM HORSE POWER

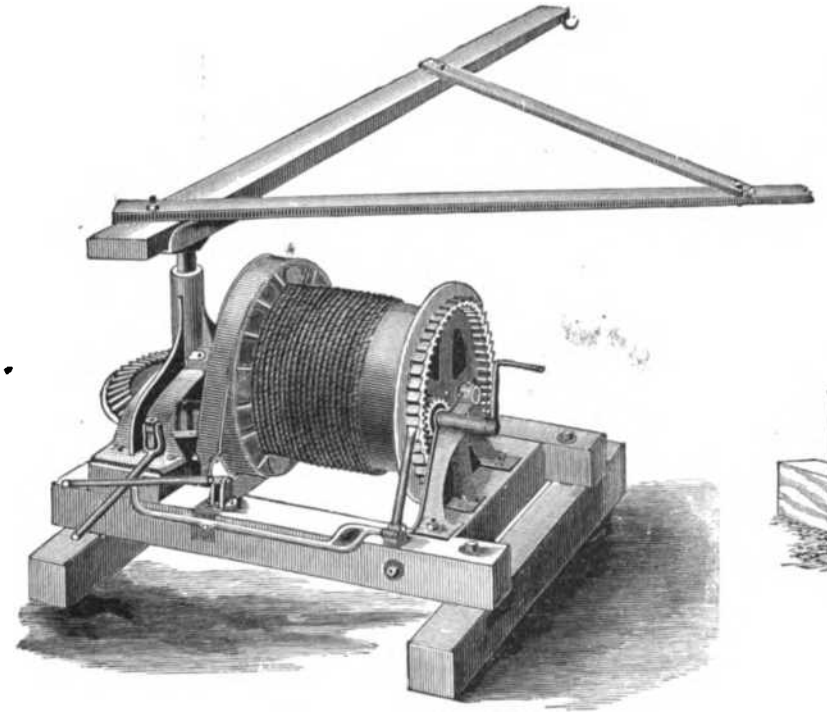


FIG. 5684

No. 2½ is designed for light lifting, such as slate, coal, etc. Single rope, 1,600 lbs. 33 feet per minute. Single block, 3,200 lbs. 17 feet per minute. Gears, 39 and 26 teeth. Drum, 22 inches long by 20 inches diameter. Bed frame, 5 feet 3 inches by 3 feet wide. Height, 3 feet 6 inches. Weight, 1,300 lbs. Price, $100.00.

SINGLE DRUM HORSE POWER

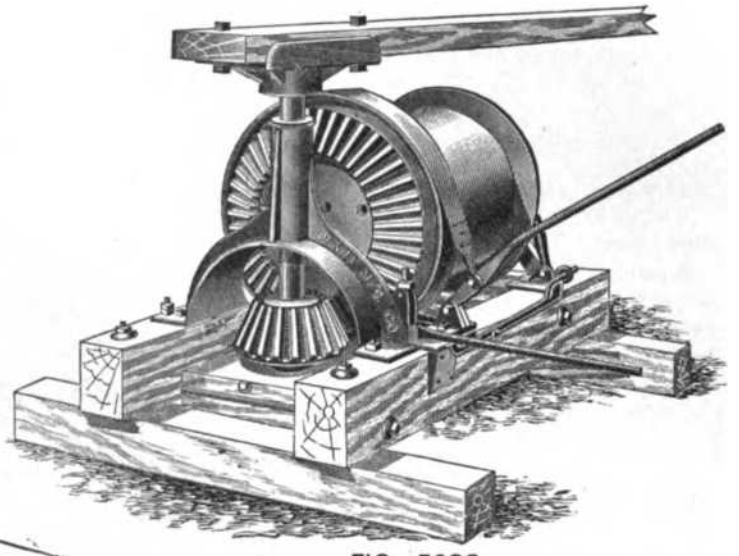


FIG. 5683

No. 1½ is designed for heavy work, quarrying or building. Single rope, 4,800 lbs. 11 feet per minute. Single block, 9,600 lbs. 5½ feet per minute. Two single blocks, 14,400 lbs. Gears, 20 and 43 teeth. Drum, 22 inches long by 20 inches diameter. Bed frame, 5 feet 3 inches by 2 feet 9 inches wide. Weight, 1,400 lbs. Price, $120.00.

No. 2 is designed for the ordinary building of bridge foundations and approaches and quarrying. Single rope, 2,400 lbs. 22 feet per minute. Single block, 4,800 lbs. 11 feet per minute. Two single blocks, 7,200 lbs. Gears, 34 and 34 teeth. Drum, 22 inches long by 20 inches diameter. Bed frame, 5 feet 3 inches long by 2 feet 9 inches wide. Height, 3 feet 6 inches. Weight, 1,300 lbs. Price, $100.00.

SINGLE DRUM DOUBLE SPEED

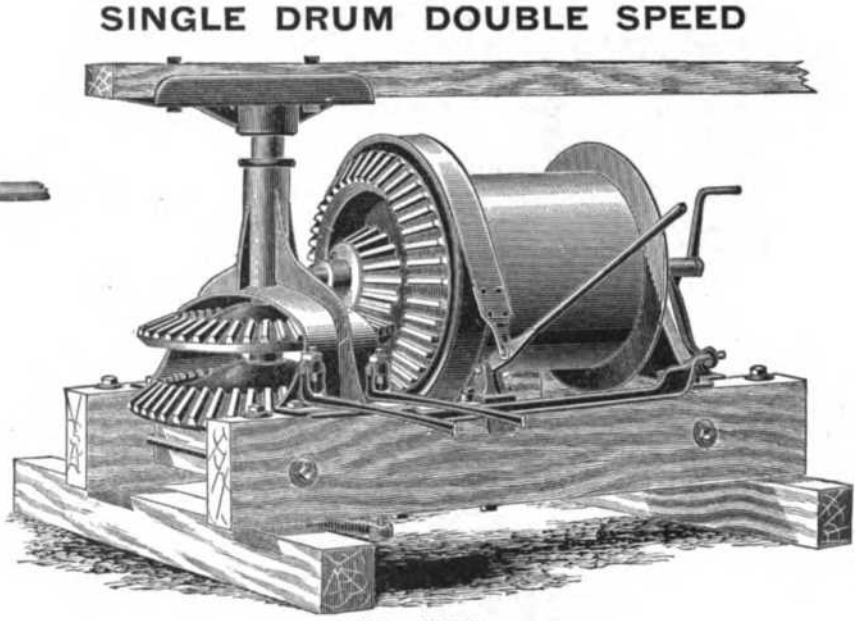


FIG. 5685

Designed for the Use of Builders and Quarrymen.

Fast speed—Single rope, 960 lbs 55 feet per minute. Fast speed—Single block, 1,960 lbs. 28 feet per minute. Slow speed—Single rope, 2,400 lbs. 22 feet per minute. Slow speed—Single block, 4,800 lbs. 11 feet per minute. Slow speed—Two single blocks, 7,200 lbs.

Gears, 42 and 42, 45 and 18 teeth. Drum, 22 inches long by 20 inches diameter. Bed frame, 6 feet long by 3 feet 3 inches wide. Height, 4 feet. Weight, 2,000 lbs. Price, $150.00.

DIRECTIONS FOR FIGS. 5683, 5684 AND 5685

To raise weight, start the horse and draw back gear lever. To lower, push forward gear lever and in the same instant apply brake and lower weight to place desired. To take up slack rope, use the crank on end of drum. To put wheels closer in gear, tighten two nuts connected with iron bridge tree, and adjust collar on outer end of drum.

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HORSE POWER HOISTING MACHINES
DOUBLE DRUMS AND DOUBLE SPEED

Designed for the use of Quarrymen and Builders.

Fast speed.—Single rope, 960 pounds, 55 feet per minute.
" " " block; 1,960 pounds, 28 feet per minute.

Slow Speed.—Single Rope, 2,400 pounds, 22 feet per minute.

Slow Speed.—Single Block, 4,800 pounds, 11 feet per minute.

Slow Speed.—Two Single Blocks, 7,200 pounds.

Hoisting gears, 42 and 42, 45 and 18 teeth; hoisting drum, 22 inches long by 20 inches diameter; boom drum gears, 36 and 16 teeth; boom drum, 12 inches diameter by 20 inches long; bed frame, 8 feet 5 inches by 3 feet 3 inches; height, 4 feet; weight, 3,000 pounds.

Each.....$200 00

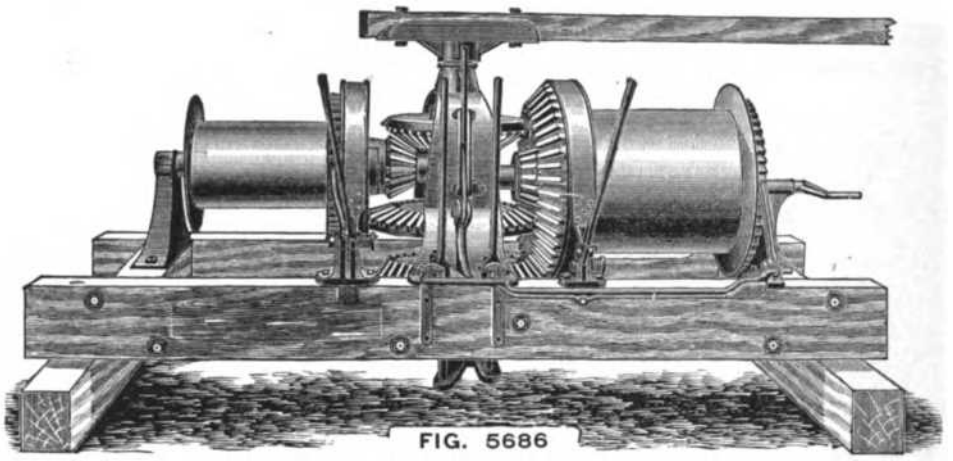


FIG. 5686

GROOVED DOUBLE DRUMS AND DOUBLE SPEED

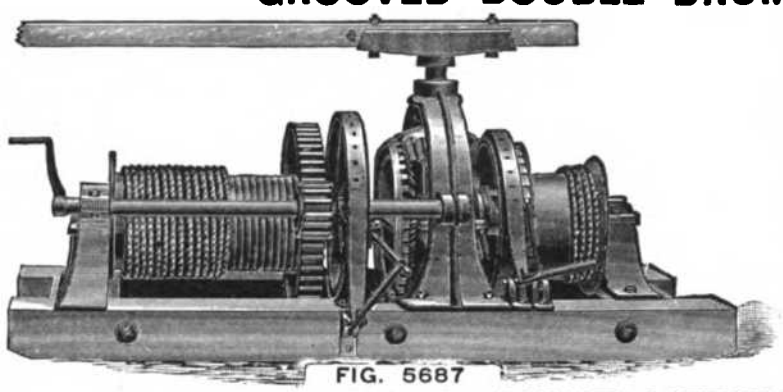


FIG. 5687

Designed to operate a derrick in quarrying or building.

Single rope, 2½ tons 10 feet in 1 minute; single and double block, 10 tons; corded drum, 28 inches long by 17 inches diameter; drum for boom hoist, 12 inches long by 14 inches diameter; bed frame, 8 feet long by 3 feet 8 inches wide; height over all, 4 feet; weight, 3,000 pounds.

Each.....$225 00

DIRECTIONS

In raising a weight, put corded drum clutch in gear. Start the horse. When the weight is high enough, apply the brake, ease back the horse, throw out the clutch and lower the weight at any required speed. Care should be taken to keep the corded drum clutch out of gear when lowering the weight. The boom can be raised or lowered in the same manner and at the time the hoisting drum is in or out of gear. In no case apply the brake to stop the horse. Breeching strap on the horse should be fastened forward to the sweep tie, so as to enable the horse to hold back when required.

No. 3. LIGHT LIFTING AT QUICK SPEED

SINGLE DRUMS

Designed for light lifting, and at a quick speed.

CAPACITY

Single Line, 960 pounds, 55 feet per minute; Single Block, 1,920 pounds, 28 feet per minute.

DIMENSIONS

Gears, 45 and 18 teeth; drum, 21 inches long, 20 inches in diameter; bed frame, 5 feet 3 inches long by 3 feet 3 inches wide; height, 3 feet 6 inches; weight, 1,300 pounds.

Each.....$100 00

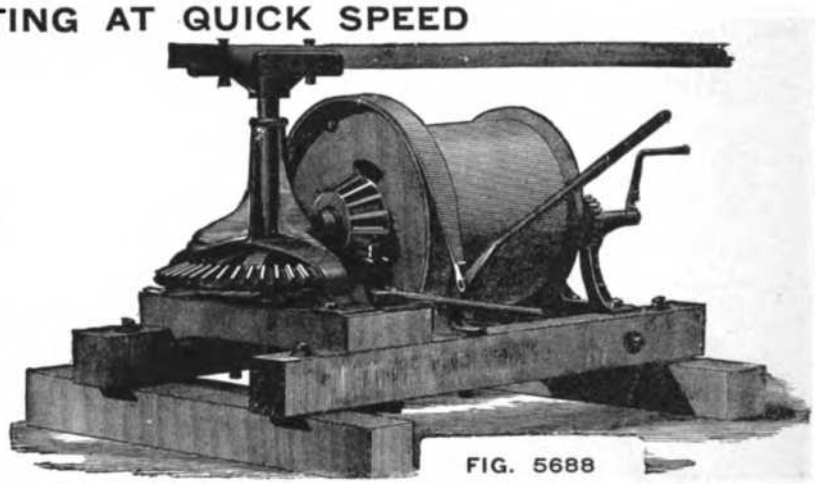


FIG. 5688

DOUBLE DRUM AND DOUBLE SPEED FRICTION HOIST

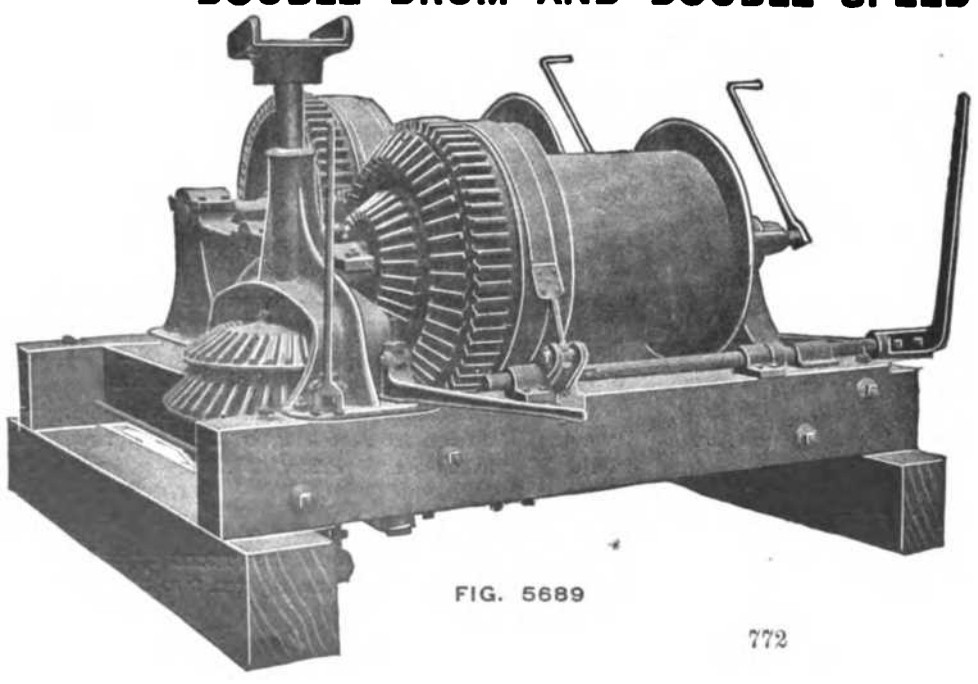


FIG. 5689

For contractors, quarrymen, builders, miners and all light and heavy hoisting. This machine is designed for derricks, as it handles both the load and boom lines. The drums have patent friction, enabling the operator to place the load in any position. When light load is to be lifted, by changing a lever, it doubles the speed and saves much time. When lowering boom or load, the friction clutch can be released instantly and used as a brake, although the machine has an independent band brake when needed. There is a hand crank to take up slack rope; also automatic safety attachment. The drums set one back of the other, as on hoisting engines. The lines pass to the derrick without guide sheaves, the one line passing over the other, allowing the rope to be wound evenly on the drums.

POWER, WITH ONE HORSE

Single Line, 2,500 pounds, 25 feet per minute; two Lines, One Single Block, 5,000 pounds, 13 feet per minute; Four Lines, Two Single Blocks, 10,000 pounds.

DIMENSIONS

Gears, 42 and 42, 39 and 26 teeth; drum, 22 by 20; bed frame, 6½ feet long by 4½ feet wide; height, 4 feet.

Each.....$275 00

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HORSE POWER JACK

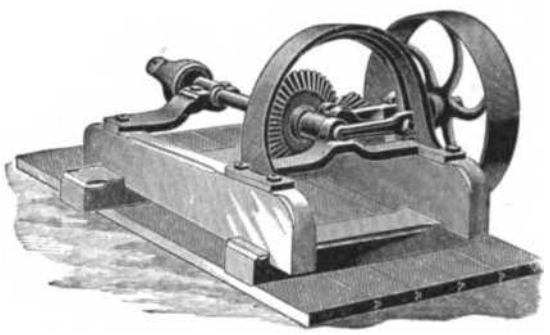


FIG. 5690

Where it is necessary, owing to the situation of the power and to save digging pits for the large band wheel, this jack answers the purpose.

The wheel may be set in any position, right or left, vertical or horizontal.

CLIMAX TRIPLE GEARED HORSE POWER

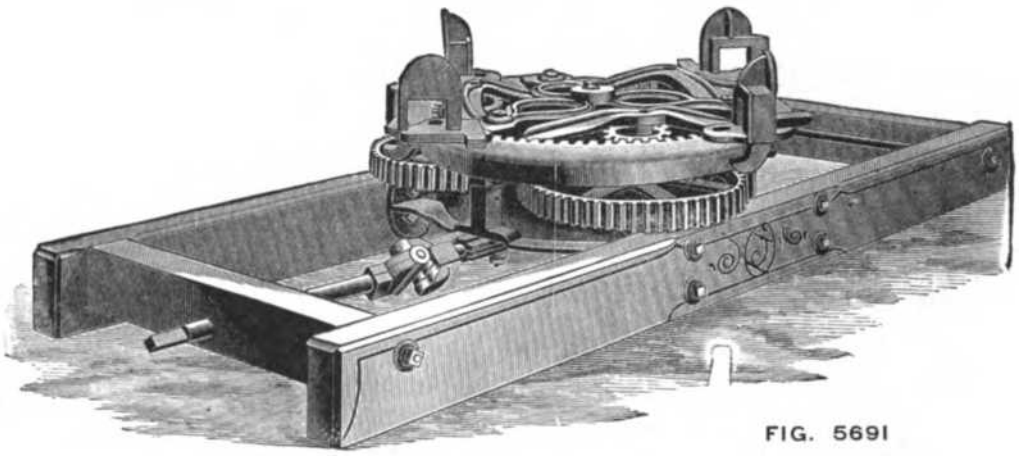


FIG. 5691

The Climax Power is triple geared, the strain being divided so as to prevent breakage or wear. The gearing is all connected by one strong iron frame, and there can be no derangement or decay. The levers are so arranged that the strain of the team is thrown upon the iron stay rods or braces, and can be taken off or put on in a moment, without loosening a bolt. All of the boxes are self-oiling, and the whole machine is constructed with precision. It is strictly portable; it may be moved and set ready for use in fifteen minutes by ordinary laborers. The pinions are large and made of steel to prevent wear or friction. These Powers always run smooth and light.

We can furnish these Horse Powers mounted on wagons. Wheels do not have to be taken off to use; levers pass over. Can be set up in twenty minutes, ready for work. Powers mounted on wagons have drivers' seats with places to carry levers, braces, shaft, pulley block, and everything belonging to the power, and are furnished with single and double trees and neck yoke—a complete outfit. They are quickly set for use, requiring no lifting. The shaft makes ninety revolutions to one of team, or about two hundred per minute, in all of these powers, except A5 and A6—72 revolutions to one of team in these two powers. Each power is furnished with shaft, band wheel and pulley block; or, if for geared machine, three extra shafts and connections in place of band wheel and pulley block. When Jack, Fig. 5690, is ordered in place of band wheel, $5.00 extra will be charged.

PRICES, FIG. 5690

Nos.	No. Horses Suited for.	Nos. of Levers.	Down Powers, Weight in Lbs.	Each.	Weight on Wagon.	Each.
A1	10	5	2,000	$150 00	2,400	$195 00
A2	8 to 10	4	2,000	140 00	2,400	185 00
A3	6 " 8	4	1,900	110 00	2,200	155 00
A4	4 " 6	4	1,650	95 00	1,850	140 00
A5	3 " 4	4	1,400	80 00	1,600	120 00
A6	2 " 3	2	1,200	75 00	1,400	115 00

HAND POWER STUMP PULLERS

This Puller has power that can be applied in very many ways, and for many purposes, just as well as pulling stumps. We name some things for which it has been, and can be, successfully used: For pulling pipe out of bored and driven wells; for lifting stone in quarries; for setting heavy monuments; for raising and moving buildings.



FIG. 5692

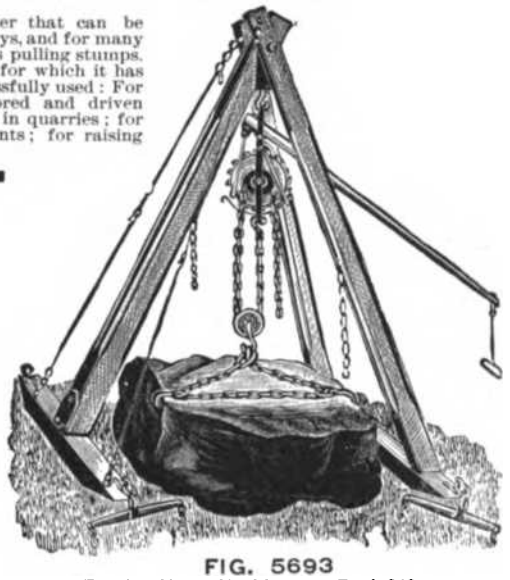


FIG. 5693

The Cut Shows Machine as a Rock Lifter.

PRICES, FIGS. 5691 AND 5692

The prices are for complete machines including Block Chain, Root Chain, Runners, 10 foot Lever, 12 foot Derrick, with Little Chains and Rods, Wheel and Yoke, Lower Pulley; in fact, everything not mentioned on the list as extras.

Machine.	Wheel, In.	Lift Tons.	Each.	Machine.	Wheel, In.	Lift Tons.	Each.
A	12	10	$25 00	3	20	30 to 40	$45 00
1	15	20 to 25	35 00	4	23	30 " 40	50 00
2	18	20 " 25	40 00	5	26	50	70 00

Irons complete without woodwork, $3.00 less on all machines except No. 5, and $4.00 less on No. 5.

Extras only shipped when specified in the order.

PRICES OF EXTRAS

No. 10	Grab Hooks, No. 5, steel	$10 00	
" 11	" " " 4, "	9 00	
" 12	Iron Grab Hooks for either size machine	7 00	
" 13	No. A Iron Grab Hooks	5 00	
" 14	Stone Hooks (2)	5 00	
" 15	Steel Block Chain either size, in place of iron	5 00	
No. 16	Longer Chain with 14 ft. Derrick for either size	$2 00	
" 17	Short Light Root Chain	2 00	
" 18	Extra Heavy Lever with Irons 12 ft. for No. 5	2 00	
" 19	Root Cutter	1 50	
" 20	Two Good Wagon Whiffletrees	1 00	
" 21	Crowbar	50	

No. A is adapted for light class of grubbing or rock lifting; has 10 foot derrick. Nos. 1 and 2 are adapted for light grubbing, stump pulling and heavy rock lifting; has 12 foot derrick. Nos. 3 and 4 are adapted for general purpose work; have 12 or 14 foot derrick. No. 5 is especially adapted for heavy grade of work; has 14 foot derrick.

ARCHIMEDEAN STUMP PULLER AND ROCK LIFTER

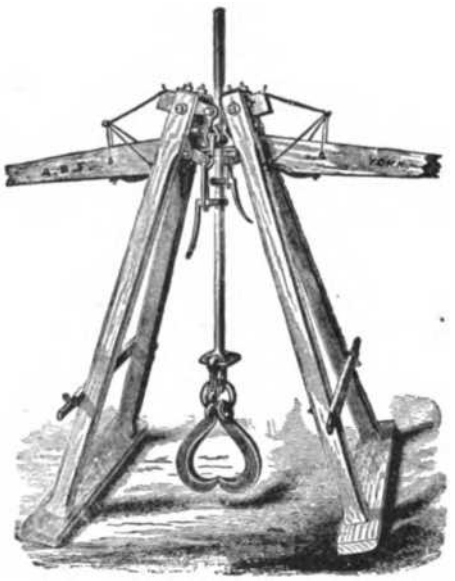


FIG. 5694

The Archimedean Stump Puller is a lever machine; it has great power; two men can raise 25,000 pounds. Weighing from 430 to 645 pounds, it may readily be carried by the hands necessary to work it.

No. 1 is worked by four men, raises 50,000 lbs., weighs 645 lbs. Price, $85 00

No. 2 is worked by three men, lifts 35,000 lbs., weighs 485 lbs. Price, 65 00

No. 3 is worked by two men, lifts 25,000 lbs., weighs 430 lbs. Price, 50 00

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TRESTLE OR PIPE LINE DERRICK

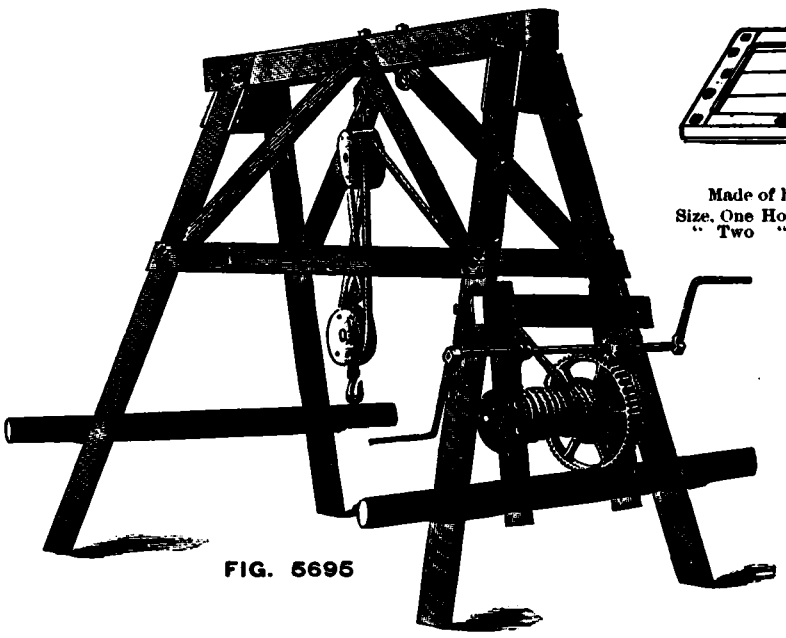


FIG. 5695

DRAG OR STONE BOAT



FIG. 5696

Made of hard wood and strongly bolted together.

Size, One Horse, price	$7 00
" Two " "	8 00

DESCRIPTION
FIG. 5695

Used for laying water and gas mains. The standard sizes are as follows: Length, measuring across the legs, 11 feet; height, 9 feet; suitable for iron pipe up to 30 inches in diameter. Smaller size for 15 inch pipe and less: length, 9 feet; height, 7 feet, with crab of corresponding proportions. Prices on application. Other sizes can be made to order.

TRIPOD PIPE LINE DERRICK

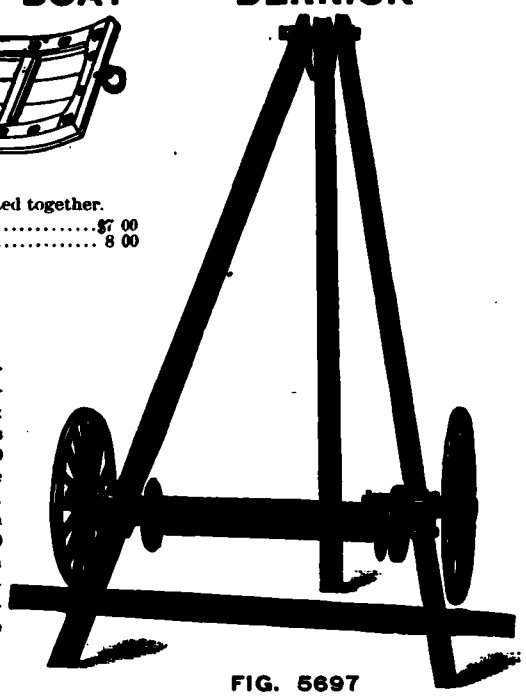


FIG. 5697

DESCRIPTION. FIG. 5697

This is a very handy and light machine, easily transported. The windlass is made in proportion to the size pipe to be handled, as most of its work is lowering pipe into trenches. The wheels are used for braking by hand. The pin through the shear legs is of large diameter and well supported by iron plates. In moving, the derrick is tilted forward and rides on its own wheels, the back leg resting on its shaft, and the windlass is thrown out of gear by means of the clutch on pinion. Prices on application.

FOUR LEG DERRICK

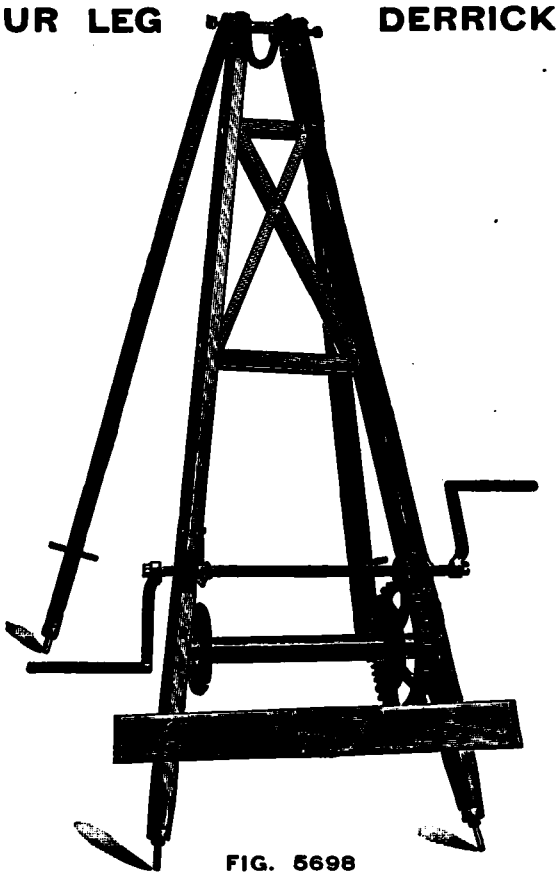


FIG. 5698

We illustrate a Four Leg Derrick, but can furnish the three leg or other styles if desired. Prices on application. They are of good material, and fitted in very best manner. The 10 foot light derrick has 16½ inch gear; 12, 14 and 16 foot, 18½ inch gear. All heavy derricks have 22½ inch gear.

PRICES

10 foot	light,	$37 50	heavy	$40 00	14 foot	light,	$46 00	heavy,	$52 00
12 "	"	40 00	"	46 00	16 "	"	53 00	"	57 00

PATENT EXTENSIBLE TRENCH BRACE

FOR SUPPORTING SIDES OF TRENCHES



FIG. 5699

ALL IRON BRACES

With 1½ Inch Screw and 1½ Inch Pipe, Single Barrel.

	Per Doz.
16 and 18 inches long when closed	$23 00
21 " 24 " " " "	24 00
27 " 30 " " " "	26 00
36 " " " " "	27 00
3½ feet " " "	28 00
4 " " " "	29 00

With 1½ Inch Screw, Double Barrel.

4½ feet long, when closed	$38 00
5 " " " "	39 00
5½ " " " "	41 00
6 " " " "	43 00

With 2 Inch Screw and 2 Inch Pipe, Single Barrel.

	Per Doz.
3½ feet long, when closed	$52 00
4 " " " "	53 00
4½ " " " "	54 00
5 " " " "	55 00

With 2 Inch Screw, Double Barrel.

5 feet long, when closed	$63 00
5½ " " " "	65 00
6 " " " "	67 00
6½ " " " "	69 00
7 " " " "	71 00
8 " " " "	75 00

Special sizes to order.

FITTINGS FOR COMBINED SCREW AND TIMBER BRACE



FIG. 5701

Invaluable in all kinds of heavy work, wide and deep trenches, tunnel, foundation work, etc. We do not furnish timbers.

Sizes of Screw A.	Sizes of Cap.	Per Doz., with Caps for Each End.	Per Doz., with Cap Screw End Only.
1½ x 14 inches	4 x 4 inches	$20 00	$18 00
1½ x 14 "	6 x 6 "	24 00	20 00
1½ x 18 "	6 x 6 "	26 00	22 00
2 x 18 inches	6 x 6 inches	$43 00	$38 00
2 x 18 "	8 x 8 "	46 00	40 00
2 x 18 "	9 x 12 "	55 00	44 00

BRACE FITTINGS COMPLETE EXCEPT BARREL OR PIPE

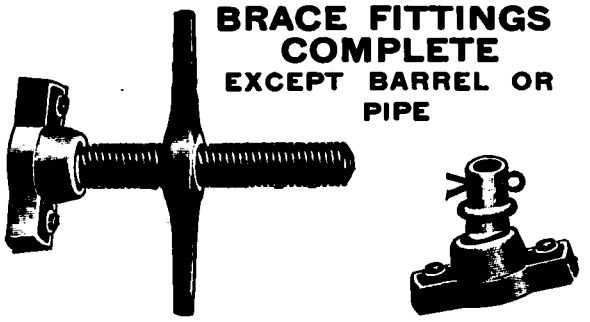


FIG. 5700

Shipped ready for pipe to be attached. Use only 1½ inch (or 2 inch) lap weld pipe. Cut pipe 7 inches shorter than length of complete brace wanted, when closed.

PRICES

Sizes of Screw.						Per Doz.
1½ inches diameter,	12 inches long					$20 00
1½ "	"	14	"	"		21 00
1½ "	"	16	"	"		22 00
1½ "	"	18	"	"		23 00
2 "	"	18	"	"		45 00

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TRENCH CHAIN AND ROPE

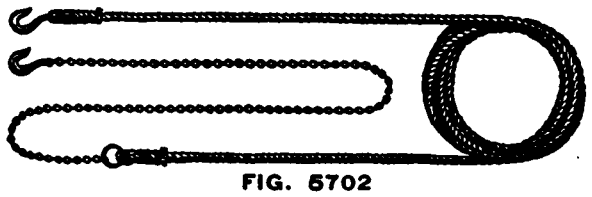


FIG. 5702

For Lowering Sewer Pipe, Brick, etc.

Price, each.....$3 00

ADJUSTABLE TRENCHING BRACE

STEEL SCREW, SWIVEL HEAD

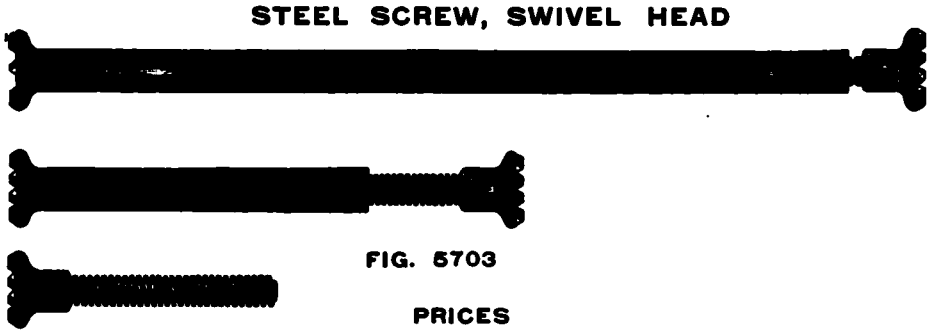


FIG. 5703

PRICES

Length When Closed.		Per Dozen in Lots of— 4 Dozen or Less.	8 Dozen or Less.	More Than 8 Doz.
2 feet or.....	under....	$16 30	$15 20	$14 30
2 " 6 inches.....	1½ in. pipe.	16 90	15 75	14 80
3 "		17 50	16 50	15 30
3 " 6 inches.....		18 00	16 90	15 80
4 "		18 60	17 85	16 30
4 " 6 inches.....		19 20	18 00	16 80
5 "	2 in. pipe.	23 30	21 85	20 40
5 " 6 inches.....		24 00	22 50	21 00
6 "		24 80	23 25	21 70
6 " 6 inches.....		25 50	24 00	22 35
7 "		26 30	24 65	23 00
7 " 6 inches.....		27 00	25 35	23 65
8 "		27 80	26 00	24 30
8 " 6 inches.....		28 50	26 75	25 00
9 "		29 30	27 45	25 60
9 " 6 inches.....		30 00	28 25	26 25

PLANK PULLER

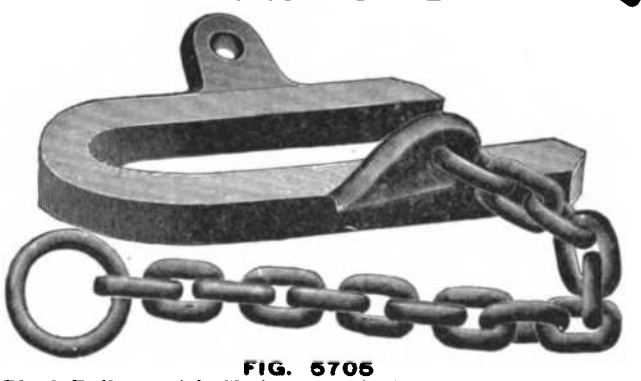


FIG. 5705

Plank Pullers, with Chain, wrought iron, each.....$9 00

PLANK CAP

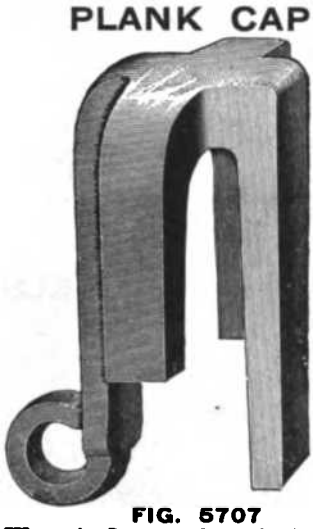


FIG. 5707

Wrought Iron. each....$9 00

CONTRACTOR'S MAUL



FIG. 5706

Iron Ring, Wood Sewer Builders' Mauls, diameter of face, 6 in.; length, 12 in.; with handles, per dozen.$36 00
Extra handles..... 6 00

PLANK LEVER

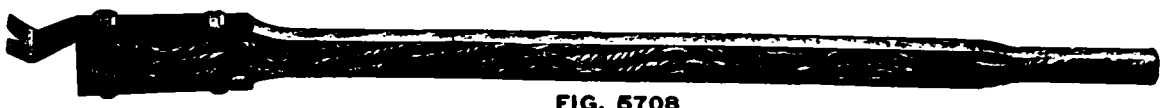


FIG. 5708

Plank Levers, 4 x 6 inches x 14 feet long, each.....$11 25

STEEL STONE TONGS



FIG. 5709

For setting stone or lifting timber. We furnish these in any size desired. Give greatest opening for tongs and load to be lifted. Prices on application.

STEEL GRAB HOOKS

WITH BB CHAIN

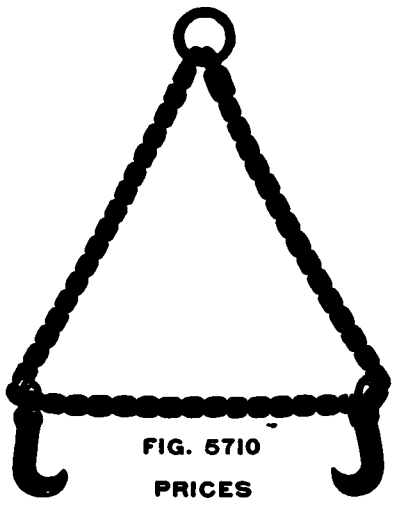


FIG. 5710

PRICES

Capacity in Tons.	Two Hooks Without Chain, Each.	Hooks and Chain Complete, Each.
5	$9 00	$15 00
8	11 00	20 00
10	14 00	26 00
12	16 00	30 00

STONE SCALE BOX

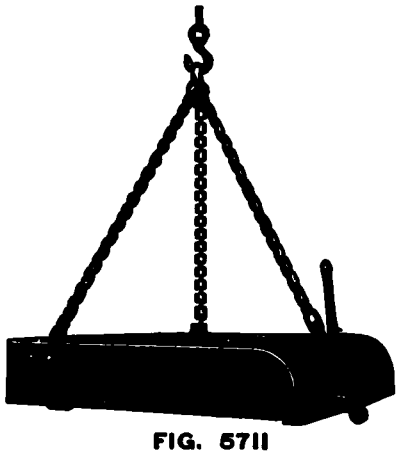


FIG. 5711

Made with Wood or Steel Box.

PRICES ON APPLICATION

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PLAIN BACK SQUARE POINT SHOVEL

NO. 22

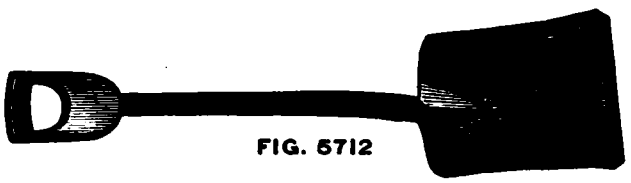


FIG. 5712

CHARCOAL SHOVEL

Size, 18½ x 14 x 15½ inches.

NO. 35

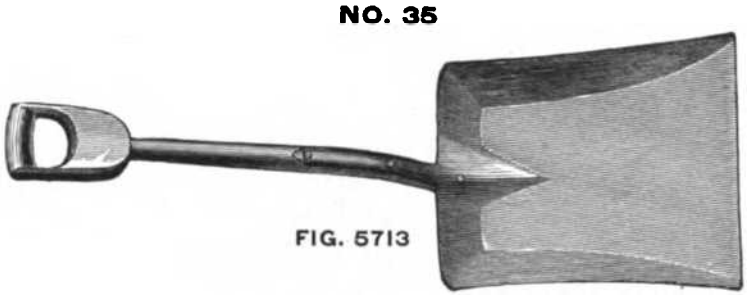


FIG. 5713

D HANDLE CAST STEEL BACK STRAP SHOVEL

NO. 357

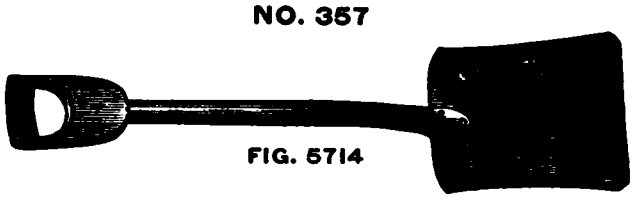


FIG. 5714

BRICK SHOVEL

Size, 10½ x 9 inches.

NO. 37

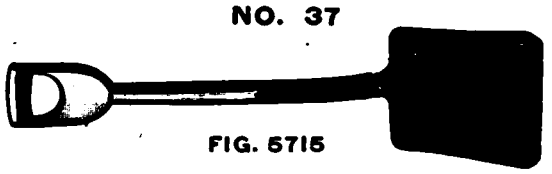


FIG. 5715

D HANDLE PLAIN BACK ROUND POINT SHOVEL

NO. 39

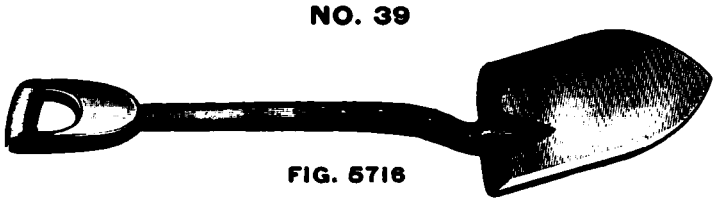


FIG. 5716

PATENT PLAIN BACK SHOVEL

NO. 228

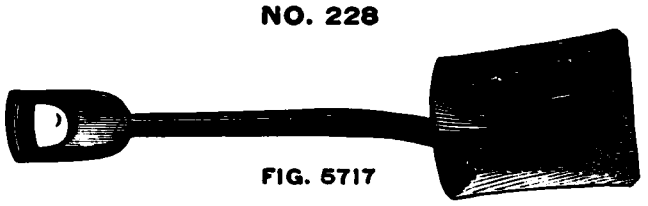


FIG. 5717

BACK STRAP D HANDLE ROUND POINT SHOVEL

NO. 365

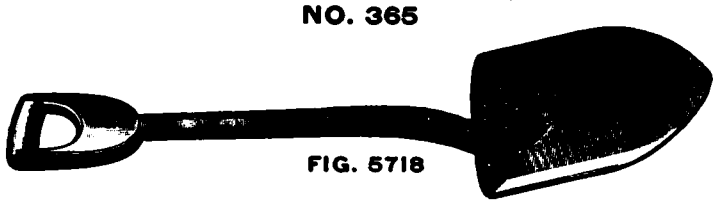


FIG. 5718

CAST STEEL EDGE PLATED SHOVELS

BLACK

Nos.			Nos.	Per Dozen.
20	D	handle plain back square point shovels	0	$11 75
21	D	" " " "	1	11 75
22	D	" " " "	2	12 00
23	D	" " " "	3	12 50
24	D	" " " "	4	13 00
25	D	" " " "	5	14 00
26	D	" " " "	6	15 00
27	D	" " " "	7	16 00
28	D	" " " "	8	17 00
29	D	" " " "	9	18 00
30	D	" " " "	10	19 50
31	D	" " " "	11	20 50
32	D	" " " "	12	22 50
33	D	" " " "	13	24 50
34	D	" " " "	14	26 00
35	D	" " "charcoal"	..	28 00
36	D	" " " boys' "	..	9 50
37	D	" " " brick "	..	12 00
38	D	" " round point "	1	12 00
39	D	" " ,, "	2	12 25
40	D	" " " "	3	12 75
41	D	" " " "	4	13 75
42	D	" " " "	5	14 50
43	D	" " " "	6	16 00
44	D	" " " "	7	17 50
56	D	handle back strap square point shovels	0	11 00
57	D	" " " "	1	11 00
58	D	" " " "	2	12 00
59	D	" " " "	3	12 50
60	D	" " " "	4	13 50
61	D	" " " "	5	14 25
62	D	" " " "	6	15 25
68		Socket plain back round point shovels, without handles	..	10 50

CAST STEEL EDGE PLATED SHOVELS

POLISHED

Nos.			Nos.	Per Dozen
64	D	handle plain back square point shovels	1	$12 50
65	D	" " " "	2	12 75
66	D	" " " "	3	13 25
67	D	" " round point "	1	12 75
68	D	" " " "	2	13 00
69	D	" " " "	3	13 50

PATENT PLAIN BACK SOLID CAST STEEL SHOVELS

Nos.			Nos.	Per Dozen.
228	D	handle square point shovels, polished	2	$13 50
229	D	" " " "	3	14 00
230	D	" round point " "	2	14 00
231	D	" " " "	3	14 50
232	Long	handle square point " "	2	13 50
233		" " " "	3	14 00
234		" round point " "	2	13 50
235		" " " "	3	14 00
236	D	handle square point shovels, black	2	12 75
237	D	" " " "	3	13 50
238	D	" round point " "	2	13 50
239	D	" " " "	3	14 00
240	Long	handle square point " "	2	12 75
241		" " " "	3	13 50
242		" round point " "	2	12 75
243		" " " "	3	13 50

POLISHED CAST STEEL BACK STRAP SHOVELS

Nos.			Nos.	Per Dozen.
356	D	handle square point shovels	1	$12 50
357	D	" " "	2	12 50
358	D	" " "	3	13 00
359	D	" " "	4	13 75
360	D	" " "	5	14 50
361	D	" " "	6	15 25
362	D	" " "	7	15 75
363	D	" " "	8	16 50
364	D	" " "	9	17 50
365	D	" round point "	2	13 00
366	D	" " "	3	13 50
367	D	" " "	4	14 50

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MOULDER'S SHOVEL

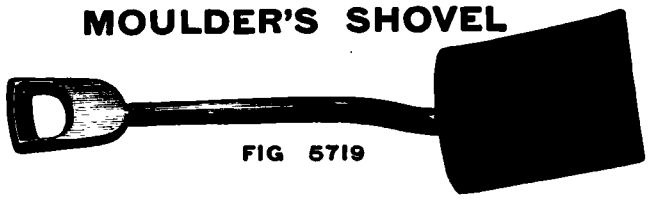


FIG 5719

No. 343—Patent Molders' Shovel. Plain Back, Solid Cast Steel.

No. 343	D handle,	square	point	shovel,	No. 2,	per	dozen..	.....	$13 50
" 344	"	"	"	"	" 2,	"	"	.....	12 50
" 345	"	"	"	"	" 2,	"	"	.....	11 50
" 346	"	"	"	"	" 2,	"	"	.....	10 75
" 347	"	"	"	"	" 2,	"	"	.....	10 50
" 880	"	"	"	"	" 2,	"	"	.....	9 00

WESTERN PATTERN COAL SHOVEL



FIG. 5720

No. 813—Western Pattern Coal Shovel, No. 2.
Size, 14¾x13¼x14½ inches.

No. 813	Steel half polished,	No. 2,	per	dozen	.....			$11 75
" 814	" "	" 3,	"	"	.....			12 00
" 815	" black	" 2,	"	"	.....			11 50
" 816	" "	" 3,	"	"	.....	.....		11 75

TAMPING SHOVEL, WITH MALLEABLE IRON HEAD

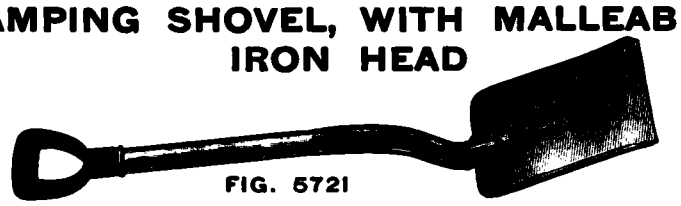


FIG. 5721

No. 836	Cast steel edge plated, No. 2, per dozen	$13 50
" 1031	Solid cast steel, No. 2, per dozen	14 25

CAST STEEL EDGE PLATED BLACK SHOVELS

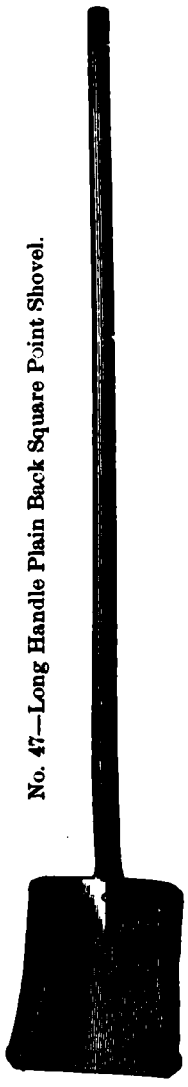
No. 45	Long handle	plain	back	square	point	shovel,	No. 0,	per	dozen.	$11 75
" 46	"	"	"	"	"	"	" 1,	"	"	11 75
" 47	"	"	"	"	"	"	" 2,	"	"	12 00
" 48	"	"	"	"	"	"	" 3,	"	"	12 50
" 49	"	"	"	"	"	"	" 4,	"	"	13 00
" 50	"	"	"	"	"	"	" 5,	"	"	14 00
" 51	"	"	"	"	round	"	" 0,	"	"	11 75
" 52	"	"	"	"	"	"	" 1,	"	"	11 75
" 53	"	"	"	"	"	"	" 2,	"	"	12 00
" 54	"	"	"	"	"	"	" 3,	"	"	12 50
" 55	"	"	"	"	"	"	" 4,	"	"	13 00

CAST STEEL EDGE PLATED POLISHED SHOVELS

No. 70	Long handle	plain	back	square	point	shovel,	No. 1,	per	dozen.	$12 50
" 71	"	"	"	"	"	"	" 2,	"	"	12 75
" 72	"	"	"	"	"	"	" 3,	"	"	13 25
" 73	"	"	"	"	round	"	" 1,	"	"	12 50
" 74	"	"	"	"	"	"	" 2,	"	"	12 75
" 75	"	"	"	"	"	"	" 3,	"	"	13 25

POLISHED CAST STEEL BACK STRAP SHOVELS

No. 368	Long handle	square	point	shovel	.....	No. 1,	per	dozen.	$12 50
" 369	"	"	"	"	.....	" 2,	"	"	12 50
" 370	"	"	"	"	.....	" 3,	"	"	13 00
" 371	"	"	"	"	.....	" 4,	"	"	13 75
" 372	"	"	"	"	.....	" 5,	"	"	14 50
" 373	"	"	round	"	.....	" 1,	"	"	12 50
" 374	"	"	"	"	.....	" 2,	"	"	12 50
" 375	"	"	"	"	.....	" 3,	"	"	13 25
" 376	"	"	California round point shovel,			" 2,	"	"	12 50
" 377	"	"	round spring point shovel....			" 2,	"	"	12 50



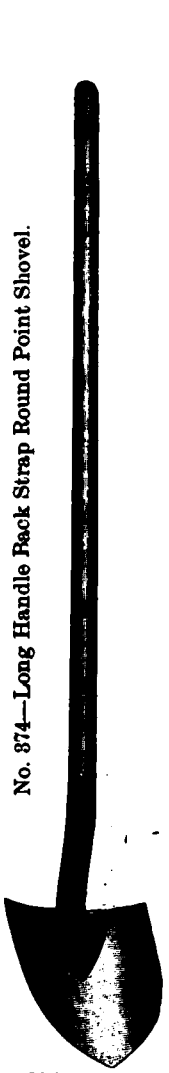
No. 47—Long Handle Plain Back Square Point Shovel.

FIG. 5722



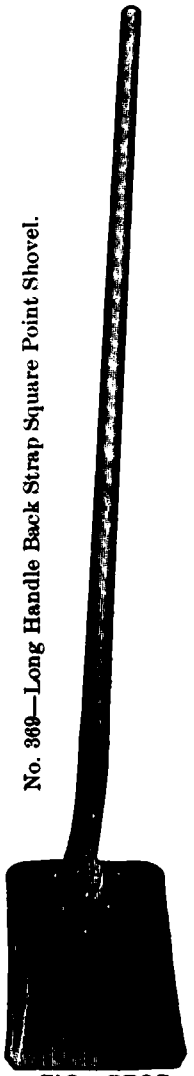
No. 53—Long Handle Plain Back Round Point Shovel.

FIG. 5723



No. 374—Long Handle Back Strap Round Point Shovel.

FIG. 5724



No. 369—Long Handle Back Strap Square Point Shovel.

FIG. 5725

GAS SHOVEL



FIG. 5726

No. 825—Gas Shovel. Size, 15½x9x10.

No. 825—Cast steel back strap long handle, long strap, black, No. 2, per dozen..... $16 50

MALLEABLE HEAD FOR SHOVEL



FIG. 5727

PRICE

Trade number 837, per dozen. $8 00

LIME SHOVEL

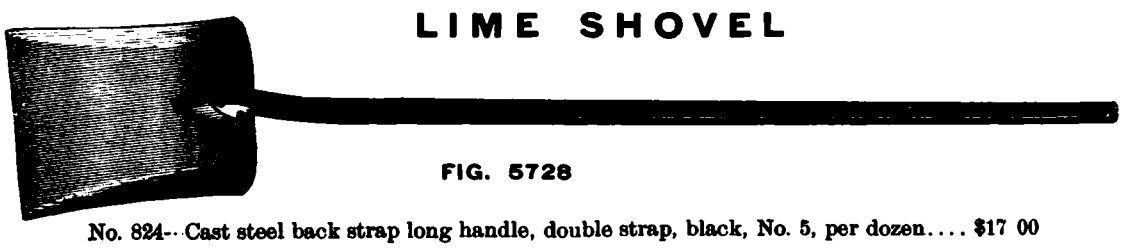


FIG. 5728

No. 824—Cast steel back strap long handle, double strap, black, No. 5, per dozen.... $17 00

MALLEABLE D HEAD WITH WOOD HANDLE



FIG. 5729

PRICE

Per dozen....$1 50

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BACK STRAP SHOVELS

RAILROAD SHOVELS

D HANDLE, SQUARE POINT

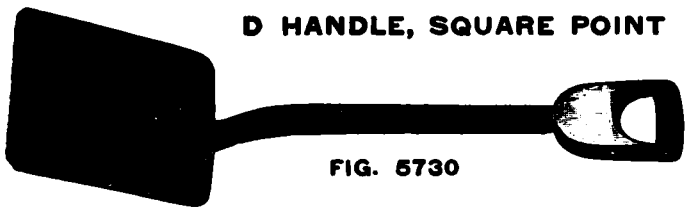


FIG. 5730

WITH TAMPING HEAD

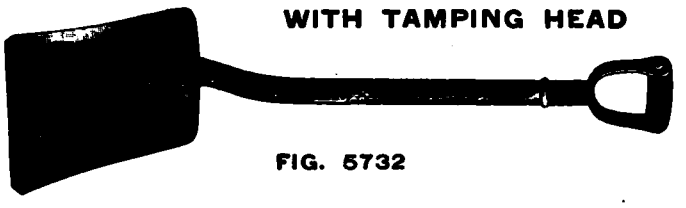


FIG. 5732

D HANDLE, ROUND POINT



FIG. 5731

LIME POINT

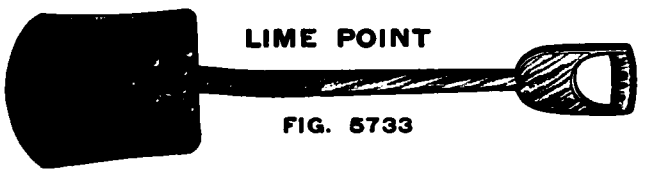


FIG. 5733

EXTRA CAST STEEL PATENT BACK STRAP SHOVELS

Nos.				Black.	Sizes.	Per Doz.
112	D handle,	square	point		2	$22 50
113	"	"	"	"	3	23 25
114	"	"	"	"	4	24 00
115	"	"	"	"	5	24 75
116	"	"	"	"	6	25 50
122	"	"	round	"	2	22 50
123	"	"	"	"	3	23 25

Shovels with tamping heads, $1.00 extra, per dozen.

SOLID STEEL PATENT BACK STRAP SHOVELS

Nos.				Black.	Sizes.	Per Doz.
152	D handle,	square	point		2	$18 75
153	"	"	"	"	3	19 50
154	"	"	"	"	4	20 50
155	"	"	"	"	5	21 00
156	"	"	"	"	6	21 75
162	"	"	round	"	2	18 75
163	"	"	"	"	3	19 50

Lime shovels same price as similar size square point, according to grade. Shovels larger size than those listed at proportionate advance. Solid front shovels, 25 cents extra, per dozen. Polished shovels, 25 cents extra, per dozen.

BACK STRAP COAL SHOVELS

BITUMINOUS

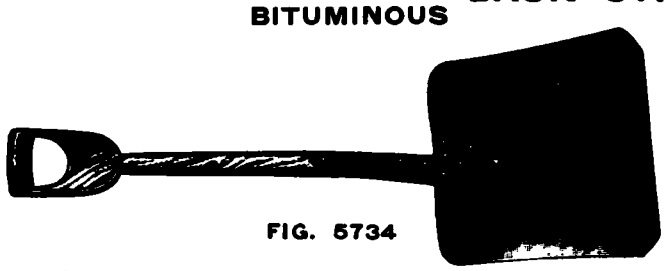


FIG. 5734

ANTHRACITE BACK

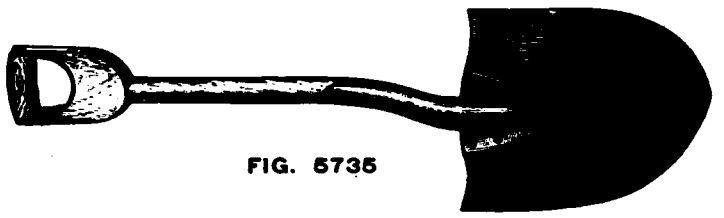


FIG. 5735

EXTRA CAST STEEL PATENT BACK STRAP SHOVELS

Nos.				Black.	Sizes.	Per Doz.
191	D or long handle,			bituminous	1	$25 50
192	"	"	"	"	2	26 25
193	"	"	"	"	3	27 00
195	"	"	"	coke	5	28 50
196	"	"	"	anthracite	6	24 75
202	Collier				2	17 25

SOLID STEEL PATENT BACK STRAP SHOVELS

Nos.				Black.	Sizes.	Per Doz.
231	D or long handle,			bituminous	1	$21 25
232	"	"	"	"	2	22 50
233	"	"	"	"	3	23 25
235	"	"	"	coke	5	24 75
236	"	"	"	anthracite	6	21 00

Half polished shovels, 25 cents extra, per dozen.

BACK STRAP SHOVELS

D HANDLE, ROUND POINT

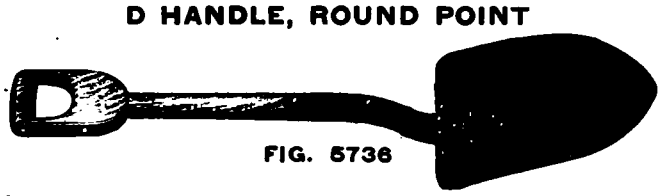


FIG. 5736

LONG HANDLE, HALF SPRING POINT

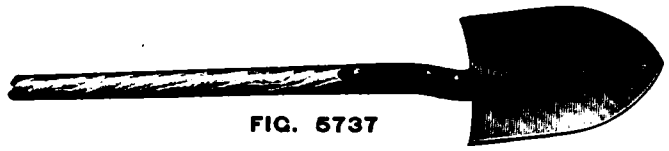


FIG. 5737

CAST STEEL BACK STRAP SHOVELS AND SPADES

Nos.				Black.	Sizes.	Per Doz.
392	D or long handle,			square point	2	$19 50
402	"	"	"	round "	2	19 50
412	"	"	"	spade	2	19 50

CAST STEEL BACK STRAP WESTERN MINING SHOVELS

Nos.					Sizes.	Per Doz.
432	D or long handle,			stiff point	2	$19 50
442	"	"	"	half spring point	2	19 50
452	"	"	"	full " "	2	19 50

Any of the above shovels can be furnished with socket straps.

SOLID STEEL BACK STRAP SHOVELS AND SPADES

Nos.				Black.	Sizes.	Per Doz.
462	D or long handle,			square point	2	$18 00
472	"	"	"	round "	2	18 00
482	"	"	"	spade	2	18 00

EXTRA CAST STEEL BACK STRAP WESTERN MINING SHOVELS

Nos.					Sizes.	Per Doz.
362	D or long handle,			stiff point	2	$21 75
372	"	"	"	half spring point	2	21 75
382	"	"	"	full " "	2	21 75

Each additional size, 25 cents per dozen, additional. Half polished coal shovels, 25 cents per dozen, additional. Full polished, 25 cents per dozen, additional.

LONG HANDLE, ROUND POINT

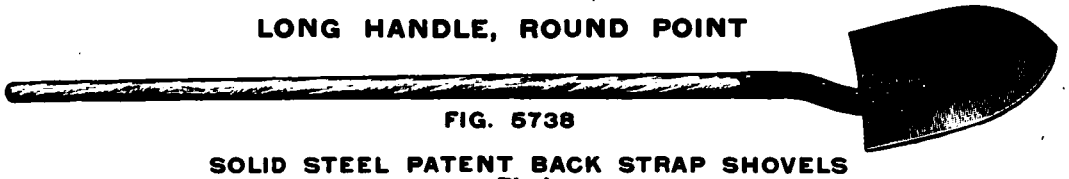


FIG. 5738

SOLID STEEL PATENT BACK STRAP SHOVELS

Nos.				Black.	Sizes.	Per Doz.
72	Long handle,	square	point		2	$18 75
73	"	"	"	"	3	19 50
74	"	"	"	"	4	20 25
75	"	"	"	"	5	21 00
76	Long handle,	square	point		6	$21 75
82	"	"	round	"	2	18 75
83	"	"	"	"	3	19 50

Lime shovels same price as similar size square point, according to grade. Irrigating shovels, mining shovels, spading shovels quoted upon application. Solid front shovels, 25 cents extra, per dozen. Polished shovels, 25 cents extra, per dozen.

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No. 704—CAST STEEL POLISHED SCOOP



FIG. 5739

No. 703—No. 2 SCOOP

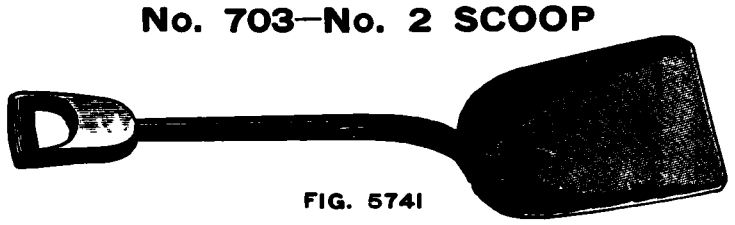


FIG. 5741

No. 707—BACK VIEW No. 6 SCOOP

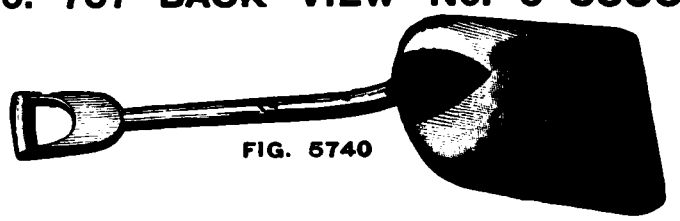


FIG. 5740

No. 709—No. 8 SCOOP

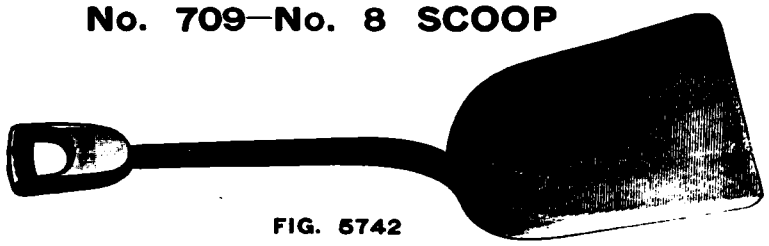


FIG. 5742

SCOOPS

Nos.		Nos.	Per Dozen.
703	O. Ames Cast Steel, Polished	2	$14 50
704	" " " "	3	14 75
705	" " " "	4	15 25
706	" " " "	5	15 50
707	" " " "	6	16 00
708	" " " "	7	16 50
709	" " " "	8	17 00
710	" " " "	9	17 75
711	" " " "	10	18 50

Nos.		Nos.	Per Dozen.
712	O. Ames Cast Steel, Polished	11	$19 00
713	" " " "	12	19 00
714	" " " "	13	20 00
715	" " " "	14	21 00

Half polished Cast Steel or Steel Scoops 25 cents per dozen less than polished.

Unpolished Cast Steel or Steel Scoops 50 cents per dozen less than polished.

FURNACE SCOOPS

Nos.	Polished Steel.	Per Dozen.
792	D handle	$9 75
793	Long "	9 75

Nos.	Half Polished Steel.	Per Dozen.
794	D handle	$9 50
795	Long "	9 50

Half polished, 15 cents less than polished. Black. 25 cents less than polished. Black, 10 cents less than half polished.

BACK STRAP SCOOPS

EASTERN PATTERN, D HANDLE

BACK, NO. 503

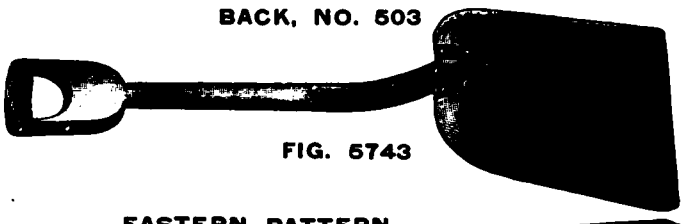


FIG. 5743

FRONT, NO. 503

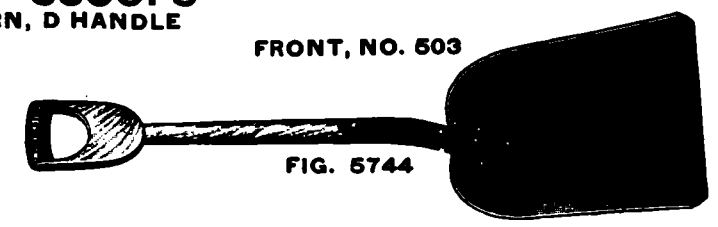


FIG. 5744

EASTERN PATTERN, D HANDLE. NO. 743

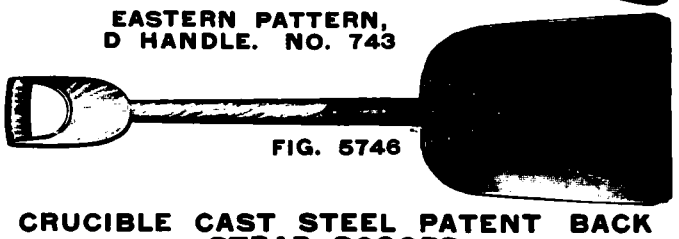


FIG. 5746

WESTERN PATTERN, D HANDLE. NO. 773

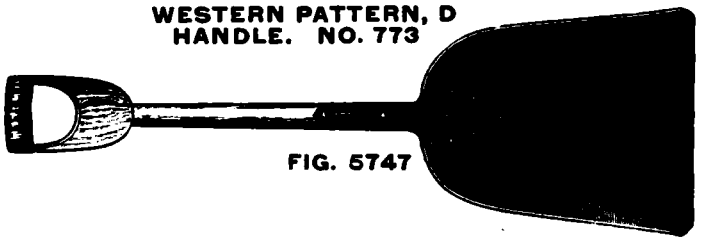


FIG. 5747

CRUCIBLE CAST STEEL PATENT BACK STRAP SCOOPS
EASTERN PATTERN

D or Long Handle, Black.			D or Long Handle, Half Polished.			D or Long Handle, Full Polished.		
Nos.	Sizes.	Per Doz.	Nos.	Sizes.	Per Doz.	Nos.	Sizes.	Per Doz.
502	2	$28 50	512	2	$28 80	522	2	$29 25
503	3	29 25	513	3	29 55	523	3	30 00
504	4	30 00	514	4	30 30	524	4	30 75
505	5	30 75	515	5	31 05	525	5	31 50
506	6	31 50	516	6	31 80	526	6	32 25
507	7	32 25	517	7	32 55	527	7	33 00
508	8	33 00	518	8	33 30	528	8	33 75

Larger sizes at proportionate advance.

CRUCIBLE CAST STEEL PATENT BACK STRAP SCOOPS
WESTERN PATTERN

D or Long Handle, Black.			D or Long Handle, Half Polished.			D or Long Handle, Full Polished.		
Nos.	Sizes.	Per Doz.	Nos.	Sizes.	Per Doz.	Nos.	Sizes.	Per Doz.
531	1	$29 25	541	1	$29 55	551	1	$30 00
532	2	30 00	542	2	30 30	552	2	30 75
533	3	30 75	543	3	31 05	553	3	31 50
534	4	31 50	544	4	31 80	554	4	32 25
535	5	32 25	545	5	32 55	555	5	33 00
536	6	33 00	546	6	33 30	556	6	33 75

STEEL BACK STRAP SCOOPS
EASTERN PATTERN

D or Long Handle, Black.			D or Long Handle, Half Polished.			D or Long Handle, Full Polished.		
Nos.	Sizes.	Per Doz.	Nos.	Sizes.	Per Doz.	Nos.	Sizes.	Per Doz.
742	2	$21 75	752	2	$22 05	762	2	$22 50
743	3	22 50	753	3	22 80	763	3	23 25
744	4	23 25	754	4	23 55	764	4	24 00
745	5	24 00	755	5	24 30	765	5	24 75
746	6	24 75	756	6	25 05	766	6	25 50
747	7	25 50	757	7	25 80	767	7	26 25
748	8	26 25	758	8	26 55	768	8	27 00

Larger sizes at proportionate advance.

STEEL BACK STRAP SCOOPS
WESTERN PATTERN

D or Long Handle, Black.			D or Long Handle, Half Polished.			D or Long Handle, Full Polished.		
Nos.	Sizes.	Per Doz.	Nos.	Sizes.	Per Doz.	Nos.	Sizes.	Per Doz.
771	1	$22 50	781	1	$22 80	791	1	$23 25
772	2	23 25	782	2	23 55	792	2	24 00
773	3	24 00	783	3	24 30	793	3	24 75
774	4	24 75	784	4	25 05	794	4	25 50
775	5	25 50	785	5	25 80	795	5	26 25
776	6	26 25	786	6	26 55	796	6	27 00

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NO. 81. LONG HANDLE PLAIN BACK SPADE

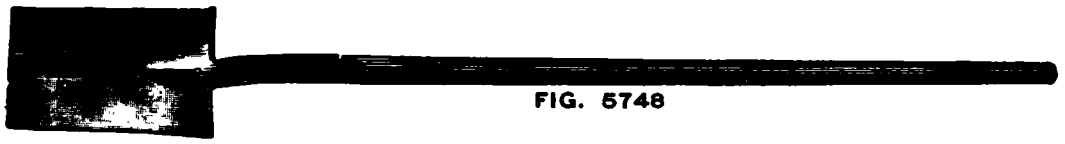


FIG. 5748

NO. 103. SOCKET SPADE

Size, 11¼ x 7½ x 7¼ inches.



FIG. 5749

NO. 77. D HANDLE PLAIN BACK SPADE

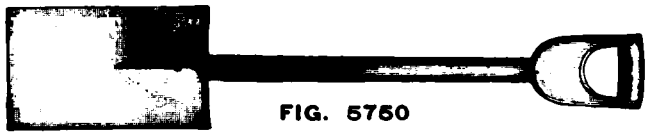


FIG. 5750

NO. 97. SUBSOIL SPADE

Size, 16 x 7¾ x 7½ inches.

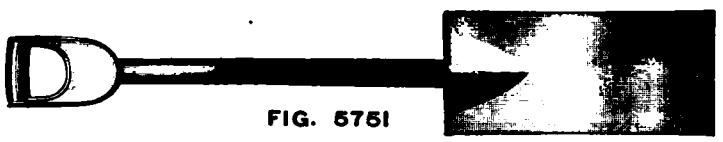


FIG. 5751

NO. 96. BRICK SPADE

Size, 10¼ x 7¼ inches.

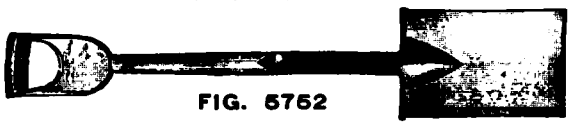


FIG. 5752

NO. 98. LEAD MINER'S SPADE

Size, 10½ x 7 x 6½ inches.

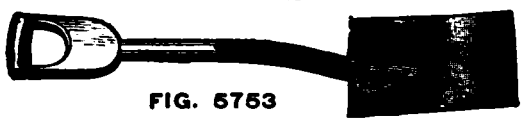


FIG. 5753

NO. 102. PLAIN BACK ROUND POINT SPADE

Size, 12 x 7¼ inches.

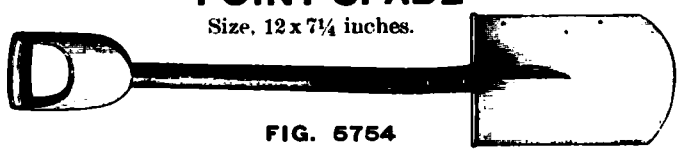


FIG. 5754

NO. 99. PEAT SPADE

Size, 16½ x 4 inches.

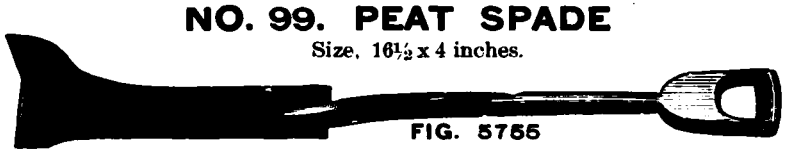


FIG. 5755

CAST STEEL EDGE PLATED SPADES

Black.

Nos.				Nos.	Per Dozen.
76	D handle	plain back	spades	1	$12 75
77	"	"	"	2	13 00
78	"	"	"	3	13 50
79	"	"	"	4	14 50
80	Long handle	"	"	1	12 75
81	"	"	"	2	13 00
82	"	"	"	3	13 50
83	D handle	"	" tapered	2	13 50
96	"	"	brick spades		13 00
97	"	"	subsoil spades		15 50
98	"	"	mining spades		12 00
99	"	"	peat spades		20 50
102	"	"	round point spades		13 00
103	Socket	"	spades, without handles		11 50

Polished spades, 75 cents more per dozen.

NO. 1017. POLISHED D HANDLE DITCHING SPADE

Tapers from 6½ inches at point to 5¾ inches at shoulder.

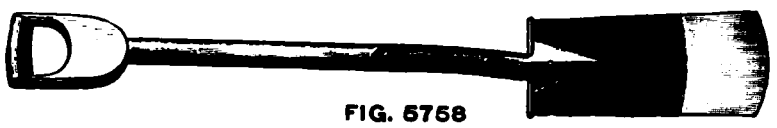


FIG. 5758

NO. 1017, T HANDLE DITCHING SPADE

Tapers from 6½ inches at point to 5¾ inches at shoulder.

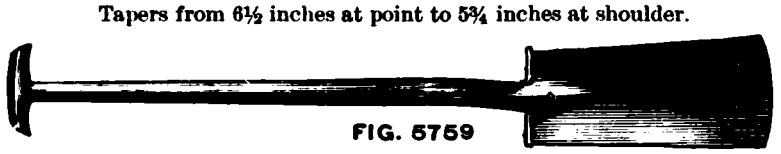


FIG. 5759

Nos.			Inches Long.	14	16	18	20	22
1017	Patent solid C. S.,	per doz.		$15 00	$15 50	$16 00	$16 50	$16 75
1018	"	"	"	12 50	13 00	13 50	14 00	14 25
1019	"	steel	"	11 25	12 25	12 25	12 75	12 75

Ditching spades with T handles, 25 cents extra.

In ordering, give number and state length of ditching and post spades wanted. Half polished ditching and post spades, 15 cents per dozen less than polished. Unpolished, 25 cents per dozen less than polished.

CAST STEEL EDGE PLATED SPADES

Polished.

Nos.				Nos.	Per Doz.
104	D handle	plain back	spades	1	$13 50
105	"	"	"	2	13 50
106	"	"	"	3	14 25
107	"	"	hedge spades	2	15 00
108	"	"	round point spades	2	13 00
109	Long handle	"	spades	1	13 50
110	"	"	"	2	13 50
111	"	"	"	3	14 25

NO. 382. LONG STRAP BRICK SPADE

Size, 10¼ x 7¼ inches.

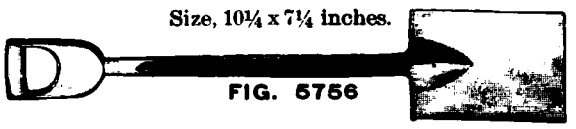


FIG. 5756

NO. 379. CAST STEEL BACK STRAP SPADE



FIG. 5757

POLISHED CAST STEEL BACK STRAP SPADES

Nos.				Nos.	Per Doz.
378	D handle	spades		1	$12 50
379	"	"	"	2	12 50
380	"	"	"	3	13 25
381	"	"	"	4	14 00
382	"	"	long strap spades	2	13 75
383	"	"	" "	3	14 50
384	"	"	mining "		11 00
385	Long handle		"	1	12 50
386	"		"	2	12 50
387	"		"	3	13 25
388	"		long strap "	2	13 75
389	"		" "	3	14 50

Unpolished spades, 50 cents less per dozen.

NO. 1022. POLISHED CONCAVE OR POST SPADE

Tapers from 6 inches at point to 5½ inches at shoulder.

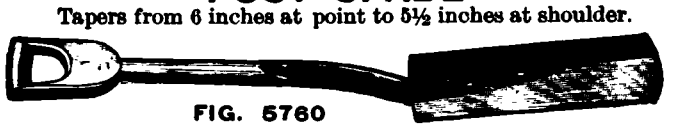


FIG. 5760

Nos.			Inches Long.	14	16	18	20	22
1022	Patent solid C. S.,	per doz.		$15 00	$15 50	$16 00	$16 50	$16 75
1023	"	"	"	12 50	13 00	13 50	14 00	14 25
1024	"	steel	"	11 25	12 25	12 25	12 75	12 75

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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POLISHED DRAIN SPADE



NO. 1. FIG. 5761

Tapers from 7½ inches at shoulder to 5½ inches at point.

Nos.		Inches long.	Per Dozen. 14	16
1002	Solid cast steel		$15 50	$16 00
1003	" "		12 50	13 00
1004	" steel		11 25	11 75

POLISHED DRAIN SPADE



NO. 3. FIG. 5763

Tapers from 4¼ inches at shoulder to 3 inches at point.

PRICES, FIG. 5763

Nos		Inches long.	Per Dozen. 16	18	20	22	24
1012	Solid cast steel		$14 75	$15 00	$15 50	$15 75	$16 25
1013	" "		13 25	13 50	14 00	14 25	14 50
1014	" steel		12 25	12 25	12 75	13 25	13 25

POLISHED DRAIN SPADE



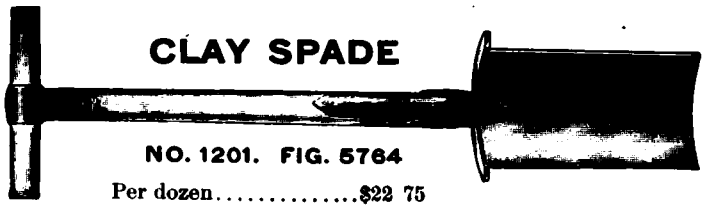
NO. 2. FIG. 5762

Taper from 5½ inches at shoulder to 4¼ inches at point.

Nos.		Inches long.	Per Dozen. 16	18	20	22	24
1007	Solid cast steel		$14 75	$15 00	$15 50	$15 75	$16 25
1008	" "		13 25	13 50	14 00	14 25	14 50
1009	" steel		12 25	12 25	12 75	13 25	13 25

In ordering drain spades give number and state length wanted.
Half polished drain spades, 15 cents less than polished.
Unpolished, 25 cents less than polished.
Foot clasps, $1.50 per dozen.

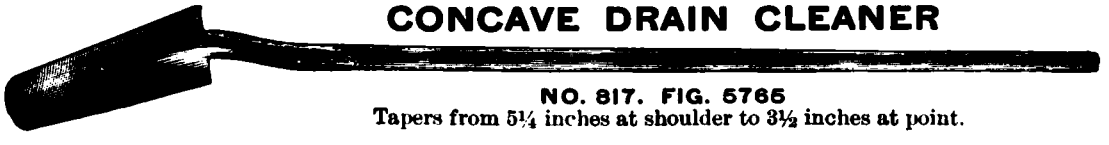
CLAY SPADE



NO. 1201. FIG. 5764

Per dozen.....$22 75

CONCAVE DRAIN CLEANER



NO. 817. FIG. 5765

Tapers from 5¼ inches at shoulder to 3½ inches at point.

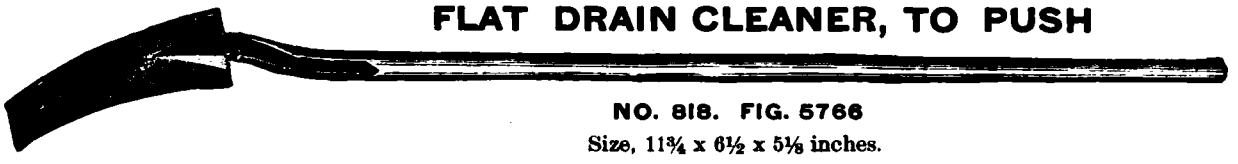
PRICES, FIG. 5765

Nos.		Per Dozen
817	Solid cast steel, polished	$13 00
1026	" " "	11 25
1027	" steel, "	9 50

PRICES, FIG. 5766

Nos.		Per Dozen.
818	Solid cast steel, polished	$13 00
1028	Solid cast steel, polished	11 25
1029	Solid steel, polished	9 50

FLAT DRAIN CLEANER, TO PUSH



NO. 818. FIG. 5766

Size, 11¾ x 6½ x 5⅛ inches.

DITCHING AND DRAIN TOOLS

D HANDLE DITCHING SPADE



NO. 1242. FIG. 5767

Ditching spade blades spread from 5¾ inches at the step to 6⅜ inches at the point, and are made from 14 to 22 inches long. Per dozen, $31.50.

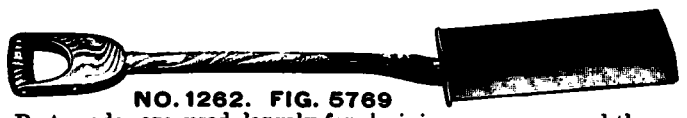
D HANDLE DRAIN SPADE



NO. 1252. FIG. 5768

Drain spade blades taper from 5½ inches at the step to 4⅜ inches at the point, and are made from 14 to 22 inches long. Per dozen, $31.50.

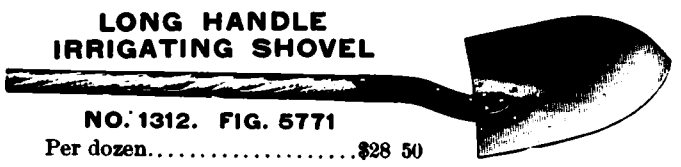
D HANDLE POST SPADE



NO. 1262. FIG. 5769

Post spades are used largely for draining purposes, and the name is only used to distinguish them from others. The blades are 5½ inches at the step and 6 inches at the point, and are made from 14 to 22 inches long. Per dozen, $31.50.

LONG HANDLE IRRIGATING SHOVEL



NO. 1312. FIG. 5771

Per dozen.....$28 50

DRAIN TOOLS

Plain back solid extra cast steel shovels and spades. Black.

Nos.		Sizes.	Per Doz.
1322	D handle, ditching spade	2	$28 50
1332	" drain spade	2	
1342	" post spade	2	
1352	" subsoil	2	

No.	IRRIGATING SHOVEL	Size.	Per Doz.
1392	Long handle	2	$26 25

D HANDLE SUBSOIL SPADE



NO. 1272. FIG. 5770

Subsoil spades are made very heavy and strong for deep digging and nursery use. The blades are 7 inches at the step and 6¾ inches at the point, and are made from 14 to 22 inches long. Per dozen, $31.50.

LONG HANDLE WESTERN MINING SHOVEL



FIG. 5772

PRICES, FIG. 5772

Nos.		Sizes.	Per Doz.
1362	D or long handle, stiff point	2	$23 25
1372	" half spring point	2	
1382	" full spring point	2	

DRAIN TOOLS

Plain back solid cast steel shovels and spades. Black.

Nos.		Sizes.	Per Doz.
1402	D handle, ditching spade	2	$25 50
1412	" drain spade	2	
1422	" post spade	2	
1432	" subsoil	2	

WESTERN MINING SHOVELS

Nos.		Sizes.	Per Doz.
1442	D or long handle, stiff point	2	$21 00
1452	" half spring point	2	
1462	" full spring point	2	

IRRIGATING SHOVEL

No.		Size.	Per Doz.
1472	Long handle	2	$24 00

Additional sizes advance 50 cents per dozen. Socket straps furnished if desired. Specials not listed quoted upon application. All ditching, post and drain tools based on 14 inches, 50 cents advance per size. Polished shovels and spades, 50 cents extra per dozen.

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SNOW OR ASH SHOVELS

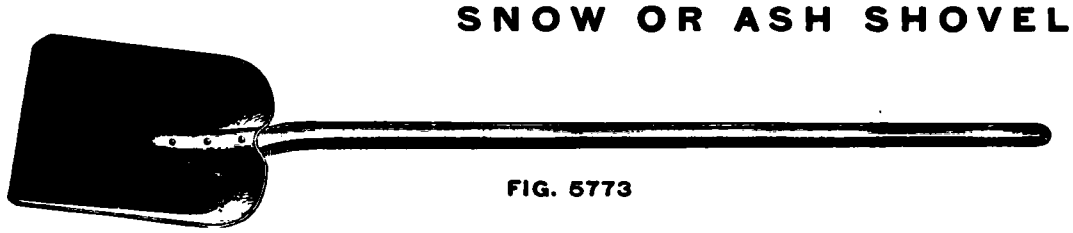


FIG. 5773

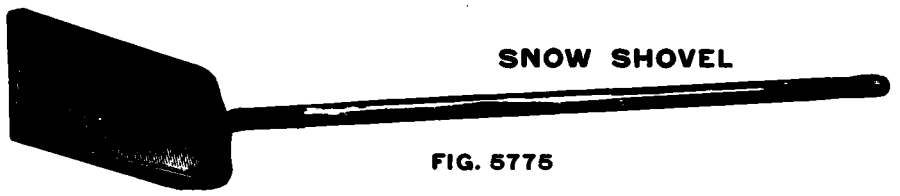
PRICES, FIG. 5773

No. 1050	Size No. 2,	Long Handle.
" 1051	" 3,	" "
" 1052	" 2,	D Handle.
" 1053	" 3,	" "
" 1070	" 2,	Long Handle
" 1071	" 3,	" "
" 1072	" 2,	D Handle.
" 1073	" 3,	" "

Prices on application.

PRICES, FIG. 5775

Long Handle Snow Shovels, per dozen.....$7 00
D Handle " " " 10 00



SNOW SHOVEL

FIG. 5775

SNOW SHOVEL

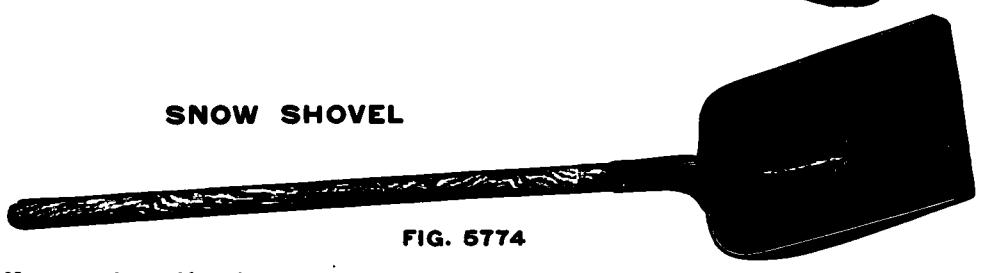


FIG. 5774

No. 3000 Snow Shovels, per dozen.....$7 00

SIDEWALK ICE CHISEL

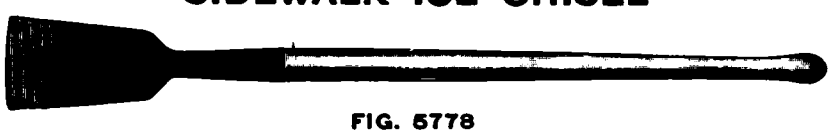


FIG. 5778

Per dozen.....$12 00

ICE CHOPPER AND SCRAPER

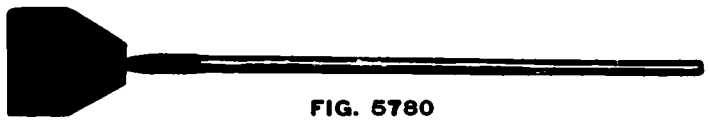


FIG. 5780

No. 1	Small, per dozen	$5 00
" 2	Medium, "	5 50
" 3	Large, "	6 50

STONE PICKER

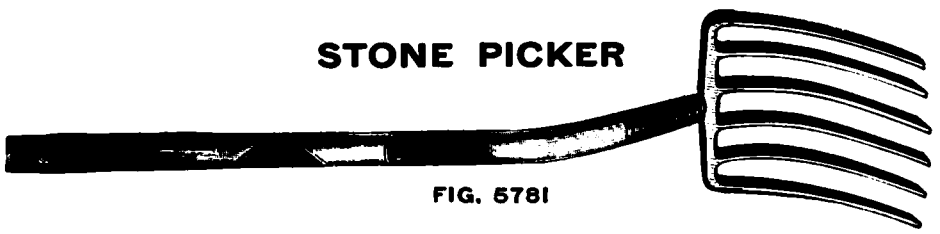


FIG. 5781

6 Tines, 4½ foot, XX Handles, per dozen.....$16 50

BALLAST OR STONE FORK

Black Oil Finish. XX D Handles.

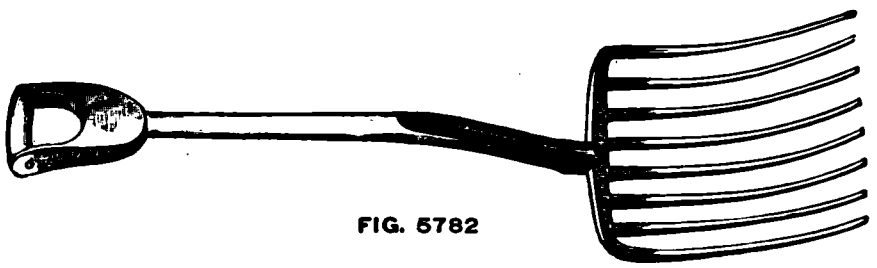


FIG. 5782

GALVANIZED WIRE SCOOP

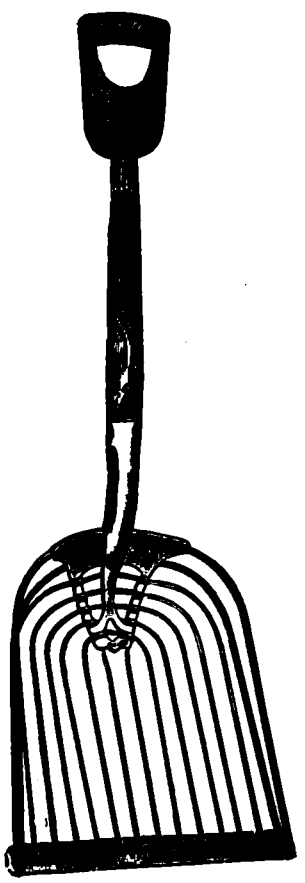


FIG. 5783

No.	Per Doz.
975 D Handle.....	$33 00

Very strong and durable. Adapted for coal, coke, or ice.

MALLEABLE SCREENING SCOOP



FIG. 5783A

These shovels are made of malleable iron, and are used for coal, coke and ash screeners.

Price, per dozen....$27 00

PRICES, FIG. 5782

Strapped and Capped.		Per Dozen.
Square 8 Tines		$20 00
" 10	"	25 00
" 12	"	29 00
" 14	"	33 00
Round 11	"	27 00

If with Polished Tines, $2.00 added to the list.

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COKE FORK

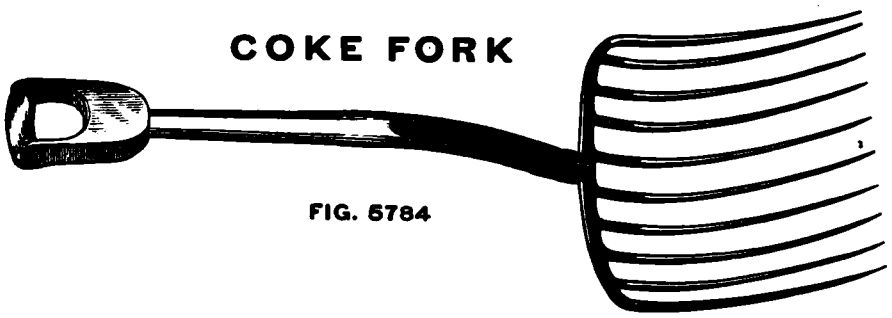


FIG. 5784

COAL FORK

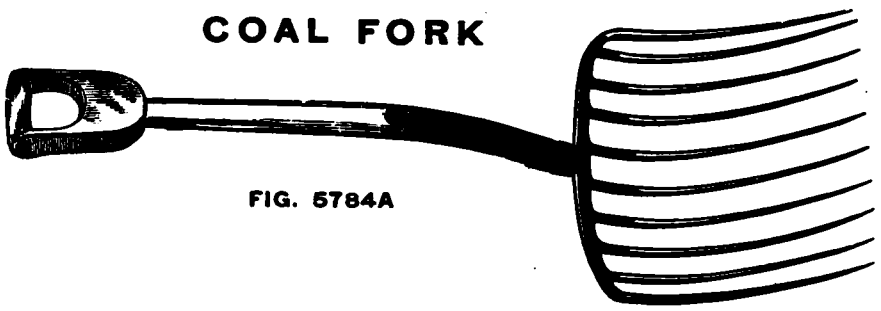


FIG. 5784A

EXTRA HEAVY STEEL BALLAST AND COAL RAKE

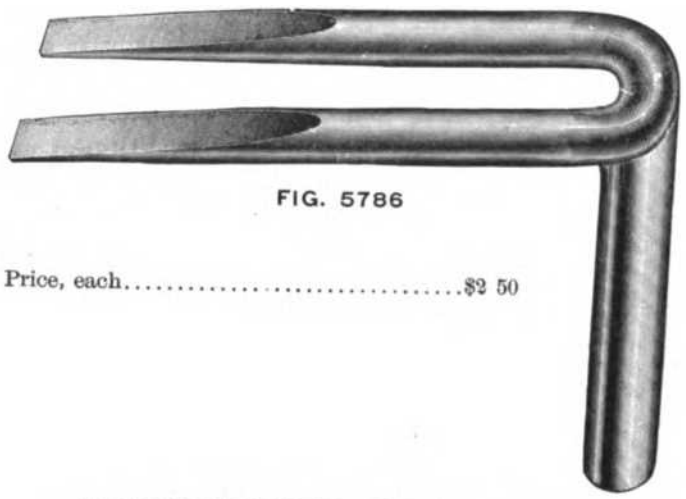


FIG. 5786

Price, each.....$2 50

LOCOMOTIVE COAL PICK

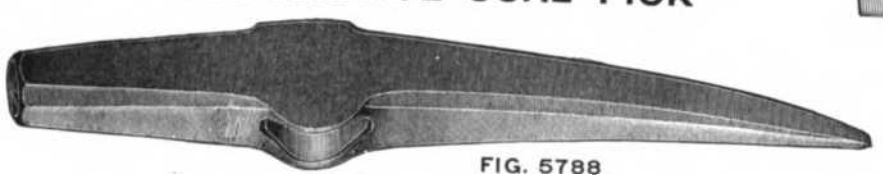


FIG. 5788

Made Any Desired Weight.

Price, per pound ..... 17 cents

POLL PICK



FIG. 5789

Ground, Oil Finished, Solid Cast Steel.

Sizes.	Weight, Pounds.	Per Dozen.
1	3½	$18 00
2	4	19 00
3	4½	20 00
4	5¼	21 50
5	6	23 00
6	6¾	24 50

Painted Blue. Polished Head and Points.

Sizes.	Weight, Pounds.	Per Dozen.
1	3½	15 00
2	4	16 00
3	4½	17 00
4	5	18 50
5	6	20 00
6	7	21 50

COKE FORK

PRICES, FIGS. 5784, 5784A AND 5785

Black Oil Finish. XX D Handles.
Strapped and Capped Ferrule.

Nos. of Tines, Diamond.			
8	Coke, per doz.		$20 00
10	"	"	24 00
12	"	"	28 00
14	"	"	33 00
16	"	"	40 00
18	"	"	48 00
7	Coal, Heavy, 18 inches long, per doz.		26 00
8	Coal, "		20 00
10	" "		25 00
12	" "		29 00

If with polished tines, $2.00 added to the list.

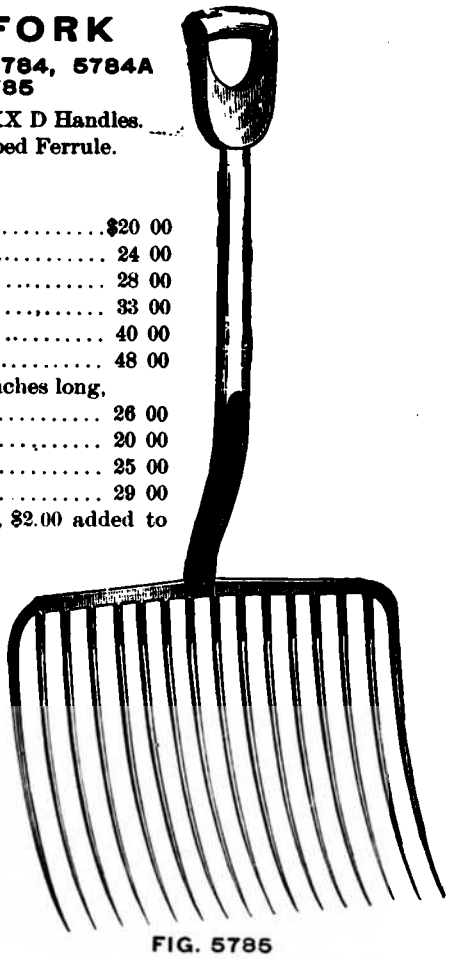


FIG. 5785

DESCRIPTION FIG. 5787

The standard size of this Steel Scraper Head is 16 inches long on the blade, 8 inches long on shoulder, and 6 inches wide. It can readily be welded to rod or gas pipe. Price, each $1 60

COKE DRAWER OR SCRAPER HEAD



FIG. 5787

COMMON EYE COAL PICK



FIG. 5790

ADZE EYE COAL PICK



FIG. 5791

Solid Cast Steel, Ground and Oil Finished.

Common Eye, Nos.	Adze Eye.	Weight, Pounds.	Per Dozen.
1890	1900	2	$10 50
1891	1901	2½	11 00
1892	1902	3	11 50
1893	1903	3½	12 00
1894	1904	4	12 50
1895	1905	4½	13 00
1896	1906	5	13 50
1897	1907	5½	14 00
1898	1908	6	14 50
1899	1909	6½	15 00

Ground and Oil Finished.

Common Eye, Nos.	Adze Eye.	Weight, Pounds.	Per Dozen.
1770	1780	2	$8 50
1771	1781	2½	9 00
1772	1782	3	9 50
1773	1783	3½	10 00
1774	1784	4	10 50
1775	1785	4½	11 00
1776	1786	5	11 50
1777	1787	5½	12 00
1778	1788	6	12 50
1779	1789	6½	13 00

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CONTRACTOR'S PICK



FIG. 5792

PRICES, FIG. 5792

Forge Finished and Oiled.

Weight, Pounds.	Per Doz.	Weight, Pounds.	Per Doz.
7	$18 00	9	21 00
7½	18 50	9½	22 00
8	19 00	10	23 00
8½	20 00		

SURFACE PICK

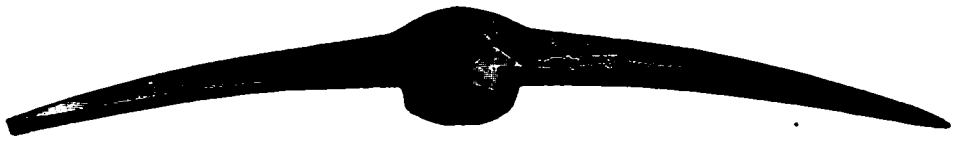


FIG. 5793

PRICES, FIG. 5793

Solid Cast Steel, Oil Finished.			Ground and Oil Finished.		
Sizes.	Weight, Pounds.	Per Doz.	Sizes.	Weight, Pounds.	Per Doz.
1	4	$17 00	1	4	$14 00
2	4½	18 00	2	4½	15 00
3	5	19 00	3	5	16 00
4	5½	20 00	4	5½	17 00
5	6	21 00	5	6	18 00
6	6½	22 00	6	6½	19 00
7	7	23 00	7	7	20 00

DRIFTING PICK



FIG. 5794

PRICES, FIG. 5794

Solid Cast Steel, Oil Finished.			Ground and Oil Finished.		
Sizes.	Weight, Pounds.	Per Doz.	Sizes.	Weight, Pounds.	Per Doz.
1	3	$16 00	1	3	$12 50
2	4	18 00	2	4	14 00
3	4½	19 00	3	4½	15 00
4	5	20 00	4	5	16 00
5	6	22 00	5	6	17 50

MINING PICK

KLONDIKE PATTERN



FIG. 5795

PRICES, FIG. 5795

Eyes, Soft Steel; Arms, Extra Tool Steel.

Sizes, Inches.	Weight, Pounds.	Length of Arms, Inches.	Per Doz.
32	5	13¼	$21 00
34	5½	14¼	22 00
36	6	15¼	23 00

RAILROAD PICK



FIG. 5796

PRICES

Solid Cast Steel, Oil Finished.

Weight, Pounds.	Per Doz.
4 to 5	$16 00
5 " 6	17 00
6 " 7	18 00
7 " 8	19 00
8 " 9	21 00

Painted Blue, Polished Points.

Weight, Pounds.	Per Doz.	Weight, Pounds.	Per Doz.
4	$11 50	8	$15 50
4 to 5	11 50	8 to 9	16 50
5	12 00	9	17 50
5 to 6	12 50	9 to 10	18 50
6	13 00	10	19 50
6 to 7	13 50	10 to 11	20 50
7	14 00	11 to 12	22 50
7 to 8	14 50		

RAILROAD V TAMPING PICK



FIG. 5797

PRICES

Solid Cast Steel, Oil Finished.

Weight, Pounds.	Per Doz.
6 to 7	$22 00
7 " 8	23 00
8 " 9	24 00

Painted Blue, Polished Points.

Weight, Ppunds.	Per Doz.	Weight, Pounds.	Per Doz.
6	$18 00	8	$19 50
6 to 7	18 00	8 to 9	20 00
7	18 50	9	21 00
7 to 8	19 00		

RAILROAD T TAMPING PICK



FIG. 5798

PRICES

Solid Cast Steel, Oil Finished.

Weight, Pounds.	Per Doz.
6 to 7	$22 00
7 " 8	23 00
8 " 9	24 00

Painted Blue, Polished Points.

Weight, Pounds.	Per Doz.	Weight, Pounds.	Per Doz.
6	$18 00	8	$19 50
6 to 7	18 00	8 to 9	20 00
7	18 50	9	21 00
7 to 8	19 00		

PICK EYES

RAILROAD AND TAMPING

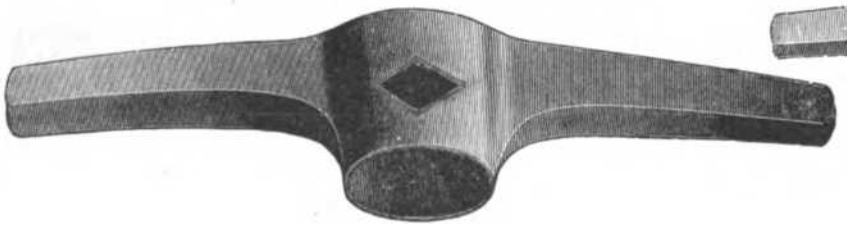


FIG. 5800

PRICES

Forge Finished.

	Per Doz.
Weight of Picks, 4½ pounds, Railroad	$9 00
" 5 " "	9 50
" 6 " "	10 50
" 7 " "	11 50
" 8 " "	12 50

	Per Doz.
Tamping	$11 00
"	12 00
"	13 00

SURFACE AND DRIFTING



FIG. 5801

PRICES

Surface. Forge Finished.

Size Pick 1	Weight, 4	pounds, per dozen			$8 50
" 2	" 4½	"	"		9 00
" 3	" 5	"	"		9 50
" 4	" 5½	"	"		10 00
" 5	" 6	"	"		10 50
" 6	" 6½	"	"		11 00
" 7	" 7	"	"		11 50

Drifting. Forge Finished.

Size Pick 1	Weight, 3	pounds, per dozen			$7 50
" 2	" 4	"	"		8 50
" 3	" 4½	"	"		9 00
" 4	" 5	"	"		9 50
" 5	" 6	"	"		10 50

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DRIFTING PICK

Strapped Eye Pattern.

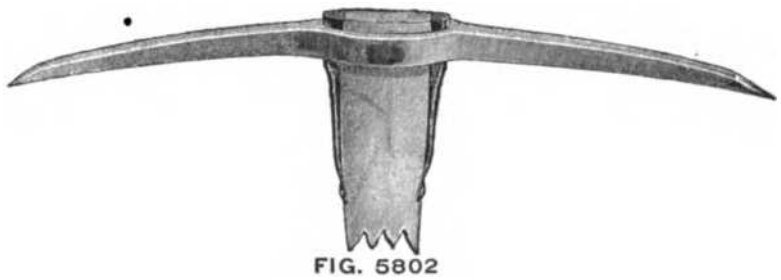


FIG. 5802

Size 1	Weight, 5 pounds;	per dozen		$20 00
" 2	" 5½ "	"		21 00
" 3	" 6 "	"		22 00

Handled with extra quality handles, $2.00 per dozen extra.
Prices include straps and rivets.

LONG AND SHORT CUTTER MATTOCK

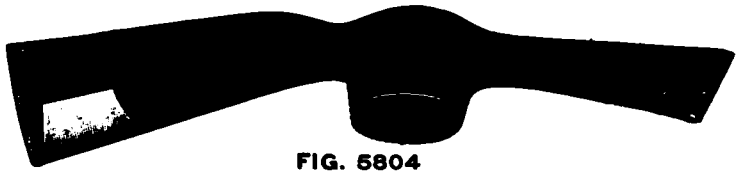


FIG. 5804

Painted Blue, Polished Cutter.

Long Cutter, average weight, 6 pounds; size hoe, 8½ x 4¼ inches; size cutter, 6 x 3½ inches; per dozen $17 00
Short Cutter, average weight, 5½ pounds; size hoe, 8¼ x 4¼ inches; size cutter, 4½ x 3½ inches; per dozen 16 50

LONG AND SHORT CUTTER MATTOCK

Light Pattern.

FIG. 5806

Painted Blue, Polished Cutter.

Long Cutter, average weight, 5 pounds; size hoe, 8¼ x 3½ inches; size cutter, 5¾ x 3 inches; per dozen $16 00
Short Cutter, average weight, 5 pounds; size hoe, 8¼ x 3½ inches; size cutter, 4½ x 3 inches; per dozen 16 00

GRUB HOE



FIG. 5808

Painted Blue, Polished Cutter.

Size 0	Weight, 3 pounds;	size hoe,	10½ x 3½ inches	per dozen		$11 50
" 1	" 3½ "	"	10¾ x 3¾ "	"		12 00
" 2	" 4 "	"	11¼ x 4 "	"		12 50
" 3	" 4½ "	"	11½ x 4¼ "	"		13 00

BUSH HOOK

Axe Handle.

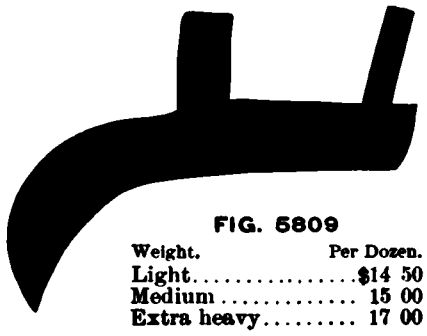


FIG. 5809

Weight.	Per Dozen.
Light	$14 50
Medium	15 00
Extra heavy	17 00

BUSH HOOK

Auckland Pattern.



FIG. 5810

No. 800 Per dozen $17 00

EYELESS STEEL CONTRACTOR'S PICK

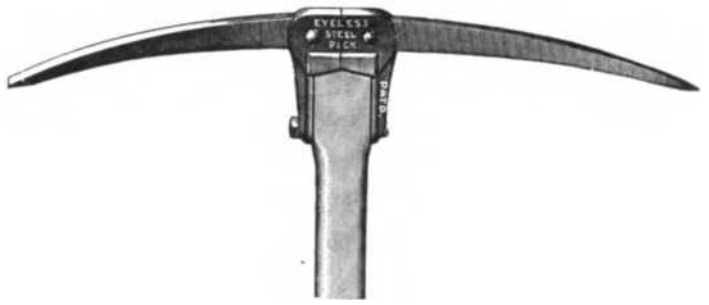


FIG. 5803

Weight, 5 pounds;	per dozen			$16 00
" 6 "	"			18 00
" 7 "	"			20 00
" 8 "	"			22 00

PICK MATTOCK



FIG. 5805

Painted Blue, Polished Point and Cutter.

Average weight, 6 pounds; size hoe, 8½ x 4½ inches; size pick end, 8½ inches; per dozen $17 00

GRUB HOE

Southern or Accomac Pattern.

FIG. 5807

Painted Blue, Polished Cutter.

Size 0	Weight, 3 pounds;	size hoe,	10½ x 5 inches;	per dozen		$13 50
" 1	" 3½ "	"	10¾ x 5½ "	"		14 00
" 2	" 4 "	"	11¼ x 6 "	"		14 50
" 3	" 4½ "	"	11½ x 6½ "	"		15 00

ACCOMAC HOES

Standard Sizes.

6 inches	$18 00
6½ "	19 00
7 "	20 00



FIG. 5811

BUSH HOOK

Two Ring.

No. 810 Per doz. $14 00

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CARPENTERS' ADZES

HALF HEAD

Bronze Finish.



FIG. 5812

No. 740—Cut 3½ to 4½ in.; per doz.....$24 00

FULL HEAD

Bronze Finish.

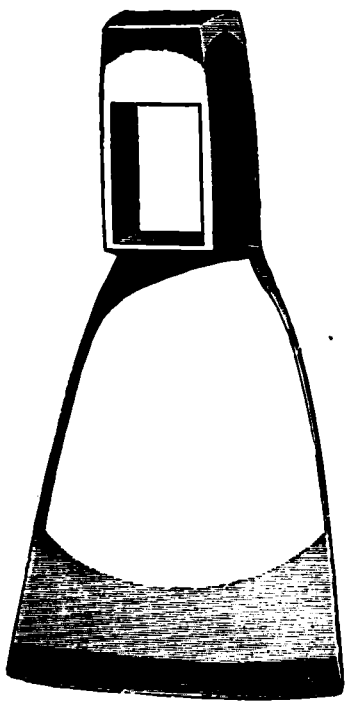


FIG. 5813

No. 750—Cut 3½ to 4½ in.; per doz.....$24 00

SHIP CARPENTER'S ADZE

SPUR HEAD (Bronze Finish)

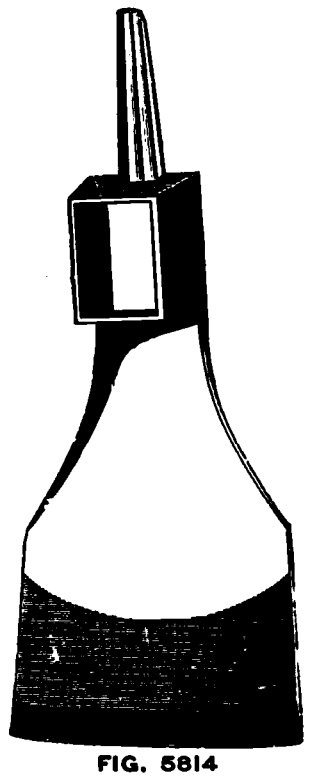


FIG. 5814

No. 780—Cut 4 to 4½ in.; per doz.....$25 00

" 781— " 4 " 4½ "(with lip); per doz..30 00

RAILROAD ADZES

HALF HEAD

Bronze Finish.

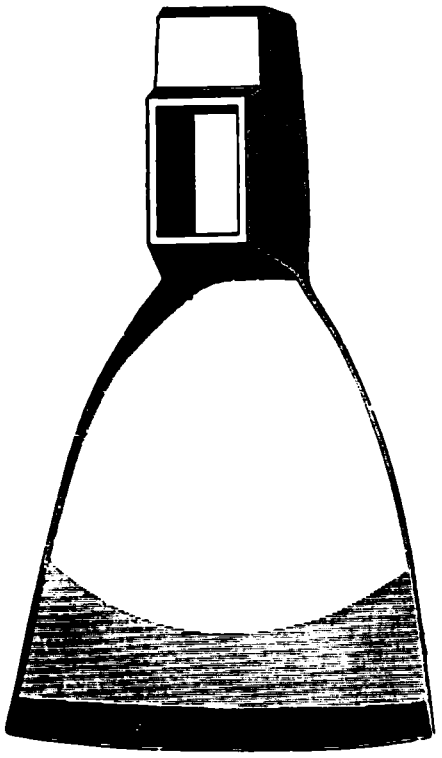


FIG. 5815

No. 760—Cut 5 to 5½ in.; per doz.....$26 00

" 761— " 5¾ " 6 " " " 27 00

FULL HEAD

Bronze Finish.

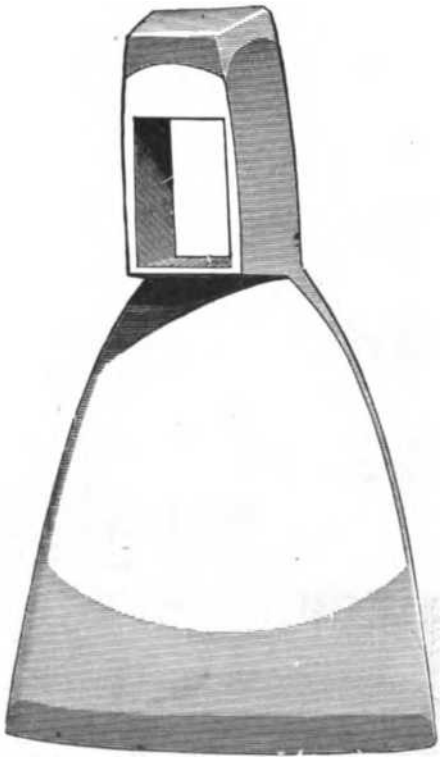


FIG. 5816

No. 770—Cut 5 to 5½ in.; per doz.....$26 00

" 771— " 5¾ " 6 " " " 27 00

COOPER'S ADZE

Painted Blue.

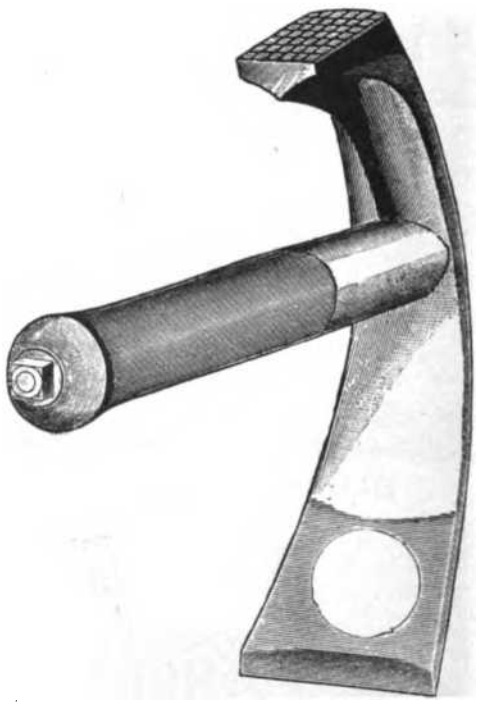


FIG. 5817

No.	Weight.	Width of Cut.	Per Doz.
2770	3 lbs. 8 oz.	8 inches	$44 00

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BROAD AXES

OHIO PATTERN

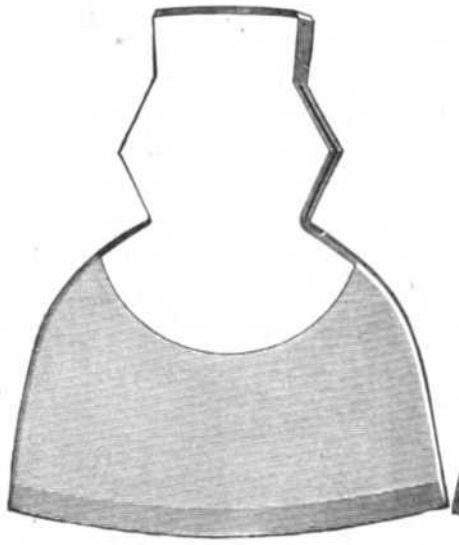


FIG. 5818

PENNA. OR PITTSBURG PATTERN



FIG. 5819

WESTERN PATTERN



FIG. 5820

PRICES, FIGS. 5818 TO 5820

Bronze Finish, Cast Steel.

Ohio, Fig. 5818, Nos.	Penna., Fig. 5819, Nos.	Western, Fig. 5820, Nos.	Assorted, Pounds.	Per Dozen.
680	690	700	5 to 6½	$32 00
681	691	701	6 " 7	32 00
682	692	702	6½ " 7½	32 00
683	693	703	6 " 8	32 00
684	694	704	7 " 8	35 00
685	695	705	7½ " 8½	35 00
686	696	706	7 " 9	35 00
687	697	707	8 " 9	38 00
688	698	708	8½ " 9½	38 00
689	699	709	8 " 10	38 00

Weights assorted as wanted.

SHIP PATTERN



FIG. 5822

No.	Bronze Finish, Cast Steel. Weight, Pounds.	Per Dozen.
780	5 to 5½	$30 00

NEW ORLEANS PATTERN

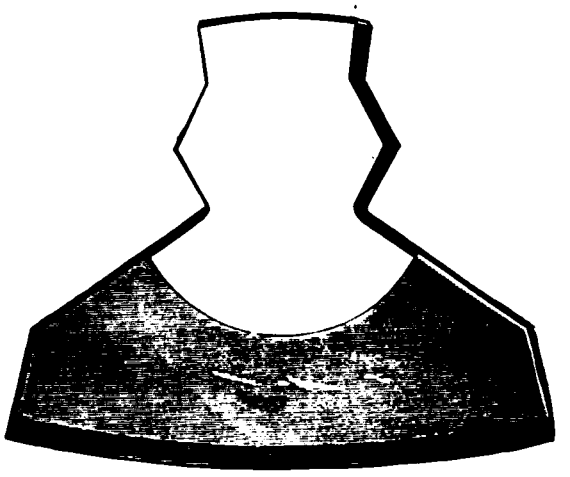


FIG. 5823

Nos.	Bronze Finish, Cast Steel. Assorted Weights. Pounds.	Per Dozen.
710	5 to 6½	$32 00
711	6 " 7	32 00
712	6½ " 7½	32 00
713	6 " 8	32 00
714	7 " 8	35 00
715	7½ " 8½	35 00
716	7 " 9	35 00
717	8 " 9	38 00
718	8½ " 9½	38 00
719	8 " 10	38 00

CANADA PATTERN

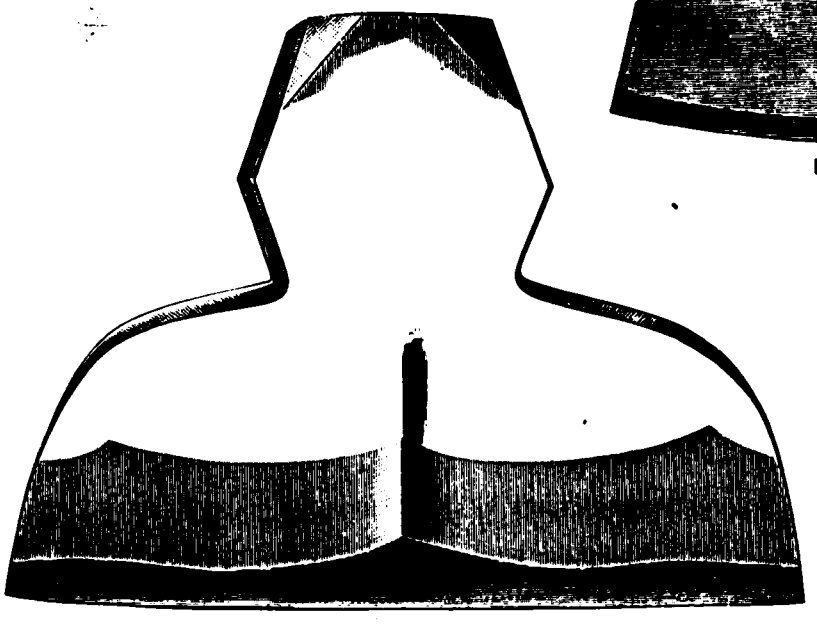


FIG. 5821

Nos.	Bronze Finish, Cast Steel. Assorted Weights, Pounds.	Per Dozen.
720	5 to 7	$42 00
721	All 6	42 00
722	6 " 7	44 00
723	6½ " 7½	44 00
724	All 6½	44 00
725	" 7	44 00
726	7 " 8	46 00
727	7½ " 8½	46 00
728	7 " 9	46 00
729	All 7½	46 00

Nos.	Bronze Finish, Cast Steel. Assorted Weights, Pounds.	Per Dozen.
0720	All 8	$46 00
0721	8 to 9	48 00
0722	All 8½	48 00
0723	" 9	48 00
0724	9 " 11	50 00
0725	All 9½	50 00
0726	" 10	50 00
0727	10 " 11	54 00
0728	All 11	54 00

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HANDLED AXES

YANKEE

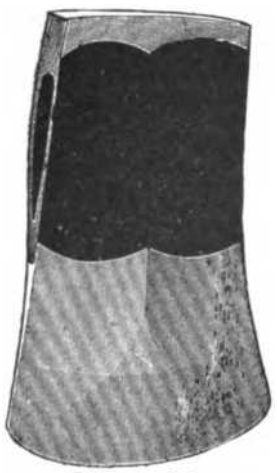


FIG. 5824

PRICES, FIGS. 5824 AND 5825

		Handled.
3¼ to 4½ lbs.,	per doz.	$....
4¼ " 5¼ "	"	.....
4½ " 5½ "	"	.....
4½ " 6 "	"	.....
5 " 7 "	"	.....
6 " 7 "	"	.....

Not handled, $..... per dozen less than above.

WESTERN

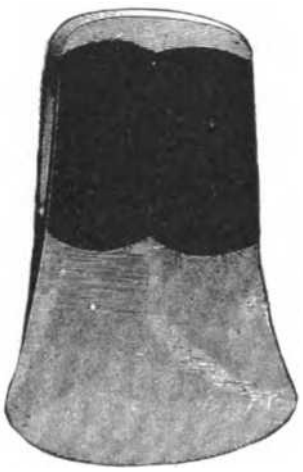


FIG. 5825

DOUBLE BITTED AXE

PRICE, FIG. 5826

Per dozen.....$

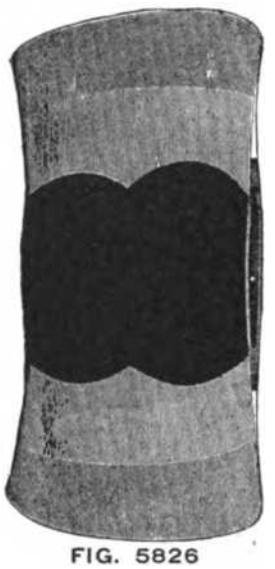


FIG. 5826

HANDLED AXE

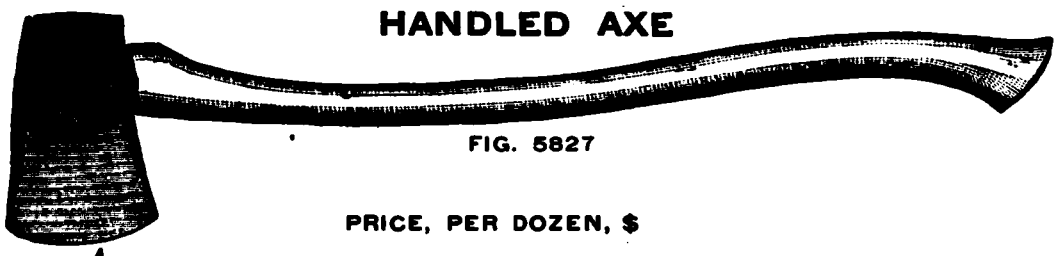


FIG. 5827

PRICE, PER DOZEN, $

FIREMAN'S AXE

SPUR OR PICK POINT

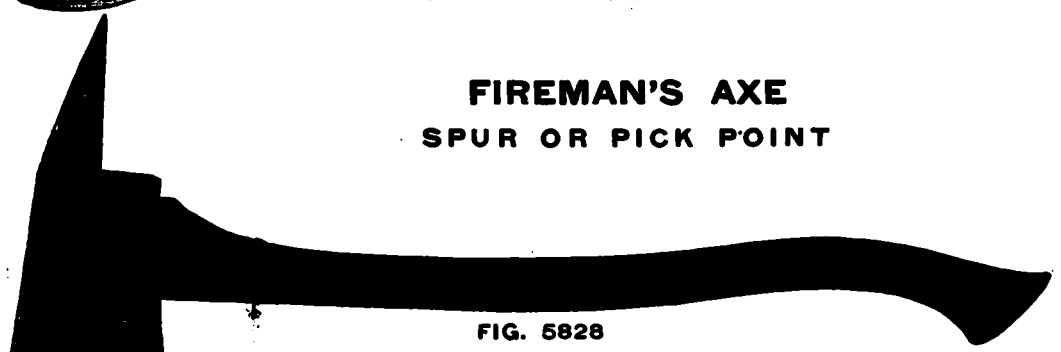


FIG. 5828

Regular Axe Finish, Painted Red.

	Per Doz.
No. 2350. Weight, 4½ to 8 lbs.	$25 00

Extra Quality Handles. Axes and Handles Painted Red.

	Per Doz.
No. 2360. Weight, 4½ to 8 lbs.	$26 50

Above weights do not include handles.

FIREMAN'S HATCHET

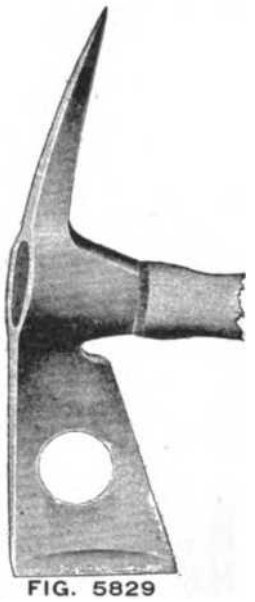


FIG. 5829

No. 575. Weight, 1 pound; per doz..$15 00

WAREHOUSE HATCHET

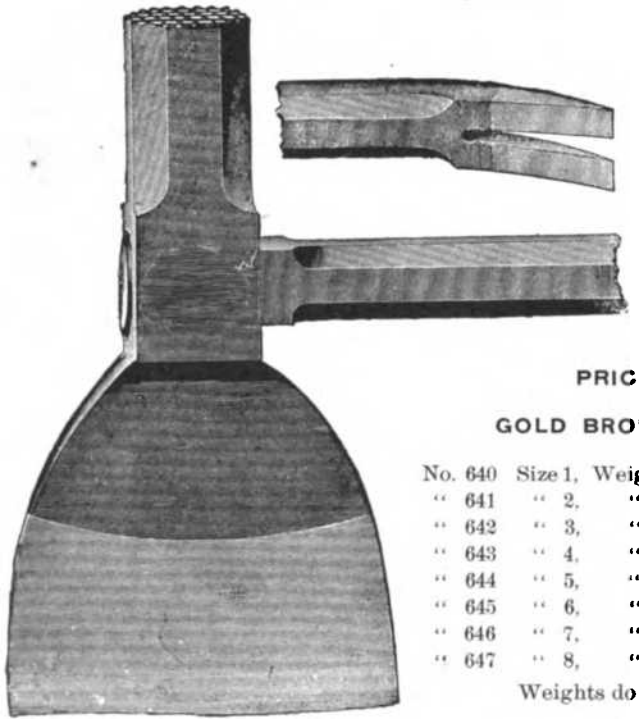


FIG. 5830

PRICE, FIG. 5830

No. 650. Weight, 3 pounds 14 ounces: Bit, 3⅞ inches: per dozen. $15 00

PRICES, FIG. 5831

GOLD BRONZE. CAST STEEL

				Per Doz.
No. 640	Size 1,	Weight, 1 lb. 8 oz.,	Bit, 4 in.	$10 50
" 641	" 2,	" 1 " 12 "	" 4½ "	11 50
" 642	" 3,	" 2 " 2 "	" 5 "	13 00
" 643	" 4,	" 2 " 8 "	" 5½ "	14 50
" 644	" 5,	" 2 " 14 "	" 6 "	16 50
" 645	" 6,	" 3 " 4 "	" 6½ "	18 00
" 646	" 7,	" 3 " 12 "	" 7 "	19 50
" 647	" 8,	" 4 " 4 "	" 7½ "	22 00

Weights do not include handles.

BROAD HATCHET

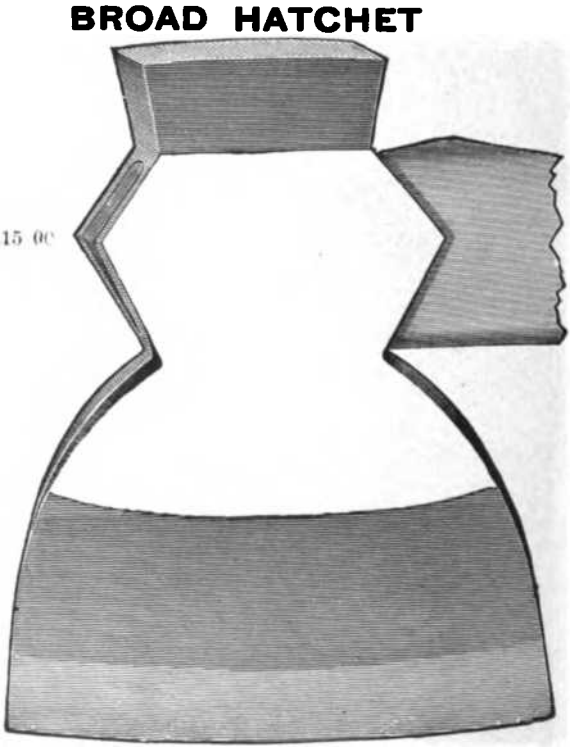


FIG. 5831

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HATCHETS

SHINGLING.

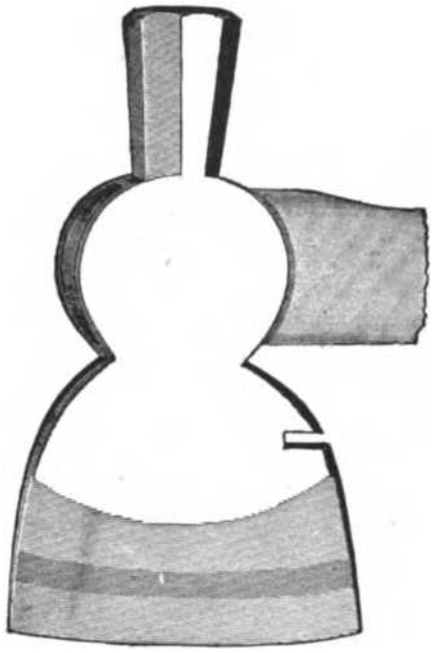


FIG. 5832

LATHING.

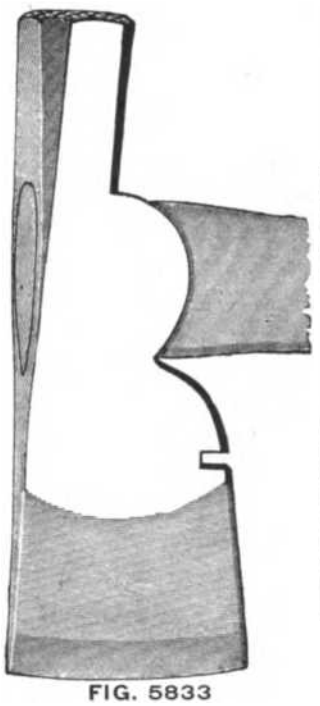


FIG. 5833

HALF.

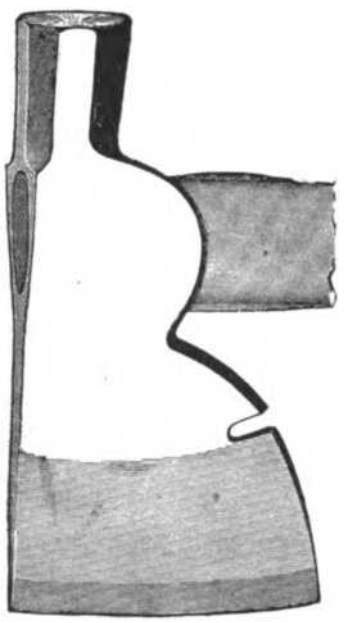


FIG. 5834

CLAW.

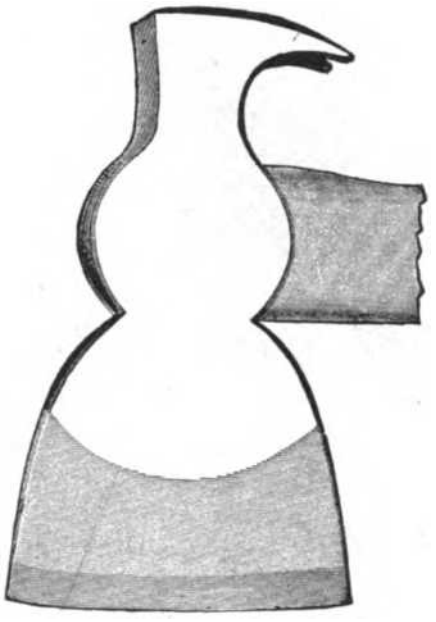


FIG. 5835

BRONZE FINISH, CAST STEEL

PRICES, FIG. 5832

Nos.	Sizes.	Weights.	Width of Bit, Inches.	Per Doz.
590	0	13 oz.	3¼	$7 50
591	1	1 lb. 1 oz.	3½	8 00
592	2	1 " 7 "	4	8 50
593	3	1 " 13 "	4½	9 00
594	4	2 " 3 "	4¾	9 50

PRICES, FIG. 5833

Nos.	Sizes.	Weights.	Width of Bit, Inches.	Per Doz.
620	0	10 oz.	2	$7 50
621	1	14 "	2¼	8 00
622	2	1 lb. 1 oz.	2½	8 50
623	3	1 " 4 "	2¾	9 00

PRICES, FIG. 5834

Nos.	Sizes.	Weights.	Width of Bit, Inches.	Per Doz.
600	1	15 oz.	3¼	$8 50
601	2	1 lb. 5 oz.	3⅝	9 00
602	3	1 " 11 "	4	9 50
603	4	2 " 1 "	4½	10 00

PRICES FIG. 5835

Nos.	Sizes.	Weights.	Width of Bit, Inches.	Per Doz.
610	1	1 lb. 3 oz.	3½	$9 00
611	2	1 " 9 "	4	9 50
612	3	1 " 15 "	4½	10 00

Weights do not include handles.

FULL POLISHED, SOLID CAST STEEL

PRICES, FIG. 5832

Nos.	Sizes.	Weights.	Width of Bit, Inches.	Per Doz.
480	1	1 lb. 1 oz.	3½	$10 50
481	2	1 " 7 "	4	11 00
482	3	1 " 13 "	4½	11 50

PRICES, FIG. 5833

Nos.	Sizes.	Weights.	Width of Bit, Inches.	Per Doz.
0500	1	14 oz.	2¼	$10 50
0501	2	1 lb. 1 oz.	2½	11 00
0502	3	1 " 4 "	2¾	11 50

PRICES, FIG. 5834

Nos.	Sizes.	Weights.	Width of Bit, Inches.	Per Doz.
490	1	15 oz.	3¼	$11 00
491	2	1 lb. 5 oz.	3⅝	11 50
492	3	1 " 11 "	4	12 00

PRICES FIG. 5835

Nos.	Sizes.	Weights.	Width of Bit, Inches.	Per Doz.
510	1	1 lb. 3 oz.	3½	$11 50
511	2	1 " 9 "	4	12 00
512	3	1 " 15 "	4½	12 50

Weights do not include handles.

BARREL HATCHET

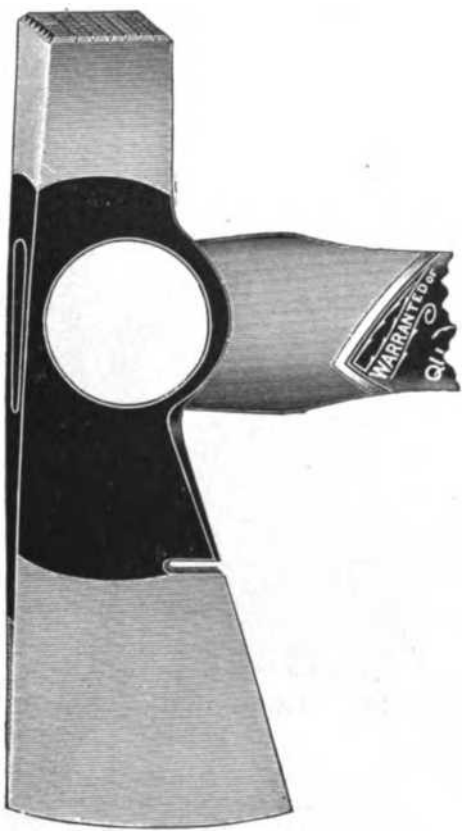


FIG. 5836

BLUE PAINTED

Nos.	Sizes.	Weights.	Bit, Inches.	Per Dozen.
630	1	10 oz.	2⅛	$8 00
631	2	14 "	2⅜	8 50

ADZE EYE BELL POLE HALF HATCHET



FIG. 5837

SOLID CAST STEEL

Nos.	Sizes.	Weights.	Per Dozen.
530	1	14 oz.	$14 50
531	2	1 lb. 2 oz.	15 00

Weights do not include handles.

ADZE EYE HALF HATCHET



FIG. 5838

SOLID CAST STEEL

Nos.	Sizes.	Weights.	Per Dozen.
2700	1	1 lb. 4 oz.	$13 50
2701	2	1 " 10 "	14 00

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IMPROVED IRON GRINDSTONE FRAME

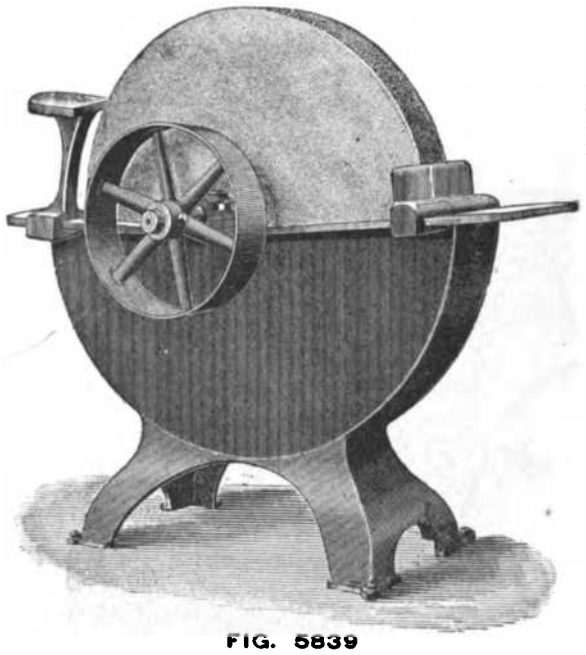


FIG. 5839

DESCRIPTION
FIG. 5839

The frames are cast all in one piece, provided with shield and grinding rest and extra heavy arbor running in babbitted boxes, with driving pulley of ample dimensions. They also have holes tapped in the bottom for draining purposes. The stones should be run for ordinary work from 600 to 1,000 feet per minute. These frames are kept in stock for quick delivery of the following sizes:

PRICES

Sizes.	With Stone Complete.	Without Stone.
24x3½	$20 00	$18 50
24x4	21 00	
26x3½	23 00	20 00
26x4	24 00	
30x3½	28 00	24 00
30x4	29 00	
36x4	44 00	38 00
36x5	45 00	
40x4	48 00	39 00
40x5	49 00	

IRON GRINDSTONE FRAME
EXTRA HEAVY

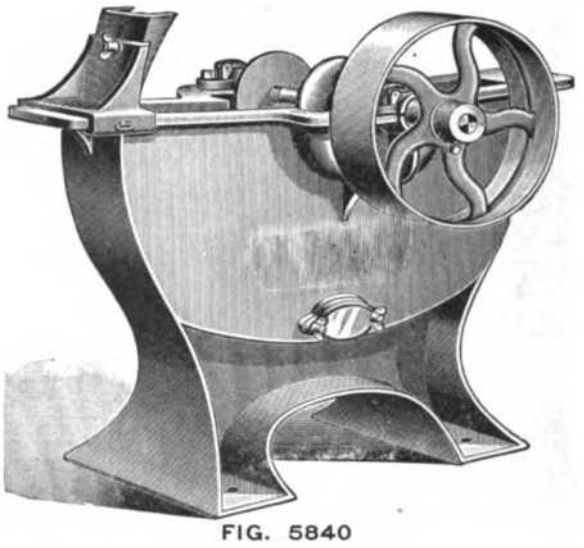


FIG. 5840

PRICE

To swing stone 30x4½ in., with pulley 16x3½ in., each, $25.00

POWER GRINDSTONE FRAME
CAST IRON

Arranged with Pulley for Power.



FIG. 5841

PRICES, FIG. 5841

	Each.
With pulley for power, to swing stone 30x4½ inches.	$15 00
Arranged with pulley and treadle for power and foot.	16 00
For size to swing stone 48x6 in., with pulley for power.	50 00

DESCRIPTION, FIG. 5842

The cut shows frame without the pulley for power and with foot treadle and handle, adapting it for use either by pedal or manual power. Arranged to be worked by hand or foot. Suitable to swing 30x4½ inch stone.

PRICE

Each.....$12 00

HAND OR FOOT GRINDSTONE FRAME
CAST IRON



FIG. 5842

CAST IRON GRINDSTONE FRAME

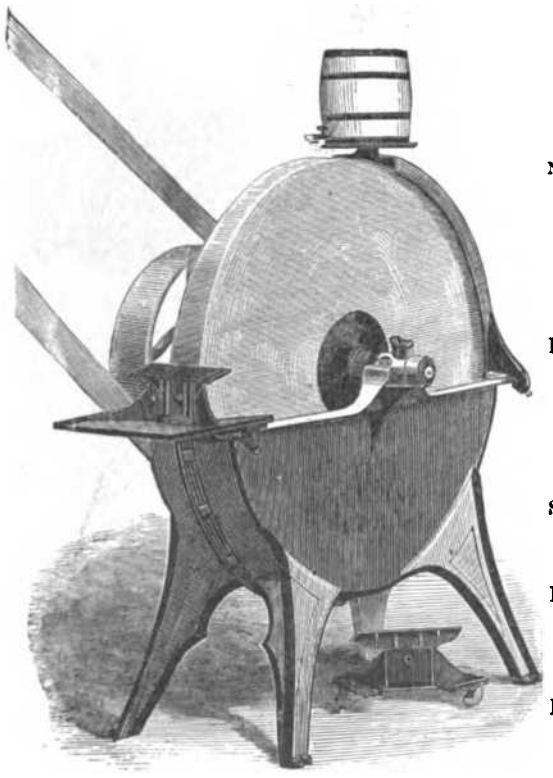


FIG. 5843

PRICES, FIG. 5843

Nos.	To Take Stone, Inches.	With Tool Rest, Each.
1	30x 4	$33 00
2	36x 6	45 00
3	48x 8	85 00
4	60x10	130 00

Extra tool rests, No. 1....4 00
" " " 2....4 00
" " " 3....5 00

Shield and Stand to Hold Keg to Drip Water on the Stone.

For No. 1 Frame.....$3 50
" " 2 " 5 00
" " 3 " 6 00

Boxing, when required, extra.

CAST IRON GRINDSTONE FRAME



FIG. 5844

The trough is cast in one piece, the legs being securely bolted by means of extension lugs, thus insuring perfect rigidity and no leakage.

A shield pan and iron bucket are furnished with each frame.

24 inches	x3 inches,	each	.....	$16 00
30 "	x4 "	"	.....	28 00
36 "	x6 "	"	.....	42 00

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IRON GRINDSTONE FRAME

WITH WATER GUARD AND ADJUSTABLE TOOL REST

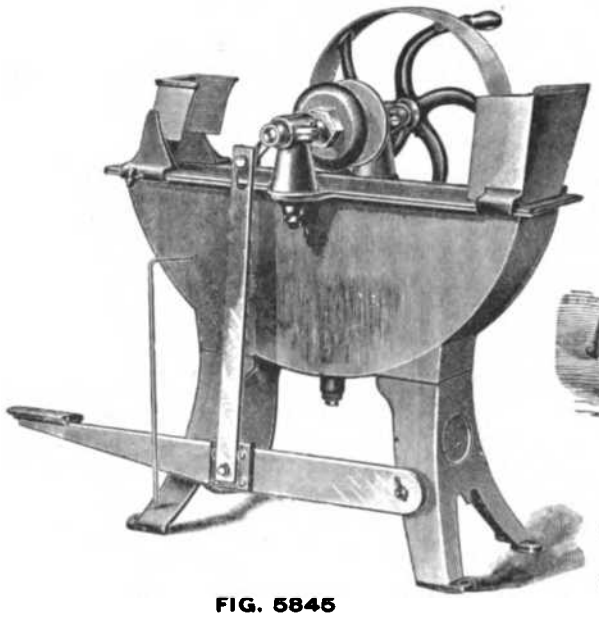


FIG. 5845

Takes stone 30 inches in diameter and 4 inch face.

PRICES

Without pulley or treadle attachment	$12 00
Pulley, extra	1 50
Treadle	1 50

Pulley has removable handle attached, as shown in cut.

IRON GRINDSTONE FRAME

WITH ADJUSTABLE TOOL REST, TRUING ATTACHMENT AND WATER POT

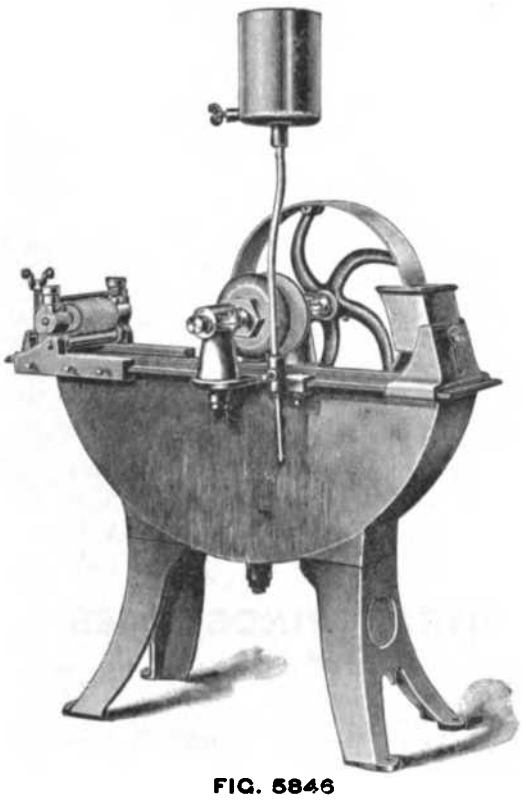


FIG. 5846

Takes stone 30 inches in diameter and 4 inch face.

PRICES

Complete	$18 00
Without water pot	17 00

MACHINE SHOP GRINDSTONES

MOUNTED ON IRON FRAMES WITH WATER BOX. STONES EXPRESSLY SELECTED

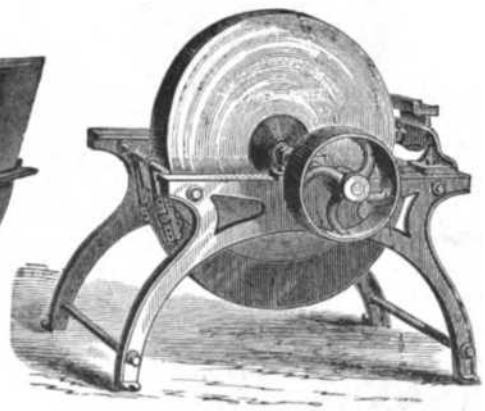


FIG. 5847

	Each.
25 inch, with either pulley or treadle	$14 00
Shield and water bucket, extra	1 00
Hand crank, extra	50

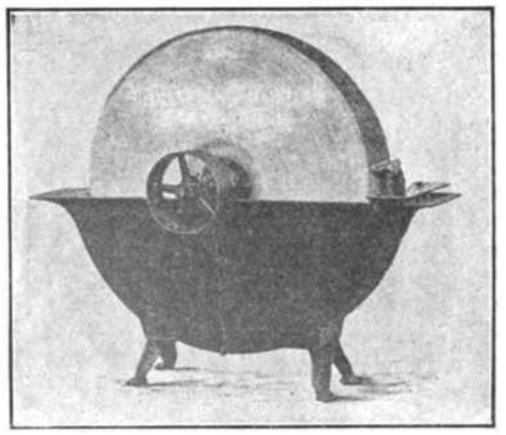


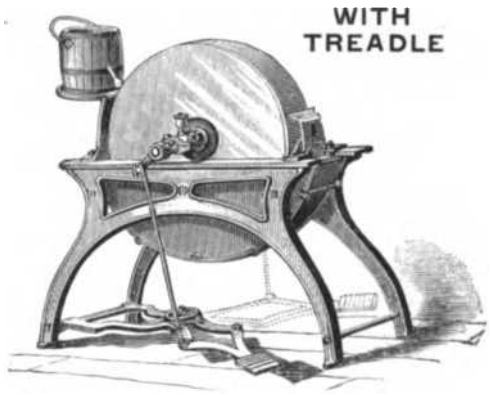
FIG. 5848

	Each.
30 inch, heavy, with pulley	$26 00
36 " " "	40 00
48 " stones 6 to 8 inches, with pulley	75 00

Heavy wood frames for power, 24 to 36 inches. Prices on application.

IRON GRINDSTONE FRAMES

WITH TREADLE



NO. 5849

WITH PULLEY

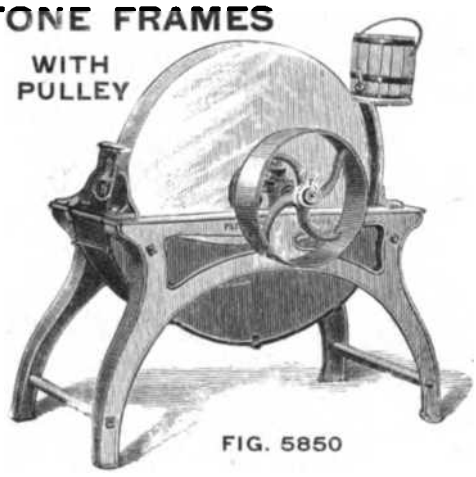


FIG. 5850

Light, strong, durable and neat. Journal boxes have covered oilers. Extra heavy steel arbors, flanges and nuts. Babbitt bearings. Foot power frame has swivel treadle for right or left foot. All drippings drain into the trough.

PRICES, FIGS. 5849 AND 5850

Numbers	0	0	1	2	3	4	5
Power applied by	Treadle or Pulley.	Treadle and Pulley.	Pulley.	Pulley.	Pulley.	Pulley.	Pulley Extra.
Without stone, each	$12 00	$13 50	$13 00	$18 50	$22 00	$35 00	$65 00
With stone, each	14 00	15 50	15 00	22 00	26 00	40 00	.....
Sizes of stone	24 x 2½	24 x 2½	24 x 3	27 x 3½	30 x 4	36 x 5	48 x 8
Shield, pan and bucket, each	$1 00	$1 00	$1 00	$2 00	$2 00	$2 00	$3 00
Hand crank, each	50	50	50	75	75	1 00	.....

CAST IRON GRINDSTONE FRAME

This frame is provided with a shield to prevent the discharge of the water from the stone, and an adjustable rest with grooves for holding the tool. The frame is water tight, has the Universal Journal Box, and the bearings are effectually protected from the grit of the stone. The arbor is made with flanges and nuts, and so arranged that a heavy stone can be hung with as little trouble, and held as firmly as a saw.

PRICES, FIG. 5851 NOT INCLUDING STONE

Nos.	—Takes a Stone.— In. Face.	In. Diam.	Each.
4	4	30	$25 00
5	5	42	35 00
6	8	54	50 00

We furnish, on special order, frames to take stone up to 10 inch face.



FIG. 5851

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BI-TREADLE GRINDSTONE



FIG. 5852

DESCRIPTION, FIG. 5852

The power applied with the legs by means of the duplex treadles is nearly double that obtained with a crank, enabling the operator to run the stone at much greater speed and perform faster and better work.

Any bushed stone not over 20 inches in diameter or more than 2¾ inches thick may be used with this frame.

Shipped knocked down and crated, stone and frame together.

Mounted with either Berea or Huron stone, fitted with detachable grindstone fixtures. Weight about 80 pounds, complete.

PRICE

Each.....$5 00

MOUNTED GRINDSTONE

On Oak Frame, with Foot Treadle, Crank and Water Box.

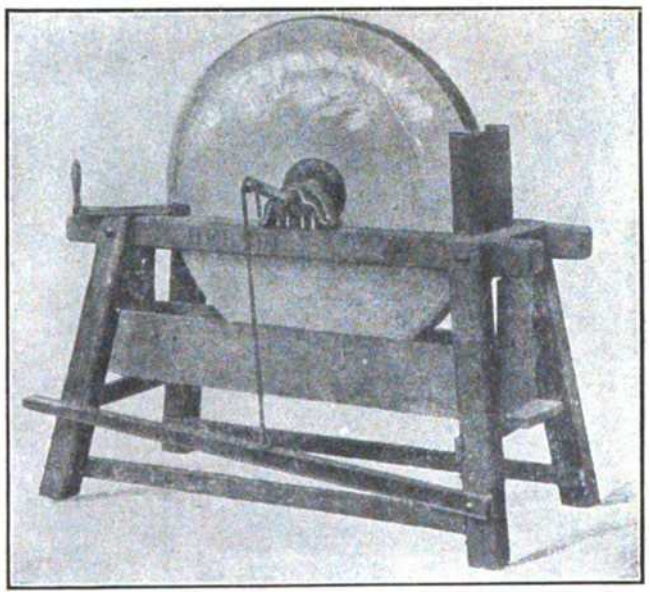


FIG. 5853

This frame is made of seasoned oak, with oil and varnish finish, strongly braced in all directions. Furnished with crank, treadle, water trough and clothes protector. It was designed with special reference to the railroad trade, where a strong, heavy article is required. We furnish with all sizes an extra heavy patent shaft and turned rollers, and use heavy bolts and washers.

Pounds.	Diameters, Inches.	Each.	Pounds.	Diameters, Inches.	Each.
50	18	$5 50	120	26	$7 50
60	20	5 75	130	27	7 75
70	21	6 00	140	28	8 00
80	22	6 25	170	30x3 extra heavy.	9 00
90	23	6 50	230	30x4 " "	11 00
100	24	7 00	330	36x4 " "	15 00
110	25	7 25			

When not otherwise ordered we ship Mounted Grindstone set up. Can be shipped mounted complete, ready for use, or knocked down, as desired.

SAMSON MOUNTED GRINDSTONE

Mounted with Specially Selected Stone.

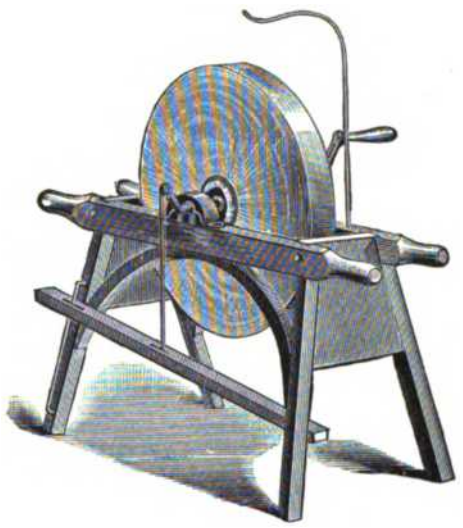


FIG. 5854

This frame is made of seasoned hard wood. The legs are securely gained into the side pieces and the ends are in one piece. Two bolts at each end pass through the entire frame from side to side. The ends of the side bars are neatly turned to serve as handles.

Being strongly braced and bolted, stands absolutely solid.

PRICES

Nos.	Pounds.	Usual Thickness, Inches.	Per Dozen.
1	Stone weighs 100 to 110	1¾ to 2¼	$72 00
2	" " 70 " 80	1¾ " 2¼	60 00
3	" " 40 " 50	1¾ " 2¼	54 00

Every frame is provided with treadle, crank and bucket holder. The crank can be used as a wrench to tighten any nut on the frame. When not otherwise ordered, we ship Mounted Grindstones set up. If desired knocked down, it should be so specified.

UNMOUNTED GRINDSTONES

For Export.

Ohio and Nova Scotia, per ton.....$

For Machinists and Manufacturers. Carefully Selected.

Berea, Ohio.....per pound. $
Amherst or Black River, Ohio..... " "
Independence, Ohio..... " "
Lake Huron..... " "
Nova Scotia..... " "
Newcastle, England..... " "

In ordering, please state for what use stone is required.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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GRINDSTONE TRIMMINGS

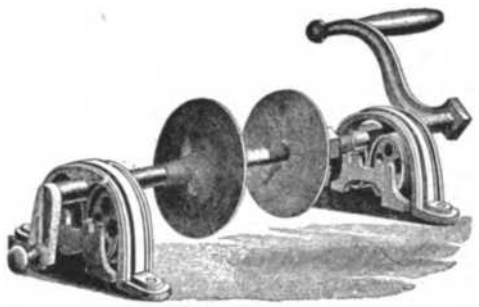


FIG. 5856

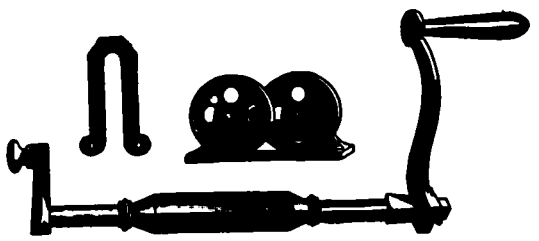


FIG. 5857

DESCRIPTION, FIGS. 5856 AND 5857

Figs. 5856 and 5857 are Grindstone Trimmings. Fig. 5856 being of the flange style, screws up with nut and screw on shaft and holds the stone conveniently and steadily between the adjustable plates. Fig. 5857 shows the more common style in which model the stone is held in place by means of keys or wedges. Both are arranged to be operated by hand or foot power. The prices in table below are for sets of a dozen.

PRICES, PER DOZEN SETS

Sizes, Nos.	Length of Shaft, Inches.	Fig. 5857, Complete, per Dozen.	Fig. 5857, Friction Rolls and Stands Only, per Dozen.
1	15½	$10 50	$5 90
2	18	13 00	6 00
3	24	14 50	....

Sizes, Nos.	Length of Shaft, Inches.	Fig. 5857, Friction Rolls Only, per Dozen.	Fig. 5857, Cranks, Handles and Straps Only, per Dozen.
1	15½	$3 50	$5 90
2	18	3 00	7 00
3	24	3 00	9 25

Sizes, Nos.	Length of Shaft, Inches.	Fig. 5857, Stands Only, per Dozen.	Fig. 5857, Cranks and Straps Only, per Dozen.
1	15½	$2 50	$3 80
2	18	2 75	5 00
3	24	2 75	7 00

Sizes, Nos.	Length of Shaft, Inches.	Fig. 5857, Handles Only, per Dozen.	Fig. 5856, Complete.
1	15½	$2 25	$18 00
2	18	2 25	19 50
3	24	....	21 00
4	..	....	24 00

Sizes, Nos.	Length of Shaft, Inches.	Fig. 5857, Shafts with Flanges and Handles Only.	Fig 5856, Friction Rolls and Stand Only.
1	17	$9 00	$5 00
2	20	10 00	5 00
3	25	12 00	5 00
4	30	15 00	5 00

Sizes, Nos.	Length of Shaft, Inches.	Fig. 5856, Stands Only.
1	17	$2 00
2	20	2 00
3	25	2 00
4	30	2 00

GRINDSTONE SHAFT

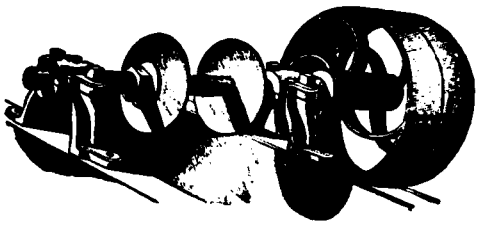


FIG. 5858

DESCRIPTION, FIG. 5858

This shows patent Grindstone Shaft, to be driven by power, with flanges, nuts, screws and fast and loose pulleys. The flanges are adjustable to fit any thickness of stone.

Suitable for Stone, Inches.	Diameter of Pulleys, Inches.	PRICES Face, Inches.	As Shows in Cut, with 2 Pulleys, Each.	With 1 Pulley. Each.
36 x 4	12	3	$9 00	$8 00
48 x 6	12	3	25 00	24 00
48 x 8	12	3	35 00	34 00

GRINDSTONE SHAFT

For Power Use, Ordinary Pattern.

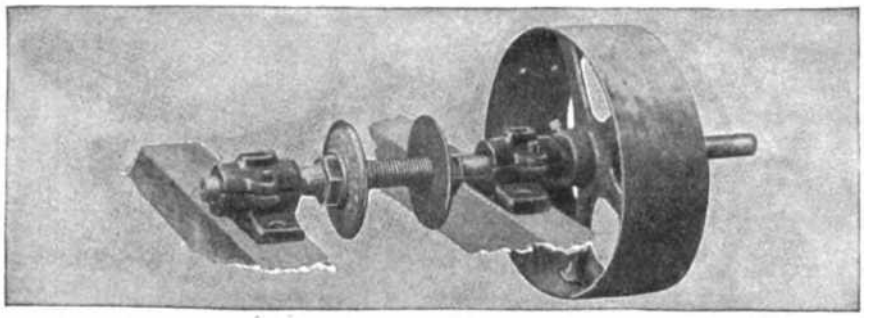


FIG. 5859

Sizes, Nos.	Diameters, Inches.	Length Feet.	Length Inches.	Will Hang Stone, Inches.	Will Hang Stone, Inches.	Each.
6	1	2	6	2½ to	6 thick	$4 20
7	1¼	2	6	3 "	6 "	5 20
8	1½	2	8	4 "	6 "	8 00
9	1¾	2	10	5 "	8 "	12 00
10	2	3	0	6 "	10 "	15 00
11	2½	4	0	8 "	12 "	20 00
12	2¾	5	0	8 "	12 "	27 00

These prices do not include pulley.

STEEL GRINDSTONE ARBOR

PRICES

Shaft, Flanges and Journal Boxes.

Nos.	Each.	Nos.	Each.
0	$5 00	3	$7 00
1	5 50	4	8 50
2	6 00	5	20 00

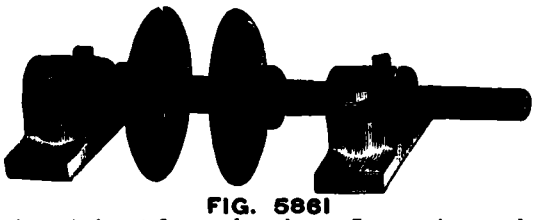


FIG. 5861

N. B.—No. 5 Arbor, for stone, 2¼ in. x 40 in., 1 flange shrunk on. Larger sizes made to order.

SHIP GRINDSTONE

PRICES

12 inch, each	$2 50
14 " "	2 75
16 " "	3 00
18 " "	3 25



FIG. 5862

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GRINDSTONE DRESSING MACHINE

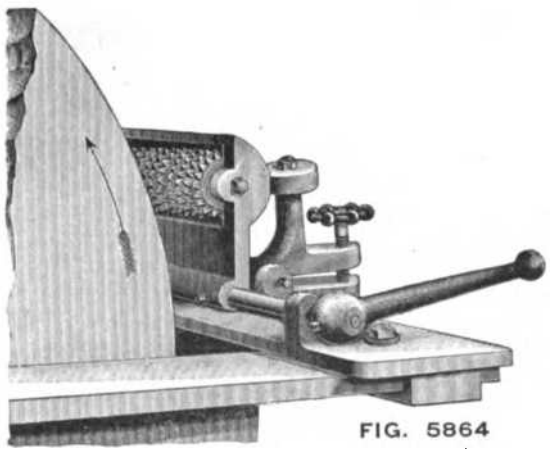


FIG. 5864

DESCRIPTION, FIG. 5864

The disks or spurs are placed in gangs on a rod held in a fixture, and brought into contact with the stone. The spurs revolve independently, and pick the surface instead of scraping it, thereby preventing dust, and at the same time the work is done much quicker than with the rod, or even than with the carbon point. The great point to be gained in a machine shop is the truing of the grindstone without making a dust. The machine presented herewith is simply a new application of an old principle, and will be readily understood by any mechanic who will examine the cut. The carrier, which is pivoted, is fed against the stone by turning the hand wheel with one hand, while it is moved backward and forward by taking hold of the balled lever with the other hand. When not in use, the spurs are held off the stone by the weight of the lever.

PRICES

No. 1	For 6 inch face and under, weight, 60 pounds.	Each	$15 00
" 2	" 6½ to 14 inch face, " 140 "	"	30 00
Extra spurs.	Per set		1 00

CHAMPION GRINDSTONE DRESSING MACHINE

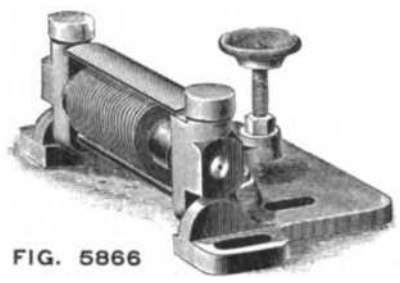


FIG. 5866

DESCRIPTION, FIG. 5866

It is so constructed that it may be used at any time, either while the stone is being used to grind or not. The cutting roll is formed of disks, which present to the stone curved or serpentine edges, which, in their revolutions, each cover alternately, at the right and left, the space occupied by two or more disks, producing on the face of the stone a perfectly true surface, leaving it in the best possible condition for grinding. The disks are made of the best quality sheet cast steel. It requires no watching. The 4 inch machine is designed for use on a grindstone, having a face not more than 4 inches wide; the 6 inch machine for stones with 6 inch faces, or between 4 and 6 inches, and so on with the 8, 10 and 12 inch machines.

PRICES

Sizes, inches	4	6	8	10	12	Extra disks,
Each	$7 50	$10 00	$12 00	$14 00	$16 00	5 cents each.

EMERY WHEEL AND GRINDSTONE DRESSER

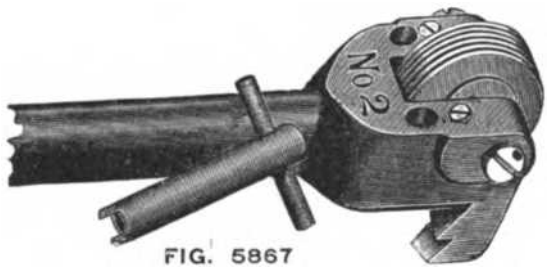


FIG. 5867

DESCRIPTION, FIG. 5867

Dresses grindstones with little or no dust. Works right or left handed, leaving the corners sharp. Cuts the hardest grindstones or emery wheels. No wear comes to the handle. The waste and oil chamber keeps the bearings wiped clean and well lubricated, and should be kept in front of the angle shown in the cut. The water tank keeps the tool cool. It is readily adjusted, and not liable to get out of order.



Spindle. Box.

PRICES

No. 2	Usual size.	Each	$2 00
No. 2	Cutters.	Per dozen	3 00
" 3	"	Each	4 00

BENNETT EMERY WHEEL DRESSER

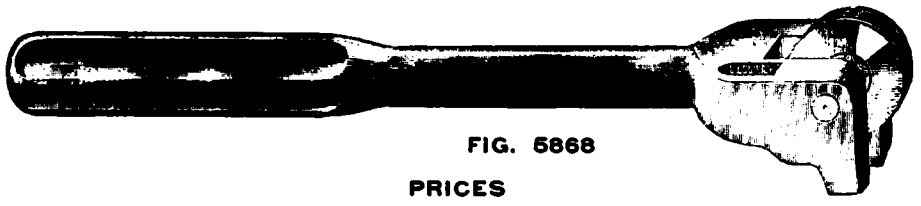


FIG. 5868

PRICES

No. 1	With extra cutter.	Each	$1 25
" 2	" " " "		1 50
" 1	Cutters.	Per set	15
" 2	"	"	20

STANDARD EMERY WHEEL DRESSER

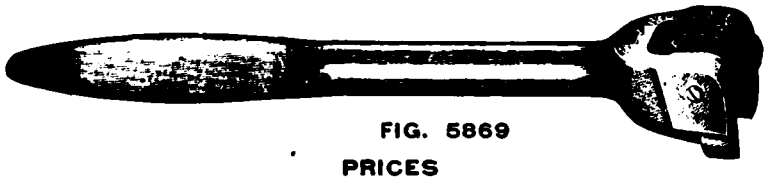


FIG. 5869

PRICES

Tool complete, with extra cutter, boxed.		Each	$2 00
Extra cutters.		Each	60

EMERY WHEEL DRESSERS

HUNTINGTON

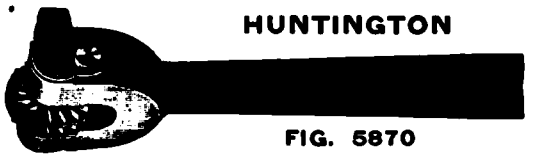


FIG. 5870

NO. 1

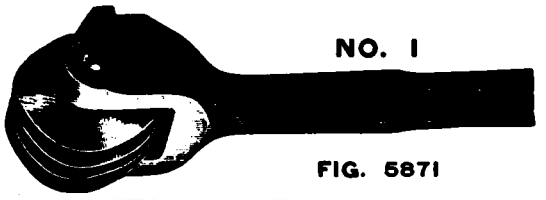


FIG. 5871

NO. 3

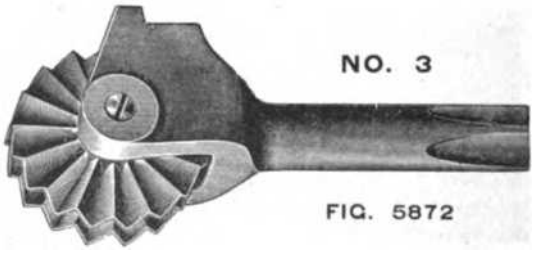


FIG. 5872

NO. 5, LATHE TOOL

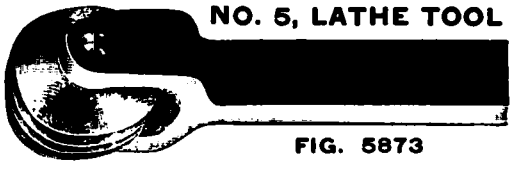


FIG. 5873

We recommend the large corrugated and twisted cutter dressers for the larger and coarser wheels; the small twisted cutter dresser, or the Huntington, for smaller and finer wheels. The small twisted cutter dresser is about one-half the size of the large one. The illustrations show the different styles of dressers and cutters.

PRICES, FIGS. 5870 TO 5873

No. 1	Dresser, small twisted cutters		$0 50
" 2	" large " "		60
" 3	" corrugated cutters, 2 in a set		75
" 5	" lathe tool with twisted cutters		75
Huntington Dressers			1 00
Huntington Cutters, per set			10
Extra Cutters, for No. 1 Dresser, per set			10
"	" " 2 " "		15
"	" " 3 " "		15

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EMERY WHEEL DRESSER

HAND TOOL



FIG. 5874

LATHE TOOL



FIG. 5875

These dressers are for sharpening, truing or dressing an emery wheel on its arbor at full speed. It leaves the wheel clean and sharp and in the best possible condition for cutting. These dressers are intended for flat face wheels and are not practical to use in shaping the face of emery wheels used for saw gumming and molding tools.

PRICES, FIGS. 5874 AND 5875

Emery wheel dressers, with 2 sets of cutters, per set.....$3 00 Extra cutters, per set.....$0 50

EMERY AND CORUNDUM WHEELS

PRICE LIST OF REGULAR WHEELS

Diams. in Inches.	Thickness of Wheels in Inches.																	
	¼	⅜	½	⅝	¾	⅞	1	1¼	1½	1¾	2	2¼	2½	2¾	3	3¼	3½	4
1	$0 25	$0 30	$0 30	$0 35	$0 35	$0 40	$0 40	$0 45	$0 50	$0 55	$0 60	$0 65	$0 70	$0 75	$0 80	$0 85	$0 90	$1 00
1½	30	35	40	45	45	50	50	55	60	65	70	75	80	85	90	95	1 00	1 10
2	35	45	50	55	55	60	60	65	70	75	80	85	90	95	1 00	1 05	1 10	1 20
2½	40	55	65	70	75	80	85	95	1 05	1 15	1 25	1 35	1 45	1 55	1 65	1 75	1 85	2 05
3	50	65	80	90	95	1 05	1 10	1 25	1 40	1 55	1 70	1 85	2 00	2 15	2 30	2 45	2 60	2 90
3½	60	80	95	1 05	1 15	1 25	1 35	1 55	1 75	1 95	2 15	2 35	2 55	2 75	2 95	3 15	3 35	3 75
4	75	95	1 10	1 25	1 35	1 50	1 60	1 85	2 10	2 35	2 60	2 85	3 10	3 35	3 60	3 85	4 10	4 60
4½	90	1 10	1 25	1 40	1 55	1 70	1 85	2 15	2 45	2 75	3 05	3 35	3 65	3 95	4 25	4 55	4 85	5 45
5	1 00	1 20	1 40	1 60	1 80	2 00	2 20	2 60	3 00	3 40	3 80	4 20	4 60	5 00	5 40	5 80	6 20	7 00
6	1 40	1 60	1 75	2 10	2 40	2 75	3 05	3 70	4 35	5 00	5 65	6 30	6 95	7 60	8 25	8 90	9 55	10 85
7	1 85	2 00	2 15	2 60	3 00	3 45	3 85	4 70	5 55	6 40	7 25	8 10	8 95	9 80	10 65	11 50	12 35	14 05
8	2 10	2 35	2 60	3 10	3 60	4 10	4 60	5 60	6 60	7 60	8 60	9 60	10 60	11 60	12 60	13 60	14 60	16 60
9	2 50	2 80	3 10	3 70	4 25	4 85	5 40	6 55	7 70	8 85	10 00	11 15	12 30	13 45	14 60	15 75	16 90	19 20
10	3 00	3 35	3 65	4 35	5 00	5 70	6 35	7 70	9 05	10 40	11 75	13 10	14 45	15 80	17 15	18 50	19 85	22 55
12	3 60	3 80	4 00	5 00	6 00	6 70	7 40	9 00	10 70	12 75	14 00	15 70	17 40	19 00	20 75	22 50	24 25	27 50
14	4 05	5 15	6 25	7 35	8 45	9 55	10 65	12 85	15 05	17 25	19 45	21 65	23 85	26 05	28 25	30 45	32 65	37 05
16	....	....	....	....	10 85	12 30	13 70	16 55	19 40	22 25	25 00	27 95	30 80	33 65	36 50	39 35	42 20	47 90
18	....	....	....	....	13 25	15 15	17 00	20 75	24 50	28 25	32 00	35 75	39 50	43 25	47 00	50 75	54 50	62 00
20	....	....	....	....	....	....	20 25	24 75	29 25	33 75	38 25	42 75	47 25	51 75	56 25	60 75	65 25	74 25
22	....	....	....	....	....	....	25 00	31 00	37 00	43 00	49 00	55 00	61 00	67 00	73 00	79 00	85 00	97 00
24	....	....	....	....	....	....	29 00	36 00	43 00	50 00	57 00	64 00	71 00	78 00	85 00	92 00	99 00	113 00
26	....	....	....	....	....	....	....	43 00	51 00	59 00	67 00	75 00	83 00	91 00	99 00	107 00	115 00	131 00
30	....	....	....	....	....	....	....	....	61 00	72 00	83 00	94 00	105 00	116 00	127 00	138 00	149 00	171 00
36	....	....	....	....	....	....	....	....	96 00	110 50	126 00	141 50	157 00	172 50	188 00	203 50	219 00	250 00

DIRECTIONS FOR ORDERING EMERY WHEELS

See speed table and remarks below. Carefully note grade list and remarks below to the right. When ordering, carefully state complete dimensions and particulars as follows:

1 Quantity required.
2 Diameter of wheels.
3 Thickness of wheels.
4 Size of arbor hole.
5 Degree of coarseness, i. e., size or number of emery.
6 Degree of hardness, i. e., grade letter.
7 Description of work intended for the wheel.*
8 Speed of wheel, i. e., number of revolutions of spindle on which wheel will be run.*

* Particular pains should be taken in respect to items 7 and 8, especially when, from previous experience, it is not possible to state the degree of coarseness and hardness required. It is the desire of the manufacturers of emery wheels to attain for the user the very best possible results, and in order to accomplish this, we should know the kind of material to be ground, i. e., whether it is iron or brass, composition, hard steel or soft steel, etc.; also the size and shape of the article, so that we may judge whether to select a grade suitable for heavy work or light work, for edges or for surfaces, etc.; also state if the work is to be applied to the wheel automatically or by hand, and if work is to be revolved, etc.

Speed.—This is important, especially if the wheel is not to run at the recommended rate of 5,000 periphery feet per minute, because even slight variations in speeds occasion noticeable difference in results, and if the speed is known the proper grade can then be selected to suit that speed.

TABLE OF EMERY WHEEL SPEEDS

Diams. Wheel, Inches.	Revs. per Minute for Surface Speed of 4,000 Feet.	Revs. per Minute for Surface Speed of 5,000 Feet.	Revs. per Minute for Surface Speed of 6,000 Feet.
1	15,279	19,099	22,918
2	7,639	9,549	11,459
3	5,093	6,366	7,639
4	3,820	4,775	5,730
5	3,056	3,820	4,584
6	2,546	3,183	3,820
7	2,183	2,728	3,274
8	1,910	2,387	2,865
10	1,528	1,910	2,292
12	1,273	1,592	1,910
14	1,091	1,364	1,637
16	955	1,194	1,432
18	849	1,061	1,273
20	764	955	1,146
22	694	868	1,042
24	637	796	955
30	509	637	764
36	424	531	637

Above table designates number of revolutions per minute for specified diameters of wheels to cause them to run at the respective periphery rates of 4,000 5,000 and 6,000 feet per minute.

The medium of 5,000 feet is usually employed in ordinary work, but in special cases it is sometimes desirable to run them at a lower or higher rate according to requirements.

The stress on the wheel at 4,000 feet periphery speed per minute is 48 pounds per square inch; at 5,000 feet, 75 pounds; at 6,000 feet, 108 pounds.

TABLE FOR SELECTION OF GRADES

Class of Work.	No. of Emery or Degree of Coarseness Usually Furnished.	Grade Letters or Degrees of Hardness Usually Furnished.
Large cast iron and steel castings	16 to 20	P to Q
Small " " " "	20 " 36	O " P
Large malleable iron castings	16 " 20	Q " R
Small " " "	20 " 30	P " Q
Chilled iron castings	16 " 20	R " T
Wrought iron	16 " 30	P " Q
Brass and bronze castings	20 " 30	O " P
Rough work in general	16 " 30	P " Q
General machine shop use	30 " 46	O " P
Lathe and planer tools	30 " 46	N " O
Small tools	46 " 100	N " P
Wood-working tools	36 " 60	M " N
Twist drills, hand grinding	36 " 60	M " N
" " special machines	46 " 60	G " J
Reamers, taps, milling cutters, etc., hand grinding	46 " 100	N " P
Reamers, taps, milling cutters, etc., special machines	46 " 60	H " K
Edging and jointing agricultural implements	20 " 30	Q " R
Grinding plow points	20 " 30	P " Q
Surfacing plow bodies	20 " 30	N " O
Stove mounting	20 " 36	P " Q
Finishing edges of stoves	30 " 46	O " P
Drop forgings	20 " 30	P " Q
Gumming and sharpening saws	36 " 60	M " N
Planing mill and paper cutting knives	30 " 46	J " K
Car wheel grinding	20 " 30	O " P

GRADE LIST OF EMERY WHEELS

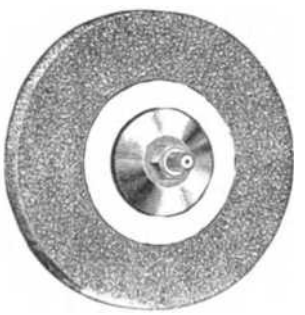


FIG. 5876

For convenience in designating the many different grades in hardness of which it is necessary that emery wheels be made in order to successfully apply to the great variety of uses now required of them, the following list of comparative grade marks has been adopted.

A—Extremely soft.	I—Medium soft.	Q—Medium hard.
B	J	R
C	K	S
D	L	T
E—Soft.	M—Medium.	U—Hard.
F	N	V
G	O	W
H	P	X

Y and Z—Extremely hard.

The intermediate letters between those designated as soft, medium soft, etc., indicate so many degrees harder or softer; e. g., L is one grade or degree softer than medium; O, 2 degrees harder than medium but not quite medium hard.

SHAPES OF WHEELS FOR ABOVE LIST

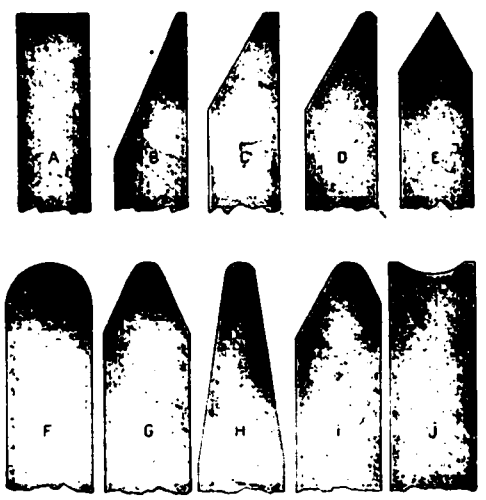


FIG. 5877

The above shapes of wheels are more especially adapted to gumming saws, grinding molding cutters, etc. In ordering, give the letter on the diagram to show what is required. We furnish wheels to any desired shape without extra charge, and where any other special shapes are required a diagram should accompany the order.

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EMERY CUP WHEELS

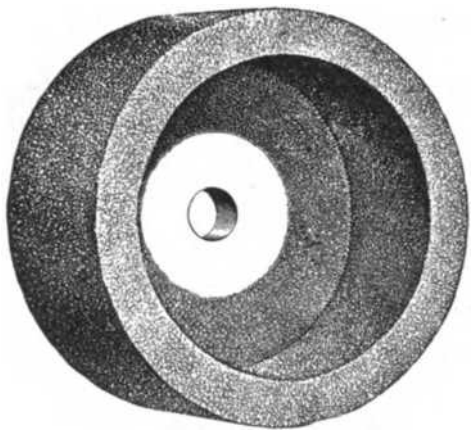
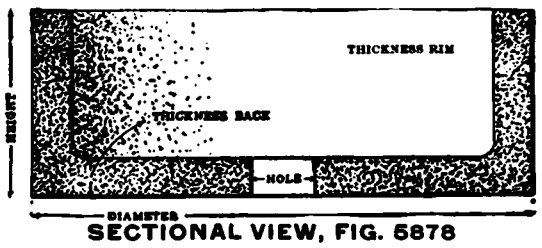


FIG. 5878



SECTIONAL VIEW, FIG. 5878

PRICES, FIG. 5878

FIVE INCHES HIGH

Diams. in Inches.	Thickness of Rim. 1 In.	1½ In.	2 In.	2½ In.	3 In.	3½ In.	4 In.
8	$14.15	.....	.....	.....	.....	.....	.....
9	15.65	20.10	.....	.....	.....	.....	.....
10	17.30	22.90	26.75	.....	.....	.....	.....
12	19.75	26.45	32.20	34.95	37.10	.....	.....
14	26.80	32.05	39.25	42.50	45.40	50.05	50.90
16	33.65	38.45	45.90	50.80	54.80	60.60	62.75
18	40.00	51.00	56.20	60.65	64.75	72.40	76.55
20	46.60	59.95	65.20	70.40	75.55	83.25	86.70
22	54.25	70.70	78.45	85.25	90.40	101.60	106.35
24	63.80	82.40	88.65	96.80	103.10	116.30	121.25
26	71.40	95.75	104.00	110.10	116.30	132.55	139.00

SIX INCHES HIGH

Diams. in Inches.	Thickness of Rim. 1 In.	1½ In.	2 In.	2½ In.	3 In.	3½ In.	4 In.
8	$16.35	.....	.....	.....	.....	.....	.....
9	18.00	23.25	.....	.....	.....	.....	.....
10	19.85	26.35	30.95	.....	.....	.....	.....
12	22.45	30.20	36.90	40.50	43.40	.....	.....
14	30.00	36.50	44.75	49.00	52.75	58.25	59.70
16	37.35	43.55	52.25	58.35	63.40	70.25	73.20
18	44.10	56.75	63.55	69.40	74.90	83.70	88.95
20	51.00	66.25	73.25	80.05	86.75	95.75	100.55
22	59.25	77.80	87.75	96.60	103.45	116.45	122.85
24	69.15	90.15	98.70	109.10	117.30	132.55	139.35
26	77.10	104.30	115.00	123.40	131.90	150.35	158.90

SEVEN INCHES HIGH

Diams. in Inches.	Thickness of Rim. 1 In.	1½ In.	2 In.	2½ In.	3 In.	3½ In.	4 In.
8	$18.55	.....	.....	.....	.....	.....	.....
9	20.35	26.35	.....	.....	.....	.....	.....
10	22.35	29.80	35.15	.....	.....	.....	.....
12	25.10	33.95	41.60	46.00	49.65	.....	.....
14	33.20	40.90	50.25	55.60	60.10	66.45	68.45
16	41.05	48.65	58.60	65.90	72.00	79.90	83.60
18	48.20	62.50	70.85	78.15	85.00	94.95	101.35
20	55.40	72.50	81.25	89.65	97.95	108.25	114.40
22	64.25	84.90	97.00	107.90	116.50	131.25	139.35
24	74.50	97.90	108.75	121.40	131.50	148.75	157.40
26	82.75	112.80	126.00	136.65	147.50	168.15	178.75

EIGHT INCHES HIGH

Diams. in Inches.	Thickness of Rim. 1 In.	1½ In.	2 In.	2½ In.	3 In.	3½ In.	4 In.
8	$20.80	.....	.....	.....	.....	.....	.....
9	22.75	29.50	.....	.....	.....	.....	.....
10	24.90	33.30	39.40	.....	.....	.....	.....
12	27.80	37.70	46.35	51.55	55.95	.....	.....
14	36.45	45.35	55.75	62.00	67.50	74.70	77.25
16	44.80	53.80	65.00	73.50	80.65	89.60	94.05
18	52.35	68.25	78.20	86.95	95.15	106.25	113.80
20	59.85	78.80	89.30	99.30	109.20	120.80	128.30
22	69.25	92.05	106.30	119.25	129.60	146.10	155.85
24	79.90	105.65	118.85	133.75	145.75	165.00	175.50
26	88.45	121.35	137.00	149.95	163.15	186.00	198.65

These prices are figured on the basis of cup wheels 5 inches, 6 inches, 7 inches and 8 inches high, which are the most common sizes used, and with backs of sufficient thickness to give the necessary strength. Other sizes will be figured proportionately. In ordering cup wheels it is necessary to state the diameter, height, thickness of rim, thickness of back and arbor hole. See sectional view.

EMERY CYLINDERS

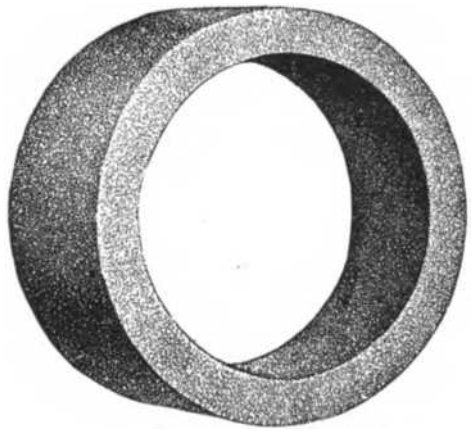


FIG. 5879

Diams. in Inches.	Thickness of Rim. 1 Inch.	1½ Inches.	2 Inches.	2½ Inches.	3 Inches.	3½ Inches.	4 Inches.	Revolutions per Minute.
8	$15.50	.....	.....	.....	.....	.....	.....	1,425
9	16.50	$22.00	.....	.....	.....	.....	.....	1,275
10	17.75	24.25	$29.50	.....	.....	.....	.....	1,150
12	18.75	26.25	33.00	$38.75	$44.00	.....	.....	950
14	22.50	31.00	38.50	45.50	51.50	$57.50	$61.50	825
16	26.00	35.75	44.60	53.00	60.25	67.60	73.00	725
18	28.80	40.25	51.40	61.40	71.00	79.00	86.90	625
20	30.90	44.00	56.25	67.40	78.50	87.60	97.00	575
22	35.00	49.75	65.00	79.40	91.50	103.90	115.50	525
24	37.50	54.25	70.50	86.25	99.50	113.60	126.60	475
26	39.75	59.80	77.00	93.00	109.25	124.75	139.25	375

It is necessary in ordering cylinders that we know the diameter, height and thickness of rim. See sectional view. Cylinders are usually operated in Chucks. For description and prices see Fig. 5880.

Above list is figured on a basis of cylinders 7 inches high; other lengths at proportionate rates.

EMERY CYLINDER CHUCK

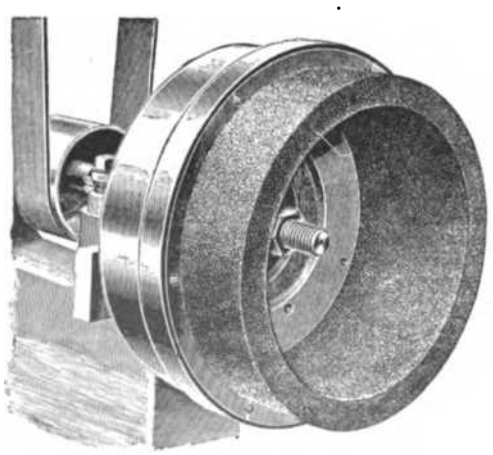
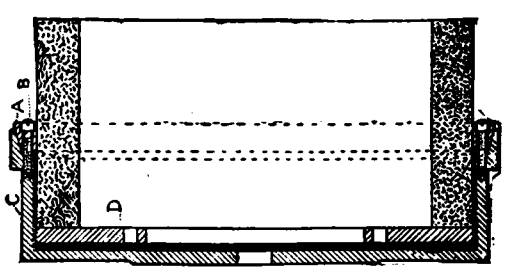


FIG. 5880

DESCRIPTION, FIG. 5880



SECTIONAL VIEW, FIG. 5880

The outer end of the chuck shell has an annular enlargement, which is internally tapered for the reception of a conical ring, A, cut apart to form separate segments, which are held in place and forced into the internally tapered recess by the screws B, one of which passes through each parting of the conical ring, which contracts under pressure and grips the emery cylinder, holding it firmly, with no danger of crushing. The main part of the chuck shell is bored to allow the emery cylinder to enter easily, and a square thread is then cut upon the inner surface, and a similarly threaded disk, D, is fitted, to be operated by a spanner wrench. This disk always holds the wheel exactly true on the end, and is used to force out the cylinder when worn. By this method the emery cylinder can be used up to about 1 inch in length. The shell of the 14 inch chuck is 3⅜ inches deep and the 16 inch chuck is 4⅜ inches. Other sizes are made in same proportion. They will hold emery cylinders of any usual length and thickness of rim.

SPECIAL FEATURES

Method of holding cylinder. Threaded disk operated by spanner to force out cylinder as worn. Cylinder always held true. No projecting screws or bolt heads.

PRICES, FIG. 5880

10 inches, each	$15 00
12 " "	17 50
14 " "	20 00
16 " "	25 00
18 " "	30 00
20 " "	35 00

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SPECIAL WHEELS
FOR BROWN & SHARPE GRINDING MACHINERY

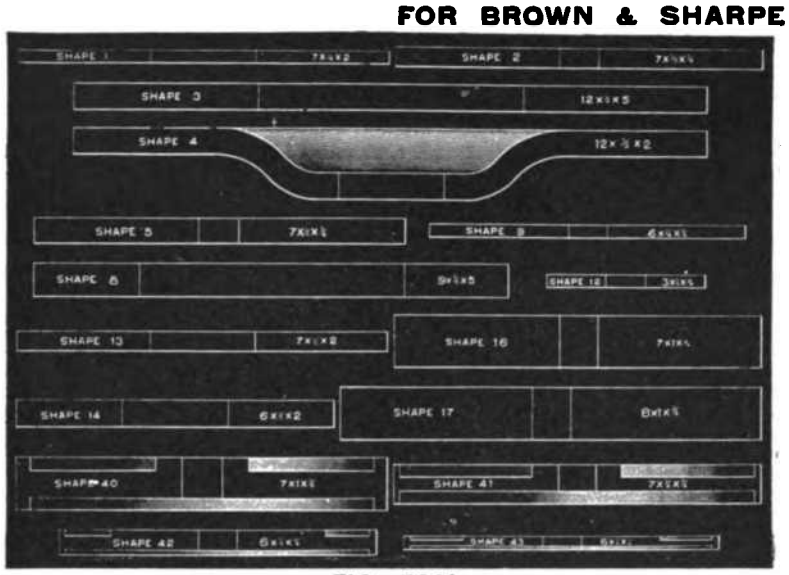


FIG. 5881

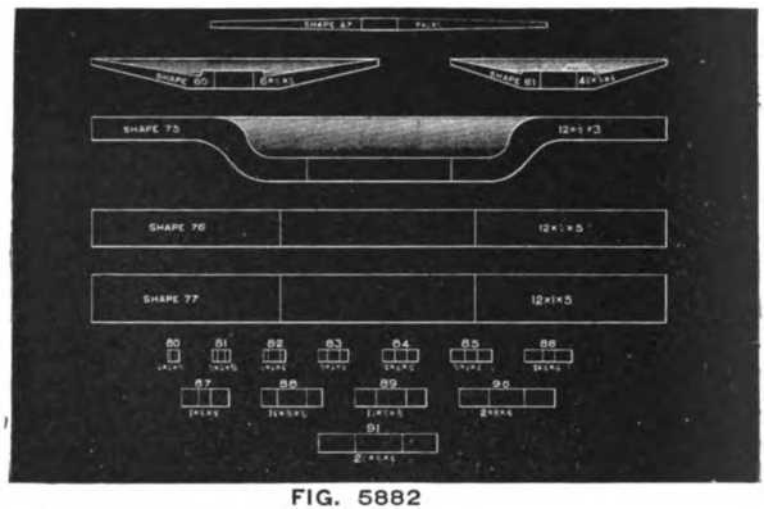


FIG. 5882

For prices of Special Emery Wheels, Figs. 5881 and 5882, see prices of Regular Emery Wheels of same dimensions, page 795.

The figures noted on the diagrams of shapes represent the dimensions of the wheels, as follows, e. g.: First, diameter; second, thickness; third, size of hole. The prices of shapes 4 and 75 are figured on the basis of wheels 1 5/16 inches and 1⅜ inches thick, respectively, which represent the total thicknesses.

CARBORUNDUM WHEELS

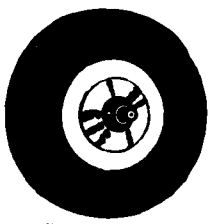


FIG. 5883

To successfully meet all the conditions to which these wheels are subjected, we furnish them in nineteen degrees of hardness. Letters arranged in a scale are used to designate these degrees, from D, very hard, to V, very soft, as shown to the right.

GRADE SCALE

Very hard.....D
E
F
Hard.....G
H
I
Medium hard.....J
K
L

Medium.....M
N
O
Medium soft.....P
Q
R
Soft.....S
T
U
Very soft.....V

PRICES OF REGULAR CARBORUNDUM WHEELS

Diameters in Inches.	Thickness of Wheels in Inches. ¼	⅜	½	⅝	¾	1	1¼	1½	1¾	2	2¼	2½	2¾	3	3¼	3½	4	Revs. per Minute for Surface Speed of 5,000 Feet.
1	$0 25	$0 30	$0 30	$0 35	$0 35	$0 40	$0 45	$0 50	$0 55	$0 60	$0 65	$0 70	$0 75	$0 80	$0 85	$0 90	$1 00	19,099
1½	30	35	40	45	45	50	55	60	65	70	75	80	85	90	95	1 00	1 10	12,733
2	35	45	50	55	55	60	65	70	75	80	85	90	95	1 00	1 05	1 10	1 20	9,549
2½	40	55	65	70	75	85	95	1 05	1 15	1 25	1 35	1 45	1 55	1 65	1 75	1 85	2 05	7,639
3	50	65	80	90	95	1 10	1 25	1 40	1 55	1 70	1 85	2 00	2 15	2 30	2 45	2 60	2 90	6,366
3½	60	80	95	1 05	1 05	1 35	1 55	1 75	1 95	2 15	2 35	2 55	2 75	2 95	3 15	3 35	3 75	5,457
4	75	95	1 10	1 25	1 35	1 60	1 85	2 10	2 35	2 60	2 85	3 10	3 35	3 60	3 85	4 10	4 60	4,775
5	1 00	1 20	1 40	1 60	1 80	2 20	2 60	3 00	3 40	3 80	4 20	4 60	5 00	5 40	5 80	6 20	7 00	3,820
6	1 40	1 60	1 75	2 10	2 40	3 05	3 70	4 35	5 00	5 65	6 30	6 95	7 60	8 25	8 90	9 55	10 85	3,183
7	1 85	2 00	2 15	2 60	3 00	3 85	4 70	5 55	6 40	7 25	8 10	8 95	9 80	10 65	11 50	12 35	14 05	2,728
8	2 10	2 35	2 60	3 10	3 60	4 60	5 60	6 60	7 60	8 60	9 60	10 60	11 60	12 60	13 60	14 60	16 60	2,387
9	2 50	2 80	3 10	3 70	4 25	5 40	6 55	7 70	8 85	10 00	11 15	12 30	13 45	14 60	15 75	16 90	19 20	2,122
10	3 00	3 35	3 65	4 35	5 00	6 35	7 70	9 05	10 40	11 75	13 10	14 45	15 80	17 15	18 50	19 85	22 55	1,910
12	3 60	3 80	4 00	5 00	6 00	7 40	9 00	10 70	12 75	14 00	15 70	17 40	19 00	20 75	22 50	24 25	27 50	1,592
14	4 05	5 15	6 25	7 35	8 45	10 65	12 85	15 05	17 25	19 45	21 65	23 85	26 05	28 25	30 45	32 65	37 05	1,364
16	....	....	....	....	10 85	13 70	16 55	19 40	22 25	25 00	27 95	30 80	33 65	36 50	39 35	42 20	47 90	1,194
18	....	....	....	....	13 25	17 00	20 75	24 50	28 25	32 00	35 75	39 50	43 25	47 00	50 75	54 50	62 00	1,061
20	....	....	....	....	.....	20 25	24 75	29 25	33 75	38 25	42 75	47 25	51 75	56 25	60 75	65 25	74 25	955
22	....	....	....	....	.....	25 00	31 00	37 00	43 00	49 00	55 00	61 00	67 00	73 00	79 00	85 00	97 00	868
24	....	....	....	....	.....	29 00	36 00	43 00	50 00	57 00	64 00	71 00	78 00	85 00	92 00	99 00	113 00	796
26	....	....	....	....	.....	.....	43 00	51 00	59 00	67 00	75 00	83 00	91 00	99 00	107 00	115 00	131 00	735
30	....	....	....	....	....	.....	.....	61 00	72 00	83 00	94 00	105 00	116 00	127 00	138 00	149 00	171 00	637
36	....	....	....	....	.....	.....	.....	.....	110 50	126 00	141 50	157 00	172 50	188 00	203 50	219 00	250 00	531

In ordering, be careful to state diameter, thickness, size of hole and number of carborundum and grade, or give sufficient information to enable us to determine these last points: The kind of metal to be ground; its form, whether surface or edge work; the speed at which the wheel will be run. We are also assisted in determining the grade by information as to the manner in which the work is fed, whether by hand or automatically.

CARBORUNDUM CUP WHEEL

These prices are for cups seven inches in length. Cup wheels three inches and under in length are sold at prices of regular solid wheels.

In ordering, please state the diameter, length, thickness of wall, thickness of back and arbor hole.

PRICES

Diams., in Inches.	Thickness of Wall. 1 Inch.	1½ Inches.	2 Inches.	2½ Inches.	3 Inches.	3½ Inches.	4 Inches.	Revolutions per Minute.
8	$18 55	.....	.....	.....	.....	.....	.....	1,425
9	20 35	$26 35	.....	.....	.....	.....	.....	1,275
10	22 35	29 80	$35 15	.....	.....	.....	.....	1,150
12	25 10	33 95	41 60	$46 00	$49 65	.....	.....	950
14	33 20	40 90	50 25	55 50	60 10	$66 45	$68 45	825
16	41 05	48 65	58 60	65 90	72 00	79 90	83 60	725
18	48 20	62 50	70 85	78 15	85 00	94 95	101 35	625
20	55 40	72 50	81 25	89 65	97 95	108 25	114 40	575
22	64 25	84 90	97 00	107 90	116 50	131 25	139 35	525
24	74 50	97 90	108 75	121 40	131 50	148 75	157 40	475
26	82 75	112 80	126 00	136 65	147 50	168 15	178 75	375

CARBORUNDUM CYLINDER

The following prices are for Carborundum Cylinders seven inches in length. Other lengths are at proportionate prices.

In ordering, please state the diameter, length and thickness of wall.

PRICES

Diams. in Inches.	Thickness of Wall. 1 Inch.	1½ Inches.	2 Inches.	2½ Inches.	3 Inches.	3½ Inches.	4 Inches.	Revolutions per Minute.
8	$15 50	.....	.....	.....	.....	.....	.....	1,425
9	16 50	$22 00	.....	.....	.....	.....	.....	1,275
10	17 75	24 25	$29 50	.....	.....	.....	.....	1,150
12	18 75	26 25	33 00	$38 75	$44 00	.....	.....	950
14	22 50	31 00	38 50	45 50	51 50	$57 50	$61 50	825
16	26 00	35 75	44 60	53 00	60 25	67 60	73 00	725
18	28 80	40 25	51 40	61 40	71 00	79 00	86 90	625
20	30 90	44 00	56 25	67 40	78 50	87 60	97 00	575
22	35 00	49 75	65 00	79 40	91 50	103 90	115 50	525
24	37 50	54 25	70 50	86 25	99 50	113 60	126 60	475
26	39 75	59 80	77 00	93 00	109 25	124 75	139 25	375

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DIAMOND POINTED EMERY WHEEL DRESSERS

Tools Tipped With These Stones Will Turn Off the Hardest Emery, Carborundum Wheels and Grindstones.

HAND TOOL

Fig. 1.

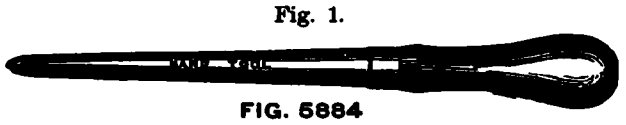


FIG. 5884

ADJUSTABLE HAND TOOL

Fig. 2.

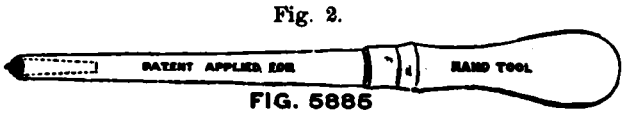


FIG. 5885

These hand tools are for dressing wheels up to 8 inches in diameter. Fig. 1 set permanently, and Fig. 2 set in adjustable stem.

PRICES

Fig. 1,	$5 00	X point, $7 00	XX point, $10 00	XXX point, $15 00
" 2,	8 00	X " 10 00	XX " 12 00	XXX " 18 00

Larger tools subject to special quotation.

LATHE TOOL

Fig. 4.

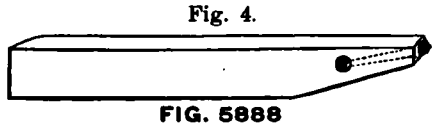


FIG. 5888

HAND TOOL

Fig. 4B.



FIG. 5889

These tools have an adjustable stem, which can be taken out and mailed to us when it is desired to have it reset.

PRICES

Fig. 4,	$12 00	X point, $14 00	XX point, $16 00	XXX point, $20 00
" 4B,	15 00	X " 18 00	XX " 20 00	XXX " 25 00

Larger tools subject to special quotation.

LATHE TOOL

Fig. 3.



FIG. 5886

HAND TOOL

Fig. 3A.



FIG. 5887

Fig. 3. Lathe tool set permanently in the holder for use in the tool post of lathe.

Fig. 3A. Similar tool fitted with handle to be used over steady rest of lathe or emery machine.

PRICES

Fig. 3,	$10 00	X point, $12 00	XX point, $14 00	XXX point, $20 00
" 3A,	12 00	X " 14 00	XX " 16 00	XXX " 20 00

Larger tools subject to special quotation.

ADJUSTABLE LATHE TOOL

Fig. 5.

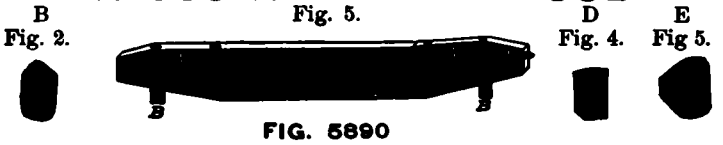


FIG. 5890

The diamond in this tool can be taken out and reset by any mechanic.

Fig. 2B represents carbon point for dressing emery wheels and grindstones. Fig. 4D represents single end shaped diamond calender point. Price, with holder complete, $38.00. Fig. 5E represents double end shaped calender point. This point can be reversed when one end becomes dull. Price, with holder, $53.00. Single end calender points sharpened, $5.00. Double end, $10.00. Special shaped diamond points, to any angle or shape, made to order.

We sell the shaped carbons set in Fig. 5 adjustable tool, as shown in illustration, for turning off hardened steel, chilled iron, paper calender and copper rolls, battery carbons, celluloid and hard rubber; also for boring cylinders.

GLASS CUTTERS



FIG. 5891

No. 0, price per dozen.....$2 00

This cutter has a cocobola wood handle. It works on the same plan as the ordinary diamond cutter with a loose head.

CONDITIONS OF SALE

Diamonds and carbon are natural formations, the hardest known substances, and are fractious. We can not hold ourselves responsible for breakages. We will, however, guarantee the hardness of the stones placed in these tools and replace all soft stones that are returned within ten days of receipt.



FIG. 5892

No. 4. Putty Knife and Glass Cutter combined, per dozen.....$1 00

TURKISH EMERY

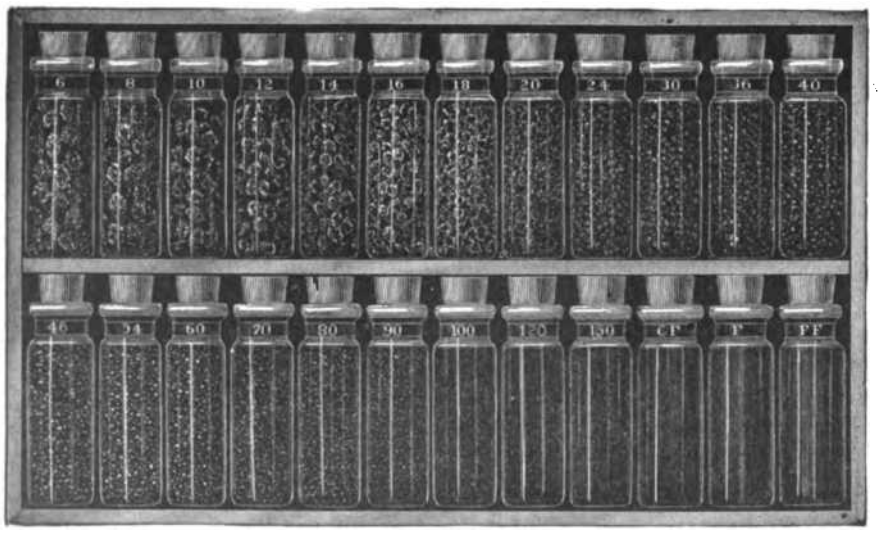


FIG. 5893

EMERY NUMBERS

Nos. 4, 6, 8, 10, 12, 14, 16, 18, 20, 24, 30, 36, 40, 46, 54, 60, 70, 80, 90, 100, 110, 120, 150, 160, 180, CF, 1F, 2F, 3F, 4F, 5F, 6F, 7F, 8F.

PRICES, FIG. 5893

	Grain. Nos. 4 to 46, Inclusive, Cts. per Lb.	Grain. Nos. 54 to 180, Inclusive, Cts. per Lb.	Flour, CF, F and FF, Cts. per Lb.
In kegs of about 300 pounds, at..	4½	5	3
½ " " 150 " ..	4¾	5¼	3¼
¼ " " 75 " ..	5	5½	3½
10 pound tin cans, 10 in case...	6	6½	5½
10 " less than " ...	10	10	8

Crocus same prices as the fine grain.

Pure sapphire or ruby corundum can be furnished of the same numbers as emery. Prices quoted upon application.

WELLINGTON MILLS EMERY

Nos. 8, 9, 10, 12, 14, 16, 18, 20, 24, 30, 36, 40, 46, 54, 60, 70, 80, 90, 100, 110, 120, 150, per pound..... 7 cts.
Fine flour, per pound..... 5 "

In kegs weighing from 200 to 250 pounds.

Superfine washed flour, per pound..... 7 cts.
Pure crocus, for cutlers' use, per pound..... 9 "

In kegs weighing from 120 to 150 pounds.

Flint quartz, all numbers, per pound..... cts.
Garnet " " " " ..... "

Packed in kegs weighing about 150 pounds, and barrels weighing about 350 pounds

MANNING, MAXWELL & MOORE, 85, 87 AND 89 LIBERTY STREET, NEW YORK

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CARBORUNDUM



FIG. 5894

PRICES

Crude Carborundum Crystals (Selected)

Any quantity, carefully packed	per pound,	$0 50

Grains, Nos. 6 to 220 (inclusive)*

½ keg (150 pounds) or more	per pound,	$0 10
50 to 150 pounds	"	12
5 " 50 "	"	15
1, 3 and 4 pounds, in tin cans	"	17

F, FF, FFF Powders

½ keg (150 pounds) or more	per pound,	$0 08
50 to 150 pounds	"	09
5 " 50 "	"	10
1, 3 and 4 pounds, in tin cans	"	12

*The price on Nos. 90, 100 and 120, in any quantity greater than 50 pounds, is 12 cents per pound.

CARBORUNDUM CLOTH

Sheets 9 x 11 inches; ¼ ream packages.

Powder (F, FF, FFF)	per ream,	$18 00
Nos. 220 to 70	"	18 00
No. 60	"	20 00
" 50	"	24 00
" 40	"	26 00

Rolls 50 yards in length; double coated.

Width, inches	9	18	27
Nos. 220 to 70	per roll, $7 50	$15 00	$22 50
" 60	" 9 00	18 00	27 00
" 50	" 10 50	21 00	31 50
" 40	" 12 50	25 00	37 50

CARBORUNDUM PAPER

Nos.	Sheets. 9 x 11 Inches, Per Ream.	Sheets. 9 x 12 Inches, Per Ream.	Rolls. 50 Yards Long 24 Inches Wide, Per Roll.
180 to 60	$6 50	$7 00	$7 00
50 and 40	7 00	7 50	7 50
36	7 75	8 50	8 50
30	8 50	9 25	9 25
24	9 50	10 25	10 25
20	11 00	12 00	12 00

COMBINATION STONE



FIG. 5896

Shape.	Dimensions of Stone, Inches.	Price in Paper Boxes, Each.	Mounted. Wood Boxes, Each.	Mounted. Iron Boxes, Each.
0	8 x 2 x 1	$1 25	$1 50	$1 50
1	8 x 1¾ x 1¼	1 25	1 50	....
1½	7 x 2 x 1	1 00	1 25	....
2	6 x 1⅝ x ¾	65	90	90
29	6 x 2 x 1	75	....	1 00

These stones are furnished with one face medium and one face coarse grade. They are particularly useful on this account, as the coarse side can be used for sharpening dull tools or on tools where fast work is required without regard to fine finish, while the medium side can be used when a finer edge is required, or for finishing after the coarse side has been used.

EMERY CLOTH, SAND PAPER, ETC.

LIBERTY BRAND

EXTRA FLINT ROLL PAPER

Per roll 50 yards long.

Widths, in.	24	30	36	40	42	48
Nos. 00 to 1½	$5 50	$8 00	$10 00	$12 00	$13 00	$15 00
" 2	6 00	9 00	11 00	13 00	14 00	17 00
" 2½	6 50	10 00	12 00	14 00	15 00	18 00
" 3	7 00	11 00	13 00	15 00	16 00	20 00
" 3½	8 00	13 00	15 00	17 00	18 00	23 00
" 4	9 00	15 00	17 00	20 00	21 00	26 00

FLINT PAPER, BEST GRADE

Sheets 9x11 in.; half ream pkgs.

Nos.	Per Ream.
00 to 1½ and assorted	$5 00
2	5 50
2½	6 00
3	6 50
3½	7 00
4	8 00

EMERY PAPER

Per roll 50 yards long; width, 24 inches.

Nos.	Per Roll.
00 to 1½	$7 50
2	9 00
2½	11 00
3	13 00
3½	15 00

Sheets 9x11 in.; half ream pkgs.

Nos.	Per Ream.
00 to 1½	$7 00
2	8 00
2½	10 00
3	12 00
3½	14 00

EMERY CLOTH

In sheets 9 x 11; quire packages.

No. FF	per ream,	$20 00
" F or No. 00	"	20 00
" 120 " 0	"	20 00
" 100	"	20 00
" 90 or No. ½	"	20 00
" 80 " 1	"	20 00
" 70 " 1½	"	20 00
" 60 " 2	"	22 00
" 54 " 2½	"	26 00
" 46 " 3	"	28 00
" 40 " 3½	"	30 00
Crocus cloth	"	20 00

In rolls 50 yards each.

9 inches.		
Nos. 00 to 1½	per roll,	$7 00
" 2	"	8 00
" 2½	"	9 50
" 3	"	11 00
" 3½	"	13 00
18 inches.		
Nos. 00 to 1½	per roll,	$14 00
" 2	"	16 00
" 2½	"	19 00
" 3	"	22 00
" 3½	"	26 00
27 inches.		
Nos. 00 to 1½	per roll,	$21 00
" 2	"	24 00
" 2½	"	28 50
" 3	"	33 00
" 3½	"	39 00

GARNET PAPER

In sheets 9 x 11 inches; half ream packages.

Nos. 00 to 1½	per ream,	$5 50
" 2	"	6 00
" 2½	"	6 50
" 3	"	7 00

GARNET CLOTH IN ROLLS

Per roll 50 yards.

Width, inches	14	28
Nos. 00 to 2	$12 50	$25 00
" 2½ and 3	15 00	30 00

EXTRA GARNET ROLL PAPER

Per roll 50 yards long.

Widths, in.	24	30	36	40	42	48
Nos. 00 to 1½	$6 00	$9 00	$11 00	$13 00	$15 00	$18 00
" 2	6 50	10 00	12 00	14 00	16 00	20 00
" 2½	7 25	11 00	13 00	15 00	17 00	22 00
" 3	8 25	12 00	14 00	16 00	18 00	25 00
" 3½	9 50	14 00	16 00	18 00	20 00	29 00
" 4	10 50	16 00	18 00	21 00	23 00	32 00

INDIA OIL STONES

Shape.	Dimensions Stone, Inches.	Prices, Including Box. Coarse and Medium, Each.	Fine, Each.	Approx. Weight per Doz. Complete, Pounds.
0	8x2x1	$1 25	$1 75	25
1	8x1¾x1¼	1 25	1 75	25
1½	7x2x1	1 00	1 40	20
2	6x1⅝x¾	75	1 00	11¼
3	4x1x½	55	70	8½

MOUNTED IN POLISHED WOOD CASES

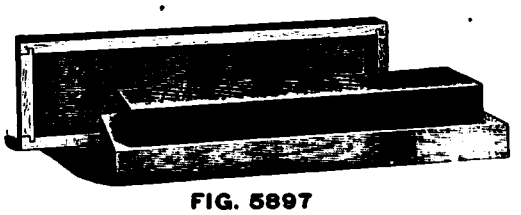


FIG. 5897

MOUNTED IN IRON BOXES

Shape.	Dimensions Stone, Inches.	Prices, Including Box. Coarse and Medium, Each.	Fine, Each.	Approximate Weight per Dozen Complete, Pounds.
0	8x2x1	$1 25	$1 75	58
2	6x1⅝x¾	75	1 00	36
29	6x2x1	85	1 15	40
1½	7x2x1	1 00	1 50	50

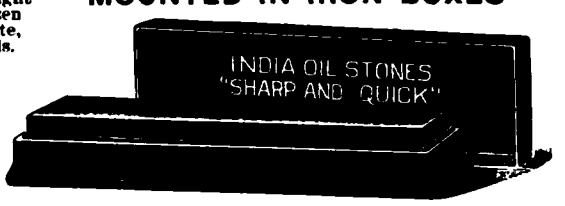


FIG. 5898

The above boxes are fitted with four cork feet, which will to a great extent prevent them from sliding on bench while in use.

The stone rests on a piece of felt in bottom of box which, absorbing a quantity of oil, keeps the stone moist. Polished wood cases or finished iron boxes, 25 cents each.

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MOUNTED OILSTONE

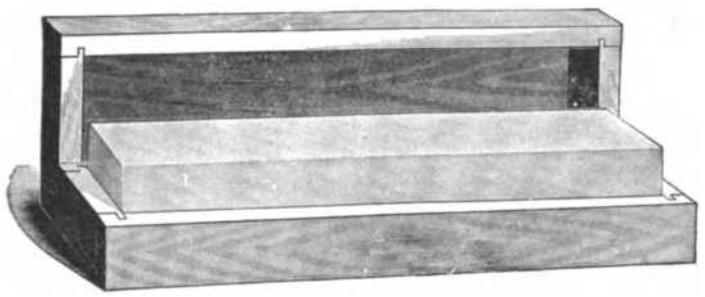


FIG. 5899

WASHITA OILSTONES. PRICES

In handsomely polished cherry boxes.

				No. 1.	Lily White and Rosy Red.
9	x 2	inches,	per dozen	$14 00	$16 00
8	x 2	"	"	12 00	14 00
7	x 2	"	"	11 00	13 00
6	x 2	"	"	10 00	11 50
5	x 2	"	"	9 00	10 00
4	x 1½	"	"	7 00	9 00
3½	x 1	"	"	5 50	6 00

ARKANSAS OILSTONES. PRICES

In polished mahogany boxes.

				Hard.	Soft.
8	x 2	inches,	per dozen	$40 00	$24 00
7	x 2	"	"	36 00	20 00
6	x 2	"	"	30 00	18 00
5	x 2	"	"	24 00	15 00
4	x 1½	"	"	14 00	10 00
3½	x 1	"	"	9 00	7 00

REGULAR BENCH OILSTONE



FIG. 5903

WASHITA OILSTONES. PRICES

Extra Lily White	60 cents per pound
Rosy Red	60 " "
Extra Washita, green paper wrapper	50 " "
No. 1 "	40 " "
No. 2 "	30 " "

Packed in 14 or 25 pound boxes; 100 or 112 pounds to a case. Furnished in four assortments as follows:

G 4 to 8 x 2 x ⅞ to 1⅛
H 6 to 8 x 2 x ⅞ to 1⅛
K 8 x 2 x ⅞ to 1⅛
L 9 x 2 to 2½ x ⅞ to 1½

ARKANSAS OILSTONES. PRICES

Are furnished in the following assortments:

Asst.	Quality.	Length.	Width.	Thickness.	Per Lb. Hard.	Per Lb. Soft.
A	Ex. selected,	3 to 5½	x 1¾ to 2	x ¾ to 1 inch	$3 25	$1 75
B	" "	5½ 8	x 1¾	2 x ¾ 1 "	4 50	2 25
C	" "	8 12	x 1¾	2 x ¾ 1 "	5 00	2 50
A	No. 1,	3 5½	x 1¾	2 x ¾ 1 "	2 80	1 50
B	"	5½ 8	x 1¾	2 x ¾ 1 "	3 50	1 70
C	"	8 12	x 1¾	2 x ¾ 1 "	4 00	1 90
D	No. 2,	3 5½	x 1¾	2 x ¾ 1 "	1 00	50
E	"	5½ 8	x 1¾	2 x ¾ 1 "	1 50	70

OILSTONE WHEEL

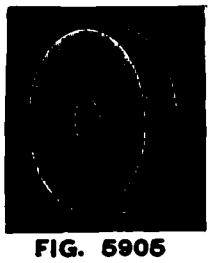


FIG. 5905

WASHITA. PRICES

Wheel, 1½ to 5 inches diameter, ⅜ to ¾ inches thick, ¼ to ½ inch hole. Per inch, 80 cents.
Smaller or larger sizes, special prices.

ARKANSAS. PRICES

Wheel, 1½ to 4 inches diameter, ¼ to ½ inch thick, ¼ to ½ inch hole; per inch, hard, $2.00; per inch, soft, $1.50. Smaller or larger sizes, special prices.

MOUNTED ON MAHOGANY HANDLE



FIG. 5900

PRICES

4½ x 1 inch, Washita, per dozen, $4.00.
4 x 1 inch, Arkansas, per dozen, hard, $7.00; soft, $5.00.

WASHITA OIL SLIP



FIG. 5901

PRICES

About 3 to 5 x 1¾ to 2 x ⅜ to ⅝ back x ⅛ to 5/16 inch edge.

Lily White	90 cents per pound
Rosy Red	90 " "
Extra	80 " "
No. 1	70 " "
No. 2	40 " "

ARKANSAS ROUND EDGE OIL SLIP



FIG. 5902

PRICES

	Hard.	Soft.
No. 1, reg., 3 to 5 x 1¾ to 2 x ⅜ to ⅝ inch back x ⅛ to ⅜ inch edge, per pound	$4 00	$2 50
No. 1, small, 3 to 5 x 1¼ to 1½ x ¼ to ⅜ inch back x ⅛ inch to sharp edge, per pound	6 00	4 00
No. 2, assorted sizes, per pound	2 50	1 00

OILSTONE HOLDER

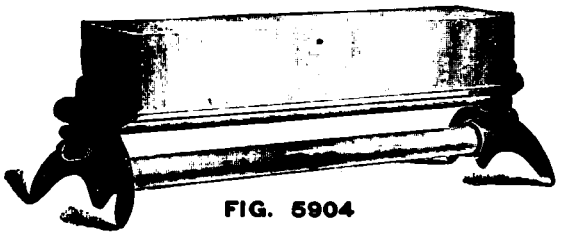


FIG. 5904

DESCRIPTION AND PRICE

A device for holding a whetstone on a bench. By loosening the thumb screws slightly the stone may be turned so as to bring either of its sides to the top; and these may be shaped differently, if desired, for all kinds of tools. They are made to take stones 9 inches long x 3 inches broad; but, by cutting off the rod B, can be made to take any smaller size.

Per dozen, $4.00.

INDIA OILSTONE WHEELS

PRICES

Diameters in Inches.	Thickness of Wheels in Inches. ¼	⅜	½	⅝	¾	⅞	1	1¼	1½	1¾	2
1	$0 25	$0 30	$0 30	$0 35	$0 35	$0 40	$0 40	$0 45	$0 50	$0 55	$0 60
1½	30	35	40	45	45	50	50	55	60	65	70
2	35	45	50	55	55	60	60	65	70	75	80
2½	40	55	65	70	75	80	85	95	1 05	1 15	1 25
3	50	65	80	90	95	1 05	1 10	1 25	1 40	1 55	1 70
3½	60	80	95	1 05	1 15	1 25	1 35	1 55	1 75	1 95	2 15
4	75	95	1 10	1 25	1 35	1 50	1 60	1 85	2 10	2 35	2 60
4½	90	1 10	1 25	1 40	1 55	1 70	1 85	2 15	2 45	2 75	3 05
5	1 00	1 20	1 40	1 60	1 80	2 00	2 20	2 60	3 00	3 40	3 80
6	1 40	1 60	1 75	2 10	2 40	2 75	3 05	3 70	4 35	5 00	5 65
7	....	....	2 15	2 60	3 00	3 45	3 85	4 70	5 55	6 40	7 25
8	....	....	2 60	3 10	3 60	4 10	4 60	5 60	6 60	7 60	8 60
9	....	....	3 10	3 70	4 25	4 85	5 40	6 55	7 70	8 85	10 00
10	....	....	3 65	4 35	5 00	5 70	6 35	7 70	9 05	10 40	11 75

These wheels are of the same texture and material as the regular India Oilstone. They are made in the same variety of grades and are used for the same purposes as those made from natural stones, such as Washita and Arkansas. The prices given are for medium and coarse; for fine the price is 50 per cent. additional.

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OIL AND WATER STONES

BENCH WHETSTONE



FIG. 5906

It is nicely finished, cuts rapidly, and imparts a good edge. Can be used with either oil or water. Packed in 14 and 25 pound boxes.

PRICES

Assorted, H 4–8 x 2 x ¾–1⅛, per pound.....$0 20
K 8 x 2 x ¾–1⅛, " 20

MOUNTED

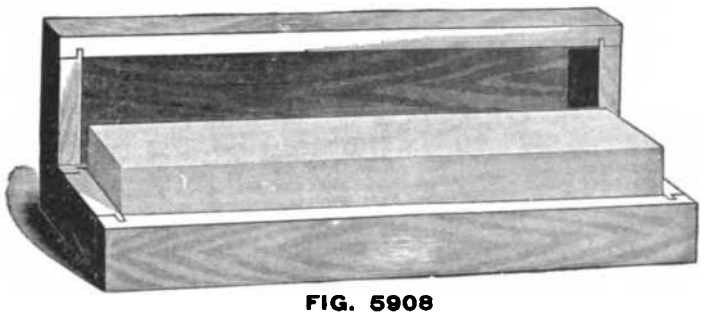


FIG. 5908

PRICES

3½ x 1	inches, per dozen	$4 00	6 x 2	inches, per dozen	$6 00
4 x 1½	" "	5 00	7 x 2	" "	7 00
5 x 2	" "	5 50	8 x 2	" "	8 00

HANDLE SLIP OR KNIFE STONE

4½ x 1 inches, per dozen.....$2 00
Special sizes to order at short notice.

HINDOSTAN SLIP



FIG. 5907

Round Edge Slips, 6 x 1½ to 2 x ½ to ¾ x ⅛ to ¼ inch, per lb....$0 20
Plain Slips, 6 x 1¾ " 2 x ⅜ " ⅝ inch, per lb..... 12
" " 6 x 1¾ " 2 x ⅜ " ⅝ " per gross..... 8 00
Wheels, per inch..... 40

Slips packed about 50 pounds in a box.

QUEER CREEK ROUND EDGE SLIP



FIG. 5909

3–5 x 1¾–2 x ¼–⅝ back x ⅛ to 5/16 edge, per pound.....$0 40
Packed 5 pounds in a box.

HORSESHOER'S KNIFE STONE



FIG. 5910

For farriers' knives, butterises, and all edged tools. Fast cutting grit; will not glaze. Made to fit the hook of a farrier's knife.

Per gross.....$15 00
Packed 1 dozen in a neat display box.

EMERY OIL STONES

END VIEW OF OIL STONES, FULL SIZE

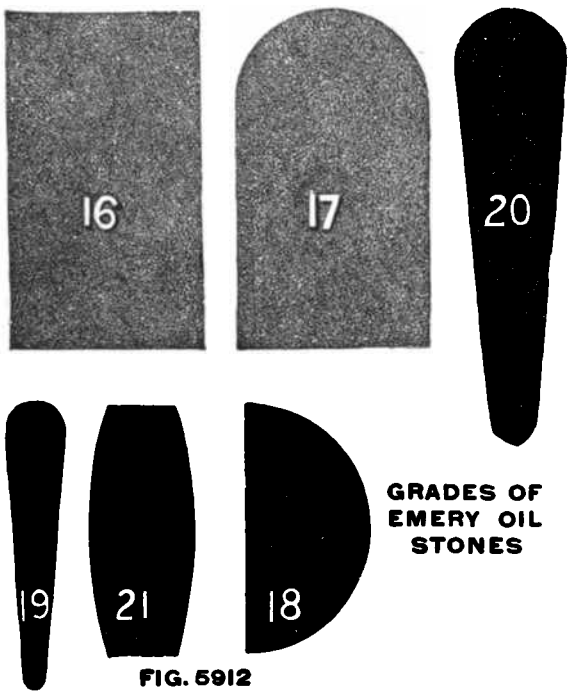


FIG. 5912

GRADES OF EMERY OIL STONES

These Oil Stones are made of the best grade of emery, and do not glaze. They are made of different grades of emery to adapt them to the following work:

Nos. 16, 20, 24, and 36 are for cleaning castings, and other rough work.

No. 60 is for sharpening machinists' tools. In finishing metals it is equal to the second cut file.

No. 80 is for sharpening carpenters' and wood working tools, and is invaluable for outside jobs, where a grindstone is not available. In finishing metals it is equal to the smooth cut files.

Nos. 80 and 100 are well adapted for planer knives in place of a grindstone.

No. 120 is for whetting carpenters' and other tools, and will produce a fine edge; is equal to a dead smooth cut file for finish.

No. F is adapted for pattern makers and other places where a very fine edge is wanted.

No. F F will produce a very keen fine edge.

PRICES

Nos. 16, 17, and 21 are 8 inches long; Nos. 18, 19, and 20 are 6 inches long.
Nos. 16 and 17, 8 x 1¾ x 1 inch, each.....$0 50
" 18, 20, and 21, each..... 35
" 19, each..... 25

SCOTCH OR WATER OF AYR STONE PENCILS

PRICES

6	inches long x	1/16	inches square, per dozen	$0 35	6	inches long x	¾	inches square, per dozen	$0 80
6	"	5/16	" "	40	6	"	⅞	" "	90
6	"	¼	" "	45	6	"	1	" "	1 00
6	"	5/16	" "	50	6	"	1¼	" "	1 25
6	"	½	" "	60	6	"	1½	" "	1 50
6	"	⅝	" "	70	*6	"	⅛	" "	2 50

*Encased in wood pencil.

EMERY BRICK OR RUB STONES

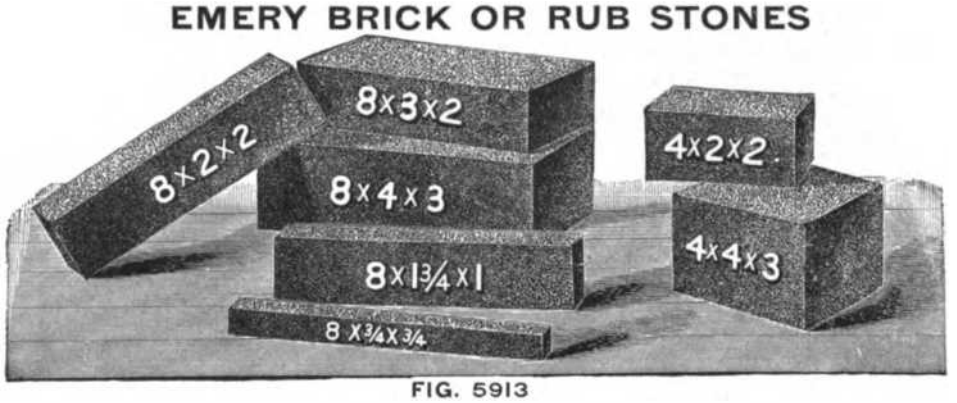


FIG. 5913

SIZES

8 x 4 x 3 inches.	8 x 4 x 2½ inches.	8 x 4 x 2 inches.	8 x 3 x 3 inches.
8 x 3 x 2½ "	8 x 3 x 2 "	8 x 2 x 2 "	8 x 2 x 1½ "
8 x 1¾ x 1 "	8 x 1½ x ¾ "	8 x ¾ x ¾ "	6 x 1½ x ¾ "
4 x 4 x 3 "	4 x 3 x 3 "	4 x 3 x 2 "	4 x 2 x 2 "

Any size, shape, or grade made to order.

Sticks for Jewelers' and Machinists' Uses, Round or Square.

7 x ⅝ x ¾ inches. 7 x ⅝ x ⅝ inches. 7 x ½ x ½ inches.
Any size, shape, or grade made to order.

Broken Brick and Emery Wheels.

For foundry use, at special figures by the barrel.

PRICES, FIG. 5913

This list is figured on a basis of brick 4 inches long, other lengths at proportionate rates.

Width or Thickness of Brick, in Inches.	Width or Thickness of Brick in Inches.												
	4	3½	3	2½	2	1¾	1½	1¼	1	¾	⅝	½	⅜	¼
¼	$0 30	28	27	26	24	23	22	21	20	19	18	17	16	15
⅜	34	33	31	29	27	26	25	23	22	21	20	19	17	..
½	38	36	34	32	30	28	27	26	24	22	21	20	..	..
⅝	42	39	37	35	33	31	29	27	26	23	22	..	..	..
¾	50	43	40	37	34	33	31	29	27	25	..	..	..	..
1	70	60	50	42	38	36	34	32	30	..	..	..	..	..
1¼	85	75	65	53	42	39	37	35	..	..	..	..	..	..
1½	1 00	90	80	65	50	43	40	..	..	..	..	..	..	..
1¾	1 20	1 05	90	75	60	51	..	..	..	..	..	..	..	..
2	1 35	1 20	1 00	85	70	..	..	..	..	..	..	..	..	..
2½	1 70	1 50	1 30	1 10	..	..	..	..	..	..	..	..	..	..
3	2 05	1 80	1 55	....	..	..	..	..	..	..	..	..	..	..
3½	2 40	2 10	....	....	..	..	..	..	..	..	..	..	..	..
4	2 75	....	....	....	..	..	..	..	..	..	..	..	..	..

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WOOD POLISHING WHEEL

COVERED WITH OAK LEATHER, READY FOR USE

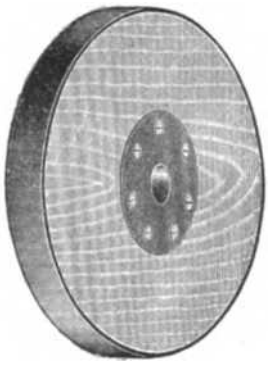


FIG. 5914

Wheels covered to order with walrus, East India buffalo, and bull neck, and prices furnished on application. We can also have the faces of wheels turned to any shape desired at a small additional charge.

Where parties wish the arbor hole on a taper to an exact size, if they will furnish us their reamer, marking how far they wish it run in, we will ream out the arbor hole to the size marked.

PRICES, FIG. 5914

Diams. In.	Thickness in Inches. 1	1½	2	2¼	2½	2¾	3	3½	4	4½	5	6
8	$2 25	$2 50	$2 80	....	....	....	....	....	....	....	....	....
9	2 50	2 80	3 10	$3 25	$3 50	....	....	....	....	....	....	....
10	2 80	3 10	3 25	3 50	3 75	$4 00	$4 25	$4 50	$4 90	$5 50	....	....
12	3 00	3 25	3 50	3 75	4 00	4 25	4 50	5 00	5 50	6 00	$6 60	....
14	3 50	3 75	4 00	4 25	4 50	4 75	5 00	5 50	6 00	6 50	7 10	$8 10
16	4 00	4 25	4 50	4 75	5 00	5 25	5 50	6 00	6 50	7 00	7 60	8 75
18	4 50	4 75	5 00	5 25	5 50	5 75	6 00	6 50	7 00	7 50	8 10	9 50
20	5 00	5 25	5 50	5 75	6 25	6 50	6 75	7 10	7 50	8 00	8 75	10 50
22	5 50	5 75	6 00	6 25	7 00	7 25	7 50	8 00	8 50	9 25	9 75	11 50
24	6 00	6 25	6 50	6 75	8 00	8 40	8 75	9 25	10 00	10 75	11 50	13 50
26	6 50	6 75	7 00	7 25	8 50	8 75	9 00	9 50	10 50	11 00	12 00	14 00
28	7 00	7 25	7 50	7 75	9 00	9 25	9 50	9 75	11 00	11 50	12 50	15 00
30	7 50	7 75	8 00	8 25	9 50	9 75	10 00	10 25	11 50	12 00	13 00	16 00

Double flange, 50 cents extra. Tapered wheels, 10 per cent. extra. Any size of wheel furnished to order at special price. Above prices for wheels with bushings for ¾ or 1 inch spindle; bushings for 1¼ inch spindle, 25 cents extra. Uncovered wheels, ⅓ less. Special covering put on when ordered, price of which depends on material ordered.

POLISHING WHEEL CLEANER

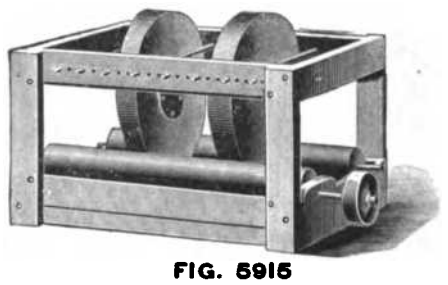


FIG. 5915

The attention of the users of leather covered emery wheels is invited to this Cleaner. By placing the worn wheel in this machine, and letting it run a few minutes with the water just touching the rollers, all of the glue and emery will be removed without damaging or loosening the leather covering. It has two rows of movable rods (only one shown in cut), to keep the wheels from falling over. The idle roller also has two positions for different diameters of wheels. It requires no attention or time to use it. Speed should be about 20 revolutions per minute.

Size inside, 24 x 26 inches; price, $12.00.

SOLID LEATHER POLISHING WHEEL

Made from Sea Lion or Bull Neck Leather, and of any thickness, by cementing two or more pieces together. This is a durable and safe wheel to run at any speed.

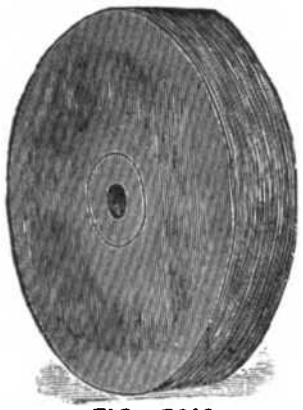


FIG. 5916

PRICES, FIG. 5916

Diams.	Thickness in Inches. ¼	½	¾	1	1¼	1½	1¾	2	2¼	2½	3	3½	4
3	$0 35	$0 45	$0 70	$0 90	$1 15	$1 35	$1 55	$1 80	$2 15	$2 25	$2 70	$3 15	$3 60
4	45	55	75	1 10	1 40	1 65	1 95	2 20	2 50	2 75	3 30	3 85	4 40
5	50	65	1 00	1 30	1 65	1 95	2 30	2 60	2 95	3 25	3 90	4 55	5 20
6	60	75	1 10	1 50	1 90	2 25	2 65	3 00	3 40	3 75	4 50	5 25	6 00
7	65	90	1 30	1 75	2 20	2 65	3 10	3 50	3 95	4 40	5 25	6 15	7 00
8	75	1 00	1 50	2 00	2 50	3 00	3 50	4 00	4 50	5 00	6 00	7 00	8 00
9	90	1 20	1 75	2 35	2 95	3 50	4 10	4 70	5 30	5 90	7 05	8 25	9 40
10	1 05	1 40	2 05	2 75	3 45	4 15	4 80	5 50	6 20	6 40	8 25	9 65	11 00
12	1 45	1 90	2 80	3 75	4 70	5 65	6 55	7 00	7 95	8 90	10 25	12 15	15 00
14	1 85	2 50	3 75	5 00	6 25	7 50	8 75	10 00	11 25	12 50	15 00	17 50	20 00
16	2 35	3 15	4 70	6 25	7 80	9 40	10 95	12 50	14 00	15 65	18 75	21 90	25 00
18	2 85	3 75	5 65	7 50	9 40	11 25	13 15	15 00	16 90	18 75	22 50	26 25	30 00
20	3 40	4 50	6 75	9 00	11 25	13 50	15 75	18 00	20 25	22 50	27 00	31 50	36 00

SOLID WALRUS WHEEL



FIG. 5918

PRICES, FIG. 5918

Diams.	Thickness in Inches. ½	¾	1	1¼	1½	2	2¼	2½	3	3½	4
2	$0 20	$0 25	$0 35	$0 45	$0 50	$0 70	$0 80	$0 90	$1 00	$1 20	$1 40
3	50	60	90	1 15	1 40	1 80	2 00	2 30	2 80	3 20	3 60
4	60	1 00	1 25	1 60	2 00	2 50	2 90	3 20	4 00	4 50	5 00
5	80	1 25	2 00	2 25	2 50	4 00	4 75	5 00	5 75	6 50	8 00
6	1 20	2 00	3 00	3 50	4 00	6 00	6 50	7 00	8 00	10 00	12 00
7	1 50	2 50	3 50	4 50	5 00	7 00	8 00	9 00	10 00	11 50	14 00
8	2 00	3 00	4 00	5 50	6 00	8 00	9 50	11 00	12 00	14 00	16 00
9	2 25	3 75	5 00	6 50	7 50	10 00	11 00	13 00	15 00	17 50	20 00
10	3 00	4 75	6 00	7 50	9 50	12 00	13 50	15 00	19 00	21 50	24 00
12	3 50	5 75	7 25	9 50	11 50	14 50	15 75	19 00	23 00	26 00	29 00

Any size or shape that is wanted furnished to order.

FELT POLISHING WHEELS AND SHEET FELT



FIG. 5917

SHEEP SKIN WHEEL

LOOSE EDGE, SOFT AND PLIABLE FOR UNEVEN SURFACES



FIG. 5919

Diams. In.	Thickness in Inches. 1	1½	2	2½	3
4	$1 10	$1 65	$2 20	$2 75	$3 25
5	1 30	2 00	2 60	3 25	3 75
6	1 50	2 25	3 00	3 75	4 50
7	1 75	2 60	3 50	4 50	5 25
8	2 00	3 00	4 00	5 00	6 00
9	2 50	3 75	5 00	6 25	7 50
10	3 00	4 50	6 00	7 50	9 00
12	4 00	6 00	8 00	10 00	12 00
14	5 00	7 50	9 50	12 00	14 50
16	6 00	9 00	12 00	14 50	17 50

PRICES, FELT POLISHING WHEELS

French, per pound, $2.00. Spanish, per pound, $2.50.

Inches.	Approx. Weight, Pounds.	Inches.	Approx. Weight, Pounds.	Inches.	Approx. Weight, Pounds.	Inches.	Approx. Weight, Pounds.
9 x ½	1⅛	12 x ½	1½	9 x ½	1⅛	12 x ¾	2¼
9 x ¾	1¼	12 x ¾	2¼	9 x ¾	1¼	12 x 1	2½
9 x 1	1½	12 x 1	2½	9 x 1	1½	12 x 1¼	2⅞
9 x 1¼	1¾	12 x 1¼	2⅞	9 x 1¼	1¾	12 x 1½	3¼
9 x 1½	2	12 x 1½	3¼	9 x 1½	2	12 x 2	4¼
9 x 2	2⅜	12 x 2	4¼	9 x 2	2⅜	12 x 2½	5½
10 x 1¼	2	15 x 2	7¼	10 x 1¼	2	15 x 1½	5½
10 x 1½	2⅜			10 x 1½	2⅜	15 x 2	7¼
				12 x ½	1½	15 x 2½	8½

PRICES, SHEET FELT

No. 1. Spanish. Extra Quality.

Sheets 18 x 18 inches; ⅛, ¼, ⅜, ½, ⅝, ¾, 1, 1½, 2 inches thick; per pound, $3 00

No. 2. Spanish. Hard.

Sheets 18 x 18 inches; ⅛, ¼, ⅜, ½, ⅝, ¾ inch thick; per pound..... 2 00

" 36 x 36 " ¼, ½, ¾, 1, 1½, 2 " " " 2 00

No. 3. Spanish. Hard.

Sheets 36 x 36 inches; ⅜, ½, ⅝, ¾, 1, 1½, 2 inches thick; per pound..... 1 50

No. 4. French. Hard.

Sheets 18 x 18 inches; ⅛, ¼, ⅜, ½, ¾, 1, 1½, 2 inches thick; per pound..... 1 75

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PATENT PAPER POLISHING WHEEL

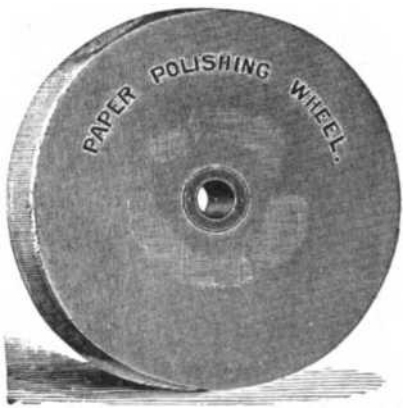


FIG. 5920

PRICES, FIG. 5920

Diams. Inches.	Thickness in Inches. 1	1¼	1½	1¾	2	2¼	2½
4	$0 70	$0 80	$0 95	$1 10	$1 20	$1 35	$1 50
6	1 00	1 15	1 30	1 40	1 55	1 70	1 80
8	1 35	1 55	1 75	1 95	2 15	2 40	2 70
10	1 70	2 00	2 35	2 70	3 00	3 35	3 70
12	2 00	2 40	2 80	3 20	3 60	4 00	4 35
14	2 35	2 75	3 15	3 55	3 95	4 35	4 70
16	2 70	3 15	3 60	4 10	4 55	4 95	5 35
18	3 35	3 90	4 40	5 00	5 60	5 15	6 70
20	4 00	4 70	5 35	6 00	6 70	7 35	8 00
22	4 70	5 40	6 15	6 95	7 75	8 55	9 35
24	5 35	6 70	8 00	9 35	10 00	10 35	11 00

Diams., Inches.	Thickness in Inches. 2¾	3	3¼	3½	3¾	4
4	$1 60	$1 75	$1 90	$2 00	$2 15	$2 35
6	1 95	2 10	2 20	2 35	2 55	3 35
8	2 90	3 10	3 30	3 50	3 75	4 00
10	4 00	4 30	4 55	4 80	5 10	5 35
12	4 70	5 00	5 30	5 70	6 00	6 35
14	5 10	5 50	5 90	6 30	6 70	7 00
16	5 80	6 30	6 70	7 15	7 60	8 00
18	7 20	7 80	8 35	8 90	9 35	10 00
20	8 70	9 35	10 00	10 70	11 35	12 00
22	10 15	10 95	11 70	12 50	13 30	14 00
24	11 70	12 35	13 70	14 70	15 35	16 00

Sizes under 1 inch thick, same price as 1 inch; under 4 inches diameter, same price as 4 inches.

Directions for Using: Glue the emery directly on the wheel.

COMPRESS POLISHING WHEEL

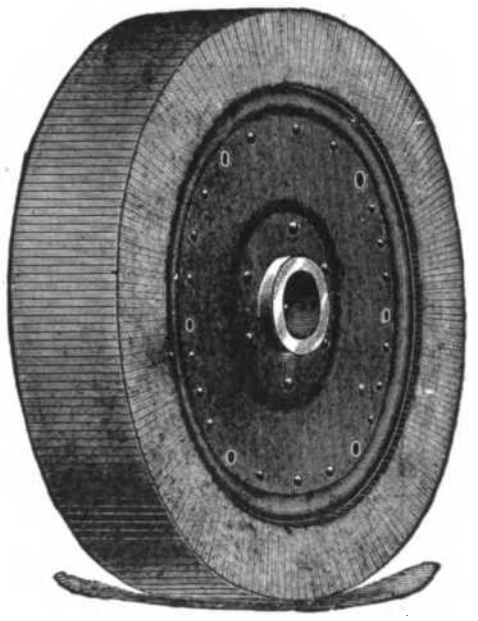


FIG. 5921

ENDLESS EMERY POLISHING BELTS

TWO PLY DUCK AND RUBBER



FIG. 5922

These belts are 12 feet long and endless, of any width up to 12 inches; they are made of two thicknesses of duck, with a layer of vulcanized rubber between. Have a perfectly smooth joint, and may be washed without danger of coming apart, and will dry quickly.

PRICES

Different lengths furnished to order.

⅜	inch, per foot	5	cents	3	inch, per foot	27	cents
½	" "	6	"	3½	" "	32	"
¾	" "	8	"	4	" "	36	"
1	" "	10	"	6	" "	54	"
1½	" "	15	"	8	" "	72	"
2	" "	19	"	10	" "	90	"
2½	" "	23	"	12	" "	$1 08	"

PRICES, FIG. 5921

With 2 Inch Oak Tanned Leather or Canvas Cushions.

Diameters, Inches.	Width of Face in Inches. 1	1½	2	2½	3	3½	4	No. of Rev. per Minute at which Each Wheel is Tested.
10	$4 50	$5 10	$5 60	$6 25	$7 25	$8 25	$9 55	7,000
12	5 10	5 60	6 25	7 00	8 00	9 00	10 35	6,000
14	5 75	6 25	7 00	8 00	9 00	10 15	11 50	5,000
16	6 50	7 25	8 00	9 00	10 00	11 35	12 75	4,500
18	7 35	8 20	9 00	10 00	11 25	12 75	14 25	4,000
20	8 25	9 00	10 00	11 25	12 50	14 00	15 75	3,500
22	9 25	10 15	11 25	12 50	13 75	15 50	17 40	3,300
24	10 35	11 35	12 50	13 75	15 50	17 40	20 00	3,000

Any shape or style desired. The covering or cushion of these wheels is made of selected oak tanned leather or of canvas, and is 2 inches thick. For prices of wheels with 1 inch leather cushion, deduct 25 per cent. For all intermediate widths other than those quoted, the prices are same as the next greater width in list. For wider face cover, special prices will be quoted on application. For tapered bore, we charge 25 cents extra per wheel on all orders of less than 10 wheels. We can make the buffing surface to fit any shape, as ogee, cone, etc.

CANVAS WHEEL

PRICES, FIG. 5923

This is an excellent wheel for roughing out work; the face can be turned to any shape. It can be used as a solid wheel when glued or in loose layers with wooden or iron flanges on each side securely fastened together through wheel. They are easily kept in balance and are very durable.

Glued made up to order only.

Diams., Inches.	Thickness, Inches. 1	1½	2	2½	3
8	$1 65	$2 25	$3 00	$3 50	$4 50
10	2 10	2 75	3 75	4 50	5 50
12	2 50	3 50	4 75	5 75	6 75
14	3 00	4 30	5 00	6 50	8 00
16	3 50	5 10	6 50	8 00	9 50

Loose Canvas Wheels.

Made up to order only.

8	85	1 50	2 10	2 75	3 60
10	1 40	2 10	2 75	3 50	4 50
12	2 20	3 20	4 25	4 85	5 85
14	2 60	3 60	4 70	5 75	7 25
16	3 00	4 20	5 75	6 50	8 25

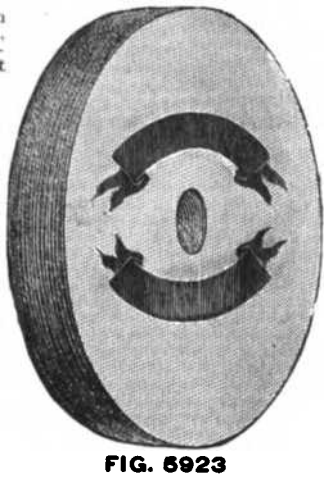


FIG. 5923

ENDLESS LEATHER POLISHING BELTS

These Belts are Made Endless, and Cemented with Waterproof Cement, any Length or Width Required.

1	inch, per foot	10	cents	4	inch, per foot	50	cents
1½	" "	17	"	4½	" "	56	"
2	" "	23	"	5	" "	63	"
2½	" "	30	"	5½	" "	70	"
3	" "	36	"	6	" "	76	"

COTTON POLISHING BELTS

Not Endless.

⅜	inch, per foot	2	cents	3½	inches, per foot	14	cents
½	" "	2	"	4	" "	18	"
⅝	" "	3	"	4½	" "	22	"
¾	" "	3	"	5	" "	25	"
1	" "	4	"	5½	" "	28	"
1½	" "	6	"	6	" "	31	"
2	" "	7	"	7	" "	35	"
2½	" "	9	"	8	" "	40	"
3	" "	11	"				

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MUSLIN BUFF



FIG. 5924

PRICES, FIG. 5924

Diameters, Inches.	Stitched or Quilted, Pieces Thick.	Per Doz.
2	30	$1 25
2½	30	1 50
3	35	1 75
4	42	2 00
5	45	2 25
6	50	3 50
7	55	6 00
8	60	6 00
9	60	7 50
10	65	10 00
12	70	12 00
14	70	16 00

BLEACHED SEWED PIECED BUFF

PRICES, FIG. 5925

Diameters, Inches.	Weight, Ounces.	Per 100.
8	3¾	$9 00
9	4¾	12 00
10	6	15 00
12	8½	21 00
14	11¾	29 00
15	13½	34 00
16	15½	39 00
18	19½	49 00

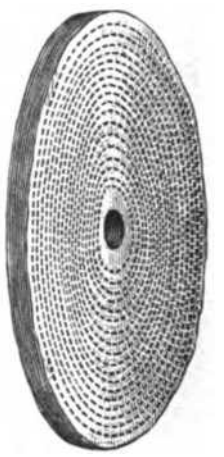


FIG. 5925

MUSLIN AND CANTON FLANNEL BUFFS. IN SECTIONS

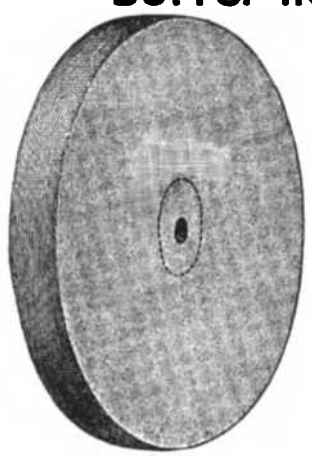


FIG. 5926

PRICES, FIG. 5926

Canton Flannel Buffs.
In Sections.

Diameters, Inches.	No. Pieces Thick.	Prices, per Section.
6	18	$0 13
9	18	25
10	18	30
12	18	35
14	18	40

In ordering above buffs give size of arbor.

Unbleached Muslin Buffs. In Sections.
One Row of Stitching Around Arbor.

Diameters, Inches.	No. Pieces Thick.	Prices, per Section.	Diameters, Inches.	No. Pieces Thick.	Prices, per Section.
6	18	$0 06	6	20	$0 07
7	18	7	7	20	8
8	18	9	8	20	10
9	18	12	9	20	13
10	18	15	10	20	16
12	18	20	12	20	22
14	18	25	14	20	27
16	18	33	16	20	36
18	18	40	18	20	44

Bleached Muslin Buffs. In Sections.

Diameters, Inches.	No. Pieces Thick.	Prices, per Section.	Diameters, Inches.	No. Pieces Thick.	Prices, per Section.
6	18	$0 07	6	20	$0 08
7	18	8	7	20	9
8	18	11	8	20	12
9	18	14	9	20	15
10	18	16	10	20	18
12	18	22	12	20	24
14	18	30	14	20	33

In ordering all above buffs give size of arbor.

POLISHING LEATHERS

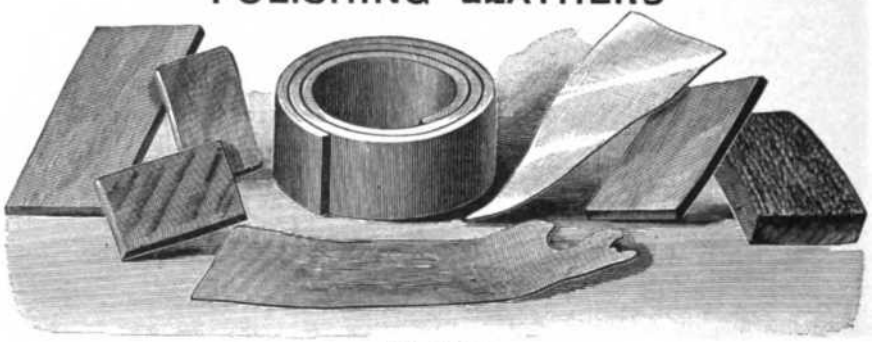


FIG. 5927

Bull Neck, Oak Tanned and Sea Lion Leather. For covering wooden polishing wheels, and for making solid wheels.
Furnished cut in strips or in whole hides.
Also Sheep Skins and Chamois Skins. Prices on application.

GLUE

For putting emery on polishing wheels and belts. The grades named below are made especially for this purpose.

	By the Barrel.	Ten Pounds.
No. 1, Whole or Ground, per pound	$0 25	Per pound $0 30
" 2, " " " "	21	" " 25
" 3, " " " "	19	" " 23
" 4, " " " "	16	" " 20

BRASS AND STEEL WIRE SCRATCH BRUSH



FIG. 5930

PRICES, FIG. 5930

Diams., Inches.	1 Row, per Doz.	2 Row, per Doz.	3 Row, per Doz.	4 Row, per Doz.	5 Row, per Doz.
2½	$2 50	$3 75	$5 00	$7 00	$9 00
3	3 00	4 50	6 00	8 00	10 00
3½	4 50	7 00	9 00	12 00	15 00
4	6 00	9 00	12 00	16 00	21 00
4¼	6 50	10 50	13 50	18 50	24 00
4½	7 00	11 50	14 50	20 50	27 00
4¾	7 50	12 00	15 00	22 00	29 00
5	8 00	13 00	16 50	24 00	32 00
5½	9 00	15 00	18 50	27 00	36 00
6	10 50	16 50	21 50	30 00	39 00
6½	11 00	19 00	24 00	36 00	42 00
7	12 00	21 00	27 00	40 00	48 00
7½	13 00	24 00	30 00	44 00	54 00
8	14 00	25 00	33 00	48 00	60 00

For heavy use, made very strong, of coarse Brass and Steel Wires from No. 30 Brown & Sharpe's Gauge, and coarser. Centers filled with lead.

BRISTLE AND TAMPICO WHEEL BRUSHES

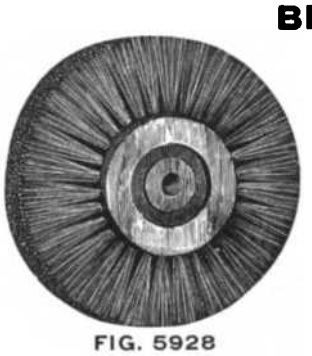


FIG. 5928

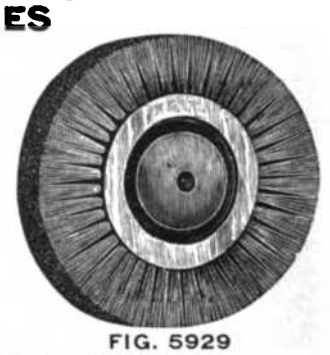


FIG. 5929

PRICES, FIGS. 5928 AND 5929

Diameters of Brush, Inches.	No. of Rows.	Size of Hubs, Inches.	Bevel or Straight. Quality. Per Dozen. A.—Pure Stiff Bristle. Black or Gray.	B. Mixed Bristle.	C.—Tampico. Black, White, Gray.
5	1	2	$4 00	$3 25	$2 00
5	2	2	6 50	4 50	3 00
5	3	2	10 00	6 00	4 00
5	4	2	13 00	7 50	5 00
6	1	3	4 50	3 50	2 50
6	2	3	6 00	5 50	3 50
6	3	3	9 00	7 00	4 50
6	4	3	12 00	8 50	5 50
6	5	3	15 00	10 50	6 50
6	7	3	18 00	14 00	7 00
8	4	5	18 00	14 25	7 00
8	5	5	25 00	18 00	8 00
8	6	5	30 00	22 00	9 00
8	7	5	34 00	25 00	11 00
8	8	5	40 00	29 00	12 50
9	4	6	23 00	18 00	8 50
9	6	6	34 00	28 00	11 50
9	8	6	46 00	35 00	15 00
10	4	7	28 50	18 50	9 25
10	6	7	40 00	32 00	12 50
10	8	7	58 00	42 00	16 00
12	4	8	46 00	28 00	12 00
12	6	8	60 00	42 00	16 00
12	8	8	100 00	60 00	22 00

MANNING, MAXWELL & MOORE, 85, 87,

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PORTABLE TOOL RACK

FOR USE AT LATHE PLANER OR DRILL



FIG. 5931

Outside sizes of trays	22 x 28 in.	26 x 34 in.
Height, varied, if desired	36 "	36 "
Greatest depth of pan	4½ "	6 "
In shipping order, knocked down	185 lbs.	310 lbs.
Prices, as shown	$9 25	$15 00
Prices, with castors	10 00	16 00

STEEL FRAME PORTABLE WORK BENCH

FOR PLUMBERS, STEAM FITTERS, HOT WATER FITTERS, GAS FITTERS, AND OTHERS WHO REQUIRE A STRONG, COMPACT AND LIGHT PORTABLE WORK BENCH

DESCRIPTION, FIG. 5932

The bench is constructed of angle iron legs, and angle iron crosspieces. The top is made of oak plank. The shelf is of ⅞ boards. The legs have a broad flange with bolt holes, so that the bench can be fastened to the floor if required. The oak plank is bolted to the cross angle irons. The legs are bolted to the side angle irons, making a strong and light work bench.

By removing the bolts from the planks and side angle iron, the bench can be taken apart and put together in a few minutes, making it convenient for shipping to and from jobs. All sizes 2 feet 11 inches high to top of plank. Special sizes made to order. All iron work is painted. The oak planks are square edge, selected stock, planed and of proportionate thickness from 1½ inches to 2½ inches, according to length of bench.

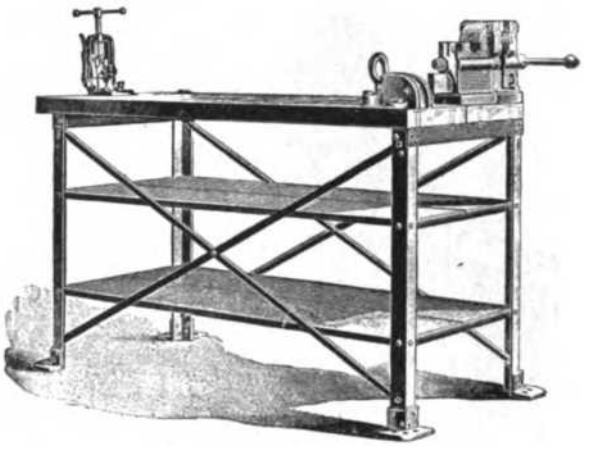


FIG. 5932

PRICES

Size 12 inches wide.	Each.	Size 18 inches wide.	Each.
No. 1, 2 feet 6 inches long	$7 50	No. 5, 3 feet long	$9 75
" 2, 3 " long	8 75	" 6, 4 " "	11 25
" 3, 3 " 6 inches long	9 75	" 7, 5 " "	12 75
" 4, 4 " long	10 75	" 8, 6 " "	14 50
Size 24 inches wide.	**Each.**	**Size 30 inches wide.**	**Each.**
No. 9, 3 feet long	$11 50	No. 15, 5 feet long	$15 75
" 10, 4 " "	13 25	" 16, 6 " "	17 50
" 11, 5 " "	15 00	" 17, 7 " "	19 50
" 12, 6 " "	16 75	" 18, 8 " "	21 50
" 13, 7 " "	18 75	" 19, 9 " "	23 50
" 14, 8 " "	20 75	" 20, 10 " "	26 00

Special sizes made to order. The price of any intermediate size would be between the next size larger and the next size smaller.

STEEL TOOL CHESTS

STYLE A



FIG. 5933
STYLE A

Has sliding drawer.

PRICES

With one drawer.

Numbers.	Depth, Inches.	Width, Inches.	Length, Inches.	Each.
1	11	12	24	$12 50
2	14	15	30	17 00
3	16	17	36	19 00
4	19	20	42	22 00
		With two drawers.		
1	11	12	24	13 00
2	14	15	30	18 00
3	16	17	36	20 25
4	19	20	42	23 50

Sent with one drawer unless ordered with two.

STYLE C

Without drawers or tills.

Numbers.	Depth, Inches.	Width, Inches.	Length, Inches.	Each.
1	11	12	30	$12 50
2	11	12	36	15 00
3	11	12	42	17 00
4	11	12	48	20 00

STYLE D

Has three drawers and a division lengthwise at bottom with a sliding cover over bottom.

Numbers.	Depth, Inches.	Width, Inches.	Length, Inches.	Each.
1	11	12	24	$15 50
2	14	15	30	21 00
3	16	17	36	23 00
4	19	20	42	26 00

STYLE B

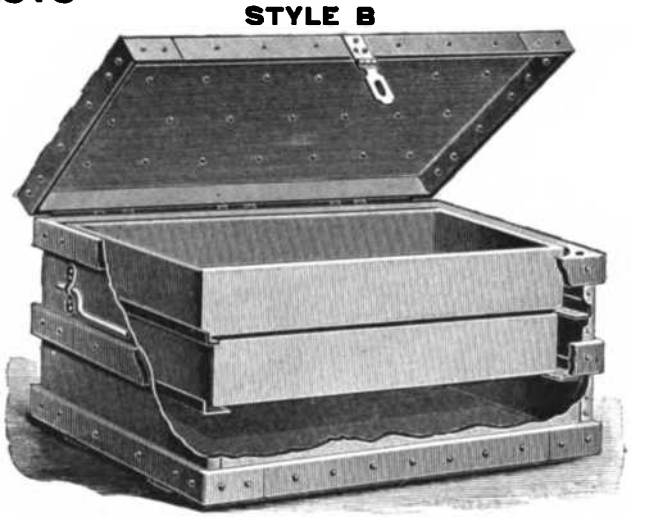


FIG. 5934

DESCRIPTION

Made from ⅛ inch cold rolled sheet steel with malleable iron corner pieces and hard wood braces and fitted with heavy wrought iron hinges and hasp, with cover so arranged as to be held open by support from the back of chest. Each chest is furnished with a first class brass lock and two keys, and bolts to screw down cover at front corners. They are painted, and make a first class tool chest for steam fitters, gas fitters, plumbers and other trades where a light and strong tool chest is required.

STYLE B PRICES

With one till.

Numbers.	Depth, Inches.	Width, Inches.	Length, Inches.	Each.
1	11	12	24	$13 00
2	14	15	30	18 50
3	16	17	36	20 50
4	19	20	42	23 00
		With two tills.		
1	11	12	24	13 50
2	14	15	30	19 00
3	16	17	36	21 00
4	19	20	42	24 00

Sent with two tills unless ordered with one.

STYLE E

Drawers with divisions in drawers, and divisions lengthwise of bottom.

Numbers.	Depth, Inches.	Width, Inches.	Length, Inches.	Each.
1	11	12	24	$14 50
2	14	15	30	20 00
3	16	17	36	22 00
4	19	20	42	25 00

STYLE F

Has one drawer with division in drawer, and division lengthwise of bottom.

Numbers.	Depth, Inches.	Width, Inches.	Length, Inches.	Each.
1	11	12	24	$13 50
2	14	15	30	19 00
3	16	17	36	21 00
4	19	20	42	24 00

The sizes of chests as given are inside measurements of sheet steel body. Covers are two inches deep. Measurements of cover are not included in depth of chest. Any special size made to order. The price of any intermediate size would be the same as the largest size that it would be ordered between. The construction of all styles is the same with the exception of drawers and tills.

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TOOL CHEST

FOR USE OF FARMERS, PLANTERS, RAILROADS AND MINES

NO. 9

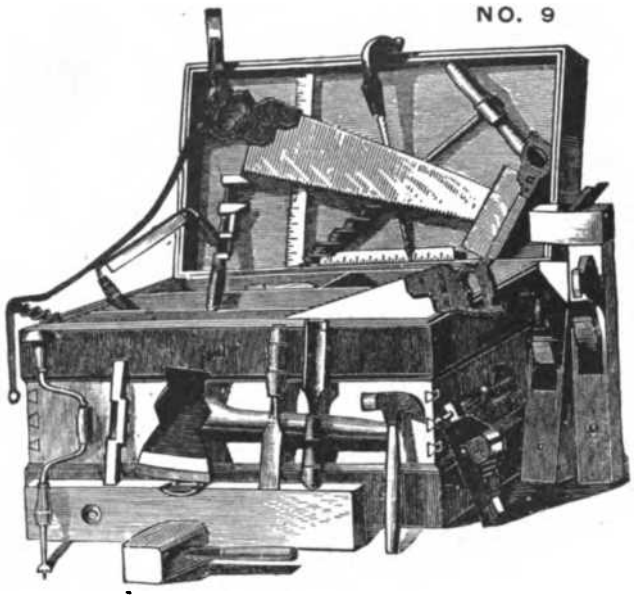


FIG. 5935

Size of chest 37¼ inches long, 19¼ inches wide, 16¼ inches deep. Made of selected chestnut and black walnut woods, nicely finished and varnished, dovetailed corners, heavy bands and base, has two sliding trays with partitions and saw rack, strong drop handles and double link spring tumbler chest lock, containing 132 fine quality assorted tools.

CONTENTS OF NO. 9. FIG. 5935

1 smooth plane, double iron; 1 jack plane, double iron; 1 fore plane, double iron; 1 measuring tape, 50 feet; 1 cast steel cold chisel; 1 improved bench stop; 3 carpenters' lead pencils; 1 oil stone, boxed; 1 brass oil can; 1 mahogany plumb and level, two side views; 1 plumb bob; 1 two foot steel square; 1 tool handle containing 9 assorted tools; 1 rosewood stock sliding T bevel; 1 chalk line, reel and awl; 1 cabinet file; 1 pair nail pincers; 2 cast steel screw drivers, assorted; 1 pair flat nose pliers; 1 steel nail set; 1 hickory mallet; 1 carpenter's ratchet brace; 3 steel brace bits, assorted; 1 set of 9 cast steel auger bits, assorted; 1 pair steel compasses; 2 rosewood stock try squares, assorted; 1 cast steel back saw, 12 inches; 1 cast steel compass saw, 12 inches; 1 cast steel adze eye nail hammer; 1 screw wrench; 1 mortise gauge; 1 cutting gauge; 3 saw files, assorted; 1 cast steel panel saw, 18 inches; 1 cast steel panel saw, 26 inches; 1 cast steel rip saw, 28 inches; 1 key hole saw; 1 saw pad; 2 flat bastard files, assorted; 2 half round bastard files, assorted; 1 two foot boxwood rule; 2 steel brad awls, assorted; 1 bench vise; 2 hand screws; 3 steel nail gimlets, assorted; 1 iron bench screw; 1 wood rasp; 1 set of 12 extra quality firmer chisels, with hickory handles, assorted, ⅛ to 2 inch; 1 set of 9 extra quality firmer gouges with hickory handles, assorted ⅛ to 1½ inches; 1 cast steel shingling hatchet; 1 cast steel broad hatchet; 5 cast steel nut augers, assorted, 1, 1¼, 1½, 1¾, 2 inches; 2 patent auger handles; 1 pair steel cutting nippers; 1 glue pot and brush; 2 steel spike gimlets, assorted; 1 saw set; 1 pair match planes; 1 steel riveting hammer; 1 improved pipe wrench; 3 cast steel framing chisels, assorted, 1, 1½, 2 inch; 1 pair round nose pliers; 1 steel box opener; 1 hand drill; 8 steel twist drills, assorted.

Price..... $95 00

DESCRIPTION, NO. 10

Size of chest, 39 inches long, 22 inches wide, 19¼ inches deep. Made of selected chestnut and black walnut woods, nicely finished and varnished, hand dovetailed corners, heavy bands and base, has three sliding trays with partitions, saw and plane racks, strong drop handles and double link spring tumbler chest lock, containing 155 best quality assorted tools.

MACHINIST'S TOOL CHEST

NO. 1
EMPTY



FIG. 5936

These chests are made of selected hard woods. Each is provided with a Yale pattern lock, two keys, and a patent automatic locking device that locks the drawers by the closing of the lid; and each has a receptacle in the top 3⅛ inches or more deep that will hold a surface gauge with 3 inch base.

No. 00 One drawer and receptacle, each..... $8 50
Made of chestnut with black walnut moldings.

No. 1 Two drawers and receptacle, each..... $4 75
Made of chestnut with black walnut molding and panels.

No. 1 O Same in size as No. 1, each..... $6 00
Made of antique quartered oak.

No. 1 W Same in size as No. 1, each..... $6 00
Made of black walnut.

The No. 00 are 15½ inches long by 9½ inches wide by 9 inches high outside, and are packed two or four in a crate.

The No. 1 are 20⅝ inches long by 13 inches wide by 9⅞ inches high outside, and are packed one or two in a crate.

CONTENTS OF NO. 10.

1 smooth plane, double iron; 1 jack plane, double iron; 1 fore plane, double iron; 1 block plane; 1 cast steel shingling hatchet; 1 cast steel broad hatchet; 1 screw wrench; 1 mortise gauge; 1 marking gauge; 1 cutting gauge; 1 hack saw frame and 3 saws; 3 steel nail gimlets, assorted; 1 pair steel cutting nippers; 1 improved saw set; 2 steel spike gimlets, assorted; 1 set of 12 extra quality firmer chisels, with polished hickory handles, assorted, ⅛ to 2 inch; 1 set of 12 extra quality firmer gouges, with polished hickory handles, assorted, ⅛ to 2 inch; 5 steel nut augers, assorted, 1, 1¼, 1½, 1¾, 2 inch; 2 patent adjustable auger handles; 1 steel drawing knife; 1 two foot boxwood rule; 3 flat bastard files, assorted; 1 spokeshave, steel iron; 1 angular boring implement; 2 hand screws; 1 two foot steel square; 1 steel cold chisel; 1 steel punch for iron; 1 chalk line, reel, and awl; 1 cast steel panel saw, 18 inch; 1 cast steel panel saw, 26 inch; 1 cast steel rip saw, 28 inch; 1 cast steel back saw, 10 inch; 1 cast steel back saw, 14 inch; 1 cast steel compass saw, 12 inch; 1 hickory mallet; 1 cast steel adze eye nail hammer; 1 tool handle containing 9 assorted tools; 1 pair steel dividers; 1 rosewood stock sliding T bevel; 2 rosewood stock try squares, assorted; 1 steel brick trowel; 3 steel brad awls, assorted; 1 pair round nose pliers; 1 bench vise; 1 carpenter's ratchet brace; 1 set of 13 cast steel auger bits, assorted; 3 steel brace bits, assorted; 2 cast steel screw drivers, assorted; 1 pair flat nose pliers; 3 half round bastard files, assorted; 3 saw files, assorted; 1 improved bench stop; 1 oil stone, boxed; 1 brass oil can; 4 carpenters' lead pencils; 2 steel nail sets; assorted; 1 pair nail pincers; 1 mahogany plumb and level, two side views; 1 plumb bob; 1 iron bench screw; 1 measuring tape, 50 feet; 1 glue pot and brush; 1 cast steel pruning knife; 1 cabinet file; 1 wood rasp; 3 cast steel framing chisels, assorted, 1, 1½, 2 in.; 1 breast drill; 7 steel twist drills, assorted; 1 cast steel house carpenter's adze, with handle; 1 cast steel machinist's hammer; 1 Barnes patent pipe cutter; 1 cast steel riveting hammer; 1 revolving spring punch, 4 tubes. Price.....$135 00

PIPE FITTER'S TOOL CHEST

Made very strong from selected chestnut wood and nicely varnished. With hinge hasp for padlock and heavy japanned lifting handles. All the corners are bound with steel corner irons to prevent the chest being broken when handled roughly. Has a sliding tray for small tools. It is well adapted for machinists', blacksmiths', and carpenters' tools, or for any purpose where an extra strong chest is required.

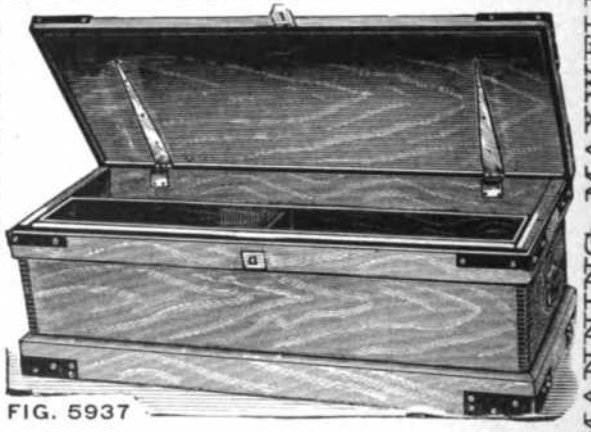


FIG. 5937

PRICES

Dimensions Outside.

Nos.	Sizes, Inches.	Each.
1	36 x 14 x 12	$15 00
2	45 x 16 x 14	17 00

EMPTY TOOL CHESTS

FOR THE USE OF FARMERS, PLANTERS, RAILROADS, MINES AND CARPENTERS

Nos.	OUTSIDE MEASURE Inches Long.	Inches Wide.	Inches Deep.	Prices, Each.	Nos.	OUTSIDE MEASURE Inches Long.	Inches Wide.	Inches Deep.	Prices, Each.
7	37¼	19¼	16¼	$14 00	11	39	22	19¼	$22 00
8	37¼	19¼	16¼	14 00	12	39	24¾	24	28 00
9	37¼	19¼	16¼	14 00	13	39	24¾	24	28 00
10	39	22	19¼	22 00					

These chests have secure spring chest lock and key and extra heavy folding lifting handles.

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WOOD HEAD DOUBLE CUT GIMLET

Best Cast Steel and Fully Warranted.

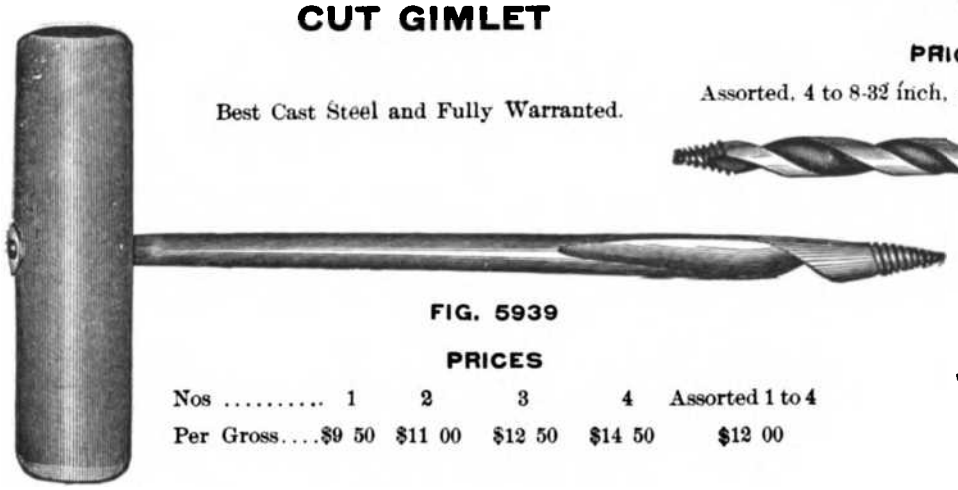


FIG. 5939

PRICES

Nos	1	2	3	4	Assorted 1 to 4
Per Gross	$9 50	$11 00	$12 50	$14 50	$12 00

STAR GIMLET

Wood Head.

PRICE, FIG. 5938

Assorted, 4 to 8-32 inch, per dozen.....$1 00



FIG. 5938

COUNTERSINKS

FLAT COUNTERSINK



FIG. 5941

Per dozen.....$2 50

ROSE FOR METAL

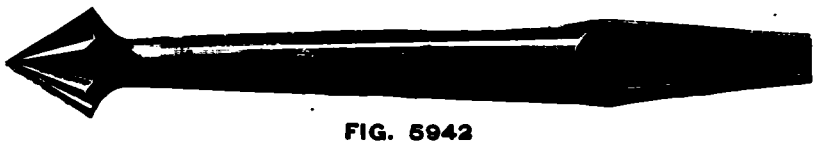


FIG. 5942

Per dozen.....$2 75

SNAIL FOR WOOD

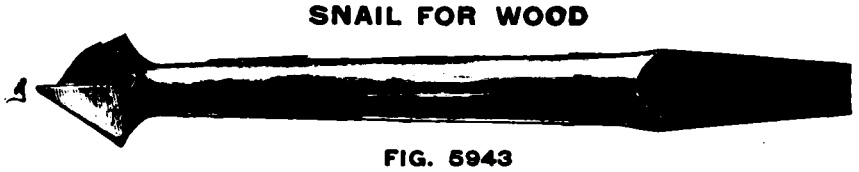


FIG. 5943

Per dozen.....$2 50

WHEELER'S COUNTERSINK FOR WOOD

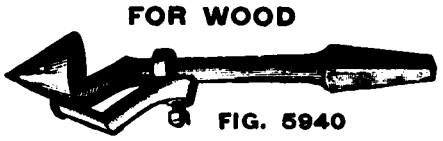


FIG. 5940

This Countersink works equally well for every variety of screw. The countersink cuts rapidly, and is easily sharpened by drawing a thin file lengthwise inside of cutter. By fastening the gauge at a given point, any number of screws may be driven so as to leave the heads flush with the surface, or at a uniform depth below it.

PRICES — Per Dozen.

No. 18	Countersinks, half dozen in a box	$3 00
" 20	" with gauge, half dozen in a box	4 50

CAST STEEL CENTER BIT

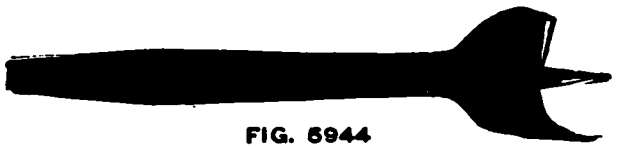


FIG. 5944

PRICES

Inches.	Black, per Dozen.	Bright, per Dozen.	Inches.	Black, per Dozen.	Bright, per Dozen.
1/8	$0 91	$1 14	7/8	$1 18	$1 41
9/64	91	1 14	15/16	1 25	1 47
1/4	91	1 14	1	1 25	1 47
9/16	91	1 14	1 1/8	1 50	1 79
3/8	91	1 14	1 1/4	1 75	2 04
7/16	1 00	1 22	1 3/8	2 00	2 29
1/2	1 00	1 22	1 1/2	2 25	2 54
9/16	1 06	1 29	1 5/8	2 50	2 83
5/8	1 06	1 29	1 3/4	2 75	3 08
11/16	1 12	1 35	1 7/8	3 00	3 33
3/4	1 12	1 35	2	3 50	3 88
13/16	1 18	1 41			

Assorted, 1/8 to 1 inch, black, $1.04; bright, $1.26 per dozen.

SHIP AUGERS

With Screws.



FIG. 5945

Without Screws.



FIG. 5946

L'HOMMEDIEU'S

With or Without Screws.

PRICES, FIGS. 5945 AND 5946

Sizes, Inches.	Per Dozen.	Sizes, Inches.	Per Dozen.	Sizes, Inches.	Per Dozen.	Sizes, Inches.	Per Dozen.
4-8 and under.	$7 50	10½ and 11-8	$18 00	17½ and 18-8	$72 00	25½ and 26-8	$187 00
4½ " 5-8	9 00	11½ " 12-8	21 00	18½ " 19-8	86 00	27½ " 28-8	216 00
5½ " 6-8	10 50	12½ " 13-8	24 00	19½ " 20-8	101 00	29½ " 30-8	245 00
6½ " 7-8	12 00	13½ " 14-8	25 50	20½ " 21-8	115 00	31½ " 32-8	274 00
7½ " 8-8	13 50	14½ " 15-8	31 50	21½ " 22-8	130 00	33½ " 36-8	330 00
8½ " 9-8	15 00	15½ " 16-8	38 00	22½ " 23-8	144 00		
9½ " 10-8	16 50	16½ " 17-8	57 00	23½ " 24-8	158 00		

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SHIP AUGER WITH RING



FIG. 5947

L'HOMMEDIEU'S
PRICES, WITH OR WITHOUT SCREWS

Sizes, Inches.	Per Dozen.	Sizes, Inches.	Per Dozen.
4-8 and under	$8 25	15½ and 16-8 and under	$41 80
4½ " 5-8 and under	9 90	16½ " 17-8 "	62 70
5½ " 6-8 "	11 55	17½ " 18-8 "	79 20
6½ " 7-8 "	13 20	18½ " 19-8 "	94 60
7½ " 8-8 "	14 85	19½ " 20-8 "	111 10
8½ " 9-8 "	16 50	20½ " 21-8 "	126 50
9½ " 10-8 "	18 15	21½ " 22-8 "	143 00
10½ " 11-8 "	19 80	22½ " 23-8 "	158 40
11½ " 12-8 "	23 10	23½ " 24-8 "	173 80
12½ " 13-8 "	26 40	29½ " 30-8 "	260 50
13½ " 14-8 "	28 05	35½ " 36-8 "	363 00
14½ " 15-8 "	34 65		

SNELL'S
PRICES, WITH OR WITHOUT SCREWS

Sizes, Inches,	Per Dozen.	Sizes, Inches,	Per Dozen.
4 and under	$8 25	15½ and 16-8 and under	$41 80
4½ " 5-8 and under	9 90	16½ " 17-8 "	62 70
5½ " 6-8 "	11 55	17½ " 18-8 "	79 20
6½ " 7-8 "	13 20	18½ " 19-8 "	94 60
7½ " 8-8 "	14 85	19½ " 20-8 "	111 10
8½ " 9-8 "	16 50	20½ " 21-8 "	126 50
9½ " 10-8 "	18 15	21½ " 22-8 "	143 00
10½ " 11-8 "	19 80	22½ " 23-8 "	158 40
11½ " 12-8 "	23 10	23½ " 24-8 "	173 80
12½ " 13-8 "	26 40	29½ " 30-8 "	260 50
13½ " 14-8 "	28 05	35½ " 36-8 "	363 00
14½ " 15-8 "	34 65		

In sets, 29½ quarters, 1 each, 6, 7, 8, 10, 12, 16-8ths (six augers), $10.50 per set.

In ordering be particular to state whether with or without screw.

LONG MILL-WRIGHT AUGER



FIG. 5953

PRICES
FIG. 5953
Solid Cast Steel.

In.	Per Dozen.
½	$12 00
9/16	15 00
⅝	15 00
11/16	18 00
¾	18 00
13/16	21 00
⅞	21 00
15/16	24 00
1	24 00
1⅛	26 00
1¼	30 00
1⅜	36 00
1½	38 50
1⅝	41 00
1¾	42 00
1⅞	45 00
2	48 00

With rings, add $1.50 per dozen to list.

SOLID CAST STEEL SHORT RING AUGER



FIG. 5948

BLACK LIP

Inches.	Per Dozen.	Inches.	Per Dozen.	Inches.	Per Dozen.
⅜	$9 50	1¼	$15 50	2½	$53 50
½	9 50	1⅜	18 50	2¾	65 50
⅝	10 50	1½	18 50	3	75 50
¾	11 50	1⅝	21 50	3¼	85 50
⅞	12 50	1¾	21 50	3½	95 50
1	13 50	2	25 50	3¾	105 50
1⅛	14 50	2¼	43 50	4	125 50

SOLID CAST STEEL CARPENTER'S NUT AUGER

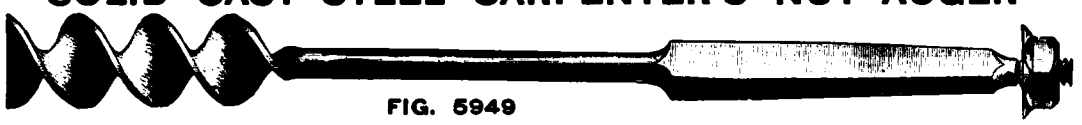


FIG. 5949

Inches.	Per Dozen.	Inches.	Per Dozen.	Inches.	Per Dozen.
⅜	$6 00	1¼	$12 00	2½	$50 00
½	6 00	1⅜	15 00	2¾	60 00
⅝	7 00	1½	15 00	3	70 00
¾	8 00	1¾	18 00	3¼	80 00
⅞	9 00	2	22 00	3½	90 00
1	10 00	2⅛	38 00	3¾	100 00
1⅛	11 00	2¼	40 00	4	120 00

LONG CUBAN AUGER

PRICES
FIG. 5954
Solid Cast Steel with Ring.

In.	Per Dozen.
⅜	$10 00
½	10 00
⅝	11 00
¾	12 00
⅞	13 00
1	14 00
1⅛	15 00
1¼	16 00
1⅜	19 00
1½	19 00
1⅝	22 00
1¾	22 00
1⅞	24 00
2	26 00
2⅛	44 00
2¼	44 00
2½	54 00
3	76 00
3¼	86 00
3½	96 00
3¾	106 00
4	126 00

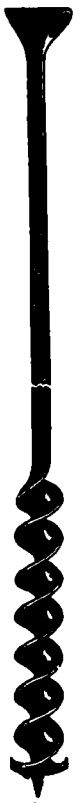


FIG. 5954

BORING MACHINE AUGER

Solid Cast Steel.



FIG. 5950

In.	Per Doz.	In.	Per Doz.	In.	Per Doz.
¼	$10 00	¾	$10 00	1⅜	$16 00
⅜	10 00	⅞	10 00	1½	17 00
7/16	10 00	1	12 00	1¾	20 00
½	10 00	1⅛	13 00	2	24 00
⅝	10 00	1¼	14 00		

IN SETS ASSORTED.

18 quarters (1 each 4, 6, 8, quarters)..... $4 50
23 " (1 " 4, 5, 6, 8 quarters)..... 5 50
41 " (1 " ½, ⅝, ¾, ⅞, 1, 1¼, 1½, 1¾, 2 inch)..10 25

BORING MACHINE SHIP AUGER



FIG. 5951

In.	Per Doz.	In.	Per Doz.	In.	Per Doz.	In.	Per Doz.
½	$8 25	⅞	$13 25	1¼	$18 20	1¾	$28 00
⅝	10 00	1	15 00	1½	23 10	2	34 50
¾	11 50	1⅛	16 50				

IN SETS ASSORTED.

18 quarters (1 each, 4, 6, 8 quarters)..... $6 25
23 " (1 " 4, 5, 6, 8 quarters)..... 7 75
41 " (1 " ½, ⅝, ¾, ⅞, 1, 1¼, 1½, 1¾, 2 inch)..... 13 75

These augers are designed especially for boring hard wood.

SOLID CAST STEEL POST AUGER

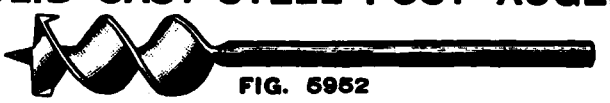


FIG. 5952

Inches.	Per Dozen.	Inches.	Per Dozen.	Inches.	Per Dozen.
1¾	$25 00	2¼	$36 00	2¾	$50 00
2	30 00	2½	45 00	3	56 00

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREETS, NEW YORK.

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SHIP AUGER BIT

With or Without Screw.



FIG. 5955

Sizes in 8ths,	2 to 4	4½ and 5	5½ and 6	6½ and 7
Per dozen,	$6 00	$7 50	$9 00	$10 50
Sizes in 8ths,		7½ and 8	8½ and 9	9½ and 10
Per dozen,		$12 00	$13 50	$15 00

In sets, one each size from 2 to 8-8ths, per set..... 9 00

In ordering, be particular to state whether with or without screw.

SHIP AUGER CAR BIT

12 Inch Twist.



FIG. 5956

PRICES

Sizes in 8ths,	2½	3	3½	4	4½	5	5½	6	6½		
Per dozen,	$8 50	$9 00	$9 50	$10 00	$10 50	$11 00	$11 50	$12 00	$12 50		
Sizes in 8ths,	7	7½	8	8½	9	9½	10	10½	11		
Per dozen,	$13 00	$14 00	$14 50	$15 50	$16 00	$17 00	$17 50	$18 50	$19 00		
Sizes in 8ths,	11½	12	12½	13	13½	14	14½	15			
Per dozen,	$21 50	$22 00	$25 00	$25 50	$26 00	$26 50	$27 50	$28 00			

SOLID CAST STEEL CAR BIT

12 Inch Twist.



FIG. 5957

PRICES

Sizes in 16ths,	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	20	
Per dozen,	$6 50	$6 50	$7 50	$9 00	$10 25	$11 25	$12 75	$13 25	$15 50	$16 50	$17 75	$18 75	$20 50	$24 00	$27 00	$30 00	

In Sets, Assorted. Per Set.

21 quarters, 1 each, 5, 6, 7, 9, 10, 11, 12; and 2 of 4 and 8-16ths..... $9 50
24 " 1 " 4, 5, 7, 9, 11, 12; and 2 of 6, 8 and 10-16ths..... 10 50
32½ " 1 " size from 4 to 16-16ths, inclusive..... 14 00



FIG. 5958

SINGLE TWIST EXTENSION LIP AUGER BIT

No. 1½. Solid Cast Steel, Full Polished.

PRICES

Sizes in 16ths,	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Per dozen,	$6 00	$6 00	$6 00	$6 00	$6 00	$6 00	$7 50	$7 50	$9 00	$9 00	$10 50	$10 50	$12 00	$12 00

Assorted, In Sets. Per Set.

18 Bits, 32½ quarters, 1 each, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16-16ths..... $9 00
9 " 18 " 1 " 4, 5, 6, 7, 8, 9, 10, 11, 12-16ths..... 5 25
6 " 14 " 1 " 4, 5, 6, 8, 12, 16-16ths..... 3 88

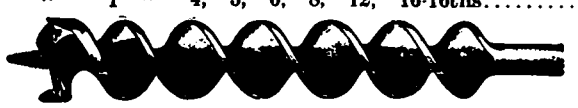


FIG. 5959

EXTENSION LIP AUGER BIT

No. 10. Solid Cast Steel. Full Polished.

PRICES

Sizes in 16ths,	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	22	24
Per dozen,	$3 40	$3 00	$3 40	$3 80	$4 40	$4 80	$5 20	$5 60	$6 10	$6 60	$7 20	$7 80	$8 40	$9 00	$9 60	$10 20	$19 80	$11 40	$12 60	$13 80
Quarters,		18		24		32½														
In sets, per set,		$3 60		$4 75		$6 25														

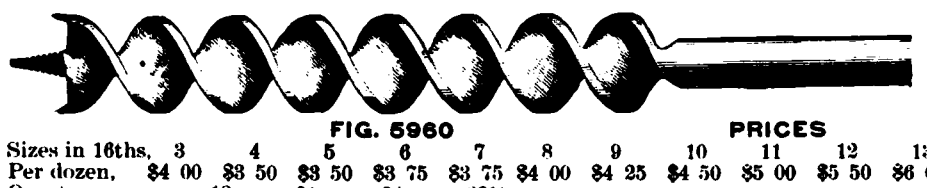


FIG. 5960

LIP AND SPUR AUGER BIT

No. 30. Solid Cast Steel, Full Polished.

PRICES

Sizes in 16ths,	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	20	22	24	
Per dozen,	$4 00	$3 50	$3 50	$3 75	$3 75	$4 00	$4 25	$4 50	$5 00	$5 50	$6 00	$6 50	$7 25	$8 00	$9 00	$10 00	$11 00	$12 00	$14 00	
Quarters,		18		21		24		32½												
In sets, per set,		$3 25		$3 80		$4 25		$5 75												

JENNINGS PATTERN CAR BIT

SOLID CAST STEEL, 12 INCH TWIST

Sizes in 16ths,	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	20
Per dozen,	$6 00	$6 80	$7 60	$8 80	$9 60	$10 40	$11 20	$12 20	$13 20	$14 40	$15 60	$16 80	$18 00	$19 20	$20 40	$22 80

IN BIT BOX

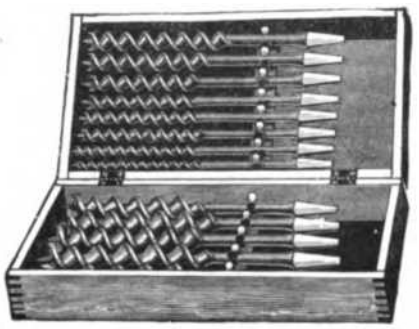


FIG. 5961

AUGER BITS IN SETS.

This Bit Box is provided with strong, durable springs, which hold the bits firmly in place.

Per Set.

Set No. 101½, comprising 13 Single Twist Extension Lip Auger Bits, No. 1½, 32½ quarters, one each, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 and 16-16ths inch..... $9 00
" 110, comprising 13 Extension Lip Auger Bits, No. 10, 32½ quarters, 1 each, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 and 16-16ths inch... 6 25
" 130 comprising 13 Lip and Spur Auger Bits, No. 30, 32½ quarters, one each, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 and 16-16ths inch..... 5 00

IN FLEXIBLE CANVAS BIT ROLL

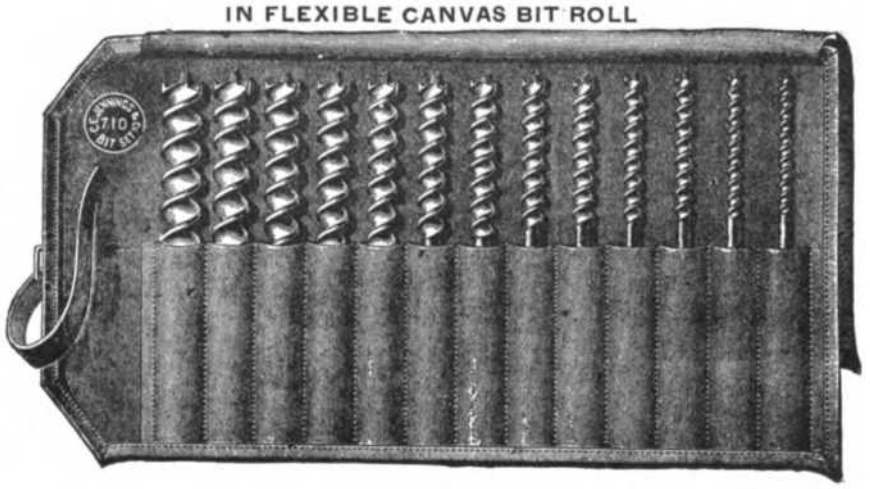




FIG. 5962

These Bit Rolls are designed especially for mechanics who carry their tools about with them. They are made of dark colored canvas, lined with Canton flannel. There is a separate pocket for each bit. The points and cutting edges are protected by a flap. When folded the roll complete measures only 11 by ` inches. Per Set.

Set No. 701½, comprising 13 Single Twist Extension Lip Auger Bits, No. 1½, 32½ quarters, one each, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 and 16-16ths..... $9 00
" 710, comprising 13 Extension Lip Auger Bits, No. 10, 32½ quarters, one each, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 and 16-16ths..... 6 50
" 730, comprising 13 Lip and Spur Auger Bits, No. 30, 32½ quarters, one each, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15 and 16-16ths..... 5 25

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FORSTNER AUGER BITS

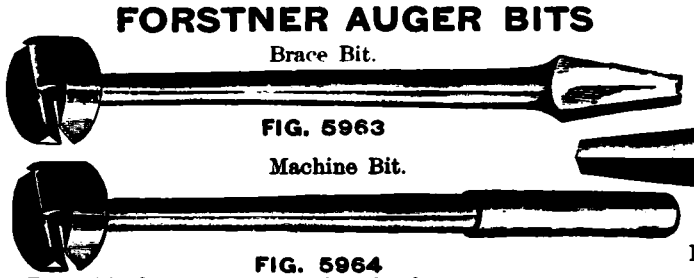


FIG. 5963

FIG. 5964

Brace bits have square tapering shanks. Machine Bits have round shanks, ⅜ and ⅝ diameter, or any size to fit lathe chucks. Length of machine shanks, 5 inches. Cabinet Machine Bit has threaded shank and square shoulder to fit doweling machines. Bits with Cabinet Machine Shank, packed half dozen in a box. Prices and estimates on application.

Sizes	⅜	7/16	⅝	9/16	⅝
Brace Bit, each	$0 45	$0 55	$0 55	$0 65	$0 65
Machine Bit, each	0 65	0 75	0 75	0 85	0 85
Sizes	11/16	⅝	13/16	⅞	15/16
Brace Bit, each	$0 80	$0 80	$0 90	$0 90	$1 00
Machine Bit, each	1 00	1 00	1 10	1 10	1 20
Sizes	⅝	⅝	17/16	1⅛	1⅛
Brace Bit, each	$1 00	$1 05	$1 05	$1 15	$1 25
Machine Bit, each	1 20	1 25	1 25	1 35	1 45

Special Sizes.

Size	¼ with spiral shank				
Brace Bit, each	$0 60				
Machine Bit, each	0 75				
Sizes	5/16 with spiral shank		13/16	15/16	
Brace Bit, each	$0 60		$1 15	$1 25	
Machine Bit, each	0 75		1 35	1 45	
Sizes	1½	1⅝	1¾	1⅞	2
Brace Bit, each	$5 00	$7 00	$7 00	$9 00	$9 00
Machine Bit, each	5 00	7 00	7 00	9 00	9 00

CLARK'S OR STEER'S EXPANSIVE BIT

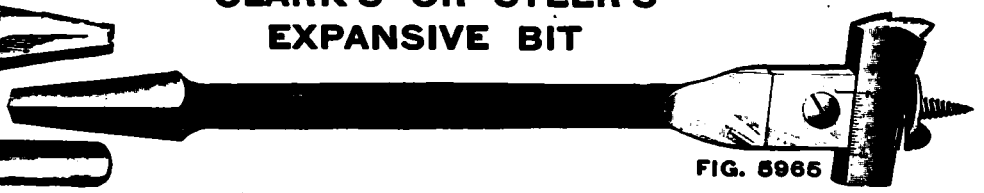


FIG. 5965

No. 1	With two cutters, cutting from ⅞ to 3 inches, per dozen	$26 00
" 2	" " " " ⅝ to 1¾ " "	18 00

SOLID CENTER STEM BIT



FIG. 5967

For Double and Single Cutter.

Sizes, 16ths	3	4	4½	5	5½	6	6½	7	7½	8	8½
Per dozen	$3 50	$3 00	$3 40	$3 40	$3 80	$3 80	$4 40	$4 40	$4 80	$4 80	$5 20
Sizes, 16ths	9	10	11	12	13	14	15	16	17	18	19
Per dozen	$5 20	$5 60	$6 10	$6 60	$7 20	$7 80	$8 40	$9 00	$9 60	$10 20	$10 80
Sizes, 16ths	20	21	22	23	24	26	28	30	32		
Per dozen	$11 40	$12 00	$12 60	$13 20	$13 80	$15 00	$16 20	$17 40	$18 60		
Sets			20½ qrs.		24 qrs.		25½ qrs.		32½ qrs.		
Each			$4 25		$4 75		$5 00		$6 25		

POWER MACHINE BITS

SOLID CAST STEEL DOUBLE TWIST



FIG. 5968

Sizes.	Twist 2 to 6 In. Long. Doz.	Each.	Twist 6 to 9 In. Long. Doz.	Each.	Twist 9 to 12 In. Long. Doz.	Each.	Twist 12 to 15 In. Long. Doz.	Each.	Twist 15 to 20 In. Long. Doz.	Each.
4/16	$6 00	$0 55	$6 60	$0 60	$7 20	$0 65	$7 80	$0 70	$8 40	$0 80
5/16	6 50	60	7 15	65	7 80	75	8 60	80	9 10	85
6/16	7 00	65	7 70	75	8 40	80	9 10	85	9 80	90
7/16	8 25	75	9 10	85	9 90	90	10 70	1 00	11 60	1 05
8/16	9 50	85	10 50	95	11 40	1 05	12 40	1 10	13 30	1 20
9/16	10 50	95	11 50	1 05	12 60	1 15	13 70	1 25	14 70	1 35
10/16	11 50	1 05	12 65	1 10	13 80	1 25	15 00	1 35	16 10	1 50
11/16	12 50	1 15	13 75	1 25	15 00	1 35	16 25	1 50	17 50	1 60
12/16	14 00	1 25	15 40	1 40	16 80	1 50	18 20	1 65	19 60	1 75
13/16	15 50	1 40	17 00	1 55	18 60	1 65	20 20	1 80	21 70	1 95
14/16	16 75	1 50	18 50	1 65	20 10	1 80	21 80	1 95	23 50	2 10
15/16	18 00	1 60	19 80	1 75	21 60	1 95	23 40	2 10	25 20	2 25
16/16	19 50	1 70	21 50	1 90	23 40	2 10	25 40	2 20	27 30	2 40
17/16	21 00	1 85	23 10	2 05	25 20	2 25	27 30	2 40	29 40	2 60
18/16	22 50	2 00	24 75	2 20	27 00	2 35	29 25	2 60	31 50	2 75
19/16	24 00	2 10	26 40	2 30	28 80	2 50	31 20	2 75	33 60	2 95
20/16	25 50	2 25	28 00	2 50	30 60	2 70	33 20	2 95	35 70	3 15
21/16	27 00	2 35	29 70	2 60	32 40	2 85	35 20	3 05	37 80	3 30
22/16	28 50	2 50	31 40	2 75	34 20	3 00	37 00	3 26	40 00	3 50
23/16	30 00	2 60	33 00	2 85	36 00	3 15	39 00	3 35	42 00	3 60
24/16	31 50	2 75	34 70	3 00	37 80	3 30	41 00	3 60	44 10	3 85
25/16	33 00	2 85	36 30	3 15	39 60	3 40	43 00	3 70	46 20	4 00
26/16	34 50	3 00	38 00	3 30	41 40	3 60	45 00	3 90	48 30	4 20
27/16	36 00	3 10	39 60	3 40	43 20	3 75	46 80	4 05	50 40	4 35
28/16	37 50	3 25	41 25	3 55	45 00	3 90	48 75	4 25	52 50	4 55
29/16	39 00	3 35	43 00	3 70	46 80	4 05	50 70	4 40	54 60	4 70
30/16	40 50	3 50	44 50	3 85	48 60	4 20	52 70	4 55	56 70	4 90
31/16	42 00	3 60	46 25	4 00	50 40	4 35	54 60	4 70	58 80	5 05
32/16	43 50	3 75	48 00	4 15	52 20	4 50	56 60	4 90	61 00	5 25

No extra charge for turning shanks on Machine Bits to any size required, provided they are straight and do not exceed 3 inches in length or 9/16 inch diameter. For shanks exceeding these dimensions, an extra charge will be made. In furnishing special shanks to order, we will not be held responsible for perfect fit, unless we are furnished a sample shank of exact size desired. All bits made by odd 32ds will be charged the price of the 16th larger.

BIT GAUGE



FIG. 5974

This cut shows the gauge in all its parts. It will be seen that one bolt with thumb screw tightens the clamps on the gauge spindle and auger bit at the same time. It will fit any size bit and exactly gauge the depth of hole to be bored. Per dozen, $3.00.

ACME POINT NO. 2



FIG. 5969

SHIP AUGER NO. 3



FIG. 5970

SINGLE TWIST NO. 4



FIG. 5971

Styles Nos. 2, 3 and 4 are only made to order. Prices quoted on application.

DOUBLE SPUR PLUG BIT

Solid Cast Steel.

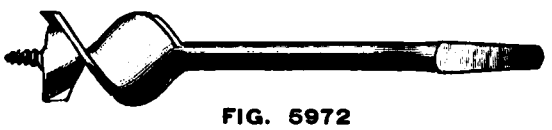


FIG. 5972

With Coarse Screw.

Sizes in 16ths	12	13	14	15	16
Per dozen	$5 50	6 00	6 50	7 25	8 00
Sizes in 16ths	17	18	20	22	24
Per dozen	$9 00	10 00	11 00	12 00	14 00

COOPER'S DOWEL BIT

Solid Cast Steel.



FIG. 5973

2½ Inch Twist.

Sizes in 16ths	3	4	5	6	7
Per dozen	$4 00	3 50	3 50	3 75	3 75
Sizes in 16ths	8	9	10	11	12
Per dozen	$4 00	4 25	4 50	5 00	5 50

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BORING MACHINES

WOOD FRAMES — NOS. 3, 4 AND 5 — GRADUATED WAYS — NOS. 1 AND 2

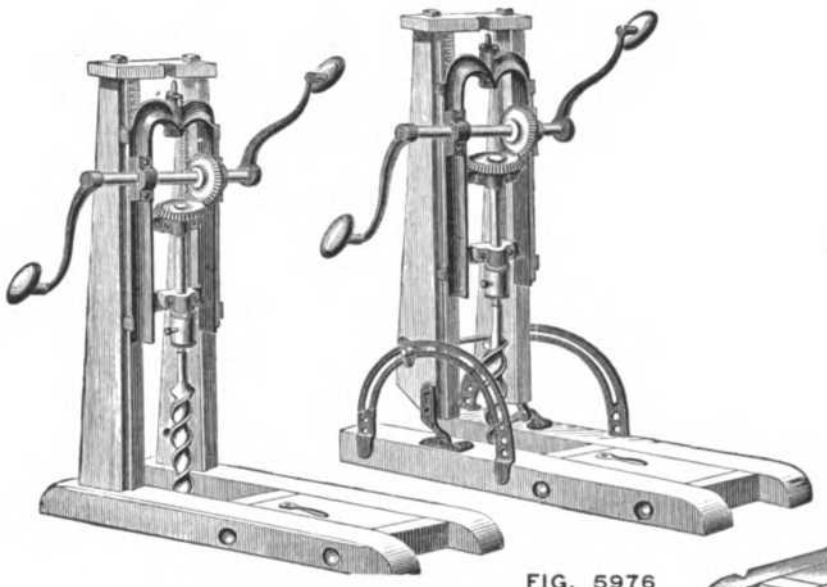


FIG. 5975

FIG. 5976

IRON FRAMES — ANGULAR — GRADUATED WAYS — UPRIGHT

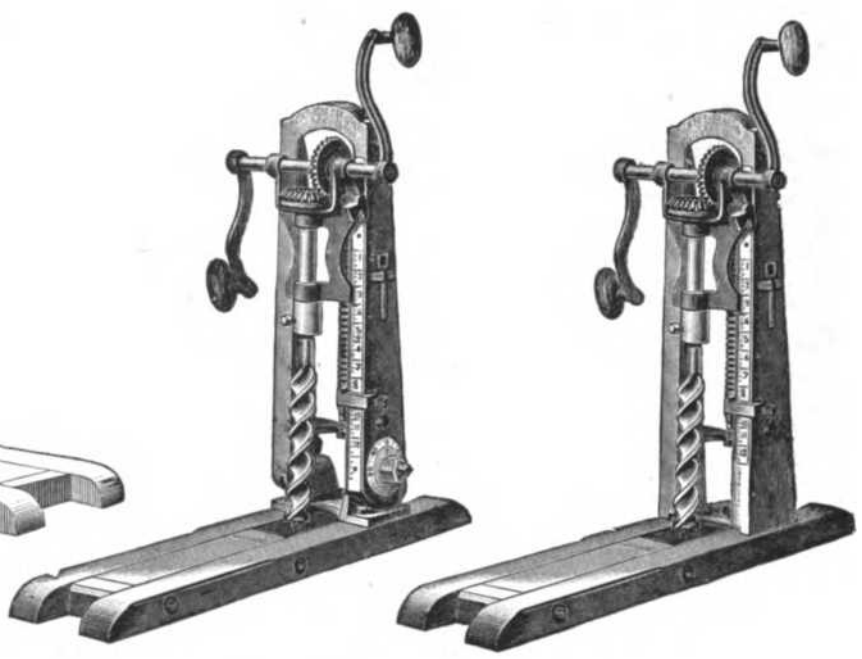


FIG. 5977

FIG. 5978

An important feature is the rack, which is easily swung into the beveled gear, and by turning the handles in the same direction as in boring the auger is withdrawn. A reverse motion of the handles throws the rack out of gear. Two in a case.

PRICES, WITHOUT AUGERS

Nos.		Each.
1	Angular, polished gear	$10 00
2	"	6 75
3	Upright, polished gear	8 50
4	"	7 50
5	"	5 50

PRICES

	Each.
Angular, painted standard, without augers	$10 75
Upright, " " " "	8 50

Two in a case.

STEEL ROD FRAME BORING MACHINE

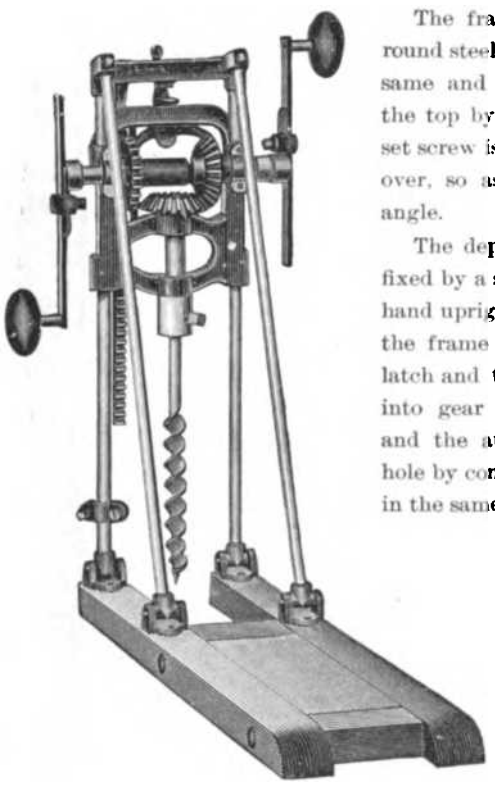


FIG. 5979

The frame is made of half inch round steel rods; the braces are the same and attached to the rods at the top by a set screw. When this set screw is loosened the frame falls over, so as to bore at any desired angle.

The depth of hole to be bored is fixed by a stop, as shown on the left-hand upright rod in the cut. When the frame strikes this stop, lift the latch and the machine throws itself into gear by the use of a spring, and the auger is lifted out of the hole by continuing to turn the crank in the same direction.

When the auger is drawn from the hole, the frame hangs itself up until the machine is moved to the next hole; then it is dropped down by turning the crank back until the auger strikes the wood, when it is thrown out of gear and proceeds to bore the next hole. As seen in the cut, the machine has adjustable cranks which fully regulate its speed and power.

PRICE

Machine, without augers.....$7 50

AJAX WOOD BORER

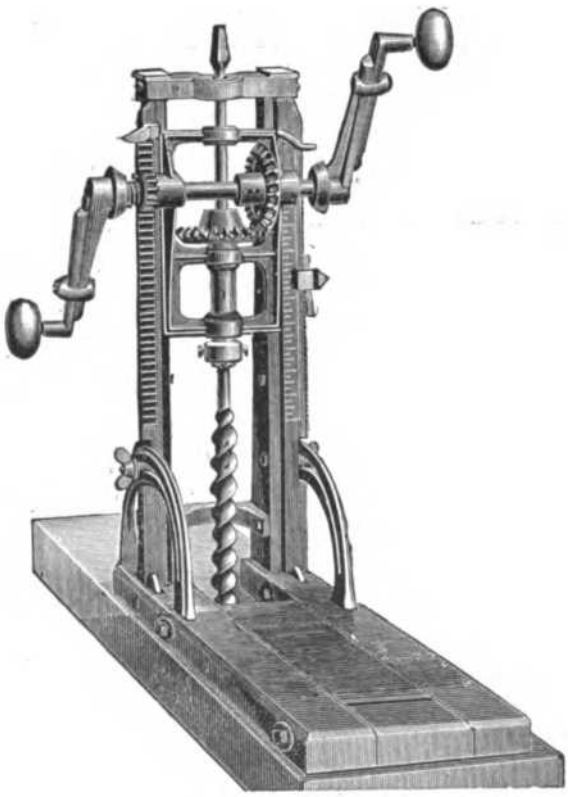


FIG. 5980

It is self withdrawing, and will hold in its chuck any shaped auger bit, round or square, or bit brace ends.

It can be set to bore any depth of hole, and when the required depth is reached withdraws quickly by the same motion, automatically, without stopping.

It folds compactly, requiring but little space in a carpenter's chest. It has extension arms.

PRICE

Without augers.....$6 50

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AUGER HANDLE

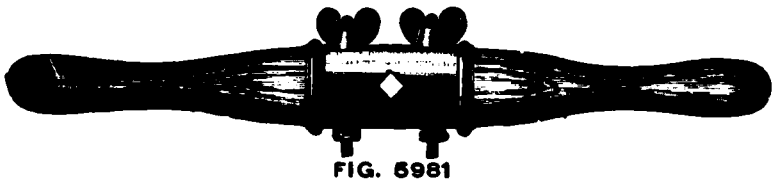


FIG. 5981

These handles will take and center correctly augers of all sizes and shapes. A steel band 3 inches long and 3/16 thick is made to fit the handle. This band is cut lengthwise into two equal sections, which are operated by the two steel screws with thumb nuts, as seen in the cut. These sections can be opened wide enough to let the auger shank pass in without removing the nut on the end.

PRICE

Made of ash wood, per dozen.....$6 00
No. 1, 14 inches long. No. 2, 17 inches long. Both same price.

GUNN'S RATCHET AUGER HANDLE

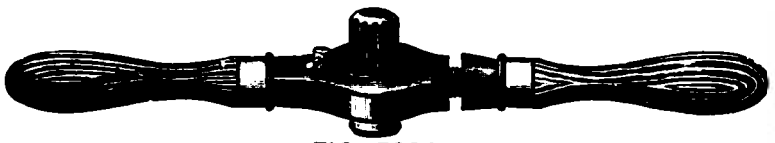


FIG. 5983

Will center and hold auger shanks of all sizes and shapes. It is not necessary to change the hands from one end to the other when using this handle. It can be made stationary or to ratchet either way. One handle may be taken off when working in a narrow place or next to a wall. The working parts are of malleable iron and steel, and the handles are of second growth ash. We send out an attachment with each handle, by the use of which the tool can be used as a ratchet drill. Length, 16 inches; weight, 1½ pounds.

PRICE

No. 5. Per dozen.....$15 00

CARPENTERS' SLICKS

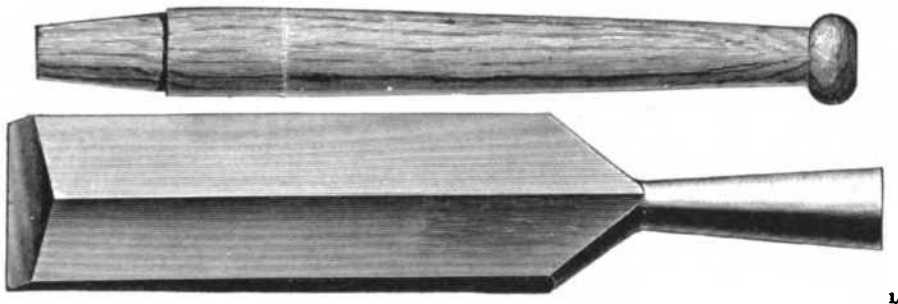


FIG. 5985

PRICES

Sizes, inches...	2½	2¾	3	3¼	3½	3¾	4
Per dozen.....$40 00		$42 00	$44 00	$48 00	$52 00	$56 00	$60 00

Quarter dozen in a wooden box.

SOCKET FRAMING CHISELS

OVAL BACK

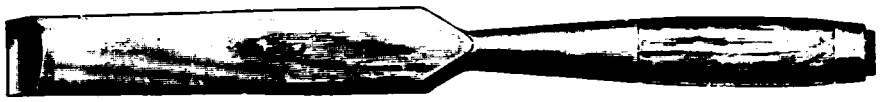


FIG. 5986

BEVEL BACK



FIG. 5987

PRICES

8 INCH BLADES

Sizes, inches	¼	5/16	⅜	7/16	½	⅝	¾	⅞	1
Per dozen..	$12 00	$12 00	$12 00	$12 00	$12 00	$13 00	$14 00	$15 00	$16 00
Sizes, inches	1⅛	1¼	1½	1¾	2	2¼	2½	2¾	3
Per dozen..	18 00	18 00	20 00	22 00	24 00	28 00	32 00	36 00	40 00

Half dozen in a wooden box.

ASSORTED IN SETS

Sizes, inches, ¼ to 3 (16)—All sizes except 7/16 and 1⅛.....Per set, $30 00
" " ¼ to 2 (12)—¼, 5/16, ⅜, ½, ⅝, ¾, ⅞, 1, 1¼, 1½, 1¾, 2.. " 18 00
" " ¼ to 2 (9)—¼, ⅜, ½, ⅝, ¾, 1, 1¼, 1½, 2..... " 14 00
" " ¼ to 2 (6)—¼, ½, ¾, 1, 1½, 2..... " 10 00

One set in a wooden box.

ROGER'S AUGER HANDLE



FIG. 5982

Is more compact than when made entirely of wood, and can be taken apart at any time and laid away in small compass. The main body is made of malleable iron, with polished ash handles at the ends.

PRICE

No. 3. Length, 16 inches; weight, 21 ounces. Price, per dozen...$4 50

RATCHET AUGER HANDLE

The chuck of this ratchet auger handle will hold almost every size of auger and bit shanks in the market. It opens wide enough to take in auger shanks with the nuts on. It can be made fixed so as to be used like a common auger handle, or by putting on the ratchet it can be used with both handles, but without shifting the hands. In cramped places one handle is taken off and placed at a right angle with the other, as seen in the cut. The wood on the detachable handle revolves. The metal part of the handle is polished and nickel plated. It also answers the purpose of a ratchet drill.

PRICE

No. 4. Per dozen.....$24 00

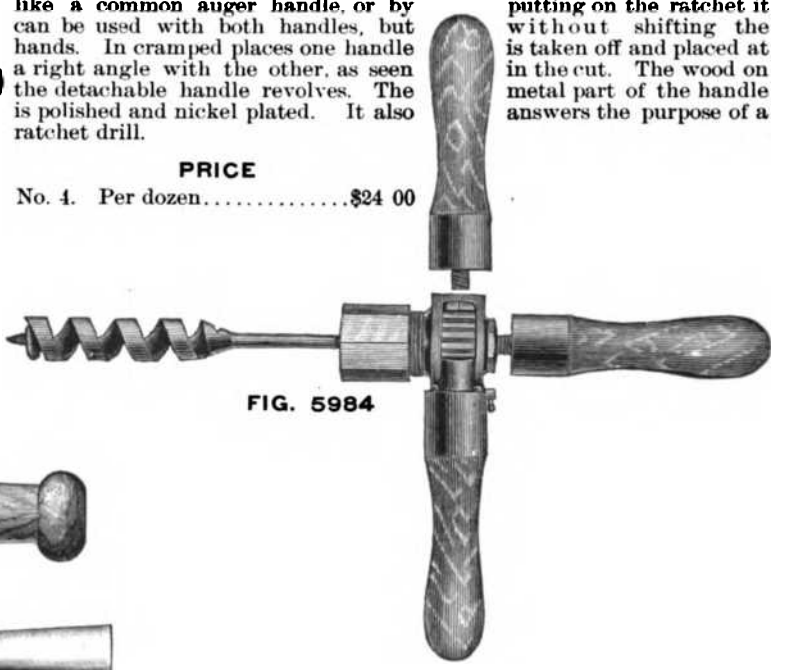


FIG. 5984

CORNER CHISELS

PRICES, FIG 5988

½	inch,	per	dozen	$22 00
⅝	"	"	"	24 00
¾	"	"	"	28 00
⅞	"	"	"	30 00
1	"	"	"	32 00
1⅛	"	"	"	34 00
1¼	"	"	"	36 00
1½	"	"	"	40 00

Half a dozen in a wooden box.

SOCKET FRAMING MILLWRIGHTS' CHISELS

10 INCH BLADES

¼	inch,	per	dozen	$15 00
5/16	"	"	"	17 00
⅜	"	"	"	18 00
7/16	"	"	"	19 00
½	"	"	"	19 00
9/16	"	"	"	20 00
⅝	"	"	"	20 00
¾	"	"	"	21 00
⅞	"	"	"	22 00
1	"	"	"	24 00
1¼	"	"	"	26 00
1⅜	"	"	"	30 00
1½	"	"	"	30 00
1¾	"	"	"	33 00
2	"	"	"	36 00

Half dozen in a wooden box.

ASSORTED IN SETS Per Set.

Inches, ¼ to 2 (12)—¼, 5/16, ⅜, ½, ⅝, ¾, ⅞, 1, 1¼, 1½, 1¾, 2.....$25 00
" ¼ to 2 (9)—¼, ⅜, ½, ⅝, ¾, 1, 1¼, 1½, 2..... 21 00
" ¼ to 2 (6)—¼, ½, ¾, 1, 1½, 2..... 15 00

One set in a wooden box.



FIG. 5988

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BEVELED SOCKET FIRMER CHISEL

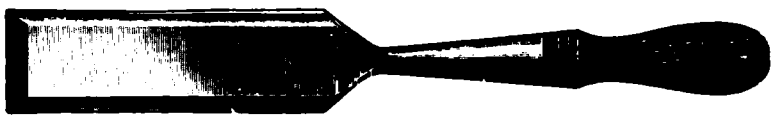


FIG. 5989

PRICES

No. 250, 6½ inch blades.

Inches	⅛	¼	⅜	½	⅝	¾	⅞
Per dozen	$8 00	8 00	8 00	9 00	10 00	11 00	11 00
Inches		1	1⅛	1¼	1½	1¾	2
Per dozen		$12 00	13 00	13 00	14 00	15 00	16 00

Half dozen in a wooden box.

Assorted in sets.

Inches, ⅛ to 2 (12)—⅛, ¼, ⅜, ½, ⅝, ¾, ⅞, 1, 1¼, 1½, 1¾, 2, per set, $11 25
" ¼ " 2 (8)—¼, ¾, ½, ¾, 1, 1¼, 1½, 2 " 8 25
" ⅛ " 1½ (9)—⅛, ¼, ⅜, ½, ⅝, ¾, 1, 1¼, 1½ " 7 75

Add 50 cents per dozen for beveling. One set in a wooden box.
These chisels, 12 in a set, are packed in a hinged top box.

SOCKET FIRMER CHISEL



FIG. 5990

PRICES

6½ inch blades.

Inches	⅛	¼	⅜	½	⅝	¾	⅞
Per dozen	$8 00	8 00	8 00	9 00	10 00	11 00	11 00
Inches		1	1⅛	1¼	1½	1¾	2
Per dozen		$12 00	13 00	13 00	14 00	15 00	16 00

Half dozen in a wooden box.

Assorted in sets.

Inches, ⅛ to 2 (12)—⅛, ¼, ¾, ½, ⅝, ¾, ⅞, 1, 1¼, 1½, 1¾, 2..per set, $11 25
" ¼ " 2 (8)—¼, ⅜, ½, ¾, 1, 1¼, 1½, 2 " 8 25
" ⅛ " 1½ (9)—⅛, ¼, ¾, ½, ⅝, ¾, 1, 1¼, 1½ " 7 75

One set in a wooden box.

SOCKET PARING CHISEL



FIG. 5991

PRICES

7½ inch blades.

Inches	⅛	¼	⅜	½	⅝	¾	⅞	1
Per dozen	$5 00	6 25	6 50	7 50	8 00	8 50	9 00	9 50
Inches		1¼	1½	1¾	2	2¼	2½	3
Per dozen		$10 50	11 50	12 00	13 00	16 00	20 00	26 00

Half dozen in a wooden box.

Assorted in sets.

Inches, ⅛ to 2 (12)—⅛, ¼, ⅜, ½, ⅝, ¾, ⅞, 1, 1¼, 1½, 1¾, 2....per set, $10 00
" ¼ to 2 (8)—¼, ⅜, ½, ¾, 1, 1¼, 1½, 2 " 7 50

One set in a wooden box.

SOCKET FIRMER MILLWRIGHT'S CHISEL



FIG. 5992

PRICES

8 inch blades.

Inches	⅛	¼	⅜	½	⅝	¾	⅞
Per dozen	$5 50	6 25	6 50	7 50	8 00	9 25	9 75
Inches	1	1¼	1½	1¾	2	2½	3
Per dozen	$10 50	11 00	12 00	12 50	13 50	21 00	27 00

Half dozen in a wooden box.

Assorted in sets.

Inches, ⅛ to 2 (12)—⅛, ¼, ⅜, ½, ⅝, ¾, ⅞, 1, 1¼, 1½, 1¾, 2...per set, $13 50
" ¼ to 2 (8)—¼, ⅜, ½, ¾, 1, 1¼, 1½, 2 " 12 00

One set in a wooden box.

SOCKET FIRMER GOUGE

Outside bevel.



FIG. 5993

PRICES

6½ inch blades.

Inches	⅛	¼	⅜	½	⅝	¾
Per dozen	$5 00	5 75	6 00	7 00	8 00	8 50
Inches	⅞	1	1¼	1½	1¾	2
Per dozen	$9 00	9 50	10 50	11 50	12 00	13 00

Assorted in sets.

Inches, ⅛ to 2 (12)—⅛, ¼, ⅜, ½, ⅝, ¾, ⅞, 1, 1¼, 1½, 1¾, 2, per set, $10 00
" ¼ to 2 (8)—¼, ½, ¾, 1, 1¼, 1½, 1¾, 2 " 7 50

Furnished with inside bevel at same prices.

SOCKET FIRMER MILLWRIGHT'S GOUGE

Inside bevel.



FIG. 5994

PRICES

8 inch blades.

Inches	⅛	¼	⅜	½	⅝	¾
Per dozen	$7 00	8 00	9 00	10 00	11 00	12 00
Inches	⅞	1	1¼	1½	1¾	2
Per dozen	$13 00	14 00	16 00	17 00	18 00	20 00

Assorted in sets.

Per Set.
Inches, ⅛ to 2 (12)—⅛, ¼, ¾, ½, ⅝, ¾, ⅞, 1, 1¼, 1½, 1¾, 2.....$15 00
" ¼ to 2 (8)—¼, ⅜, ½, ¾, 1, 1¼, 1½, 2..... 12 50

All above half dozen in a wooden box.
One set in a wooden box.
Outside bevel millwright and paring gouges furnished to order.

SOCKET FIRMER PARING GOUGE

Inside bevel.



FIG. 5995

PRICES

7½ inch blades.

Inches	⅛	¼	⅜	½	⅝	¾
Per dozen	$6 00	7 00	8 00	8 50	9 50	10 50
Inches	⅞	1	1¼	1½	1¾	2
Per dozen	$11 00	12 00	13 50	14 00	15 00	16 00

Assorted in sets.

Per Set.
Inches, ⅛ to 2 (12)—⅛, ¼, ⅜, ½, ⅝, ¾, ⅞, 1, 1¼, 1½, 1¾, 2.....$12 50
" ¼ to 2 (8)—¼, ⅜, ½, ¾, 1, 1¼, 1½, 2..... 10 00

HANDLED BEVELED TANGED FIRMER CHISEL



FIG. 5996

PRICES

No. 175, sharpened and honed, fancy applewood handles.

Inches	⅛	¼	⅜	½	⅝	¾
Per dozen	$4 70	4 85	5 10	5 45	5 80	6 05
Inches	⅞	1	1¼	1½	1¾	2
Per dozen	$6 25	6 70	8 75	9 90	12 35	13 90

Half dozen in a wooden box.

Assorted in sets. Per Set.
Inches, ⅛ to 2 (12)—⅛, ¼, ⅜, ½, ⅝, ¾, ⅞, 1, 1¼, 1½, 1¾, 2....$7 75
" ⅛ to 1½ (9)—⅛, ¼, ⅜, ½, ⅝, ¾, 1, 1¼, 1½..... 5 00

One set in a wooden box.

No. 150, without handles, sharpened and honed.

Inches	⅛	¼	⅜	½	⅝	¾
Per dozen	$3 80	3 85	4 00	4 40	4 60	4 80
Inches	⅞	1	1¼	1½	1¾	2
Per dozen	$5 00	5 40	7 25	8 30	10 50	12 00

One dozen in a wooden box.

Assorted in sets.

Inches, ⅛ to 2 (12)—⅛, ¼, ⅜, ½, ⅝, ¾, ⅞, 1, 1¼, 1½, 1¾, 2, per set, $6 40
" ⅛ to 1½ (9)—⅛, ¼, ⅜, ½, ⅝, ¾, 1, 1¼, 1½..... " " 4 00

One set in a wooden box.

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LONG THIN PARING CHISEL



FIG. 5997

7 inch Blade.

Inches	⅛	¼	⅜	½	⅝	¾	⅞	1
Per dozen	$4 50	$4 75	$4 87	$5 25	$5 50	$6 00	$6 50	$8 00
Inches	1¼	1½	1¾	2	2¼	2½	2¾	3
Per dozen	$9 75	$11 75	$13 25	$16 25	$19 25	$22 25	$31 25	$39 25

Half dozen in a wooden box.
Assorted in Sets.

Inches, ⅛ to 2 (12)—⅛, ¼, ⅜, ½, ⅝, ¾, ⅞, 1, 1¼, 1½, 1¾, 2.....per set, $8 75
" ¼ " 2 (8)—¼, ½, ¾, 1, 1¼, 1½, 1¾, 2 ..... " 7 25
Without handles, $1.25 per dozen less on list prices. One set in a wooden box.

MILLWRIGHT'S FIRMER CHISEL



FIG. 5999

7½ inch Blade.

Inches	⅛	¼	⅜	½	⅝	¾
Per dozen	$5 25	$5 25	$5 75	$6 25	$7 25	$8 25
Inches	⅞	1	1⅛	1¼	1⅜	1½
Per dozen	$9 25	$10 25	$11 75	$13 25	$14 75	$15 75
Inches	1¾	2	2¼	2½	2¾	3
Per dozen	$18 25	$22 25	$26 25	$32 25	$38 25	$42 25

Half dozen in a wooden box.
Assorted in Sets.

Inches, ⅛ to 2 (12)—⅛, ¼, ⅜, ½, ⅝, ¾, ⅞, 1, 1¼, 1½, 1¾, 2.....per set, $11 25
" ¼ " 2 (8)—¼, ⅜, ½, ¾, 1, 1¼, 1½, 2..... " 8 75
Without handles, $1.25 per dozen less on list prices. One set in a wooden box.

EXTRA PARING FIRMER GOUGE
INSIDE BEVEL



FIG. 6001

7 inch Blade.

Size, inches	⅛	¼	⅜	½	⅝	¾
Per dozen	$5 40	$5 75	$5 87	$6 25	$6 50	$6 87
Size, inches	⅞	1	1¼	1½	1¾	2
Per dozen	$7 50	$8 50	$10 25	$11 25	$15 25	$18 25

Half dozen in a wooden box.
Assorted in Sets.

Size, inches, ⅛ to 2 (12)—⅛, ¼, ⅜, ½, ⅝, ¾, ⅞, 1, 1¼, 1½, 1¾, 2....per set, $11 75
" " ¼ " 2 (8)—¼, ⅜, ½, ¾, 1, 1¼, 1½, 2 ..... " 10 25
Without handles, $1.25 per dozen less on list prices. One set in a wooden box.

EXTRA MILLWRIGHT'S FIRMER GOUGE
INSIDE BEVEL



FIG. 6002

7½ inch Blade, Heavy.

Size, inches	⅛	¼	⅜	½	⅝	¾
Per dozen	$6 25	$6 25	$6 75	$7 25	$8 25	$9 25
Size, inches	⅞	1	1¼	1½	1¾	2
Per dozen	$10 25	$11 25	$14 75	$17 25	$20 25	$23 75

Half dozen in a wooden box.
Assorted in Sets.

Size, inches, ⅛ to 2 (12)—⅛, ¼, ⅜, ½, ⅝, ¾, ⅞, 1, 1¼, 1½, 1¾, 2....per set, $13 75
" " ¼ " 2 (8)—¼, ⅜, ½, ¾, 1, 1¼, 1½, 2 ..... " 11 25
Without handles, $1.25 per dozen less on list prices. One set in a wooden box.

EXTRA TURNING CHISEL



FIG. 6004

7 inch Blade.

Size, inches	⅛	¼	⅜	½	⅝	¾	⅞	1
Per dozen	$2 50	$2 75	$3 12½	$3 37½	$3 75	$4 25	$5 00	$5 50
Size, inches	1⅛	1¼	1⅜	1½	1¾	2	2¼	2½
Per dozen	$7 00	$7 00	$8 75	$8 75	$10 25	$12 50	$16 50	$21 50

Half dozen in a wooden box.
Assorted in Sets.

Size, inches, ⅛ to 2 (12)—⅛, ¼, ⅜, ½, ⅝, ¾ ⅞, 1, 1¼, 1½, 1¾, 2....per set, $6 50
Size, inches, ¼ " 1½ (9)—¼, ⅜, ½, ⅝, ¾, ⅞, 1, 1¼, 1½..... " 5 00
Handled, $1.25 per dozen extra on list prices. One set in a wooden box.

WOOD TURNER'S PARTING OR CUTTING OFF TOOL



FIG. 6005

The ½ inch wide measures 8½ inches over all.

Size, inches	½	⅝	¾
Per dozen	$4 50	$5 00	$5 50

TANGED FIRMER CHISEL



FIG. 5998

PRICES

Sizes, In.	Per Doz.	Sizes, In.	Per Doz.
⅛	$2 00	1⅛	$4 50
5/16	2 00	1¼	5 00
¼	2 00	1⅜	5 50
5/16	2 12½	1½	6 00
⅜	2 12½	1⅝	7 50
7/16	2 25	1¾	7 50
½	2 25	1⅞	9 00
9/16	2 60	2	9 00
⅝	2 60	2¼	11 50
¾	2 75	2½	14 00
⅞	3 00	3	21 00
1	3 50		

One dozen in a wooden box.

TANGED FIRMER CHISELS, HANDLED

Sizes, In.	Per Doz.	Sizes, In.	Per Doz.	Sizes, In.	Per Doz.
⅛	$3 00	⅝	$3 60	1⅝	$8 50
5/16	3 00	¾	3 75	1¾	8 50
¼	3 00	⅞	4 00	1⅞	10 00
5/16	3 12½	1	4 50	2	10 00
⅜	3 12½	1⅛	5 50	2¼	12 50
7/16	3 25	1¼	6 00	2½	15 00
½	3 25	1⅜	6 50	3	22 00
9/16	3 60	1½	7 00		

Half dozen in a wooden box.

Assorted in Sets.

	Per Set, Not Handled.	Per Set, Handled.
Size, inches, ⅛ to 1 (8)—⅛, ¼, ⅜, ½, ⅝, ¾, ⅞, 1,	$2 50	$3 50
Size, inches, ⅛ to 1½ (9)—⅛, ¼, ⅜, ½, ⅝, ¾, 1, 1¼, 1½,	3 25	4 25
Size, inches, ⅛ to 2 (12)—⅛, ¼, ⅜, ½, ⅝, ¾, ⅞, 1, 1¼, 1½, 1¾, 2,	4 25	5 25

One set in a wooden box.

TANGED FIRMER GOUGE
OUTSIDE BEVEL



FIG. 6000

PRICES

Sizes, In.	Per Doz.	Sizes, In.	Per Doz.	Sizes, In.	Per Doz.	Sizes, In.	Per Doz.
⅛	$2 25	⅞	$3 50	⅛	$3 25	⅞	$4 50
5/16	2 37½	1	4 50	5/16	3 37½	1	5 50
¼	2 50	1⅛	5 50	¼	3 50	1⅛	6 50
5/16	2 62½	1¼	6 00	5/16	3 62½	1¼	7 00
⅜	2 62½	1⅜	7 00	⅜	3 62½	1⅜	8 00
7/16	2 75	1½	7 50	7/16	3 75	1½	8 50
½	2 87½	1⅝	9 00	½	3 87½	1⅝	10 00
9/16	3 00	1¾	10 00	9/16	4 00	1¾	11 00
⅝	3 00	1⅞	12 00	⅝	4 00	1⅞	13 00
¾	3 25	2	12 00	¾	4 25	2	13 00

One dozen in a wooden box.

TANGED FIRMER GOUGES, HANDLED

Half dozen in a wooden box.

Assorted in Sets.

	Per Set, Not Handled.	Per Set, Handled.
Size, inches, ⅛ to 1 (8)—⅛, ¼, ⅜, ½, ⅝, ¾, ⅞, 1,	$3 25	$4 25
Size, inches, ⅛ to 1½ (9)—⅛, ¼, ⅜, ½, ⅝, ¾, 1, 1¼, 1½,	4 00	5 00
Size, inches, ⅛ to 2 (12)—⅛, ¼, ⅜, ½, ⅝, ¾, ⅞, 1, 1¼, 1½, 1¾, 2,	6 00	7 00

One set in a wooden box.
Furnished with inside bevel at same list prices.

EXTRA TURNING GOUGE



FIG. 6003

7 inch Blade.

Size, inches	⅛	¼	⅜	½	⅝	¾	⅞	1
Per dozen	$3 00	$3 00	$3 50	$4 00	$4 50	$5 50	$6 00	$7 00
Size, inches	1⅛	1¼	1⅜	1½	1¾	2	2¼	2½
Per dozen	$8 50	$8 50	$12 75	$12 75	$14 00	$18 00	$21 00	$25 00

Half dozen in a wooden box.
Assorted in Sets.

Size, in., ⅛ to 2 (12)—⅛, ¼, ⅜, ½, ⅝, ¾, ⅞, 1, 1¼, 1½, 1¾, 2, per set, $8 50
" " ¼ " 1½ (9)—¼, ⅜, ½, ⅝, ¾, ⅞, 1, 1¼, 1½..... " 6 50
Handled, $1.25 per dozen extra on list prices.
One set in a wooden box.

WOOD TURNER'S SIZING TOOL

No. 25—Opens to 4 inches, per doz., $15 00



FIG. 6006

MANNING, MAXWELL & MOORE, 85, 87, LIBERTY STREET, NEW YORK

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TILLER AND BOXES FOR PIT SAW COMPLETE

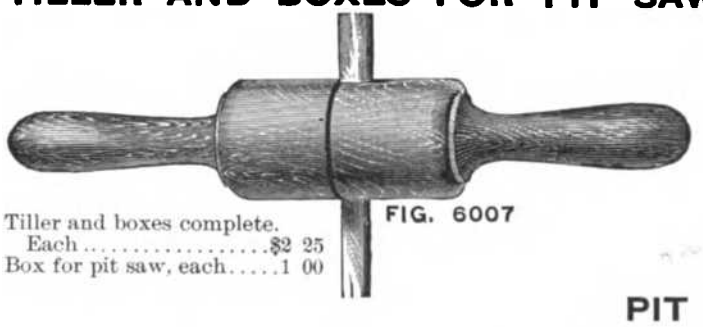


FIG. 6007

Tiller and boxes complete.
Each.....$2 25
Box for pit saw, each.....1 00

TILLER

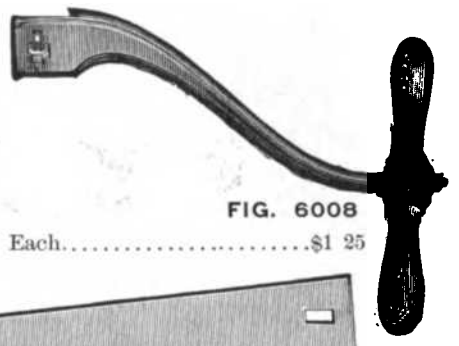


FIG. 6008

Each.....$1 25

PIT SAW

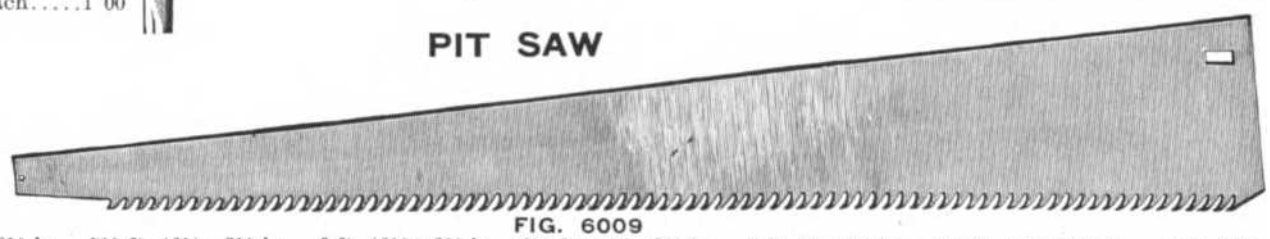


FIG. 6009

Length	5 ft. 10 x 3¼ in.	5½ ft. 10¼ x 3¼ in.	6 ft. 10½ x 3½ in.	6½ ft. 10¾ x 3½ in.	7 ft. 11 x 3½ in.	7½ ft. 11¼ x 3½ in.	8 ft. 11½ x 3½ in.
Prices, each.	$5 00	$5 50	$6 00	$6 50	$7 00	$7 50	$8 00

PIT SAW



FIG. 6010

Regular Pit Saws are 12 inches wide at butt, 4 inches wide at point, 13 gauge. Price, $1.00 per foot. Special sizes made to order.

PEG TOOTH CROSS CUT SAW



FIG. 6011

Feet	3	3½	4	4½	5	5½	6	6½	7
17 gauge, each	$1 40	$1 64	$1 87	$2 10	$2 34	$3 12	$3 60	$4 13	$4 67
16 " "	1 50	1 75	2 00	2 25	2 50	3 12	3 60	4 13	4 67
15 " "	1 60	1 87	2 14	2 40	2 67	3 12	3 60	4 13	4 67

Cross cut saws heavier than 15 gauge up to and including 5 ft. in length, add 10 p. c. for each gauge heavy; over 5 ft. add 5 p. c. for each gauge heavy.

CROSS CUT SAWS

PLAIN TOOTH

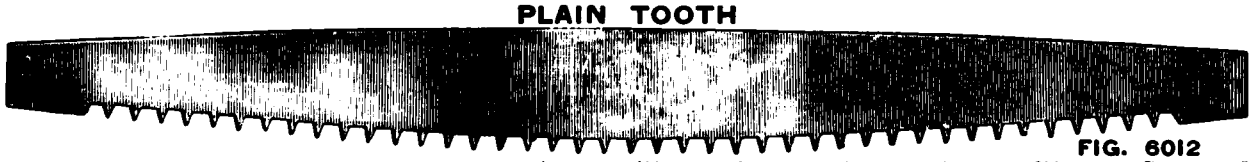


FIG. 6012

Feet		4	4½	5	5½	6	6½	7	7½	8
No. 1	Four gauges thinner on back than on tooth edge, each.	$2 52	$2 84	$3 15	$3 46	$3 78	$4 10	$4 41	$4 72	$5 04
" 2	Two " " " " " " "	2 32	2 61	2 90	3 19	3 48	3 77	4 06	4 35	4 64

TUTTLE TOOTH

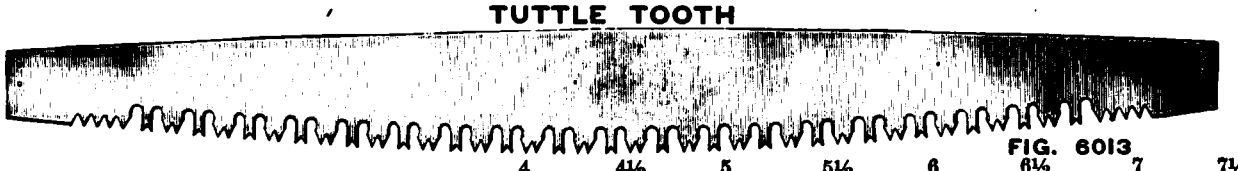


FIG. 6013

Feet		4	4½	5	5½	6	6½	7	7½	8
No. 1	Four gauges thinner on back than on tooth edge, each	$2 40	$2 70	$3 00	$3 30	$3 60	$3 90	$4 20	$4 50	$4 80
" 2	Two " " " " " " "	2 16	2 43	2 70	2 97	3 24	3 51	3 78	4 05	4 32

Toothed to the end for Pacific coast trade. Add 10 cents per foot for each foot or fraction of a foot on saws over 8 feet in length.

CHAMPION TOOTH, NO. 1

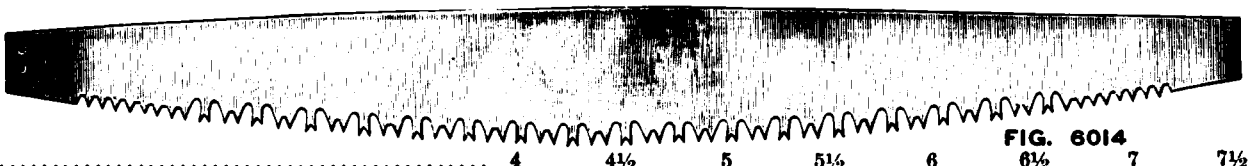


FIG. 6014

Feet	4	4½	5	5½	6	6½	7	7½	8
Four gauges thinner on back than on tooth edge, each	$2 40	$2 70	$3 00	$3 30	$3 60	$3 90	$4 20	$4 50	$4 80

Add 10 cents per foot for each foot or fraction of a foot on saws over 8 feet in length.

NARROW CROSS CUT SAW
CHAMPION, WITHOUT HANDLES

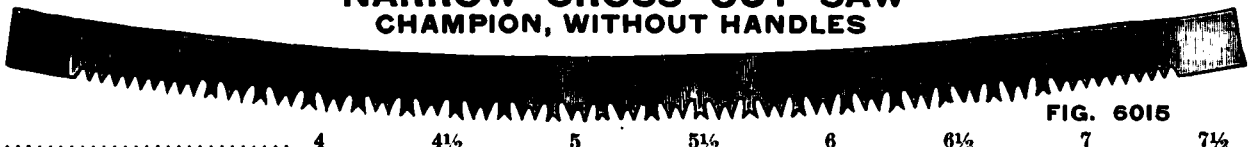


FIG. 6015

Feet	4	4½	5	5½	6	6½	7	7½	8
Each	$1 44	$1 62	$1 80	$1 98	$2 16	$2 34	$2 52	$2 70	$2 88

All cross cut saws over 8 feet in length, add 10 cents per foot for each foot or fraction of a foot over 8 feet.

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ONE MAN CROSS CUT SAWS

GREAT AMERICAN. SUPPLEMENTARY HANDLE



FIG. 6016

Feet	3	3½	4	4½	5	5½	6
Prices, each	$2 55	$2 75	$3 25	$3 65	$4 10	$4 55	$5 00

CHAMPION TOOTH



FIG. 6017

Feet	3	3½	4	4½	5	5½	6
Prices, each	$2 25	$2 60	$3 00	$3 35	$3 70	$4 10	$4 45

Plain Tuttle and Tenon tooth same price as Champion.

CROSS CUT SAW HANDLES

NO. 3, LOOP HANDLE

30 cents per pair.



FIG. 6018

CROSS CUT TABS

10 cents per pair.



FIG. 6022

ONE MAN CROSS CUT HANDLE

$3.75 per dozen.



FIG. 6019

IDEAL ONE MAN HANDLE

No. 9—55 cents each.



FIG. 6023

NO. 5 PATENT HANDLE

50 cents per pair.



FIG. 6024

SUPPLEMENTARY HANDLE FOR ONE MAN SAW

$2.00 per dozen.

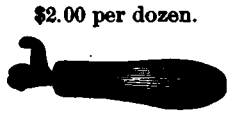


FIG. 6020

NO. 22 TRIUMPH CROSS CUT HANDLE

30 cents per pair.



FIG. 6025

NO. 4, CROSS CUT SAW HANDLE, PLAIN

12 cents per pair.



FIG. 6021

NO. 2, CLIMAX CROSS CUT HANDLE

35 cents per pair.

NO. 12 EXTRA HEAVY CLIMAX HANDLE

50 cents per pair.



FIG. 6026, NO. 2

NO. 7, HAND, PANEL AND RIP SAWS

RIP

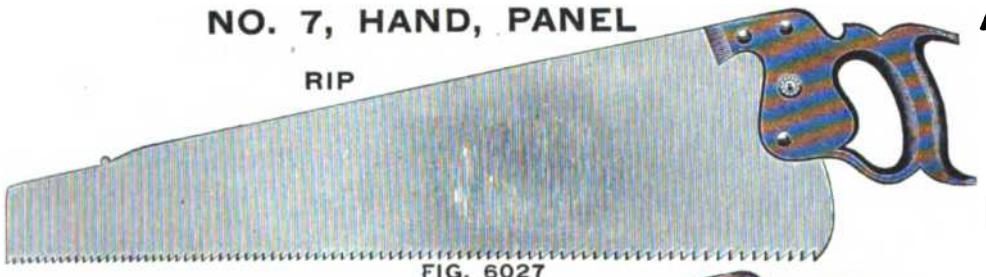


FIG. 6027

HAND

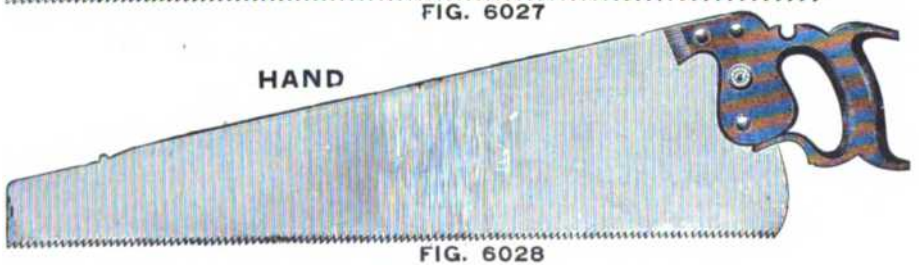


FIG. 6028

PANEL

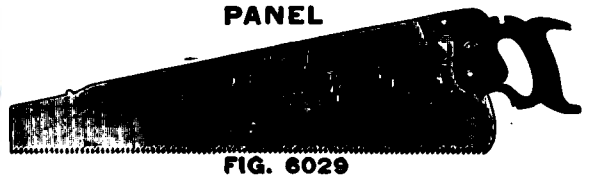


FIG. 6029

PRICES, FIGS. 6027 TO 6029

Cast steel, warranted, beech handle, polished edge, 4 improved screws, grained blade, ground, and tempered.

Inches	14	16	18	20	22	24	26
	$12 00	13 00	14 00	16 00	18 00	19 00	20 00
"	28	30	32	34	36		
	$23 50	27 00	30 50	34 50	39 00		

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CAST STEEL HAND, PANEL AND RIP SAWS

PANEL



FIG. 6030

HAND

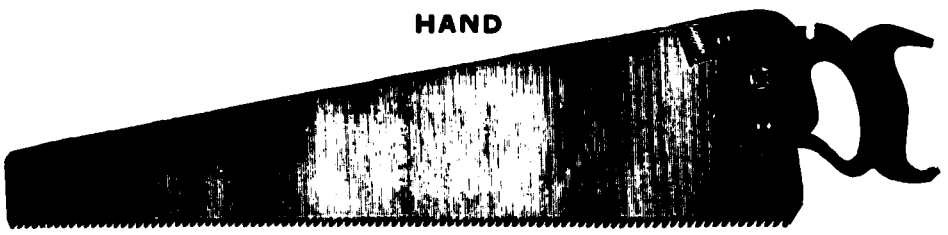


FIG. 6031

Beech Handle, Polished Edge.

PRICES

Sizes, inches	12	14	16	18	20	22	24	26	28	30
Per dozen	$4 50	$5 00	$5 50	$6 00	$6 50	$7 00	$7 50	$8 00	$9 00	$10 00

CAST STEEL BACK SAW



FIG. 6032

PRICES

No. 4, Apple Handle, Polished Edge, Blued Back.

Sizes, inches	8	10	12	14	16	18
Per dozen	$13 00	14 00	16 00	18 00	20 00	22 00

No. 5, same quality as No. 4, with Brass Back.

Sizes, inches	8	10	12	14	16	18
Per dozen	$18 00	19 00	21 00	23 00	26 00	30 00

No. 7, same quality as No. 4, with Polished Steel Back.

Sizes, inches	8	10	12	14	16	18
Per dozen	$14 00	15 00	17 00	19 00	21 00	23 00

SHIP CARPENTER'S SAW

NO. 7

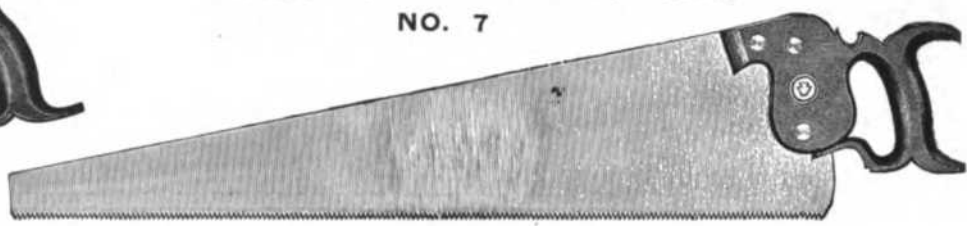


FIG. 6033

PRICES

Sizes, inches	18	20	22	24	26	28
Per dozen	$14 00	$16 00	$18 00	$19 00	$20 00	$23 50

CAST STEEL MITER BOX SAW

No. 4, Apple Handle, Polished Edge, Steel Back.

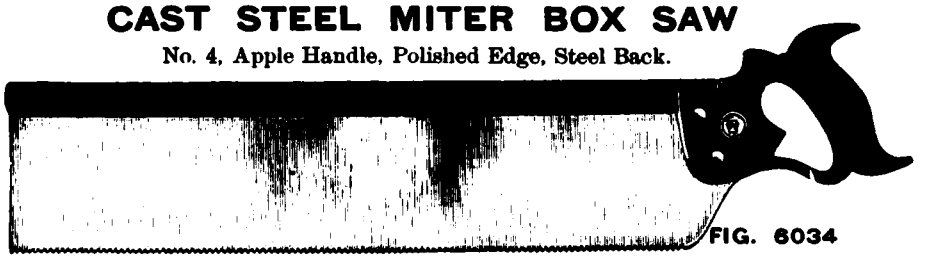


FIG. 6034

DESCRIPTION

The prices are for saws measured the full length of the blade. The peculiar shape of the butt or heel in these saws makes the toothed edge about 2 inches shorter than the full length of the blade.

Back Saw for Miter Box, 4 inches under back.

Sizes, inches	18	20	22	24	26	28	30	32
Per dozen	$22 00	24 00	26 00	28 00	30 00	32 00	34 00	36 00

Same Saw, 5 inches under back.

Sizes, inches	24	26	28	30	32
Per dozen	$31 00	$33 50	$36 00	$38 50	$41 00

Same Saw, 6 inches under back.

Sizes, inches	22	24	26	28	30	32
Per dozen	$31 00	$34 00	$37 00	$40 00	$43 00	$46 00

LANGDON MITER BOX IMPROVED

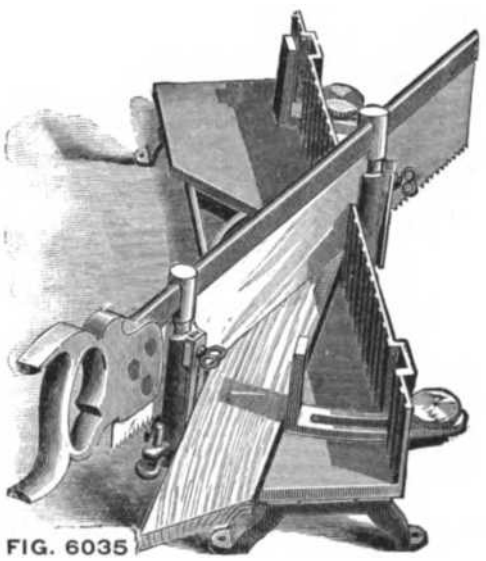


FIG. 6035

DESCRIPTION

Ordinary miter boxes cut from right angles to 45 degrees, inclusive. The New Langdon Improved cuts by using the circular arms or guides, from right angles to 75 degrees, on 2½ inch stuff. The only box adjustable for mitering circular work in patterns, emery wheels and segments of various kinds. Saws are measured extreme length of blades. For convenience of the operator, the corner of blade under the handle is clipped off.

PRICES

With No. 6 Saw for Wood.

No. 26	is Size 1,	18 x 4	$9 00
" 27	"	20 x 4	9 50
" 28	"	22 x 4	10 00
" 29	"	24 x 4	10 50
" 30	"	26 x 4	11 00
" 31	is Size 2,	22 x 4	11 00
" 32	"	24 x 4	11 50
" 33	"	26 x 4	12 00
" 34	is Size 2½	28 x 5	14 00

Prices of Boxes Without Saws.

Sizes	1	2	2½
Each	$8 25	$9 25	$11 25
Weight, pounds	10½	11½	12½

NEW LANGDON MITER BOX

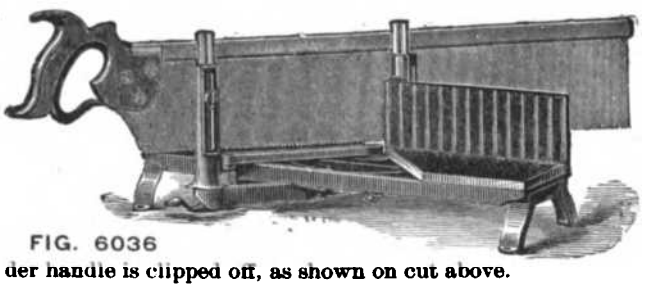


FIG. 6036

DESCRIPTION, FIG. 6036

Arranged for Back Saw.

N. B.—Saws are measured extreme length of blades. For convenience of the operator, the corner of blade under handle is clipped off, as shown on cut above.

PRICES

No. 16½	is size B, with saw,	12 x 2	$4 50
" 17	is size 1, with No. 6, saw for wood,	18 x 4	7 75
" 18	" " " " "	20 x 4	8 25
" 19	" " " " "	22 x 4	8 75
" 20	" " " " "	24 x 4	9 25
" 21	" " " " "	26 x 4	9 75
" 22	is size 2, " " " "	22 x 4	9 75
" 23	" " " " "	24 x 4	10 25
" 24	" " " " "	26 x 4	10 75
" 25	is size 2½, " " " "	28 x 5	12 00

Prices of Boxes Without Saws.

Sizes	1	2	2½	B
Each	$7 00	$8 00	$10 25	....
Weight, pounds	10½	11½	12½	6

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CAST STEEL COMPASS SAW AND BLADES

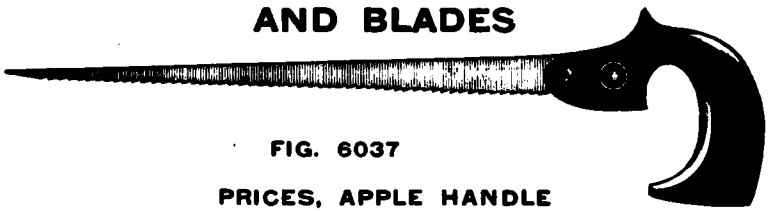


FIG. 6037

PRICES, APPLE HANDLE

Inches	10	12	14	16	18
No. 2, per dozen	$4 25	$4 50	$4 75	$5 00	$5 25

CAST STEEL COMPASS BLADES

Inches	10	12	14	16	18
No. 2, per dozen	$2 75	$3 00	$3 25	$3 50	$3 75

NEST OF SAWS

Patent combining one each, keyhole, compass and table or pruning saw.

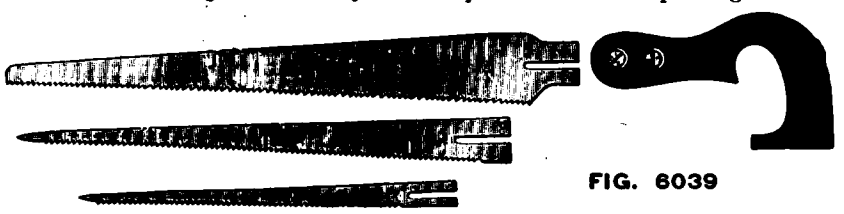


FIG. 6039

PRICES

	Per Dozen.
Handle and screws	$1 75
Keyhole blades	1 75
Compass blades	2 75
Pruning blades	4 75

SPRING HAMMER SAW SET

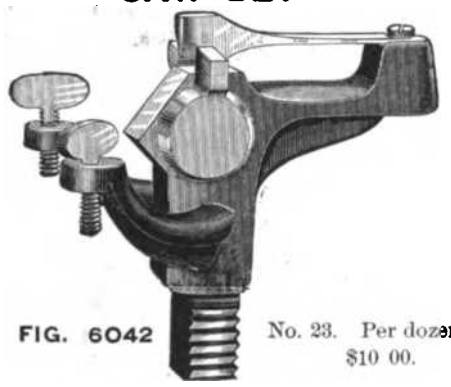


FIG. 6042

No. 23. Per dozen, $10 00.

HAMMER SAW SET

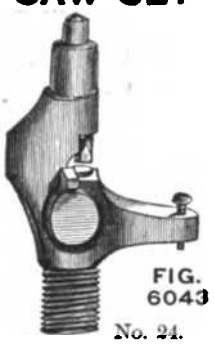


FIG. 6043

No. 24. Per dozen, $9 25.

MASTERPIECE SAW SET

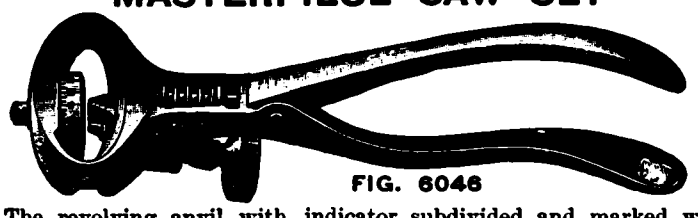


FIG. 6046

The revolving anvil with indicator subdivided and marked with figures, the figures showing the number of teeth to the inch in the saw to be set; for example, if the saw has 4 teeth to the inch, turn the anvil until the figure 4 comes up directly in front of the plunger, and so on.

Leave the set screw so that the saw will pass through without friction. When you wish to do fine work, turn the set screw back to suit your own judgment, otherwise it will be all right for use in all ordinary work.

No. 95. 6¾ inches in length, each.....$1 50

IMPROVED SAW SET



FIG. 6048

No. 1. 6¾ inches in length, each.....$1 00

For hand, band and jig saws, from the widest made down to ½ inch.

INTERCHANGEABLE COMPASS SAW AND BLADES

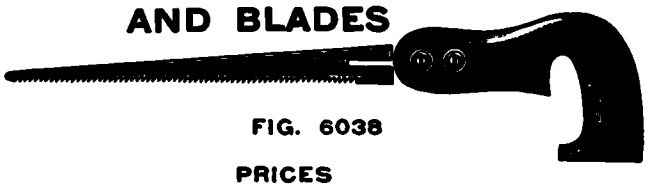


FIG. 6038

PRICES

Inches	10	12	14	16	18	20
Per dozen	$4 50	$5 00	$5 50	$6 00	$6 50	$7 00

INTERCHANGEABLE COMPASS BLADES

Inches	10	12	14	16	18
Per dozen	$2 50	$2 75	$3 00	$3 25	$3 50

PATTERN MAKER'S SAW



FIG. 6040

Per dozen.....$5 00

CROSS CUT SAW SET

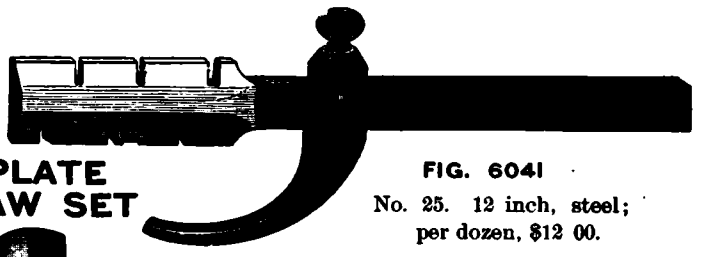


FIG. 6041

No. 25. 12 inch, steel; per dozen, $12 00.

PLATE SAW SET



FIG. 6044

NEW PATTERN LEVER SAW SET WITH GAUGE

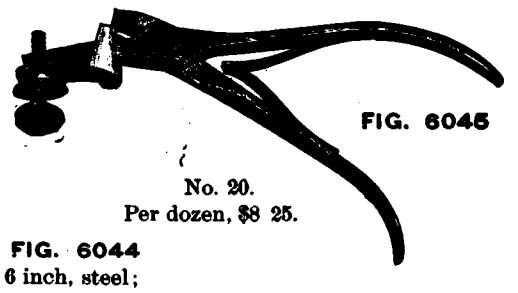


FIG. 6045

No. 20. Per dozen, $8 25.

PRICE, FIG. 6044

No. 22. 6 inch, steel; per dozen, $3 75.

NOS. 3 AND 4 SAW SETS

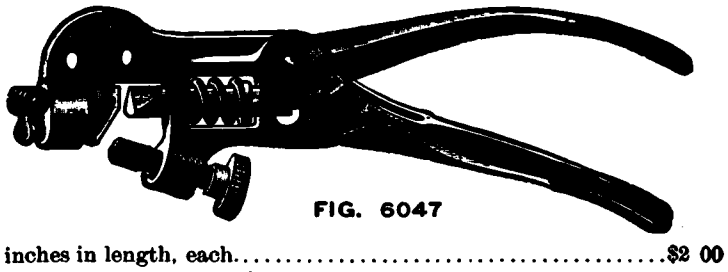


FIG. 6047

9 inches in length, each.....$2 00

No. 3. Cross cut and circular, single tooth, from 14 to 20 gauge.

No. 4. Cross cut M and Champion tooth, from 14 to 20 gauge.

NO. 5 SAW SET

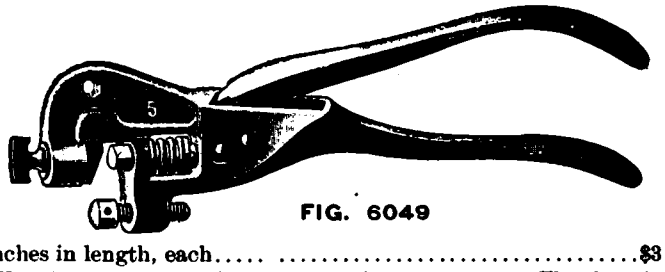


FIG. 6049

15 inches in length, each.....$3 00

For timber and board saws, from 6 to 14 gauge. The size of the saw in circumference makes no difference.

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TOOLS FOR USE IN SAW MILLS

PRICES, FIG. 6050

	Each.
C—Gauge for regulating the set or swage of saws	$1 50
F—Duplex swage or upset:	
No. 1, for swaging solid saws 10 gauge and thicker	3 50
No. 2, for swaging solid saws 11 gauge and thinner	2 50
E—Saw set for bending the points of teeth of solid saws:	
No. 1, for saws 11 gauge and thicker	2 25
No. 2, for saws 12 gauge and less	2 00

WRENCHES FOR CHANGING THE BITS IN PATENT CHISEL TOOTH SAWS

	Each.
B—No. 2, for old style shank	$0 60
D—No. 2, for new style shank	60
G—No. 3	70
H—No. 4	80

A shows the latest improved chisel bit wrench, which supports the pin on both sides, preventing them from being shorn off. These can be furnished in any of the above sizes at same price.

SPECIAL FILES FOR CHISEL TOOTH SAWS

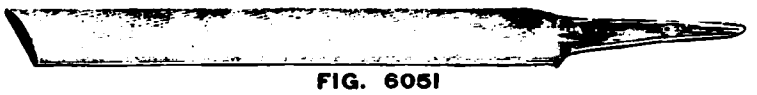


FIG. 6051

9 inches long, per dozen $4 00

ADJUSTABLE SETTING STAKE FOR CIRCULAR SAW

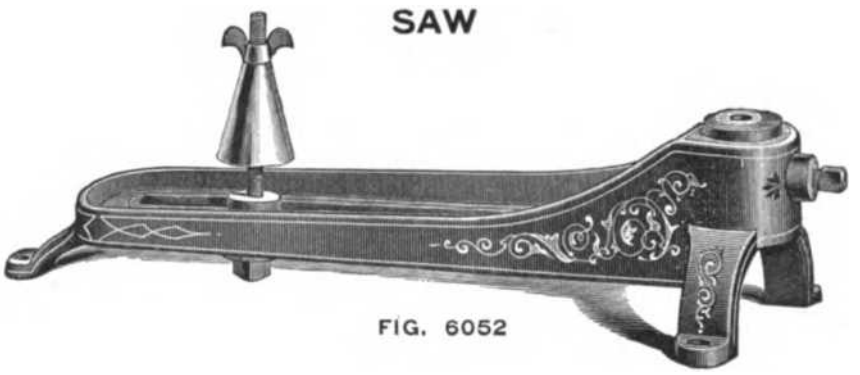


FIG. 6052

This valuable tool can be adjusted to set any saw from 6 to 30 inches in diameter. The cone is moved in or out to suit the diameter of the saw, and raised or lowered as may be required. The movable anvil is made of hardened steel, and, some portions of the face being beveled more than others, the operator can regulate the amount of set as desired. Price, each, $6.00.

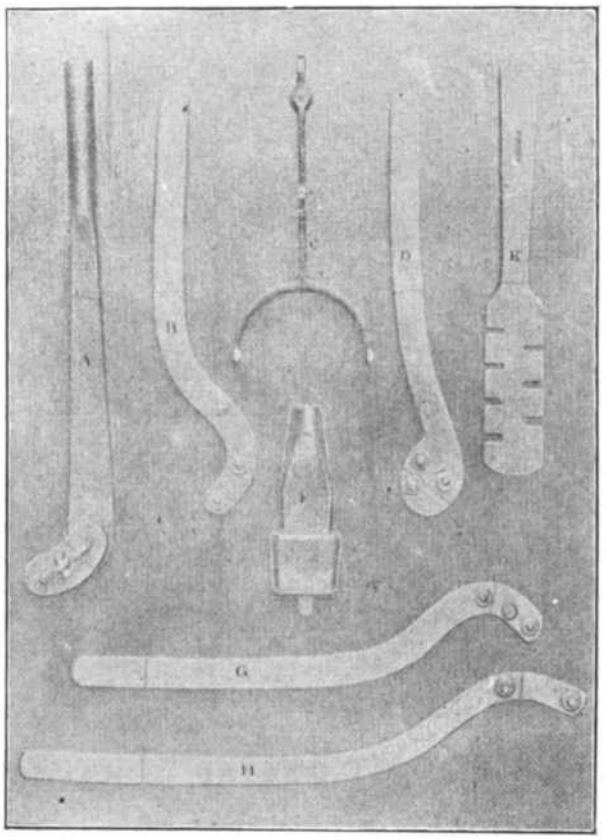


FIG. 6050

BENCH SAW GUMMER

PRICES FIG. 6053

It is suited for crosscuts, gang saws, mill saws, and circulars of 40 inch and under. Price, $50.00; extra punch and die, $12.00.

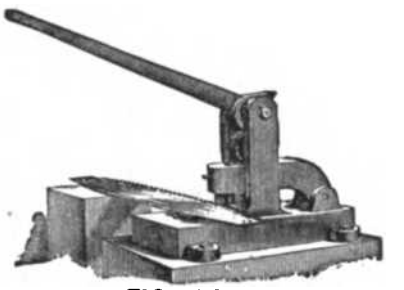


FIG. 6053

CHAMPION GUMMER

With Patent Automatic Feed Attachment.

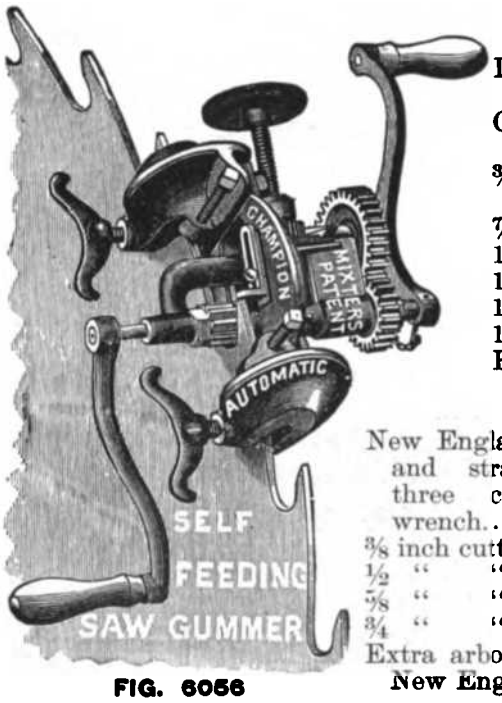


FIG. 6056

PRICES

Including three cutters, grinders and wrench	$30 00
Gummer, without automatic feed attachment,	25 00
¾ inch cutter for Champion Gummer	0 60
⅞ inch cutter	70
1 " "	80
1⅛ " "	90
1¼ " "	1 00
1½ " "	1 25
Extra arbors for ½ and ⅝ inch cutter for Champion Gummer	2 00
New England Gummer, for small and straight saw, including three cutters, grinder, and wrench	20 00
⅜ inch cutter for same	50
½ " " " "	53
⅝ " " " "	55
¾ " " " "	60
Extra arbor for ⅜ inch cutter for New England Gummer	1 50

CONQUEROR SWAGE, JUMPER OR UPSET

NO. 2

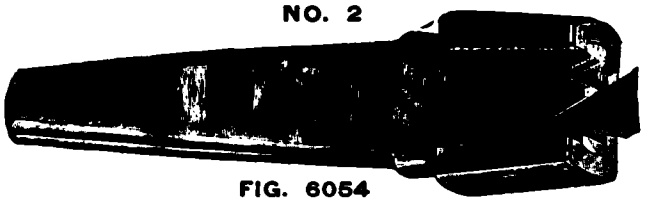


FIG. 6054

PRICES

	Each.
No. 1, for large circular saws	$3 00
" 2, " small " and mill saws	2 50
" 3, " " " saws	2 00
" 4, " band saw	2 50

CHAMPION SAW SETTING TOOL

For Crosscut Saws.

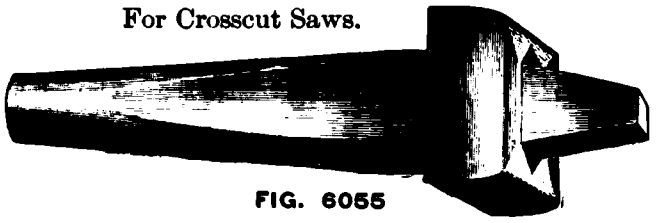


FIG. 6055

Per dozen $7.00

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TOOLS FOR REPAIRING SAWS

SWAGE BAR



FIG. 6059

SWAGE BAR HAMMER

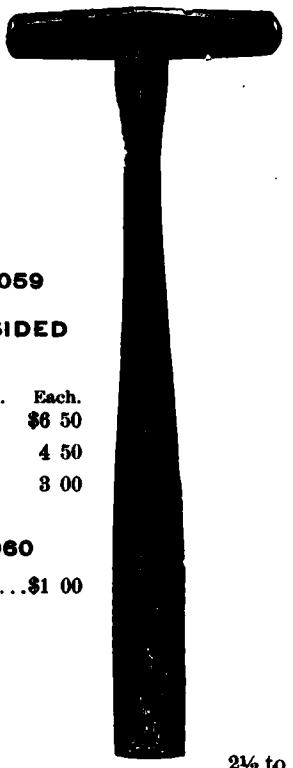


FIG. 6060

PRICES, FIG. 6059

EITHER 8 OR 6 SIDED

Lengths, Inches.	Diams. Large End, In.	Diams. Small End, In.	Each.
14	2	1	$6 50
12	1¾	¾	4 50
10	1½	½	3 00

PRICE, FIG. 6060

Each.....$1 00

BRAZING CLAMP

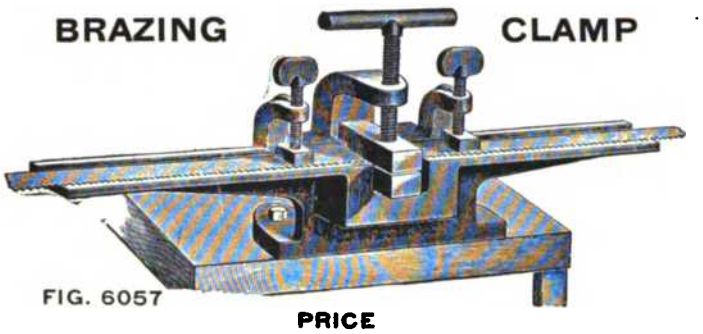


FIG. 6057

PRICE

For band saws up to 3 inches wide.....$12 00

SAWMAKER'S ANVIL AND HAMMERS



FIG. 6058

PRICES, SAWMAKER'S HAMMERS

2½ to 3 pounds, each.....$1 60
3½ " 4 " " 2 00
4½ " 6 " " 3 20

PRICES, SAWMAKER'S ANVIL

Face, 5½ x 8 inches. Height, 6 inches.... Weight, 70 pounds.. } $14.00 each.

Face, 5½ x 8 inches.. Height, 7½ inches.... Weight, 100 pounds.. } $20.00 each.

Face, 6 x 10 inches.. Height, 8½ inches... Weight, 150 pounds. } $30.00 each.

ADJUSTABLE AND FOLDING HANDLE DRAWING KNIFE

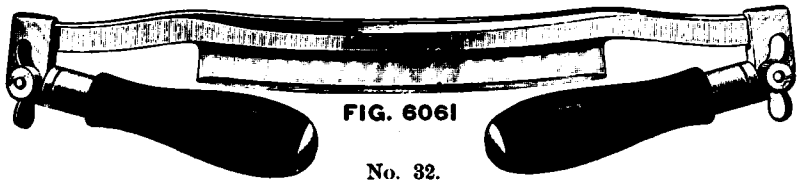


FIG. 6061

No. 32.

Inches	6	7	8	9	10
Per dozen	$21 00	$22 50	$24 00	$25 50	$27 00

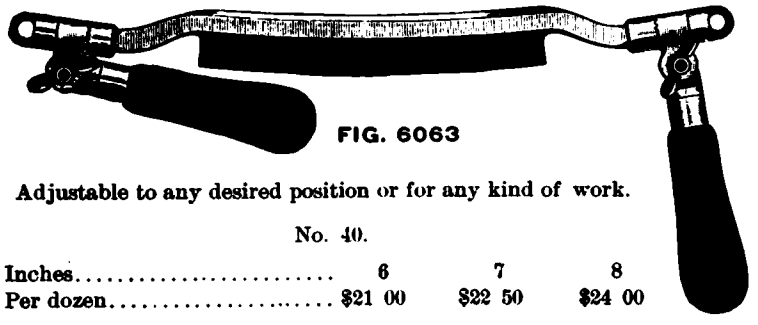


FIG. 6063

Adjustable to any desired position or for any kind of work.

No. 40.

Inches	6	7	8
Per dozen	$21 00	$22 50	$24 00

ADJUSTABLE HANDLE DRAWING KNIFE

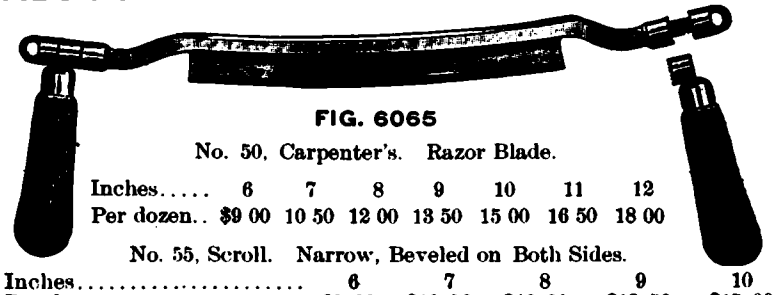


FIG. 6065

No. 50, Carpenter's. Razor Blade.

Inches	6	7	8	9	10	11	12
Per dozen..	$9 00	10 50	12 00	13 50	15 00	16 50	18 00

No. 55, Scroll. Narrow, Beveled on Both Sides.

Inches	6	7	8	9	10
Per dozen	$9 00	$10 50	$12 00	$13 50	$15 00

No. 60, Coachmaker's. Wide, Beveled on Both Sides.

Inches	6	7	8	9	10	11	12
Per dozen	$9 50	$11 00	$12 50	$14 00	$15 50	$17 00	$18 50

RAZOR BLADE DRAWING KNIFE

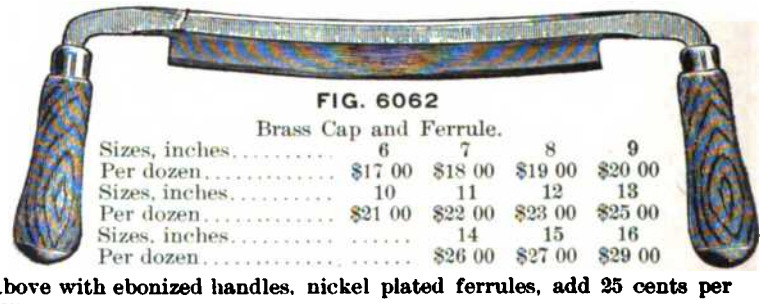


FIG. 6062

Brass Cap and Ferrule.

Sizes, inches	6	7	8	9
Per dozen	$17 00	$18 00	$19 00	$20 00
Sizes, inches	10	11	12	13
Per dozen	$21 00	$22 00	$23 00	$25 00
Sizes, inches	.....	14	15	16
Per dozen	.....	$26 00	$27 00	$29 00

Above with ebonized handles, nickel plated ferrules, add 25 cents per dozen.

EXTRA DRAWING KNIFE

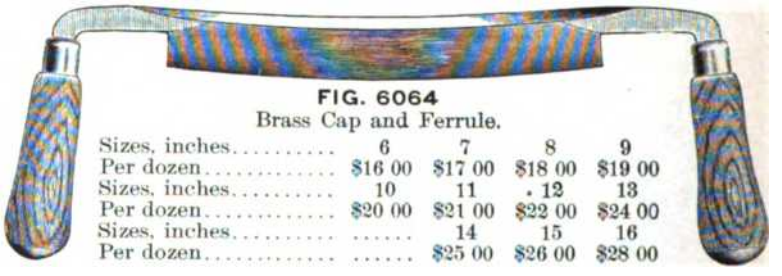


FIG. 6064

Brass Cap and Ferrule.

Sizes, inches	6	7	8	9
Per dozen	$16 00	$17 00	$18 00	$19 00
Sizes, inches	10	11	12	13
Per dozen	$20 00	$21 00	$22 00	$24 00
Sizes, inches	.....	14	15	16
Per dozen	.....	$25 00	$26 00	$28 00

FARMER'S DRAWING KNIFE



FIG. 6066

Brass Ferrule.

Sizes, inches	6	7	8	9	10
Per dozen	$12 00	$13 00	$14 00	$15 00	$16 00
Sizes, inches	.....	.....	11	12	14
Per dozen	.....	.....	$17 00	$18 00	$20 00

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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IRON SPOKE SHAVES



FIG. 6067

No. 51. Double iron, raised handle, 10 inch, 2⅛ in. cutter, per doz...$3 50



FIG. 6068

No. 52. Double iron, straight handle, 10 in., 2⅛ in., cutter, per doz., $3 50



FIG. 6069

No. 53. Adjustable, raised handle, 10 inch, 2⅛ inch cutter.....$4 50



FIG. 6070

No. 54. Adjustable, straight handle, 10 in., 2⅛ cutter, per doz., $4 50

WOOD SPOKE SHAVES

No. 80, Beech, Plain.

Inches	2½	3	3½	4
Per dozen	$3 25	$3 75	$4 25	$4 75

No. 85, Beech, Brass Plated.

Inches	2½	3	3½	4
Per dozen	$4 25	$4 75	$5 25	$5 75

No. 95, Screw Iron, Beech, Plated.

Inches	2½	3	3½	4
Per dozen	$9 00	$9 50	$10 00	$10 50

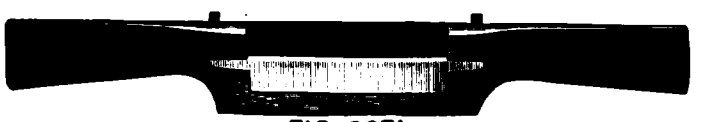


FIG. 6071

No. 80, plain; No. 85 is brass plated.

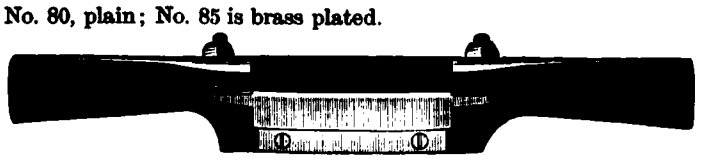


FIG. 6072

No. 95, screw iron, brass plated.

SOLID CAST STEEL SCREW DRIVERS

NO. 64. VARNISHED HANDLES

With Patent Metallic Fastening.

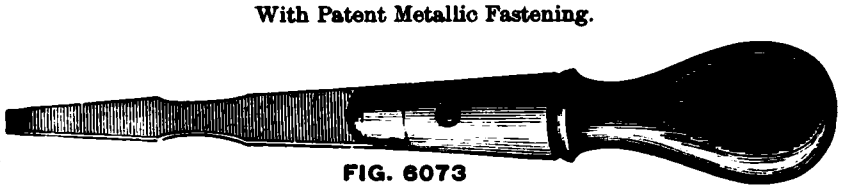


FIG. 6073

Sizes, inches,	1½	2	3	4	5	6	7	8	10	12
Per dozen	$1 00	$1 50	$2 00	$2 50	$3 00	$3 50	$4 00	$4 75	$6 00	$8 00

NO. 86. POLISHED HANDLES

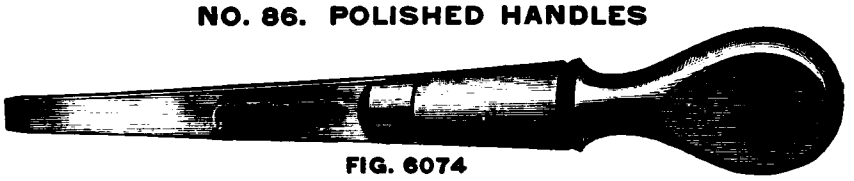


FIG. 6074

Sizes, inches	2	3	4	5	6	7	8	10	12
Per dozen	$1 50	$2 00	$2 50	$3 00	$3 50	$4 00	$4 75	$6 00	$8 00

SOLID CAST STEEL SCREW DRIVERS

MADE FROM BEST CRUCIBLE CAST STEEL

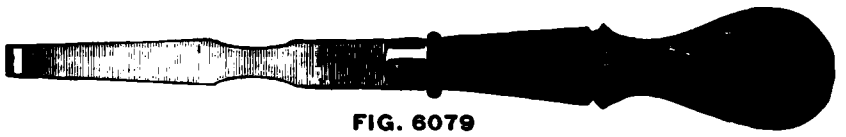


FIG. 6079

No. 25, Forged Blades.

Inches	2	3	4	5	6	7	8	9	10	11	12
Per dozen	$2 00	$2 50	$3 00	$3 50	$4 00	$5 00	$5 50	$6 00	$6 50	$7 00	$7 50

No. 35, Forged Blades, Rosewood Handles.

Inches	1½	2	3	4	5	6	7	8	9	10	11	12
Per doz.	$3 00	3 00	3 50	4 00	4 50	5 00	6 00	7 00	7 50	9 00	10 00	10 50

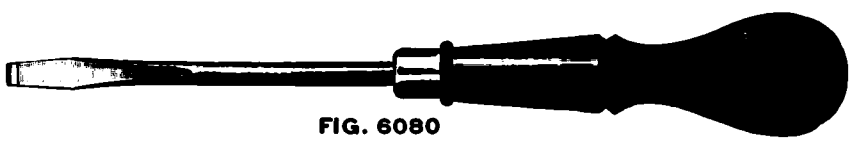


FIG. 6080

No. 40, Round Blade, Black Handle, Nickel Plated Ferrules.

Inches	1½	2	3	4	5	6	7	8	10	12
Per doz.	$0 90	$0 90	$1 15	$1 50	$1 75	$2 10	$2 35	$2 80	$3 50	$4 75

SCREW DRIVER BITS



FIG. 6075

Extra, per dozen $1 50
No. 1, " 1 00



FIG. 6076

With slot, per dozen.....$2 00

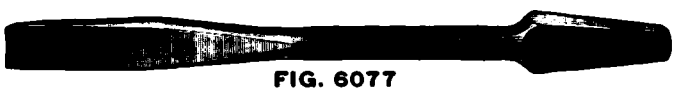


FIG. 6077

No. 75. Per dozen.....$1 25

GUN AND MACHINE MAKERS' SCREW DRIVERS



FIG. 6078

Drop forged, from best tool steel, spring tempered, with fancy wood handles.

PRICES

No. 1	⅛	x 3	inches,	per dozen	$4 00
" 2	¼	x 3	"	"	4 00
" 3	5/16	x 3	"	"	4 50
" 4	⅜	x 3	"	"	4 50
" 5	½	x 6	"	"	6 00

NO. 185. SCREW DRIVER



FIG. 6081

Extra heavy blade, forged from selected tool steel, riveted through heavy nickel plated steel ferrules.

Inches	2	3	4	5	6	8	9	10
Per dozen	$3 00	$3 50	$4 25	$5 00	$6 00	$8 00	$9 00	$10 00

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CHAMPION SCREW DRIVER

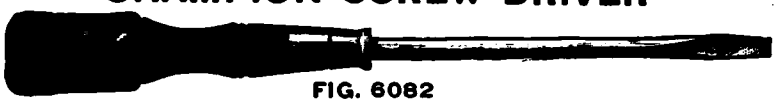


FIG. 6082

Sizes, Inches	2½	3	4	5	6	7	8	9	10	12
Per dozen	$3 00	3 50	4 25	5 00	6 00	7 00	8 00	9 00	10 00	12 00

SCREW HOLDER AND DRIVER

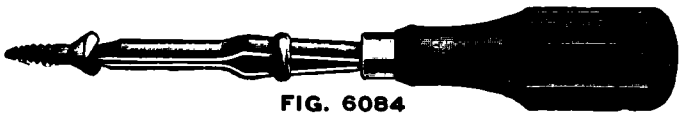


FIG. 6084

For starting screws and driving them home where it is impossible to place them with the fingers.

CHAMPION MACHINIST'S SCREW DRIVER

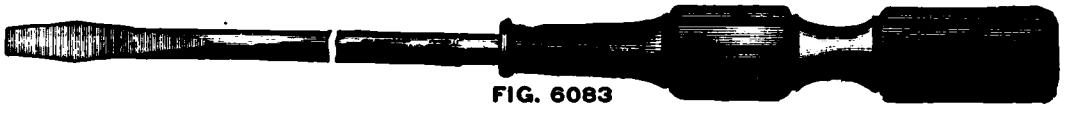


FIG. 6083

Size, inches	12	15	18	24	30
Price, per dozen	$14 00	$16 00	$18 00	$24 00	$30 00

PRICES

No. 1	2½	inch,	per	dozen	.....$6 00
" 2	4	"	"	"	..... 7 50
" 3	6	"	"	"	..... 9 00

SAMSON SCREW DRIVER

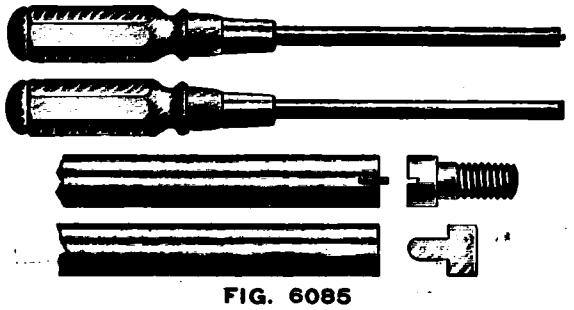


FIG. 6085

The advantages of this tool are as follows:

1. It supports the blade up to the actual straining point.
2. It supports the head of the screw so that it will not wabble. A wood screw can be started by rapping the handle with the palm of the hand, and screwed home without touching the screw after once in position,
3. The blade being parallel, it bears as much at the bottom of the slot as at the outside, thus preventing a heavy burr on each side of the slot, as is caused by the old fashioned tapered blade.
4. As the blades and shanks of drivers run in regular sizes corresponding to the average sizes of wood and machine screws, they do not wear and mar the screw.

PRICES, FIG. 6085

Samson Screw Drivers, with Rock Maple Handles.

Diams. In.	Length Shank In.	Each	Per Doz.
3/16	2	$0 25	$3 00
¼	3½	35	4 20
5/16	5¾	45	5 40
⅜	7½	55	6 60
½	9	65	7 80

PRICES, FIG. 6086

Samson Screw Driver Bits.

Diams. In.	Length Shank In.	Each	Per Doz.
¼	4	$0 25	$3 00
5/16	4¼	30	3 60
⅜	4½	35	4 20
½	4¾	40	4 80

Three extra blades and one drive out key furnished with each driver.

EXTRA BLADES

Sizes, In.	Per Doz.
3/16	$0 12
¼	15
5/16	18
⅜	20
½	25

SAMSON SCREW DRIVER BITS

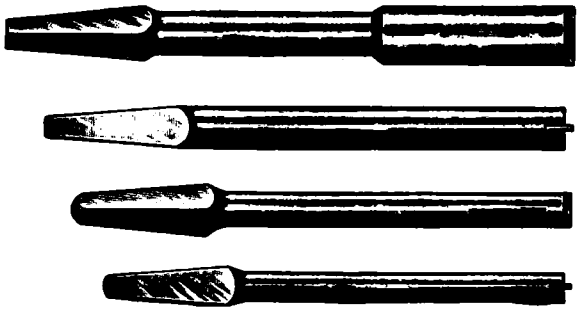


FIG. 6086

The drivers for bit stock use will be found invaluable for that purpose. When they are adapted to the screws driven it is not necessary to hold the screw, as the support from the end of the shank is sufficient. The blades for all drivers are a little long for the depth of slots in wood screws, but can be easily ground or filed to the proper length. They also drive the screw straight.

EUREKA SPIRAL SCREW DRIVER



FIG. 6087

Best Steel Blade. Seamless Brass Tube.

No. 1 14 inches long when open, 9 inches when closed, blades ¼ inch wide, per dozen....$20 00
" 2 19 " " " " 12 " " " " 5/16 " " " 24 00

YANKEE RATCHET SCREW DRIVERS

NO. 10. RIGHT AND LEFT HAND, OR RIGID

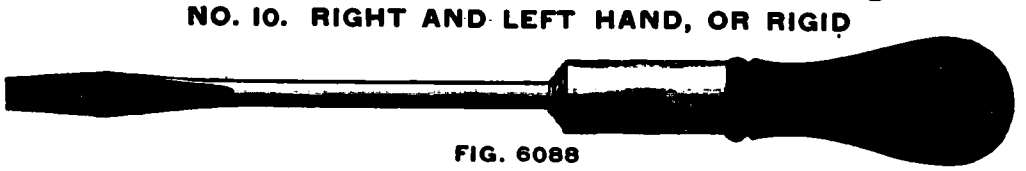


FIG. 6088

PRICES, FIG. 6088

Sizes, In.	Per Doz.	Sizes, In.	Per Doz.
2	$6 30	6	$11 10
3	7 95	8	12 75
4	8 70	10	15 00
5	9 45	12	16 50

NO. 11. RIGHT AND LEFT HAND, OR RIGID

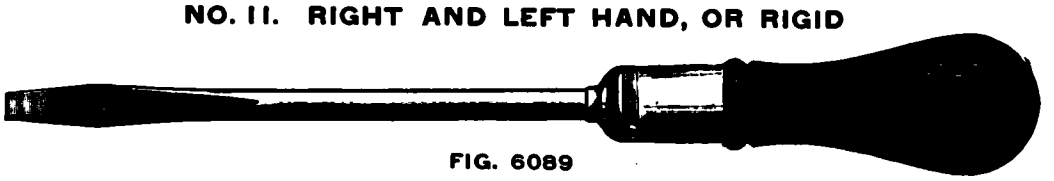


FIG. 6089

PRICES, FIG. 6089

Sizes, In.	Per Doz.	Sizes, In.	Per Doz.
2	$6 30	6	$11 10
3	7 95	8	12 75
4	8 70	10	15 00
5	9 45	12	16 50

NO. 15. RIGHT AND LEFT HAND, OR RIGID

With Finger Turn on Blade

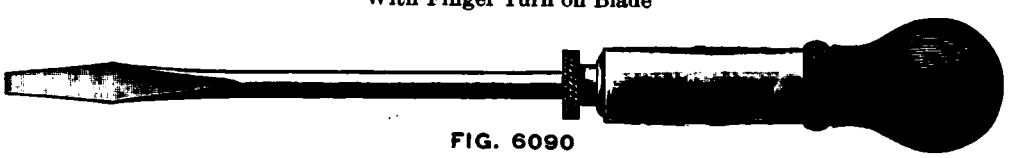


FIG. 6090

PRICES, FIG. 6090

Sizes, In.	Per Doz.	Sizes, In.	Per Doz.
2	$5 00	4	$6 00
3	5 50	5	6 50

YANKEE SPIRAL SCREW DRIVER

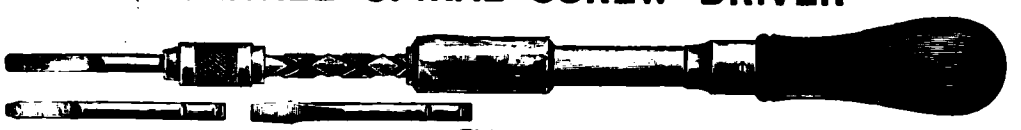


FIG. 6091

DESCRIPTION FIG. 6091

Each tool has three screw driver bits. Screws can be driven in or withdrawn by pushing on handle. Can be used as a ratchet driver, either right or left hand, or blade can be made rigid. Length, extended, 19¼ inches.

Per dozen.....$22 00

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AUTOMATIC SCREW DRIVERS

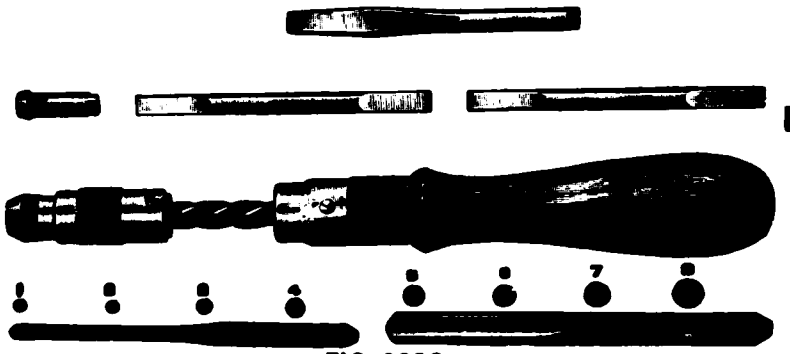


FIG. 6092

Patent revolving sleeve which the left hand grasps when the tool is working. While this sleeve is a great advantage in driving screws, it also enables the tool to be used as an automatic drill. There is also a locking device which prevents the screw driver from falling out of engagement when held perpendicularly. All the metal parts are highly polished and heavily nickel plated. The handle is of cocobola. Full length, extended, 17 inches. The three screw driver bits which go with each tool are 4 inches long.

No. 11 Without Drill Points, but with 3 Screw Driver Bits, per dozen, ... $15 00
" 12 With 8 Drill Points and 3 Screw Driver Bits, per dozen..... 21 00

WITH CAST INTERCHANGEABLE METAL NUT

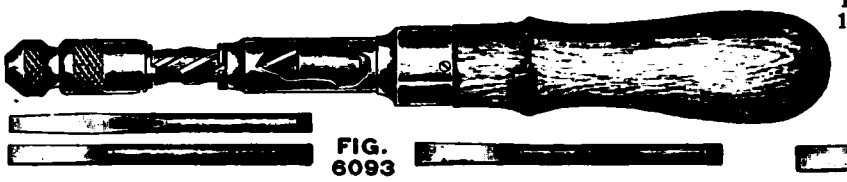


FIG. 6093

No. 20 With 3 Screw Driver Bits, 9 in. long, 13 in. extended, per doz., $12 00
" 21 " 8 " 10 " 15 " " 14 00

REVERSIBLE

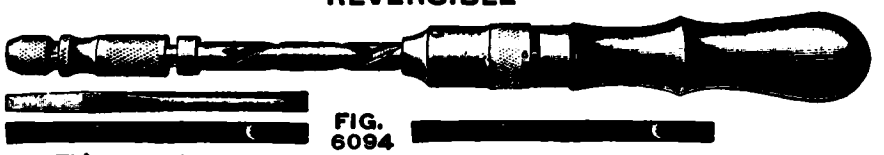


FIG. 6094

This screw driver has one groove cut deeper than the other, thus preserving the individuality of each and preventing wear at point of intersection. They are packed with three bits each, two of them double pointed, thus making five points in all.

No. 41 Per dozen $18 00
Above, one in a box.

PRICES, FIGS. 6098 AND 6099

These braces are designed for boring and screw driving.

No. 1 With 1 Screw Driver Bit, each..... $2 50
" 2 " 2 " Bits, and one Boring Bit, each..... 2 00
No. 1, 1 in a box; No. 2, six.

PRICES, FIGS. 6100 TO 6106

Nos.	Style.	Sizes, Inches.	Single Irons, In.	Each.
13	Smooth	8	2, 2⅛, 2¼	$0 70
14	Jack	16	2, 2⅛, 2¼	85
15	Fore	18, 20, 22	2⅜, 2½, 2⅝	1 10
16	Jointer	26	2½, 2⅝, 2¾	1 20
17	"	28	2½, 2⅝, 2¾	1 30
18	"	30	2½, 2⅝, 2¾	1 40
Nos.	**Style.**	**Sizes, Inches.**	**Double Irons, In.**	**Each.**
19	Smooth	8	2, 2⅛, 2¼	$0 90
20	Jack	16	2, 2⅛, 2¼	1 00
21	Fore	18, 20, 22	2⅜, 2½, 2⅝	1 40
22	Jointer	26	2½, 2⅝, 2¾	1 50
23	"	28	2½, 2⅝, 2¾	1 60
24	"	30	2½, 2⅝, 2¾	1 75

HANDLED SMOOTH PLANE

Cast Steel Double Irons.

No. 48 2, 2⅛, 2¼ inches, solid handles, each..... $1 75

RECESS HANDLE PLANE

Cast Steel Double Irons.

No. 48½ Smooth, 2, 2⅛, 2¼ in., each $1 50
" 49 Jack, 2, 2⅛, 2¼ in., each, 1 20
" 50 Fore, 22 in., 2⅜, 2½, 2⅝ in., each 1 60
" 51 Jointer, 26 inches, 2½, 2⅝, 2¾ in., each 1 75

GAY'S DOUBLE ACTION RATCHET SCREW DRIVER

EBONIZED HANDLE



FIG. 6095

4 inch, per dozen $9 00
5 " " 10 20
6 " " 12 00
8 " " 13 50
10 " " 15 00
12 " " 16 50

UNION RATCHET SCREW DRIVER



FIG. 6096

3 inch, per dozen $8 00
4 " " 8 75
5 " " 9 50
6 " " 11 25
8 " " 13 00
10 " " 15 50
12 " " 17 00

DUPLEX SCREW DRIVER

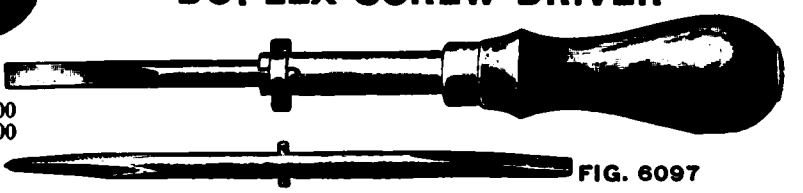


FIG. 6097

Generally when a screw driver is used, some tool is wanted to make a hole for the screw. This square reamer on the reverse end of the driver is better for that purpose than a gimlet or any other tool. The tool can be turned around instantly, so as to use either end. It is hand forged, carefully tempered, polished and nickel plated.

Complete, No. 1, Cocobola Handle, per dozen..... $4 80
" No. 3, Maple Handle, " 3 60
Bits alone, to fit handle, " 1 80

LIGHTNING BRACES

NICKEL PLATED

NO. 1

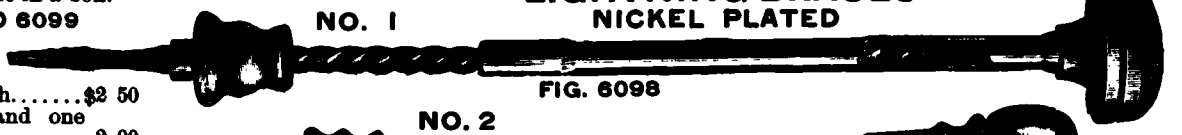


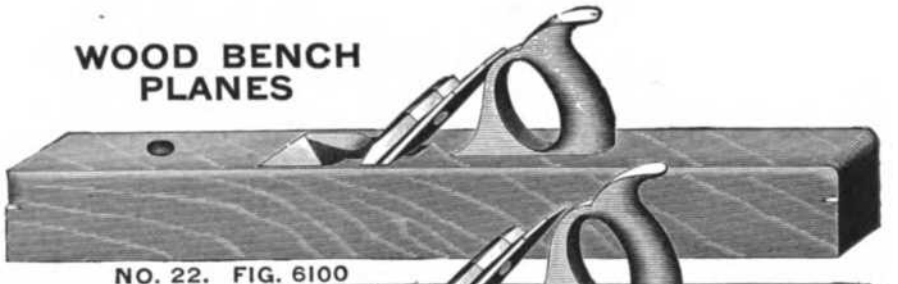
FIG. 6098

NO. 2

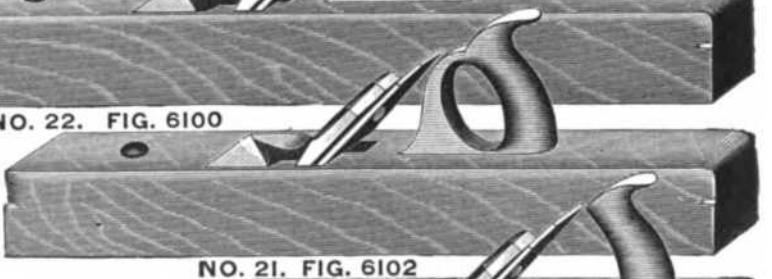


FIG. 6099

WOOD BENCH PLANES



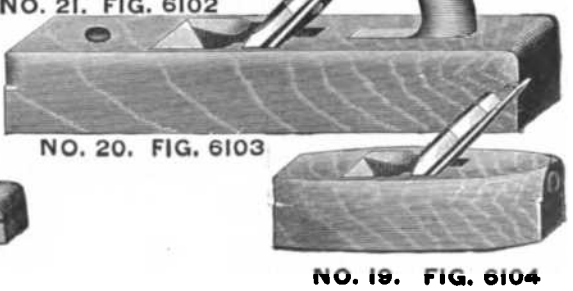
NO. 22. FIG. 6100



NO. 21. FIG. 6102

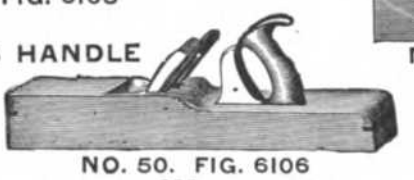


NO. 48. FIG. 6105



NO. 20. FIG. 6103

RECESS HANDLE



NO. 50. FIG. 6106

NO. 19. FIG. 6104

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BAILEY'S ADJUSTABLE IRON PLANES



FIG. 6107

Nos.								Each.
1	Smooth plane,		5½	inches in length,		1¼	inch cutter	$2 25
2	"	"	7	"	"	1⅝	" "	2 75
3	"	"	8	"	"	1¾	" "	3 00
4	"	"	9	"	"	2	" "	3 25
4½	"	"	10	"	"	2⅛	" "	3 75

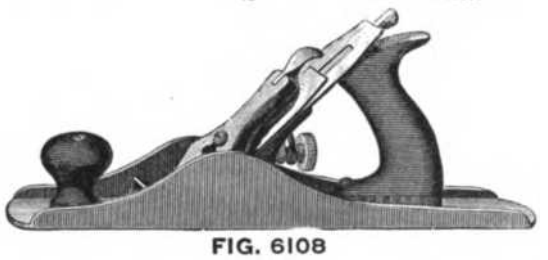


FIG. 6108

Nos.								Each.
5	Jack plane,		14	inches in length,		2	inch cutter	$3 75
5½	"	"	15	"	"	2¼	" "	4 25
6	Fore	"	18	"	"	2⅜	" "	4 75
7	Jointer plane,		22	"	"	2⅝	" "	5 50
8	"	"	24	"	"	2⅝	" "	6 50
9	Cabinetmaker's block plane, 10 inches in length, 2 inch cutter							6 00

BAILEY'S ADJUSTABLE WOOD PLANES

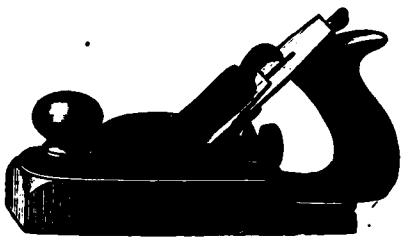


FIG. 6109

Nos.								Each.
35	Handle smooth,		9	inches in length,		2	inch cutter	$2 50
36	"	"	10	"	"	2⅛	" "	2 75
37	Jenny	"	18	"	"	2⅝	" "	3 00

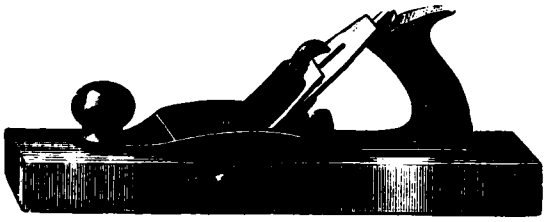


FIG. 6110

Nos.								Each.
26	Jack plane,		15	inches in length,		2	inch cutter	$2 25
27	"	"	15	"	"	2⅛	" "	2 50
27½	"	"	15	"	"	2¼	" "	2 50
28	Fore	"	18	"	"	2⅜	" "	2 75
29	"	"	20	"	"	2⅜	" "	2 75
30	Jointer plane,		22	"	"	2⅜	" "	3 00
31	"	"	24	"	"	2⅜	" "	3 00
32	"	"	26	"	"	2⅝	" "	3 25
33	"	"	28	"	"	2⅝	" "	3 25
34	"	"	30	"	"	2⅝	" "	3 50

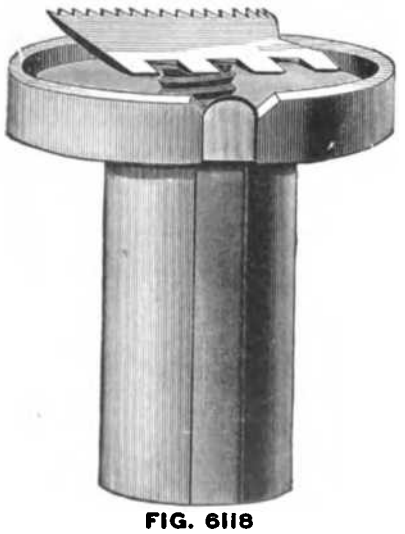


FIG. 6118

LANFAIR'S BENCH HOOK

All that is required to set this hook in the bench is to bore a 2 inch hole ½ inch in depth and a 1 inch hole the balance of the way through the bench, holding it in place with three screws. The hook has four faces, and can be turned around readily and set to any height desired. The cut is full size.

Price, per dozen, $4.50.

WITH CORRUGATED BOTTOMS



FIG. 6111

Nos.								Each.
2C	Smooth plane,		7	inches in length,		1⅝	inch cutter	$2 75
3C	"	"	8	"	"	1¾	" "	3 00
4C	"	"	9	"	"	2	" "	3 25
4½C	"	"	10	"	"	2⅛	" "	3 75

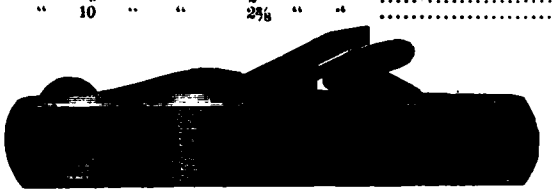


FIG. 6112

Nos.								Each.
5C	Jack plane		14	inches in length,		2	inch cutter	$3 75
5½C	"	"	15	"	"	2¼	" "	4 25
6C	Fore	"	18	"	"	2⅜	" "	4 75
7C	Jointer plane		22	"	"	2⅝	" "	5 50
8C	"	"	24	"	"	2⅝	" "	6 50

BAILEY'S ADJUSTABLE IRON BLOCK PLANES

WITH IMPROVED THROAT ADJUSTMENT

Block planes are used for planing across the ends of boards, or of blocks, and in fitting close joints. The pitch of the plane iron is less than in ordinary bench planes, and the iron is used with the bevel uppermost at the cutting edge.

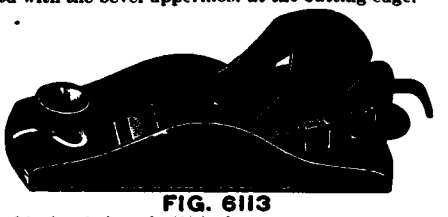


FIG. 6113

Nos.								Each.
9½	Block plane,		6	inches in length,		1¾	inch cutter	$1 50
15	"	"	7	"	"	1¾	" "	1 60



FIG. 6114

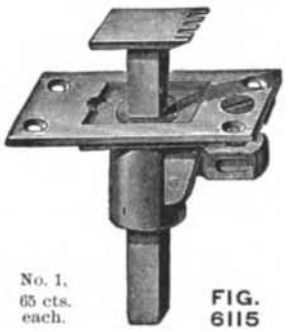
Nos.								Each.
9¾	Rosewood handle,		6	inches in length,		1¾	inch cutter	$1 75
15½	"	"	7	"	"	1¾	" "	1 85

BAILEY'S PLANE IRONS

Inches,	1¼	1⅝	1¾	2	2¼	2⅜	2⅝
Single Irons,	20	25	28	30	33	37	40 cts. each
Double "	40	45	50	55	60	65	70 "

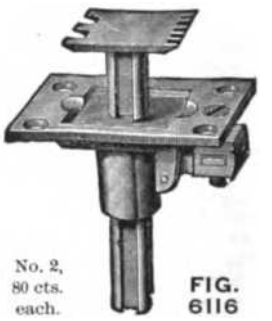
Orders for plane irons should designate the number of the planes for which they are wanted.

PERFECTED BENCH STOP OR HOOK



No. 1, 65 cts. each.

FIG. 6115



No. 2, 80 cts. each.

FIG. 6116

WESTON'S BENCH HOOK

Per doz... .....$7 00

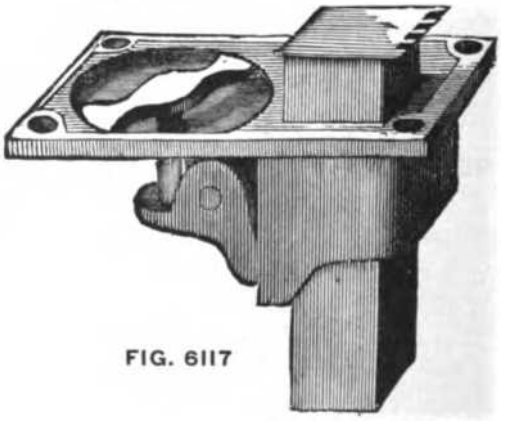


FIG. 6117

MANNING, MAXWELL, & MOORE, 83, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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POLISHED AND NICKEL PLATED STEEL SQUARES

BRIDGE BUILDERS' SQUARE, NOS. 15 AND 115

Steel. Nos.	Steel. Per Doz.	Nickel Plated. Nos.	Nickel Plated. Per Doz.	Sizes in Inches. Body.	Sizes in Inches. Tongue.	How Marked. Face. A	B	C	D	Back. E	F	G	H	Two Foot Squares.
100	$40 00	200	$50 00	24 x 2	16 x 1½	1/16	1/8	1/16	1/8	1/12 & 100's	1/32	1/12	1/10	Brace Measure, 8 Square and Essex's Board.
1	33 00	101	42 00	24 x 2	16 x 1½	1/16	1/8	1/16	1/8	1/12 & 100's	1/8	1/12	1/8	Brace Measure, 8 Square and Essex's Board.
2	30 00	102	38 00	24 x 2	16 x 1½	1/16	1/8	1/16	1/8	1/12	1/4	1/12	1/4	Brace Measure, 8 Square and Essex's Board.
2½	28 00	102½	36 00	24 x 2	16 x 1½	1/8	1/8	1/8	1/8	1/12	1/8	1/12	1/8	Framing.
3	27 50	103	35 00	24 x 2	16 x 1½	1/16	1/4	1/16	1/4	1/12	1/4	1/12	1/4	Brace Measure and Essex's Board.
4	26 50	104	34 00	24 x 2	16 x 1½	1/8	1/4	1/8	1/4	1/12	1/4	1/12	1/4	" " " " "
5	25 50	105	33 50	24 x 2	16 x 1½	1/8	1/4	1/8	1/4	1/12	1/2	1/12	1/4	" " " " "
6	24 50	106	32 00	24 x 2	16 x 1½	1/8	1/4	1/8	1/4	1/4	1/2	1/4	1/4	" " " " "
7	23 50	107	31 00	24 x 2	16 x 1½	1/8	1/4	1/8	1/4	1/4	1 in.	1/4	1/4	Essex's Board.
8	24 00	108	31 50	24 x 1½	16 x 1	1/8	1/4	1/8	1/4	1/12	1/4	1/12	1/4	
9	22 00	109	29 50	24 x 1½	16 x 1	1/8	1/4	1/8	..	1/4	1/4	1/4	..	
13	23 50	113	30 50	24 x 2	16 x 1½	1/8	1/4	1/8	1/4	1/4	1 in.	1/4	1/4	Brace Measure and Essex's Board.
14	23 00	114	30 00	24 x 2	16 x 1½	1/8	1/4	1/8	1/4	1/4	1 in.	1/4	1/4	Essex's Board.
														Bridge Builders'.
15	$300 00	115	$325 00	24 x 3	18 x 1½	1/16	1/8	1/16	1/8	1/12	1/8	1/12	1/8	Body is three inches wide, with a one inch slot through the center, as per cut Fig. 6119. Slot is marked in 1/8ths on both sides.
40	$15 00	140	$17 00	6 x 1	4 x ¾	1/32	1/8	1/32	1/8	1/12	1/8	1/12	1/8	6 Inch Machinists' Squares.
41	14 00	141	16 00	6 x 1	4 x ¾	1/16	1/8	1/16	1/8	1/12	1/8	1/12	1/8	

EXPLANATION OF THE LETTERS USED ON THIS PAGE TO SHOW HOW THESE SQUARES ARE MARKED

Face of Square.

A Face of body, outside.
B " " " inside.
C Face of tongue outside.
D " " " inside.

Back of Square.

E Back of body, outside.
F " " " inside.
G Back of tongue, outside.
H " " " inside.

The "Face" of the square is the side upon which the name is stamped. The reverse side is the "Back." The larger arm is the "Body" and the shorter arm the "Tongue."

Squares with 18 inch tongue of the following numbers furnished to order: Nos. 1, 2, 3, 100, 101, 102, 103, 200.

SQUARES WITH METRIC MEASURE

Nos.	Description.	Per Doz.	Sizes, Inches. Body.	Sizes, Inches. Tongue.	Face of Square. A	B	C	D	Back of Square. E	F	G	H
314	Steel squares, tapered....	$25 50	24 x 2	16 x 1½	1/8	1/4	1/8	1/4	Centi-meters.	Centi-meters.	Centi-meters.	Centi-meters.
322	" " not tapered.	12 00	24 x 1½	12 x 1	1/8	..	1/8	..				



FIG. 6119

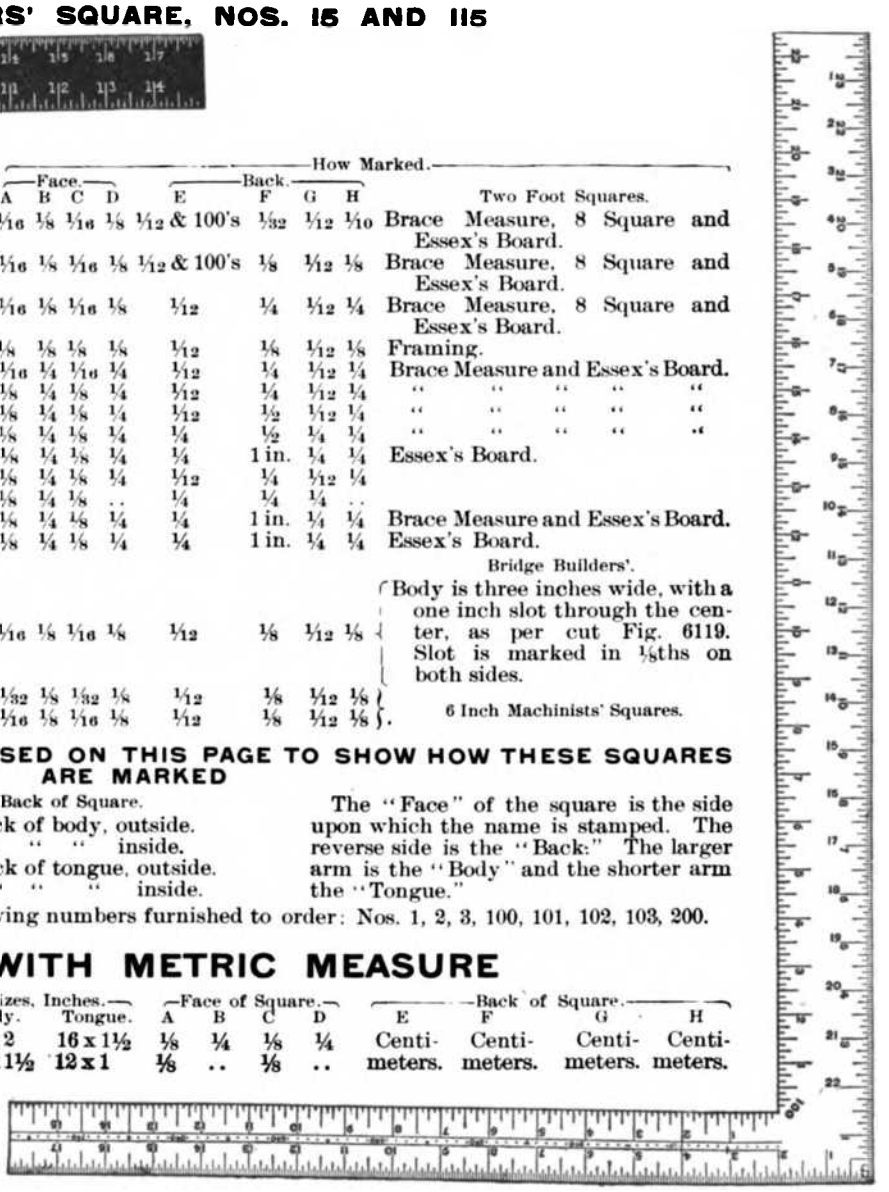
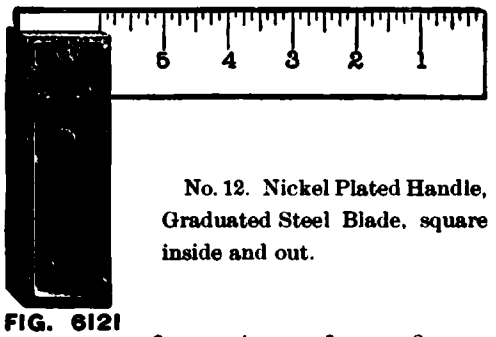


FIG. 6120

IMPROVED TRY SQUARE



No. 12. Nickel Plated Handle, Graduated Steel Blade, square inside and out.

FIG. 6121

Inches	2	4	6	8	10	12
Per dozen	$2 25	2 75	3 50	4 50	5 50	7 00

TRY SQUARE

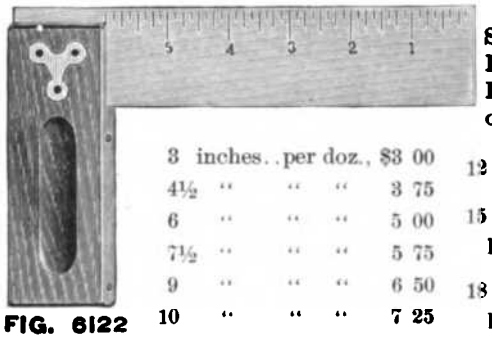


FIG. 6122

3	inches..	per doz.,		$3 00
4½	"	"	"	3 75
6	"	"	"	5 00
7½	"	"	"	5 75
9	"	"	"	6 50
10	"	"	"	7 25

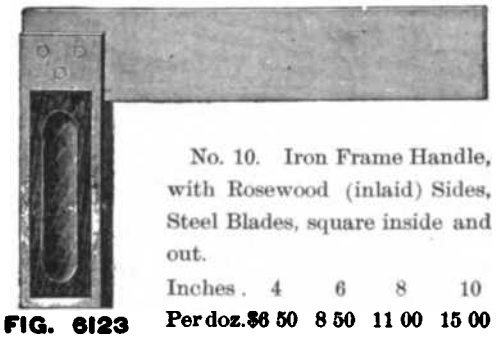
No. 20. Graduated Steel Blades, Rosewood Handles, full size, and Brass Face Plates put on with screws.

12 inches..per doz., $8 50

15 " with rest, per doz..... 12 50

18 inches, with rest, per doz..... 15 50

INLAID TRY SQUARE



No. 10. Iron Frame Handle, with Rosewood (inlaid) Sides, Steel Blades, square inside and out.

FIG. 6123

Inches.	4	6	8	10
Per doz.	$6 50	8 50	11 00	15 00

ADJUSTABLE TRY SQUARE

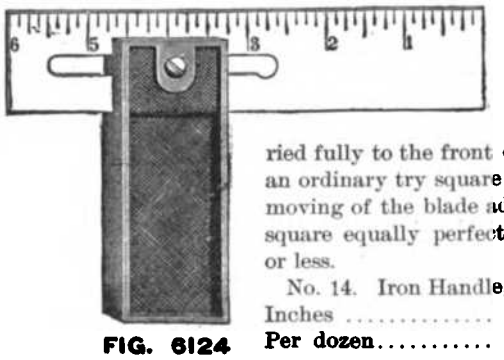


FIG. 6124

The blade of this square can be firmly and accurately secured in its seat at any point. When the blade is carried fully to the front of the handle, it is like an ordinary try square in all its uses, and the moving of the blade admits of making the try square equally perfect down to ¼ inch blade, or less.

No. 14. Iron Handle, Graduated Steel Blade.

Inches	4	6
Per dozen	$3 75	4 50

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IMPROVED MITER TRY SQUARE

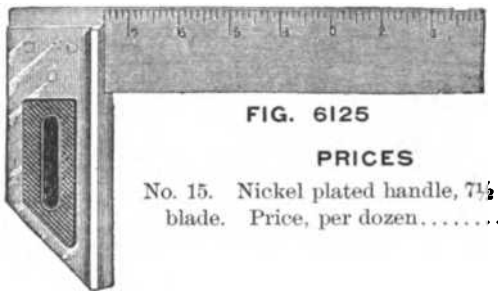


FIG. 6125

PRICES

No. 15. Nickel plated handle, 7½ inch blade. Price, per dozen..... $9 00

COMBINED TRY AND MITER SQUARE

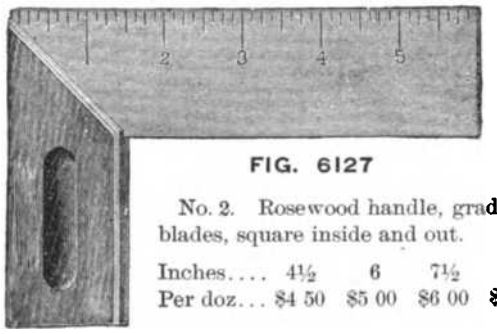


FIG. 6127

No. 2. Rosewood handle, graduated steel blades, square inside and out.

Inches....	4½	6	7½	9	12
Per doz...	$4 50	$5 00	$6 00	$7 00	$9 00

EUREKA FLUSH T BEVEL



FIG. 6129

No 18. Nickel plated. The blade is easily secured at any angle by turning the thumb screw at the lower end of the handle.

Inches.....	6	8	10
Per dozen	$6 00	$6 50	$7 50

WROUGHT IRON BENCH SCREW

MOVABLE COLLAR, DOUBLE THREAD, WOOD HANDLE



FIG. 6131

PRICES

1	Inch,	15	inches	long,	per	dozen $10 80
1⅛	"	16	"	"	"	" 11 50
1¼	"	17	"	"	"	" 15 00
1½	"	19	"	"	"	" 21 70

HEAVY WOOD BENCH SCREW

FIG. 6132

HICKORY SCREWS

PRICES, FIG. 6132

No.	16,	2¾	in.,	per	doz... $8 00
"	17,	2⅜	"	"	" ... 6 00
"	18,	2	"	"	" ... 5 00
"	19,	1¾	"	"	" ... 4 50
"	20,	1½	"	"	" ... 4 00
"	21,	1¼	"	"	" ... 3 00

MAPLE BENCH SCREWS

No.	22,	2¾	in.,	per	doz.. $6 00
"	123,	2½	"	"	" .. 4 50
"	124,	2	"	"	" .. 4 00

COMBINED TRY AND MITER SQUARE

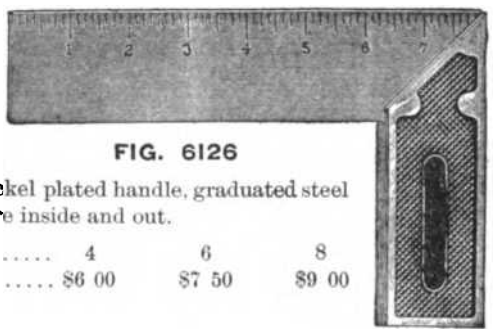


FIG. 6126

No. 1. Nickel plated handle, graduated steel blades, square inside and out.

Inches.....	4	6	8
Per dozen.....	$6 00	$7 50	$9 00

SLIDING T BEVEL

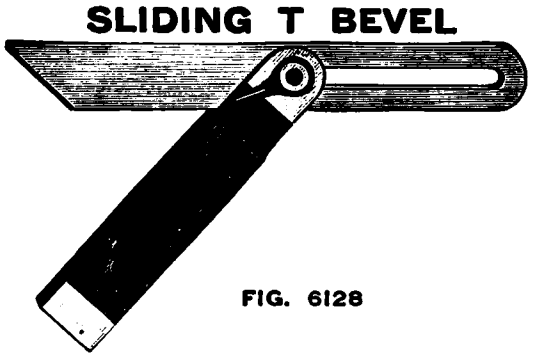


FIG. 6128

No. 25. Rosewood handles, with brass lever (flush). The bevel blade can be made fast or loose by moving the lever with the thumb of the hand which grasps the handle, thus leaving the other hand of the workman free. Bevels with thumb screws will be furnished if so ordered.

PRICES

6 inch, per dozen	$5 50	12 inch, per dozen.....	$7 00
8 " " "	6 00	14 " " "	7 50
10 " " "	6 50		

HAND SCREW

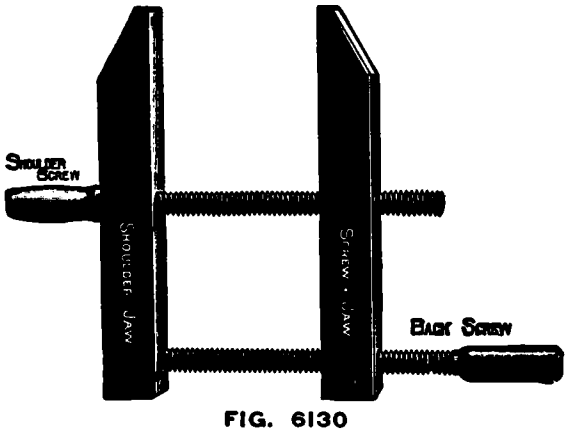


FIG. 6130

PRICES

Nos.	Diameters of Screws, Inches.	Whole Length of Screws, Inches.	Whole Length of Jaws, Inches.	Sizes of Jaws, Inches.	Open, Inches.	Per Dozen.
800	1¼	28	24	3 x 8	17	$12 00
801	1¼	26	22	2¾ x 2¾	15½	10 50
802	1¼	24	20	2⅝ x 2⅝	13¾	9 50
803	1¼	22	20	2½ x 2½	12	9 00
804	1⅛	22	18	2½ x 2½	12¼	8 50
805	1⅛	20	18	2⅜ x 2⅜	10½	8 00
806	1	20	16	2⅜ x 2⅜	11	7 50
807	1	18	16	2¼ x 2¼	9¼	7 00
808	⅞	18	14	2⅛ x 2⅛	10	6 50
809	⅞	16	14	2 x 2	8¼	6 00
810	⅞	16	12	1⅞ x 1⅞	8½	5 50
811	¾	14	12	1¾ x 1¾	7¼	5 00
812	¾	12	10	1⅝ x 1⅝	5½	4 25
813	⅝	10	8	1⅜ x 1⅜	4½	3 50
814	⅝	8	7	1⅛ x 1⅛	3	2 75
815	½	6	5	1 x 1	2	2 25
816	⅜	5	4	⅞ x ⅞	1¼	2 00

Either screw or jaw, one-third the price of the complete hand screw.

Screws of extra length can be furnished at special prices. All hand screws oil finished.

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JAPANNED STEEL BAR CARPENTER'S CLAMP

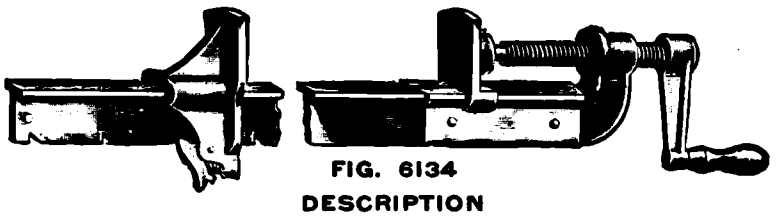


FIG. 6134

DESCRIPTION

The notches are cut on the lower edge of the bar, affording greater holding power to the sliding jaw than if cut on the upper edge.

The wrought iron screw is provided with a deep thread; the crank is malleable, and the handle of wood ebonized. The sizes given below represent a maximum width of work which each size will take.

PRICES

$\frac{3}{16}$ x 1½ inch bar, ⅝ inch screw.

Feet.	Per Pair.	Feet.	Per Pair.
1	$2 70	3	$4 00
1½	2 85	4	4 50
2	3 00	5	5 00
2½	3 75		

¼ x 1¾ inch bar, ¾ inch screw. For extra large or heavy work.

Feet.	Per Pair.	Feet.	Per Pair.
5	$7 50	8	$11 00
6	8 50	9	12 50
7	9 50	10	14 00

ADJUSTABLE CLAMP

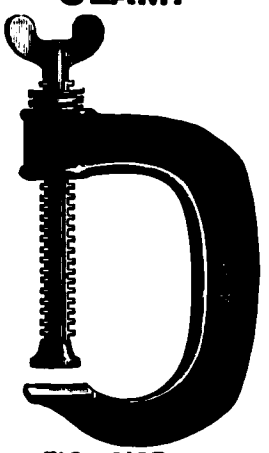


FIG. 6137

HEAVY PATTERN CLAMP



FIG. 6138

DESCRIPTION, FIG. 6137

By turning the bolt one quarter turn to the left it can be moved its full length out or in; when turning it to the right it operates like any other screw.

PRICES, FIG. 6137

Inches.	Per Dozen.
3	$4 50
4	6 50
5	7 50
6	9 00
8	11 50

PRICES, FIG. 6138

Inches.	Per Dozen.
2	$2 25
3	4 00
4	6 00
5	7 00
6	8 75
8	11 00

IMPROVED PATENT CORNER CLAMP

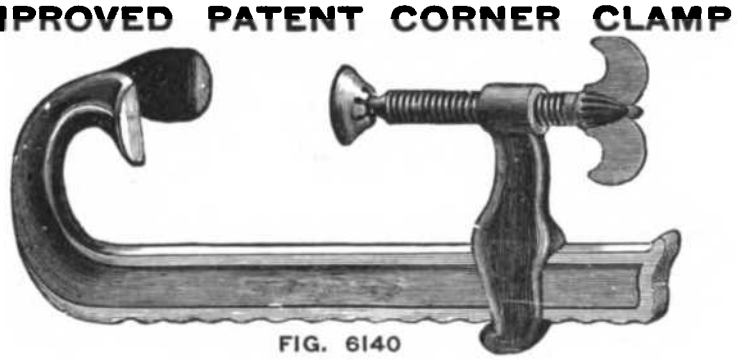


FIG. 6140

DESCRIPTION

It is easily adjusted, and, being double pronged, is particularly adapted for holding corners. Can be used on straight work equally as well. Malleable. Adjustable washer.

6 inch, per dozen, $8.00; 9 inch, per dozen, $12.00.

DOOR CLAMP



FIG. 6133

PRICES

No. 76, opens 4 feet, bars 3¼ x 2¼ inches, per dozen	$21 00
" 77, " 5 " " 3¼ x 2¼ " " "	24 00
" 78, " 7 " " 3¼ x 2¼ " " "	28 00
Extra saddles	4 20

CARRIAGEMAKER'S AND MACHINIST'S CLAMP

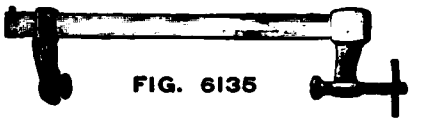


FIG. 6135

Quick adjusting, strong, and light.

PRICES

Opens 12 inches; per dozen	$18 00
" 16 " " "	21 00
" 20 " " "	24 00
" 24 " " "	27 00

ADJUSTABLE BALL CLAMP

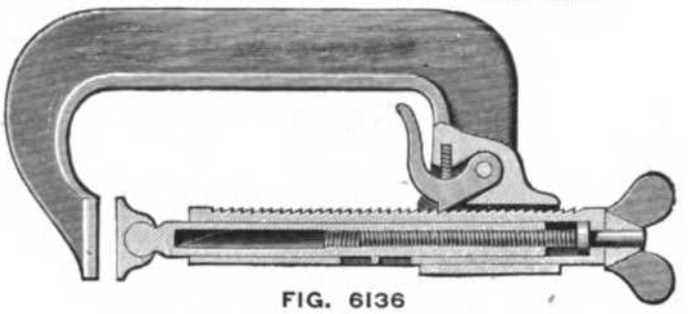


FIG. 6136

The new clamp represented in the above cut combines the qualities of quick adjustment and durability. It has the special advantage in clamping the work without displacement, being so constructed that in operating the plunger or screw it does not turn but is forced directly on the work by the thumb screw.

These clamps are made of the best malleable iron.

PRICES

No. 1. opens 3 inches; per dozen	$7 50
" 2, " 5 " " "	8 50
" 3, " 7 " " "	12 00
" 4, " 10 " " "	16 00
" 5, " 12 " " "	20 00

MALLEABLE CLAMP, WITH WROUGHT SCREW

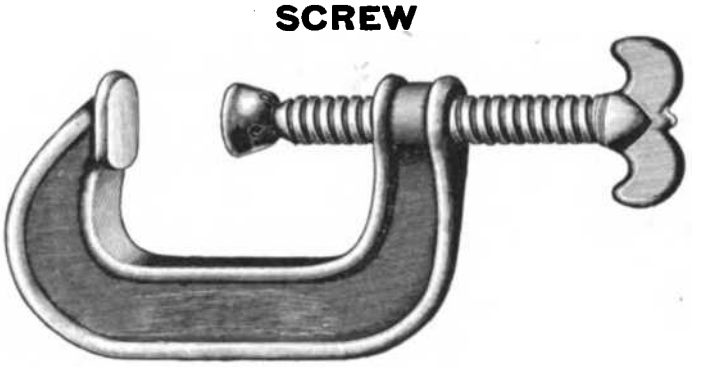


FIG. 6139

These clamps are very heavy, and are so proportioned by actual experiment as to give the greatest amount of strength possible for the weight or amount of material used. A special quality is the wrought iron screws, which are much stronger than malleable.

PRICES

Inches.	Per Dozen.	Inches.	Per Dozen.
3	$7 00	7	$20 00
4	10 00	8	25 00
5	12 00	9	27 50
6	16 00	10	30 00

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MALLEABLE IRON CABINET CLAMP

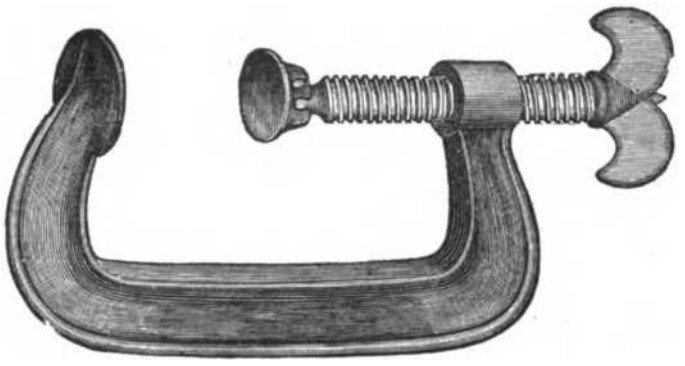


FIG. 6141

A most convenient clamp for light purposes; for gluing, scroll sawing uses, in the trimming shop, etc., and in fact in all places where the ordinary quilt clamp is not sufficiently strong. The adjustable washer works upon a perfect ball at the end of screw, thereby conforming to a beveled surface.

PRICES

2 inches, per dozen.....$2 00
3 inches, per dozen.....$3 00

ADJUSTABLE SCREW CLAMP

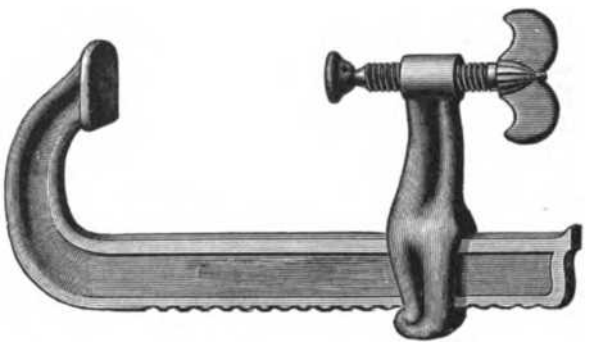


FIG. 6142

Made of the best refined malleable iron, and so proportioned as to give the greatest strength for the amount of weight. The shape of the thread on the thumb screw is of the strongest make, and so fine that the utmost power in clamping is secured without the use of a wrench They can not slip. and will conform to a beveled surface.

PRICES

3	inches,	per dozen.....	$4 00	9	inches,	per dozen.....	$10 50
5	"	"	6 50	12	"	"	15 00
7	"	"	9 00	16	"	"	20 00

BARBER IMPROVED BRACES, BALL BEARING HEADS

PLAIN

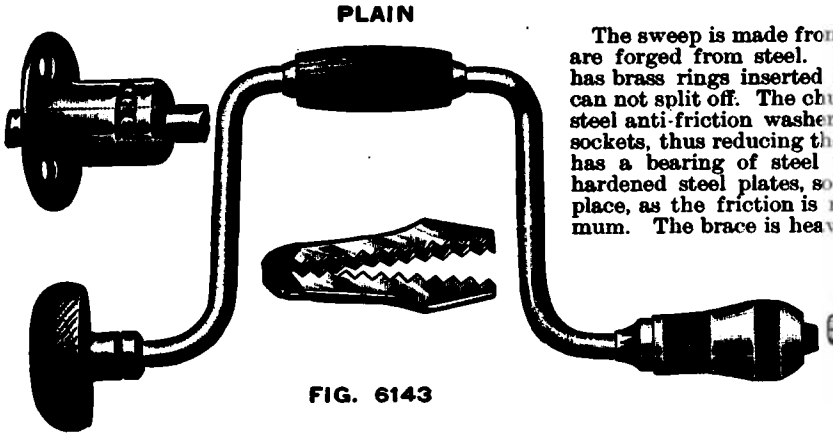


FIG. 6143

The sweep is made from steel. The jaws are forged from steel. The wood handle has brass rings inserted in each end so it can not split off. The chuck has a hardened steel anti-friction washer between the two sockets, thus reducing the wear. The head has a bearing of steel balls running on hardened steel plates, so no wear can take place, as the friction is reduced to a minimum. The brace is heavily nickel plated.

RATCHET

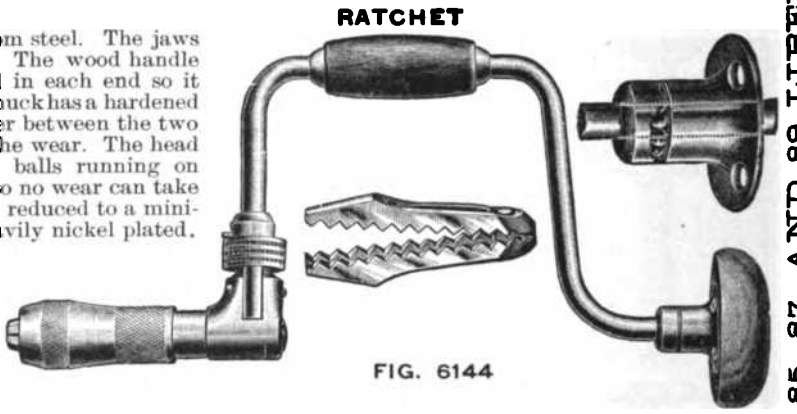


FIG. 6144

PRICES

Nos.			Per Doz.
10	14 inch	sweep.....	$33 00
11	12	"	30 00
12	10	"	27 00
13	8	"	24 00
14	6	"	21 00
15	4	"	20 00

PRICES

Nos.			Per Doz.
30	14 inch	sweep.....	$42 00
31	12	"	39 00
32	10	"	36 00
33	8	"	33 00
34	6	"	30 00

BARBER BRACES

PLAIN

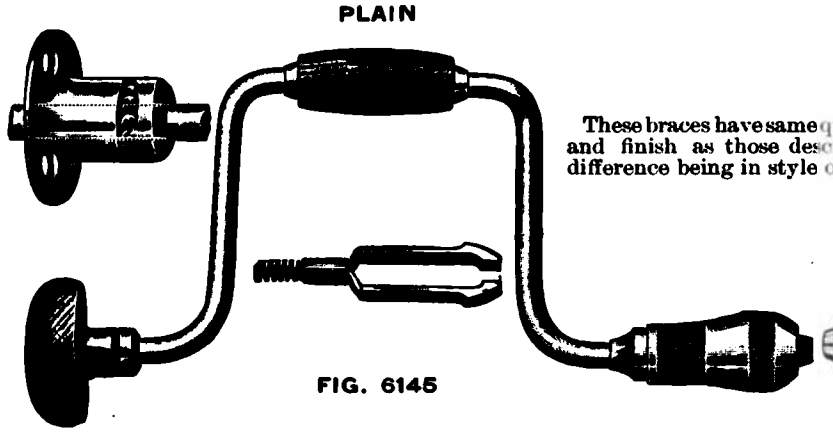


FIG. 6145

These braces have same quality of material and finish as those described above, the difference being in style of jaw.

RATCHET

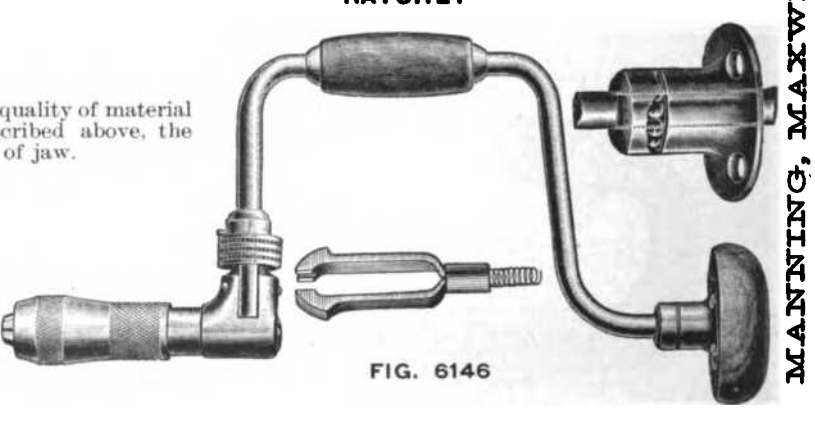


FIG. 6146

PRICES

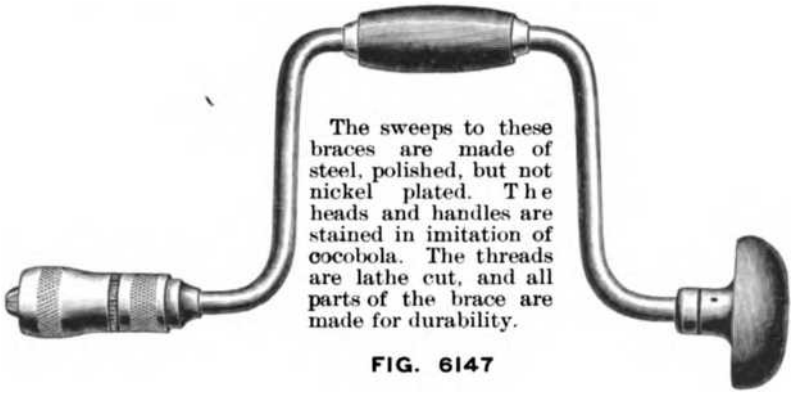
Nos.			Per Doz.
40	14 inch	sweep.....	$33 00
41	12	"	30 00
42	10	"	27 00
43	8	"	24 00
44	6	"	21 00

PRICES

Nos.			Per Doz.
61	12 inch	sweep.....	$39 00
62	10	"	36 00
63	8	"	33 00

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BARBER IMPROVED BRACE

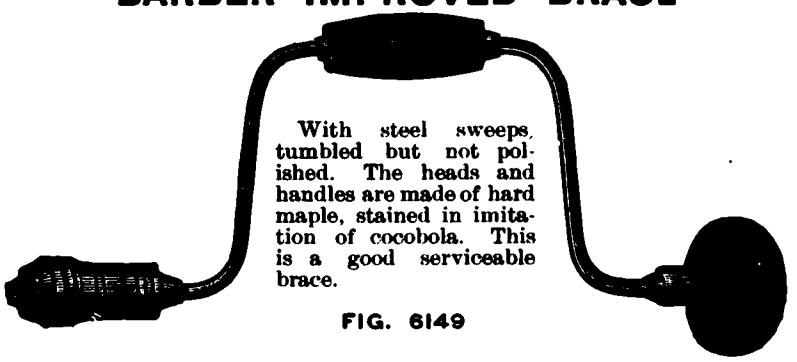


The sweeps to these braces are made of steel, polished, but not nickel plated. The heads and handles are stained in imitation of cocobola. The threads are lathe cut, and all parts of the brace are made for durability.

FIG. 6147

Nos.		PRICES	Per Doz.
21	12 inch sweep		$11 00
22	10 " "		10 00
23	8 " "		9 00
122	10 " "	ratchet	18 00
123	8 " "	"	17 00

BARBER IMPROVED BRACE



With steel sweeps, tumbled but not polished. The heads and handles are made of hard maple, stained in imitation of cocobola. This is a good serviceable brace.

FIG. 6149

Nos.		PRICES	Per Doz.
71	12 inch sweep		$8 00
72	10 " "		7 50
73	8 " "		7 00
82	10 " "	ratchet	14 00
83	8 " "	"	13 50

RATCHET BIT BRACE



This brace has ball bearing chuck, dust proof ball bearing head, forged steel alligator jaw, steel sweep nickeled, lignum vitae head, rosewood center, positive ratchet.

FIG. 6151

Nos.		PRICES	Per Doz.
1200	14 inch sweep		$60 00
1201	12 " "		55 00
1202	10 " "		52 00
1203	8 " "		49 00
1204	6 " "		47 00

BALL BRACE WITH SCREW



FIG. 6153

Nos.		PRICES	Per Doz.
30	10 inch bright sweep		$4 20
25	8 " " "		3 75

BARBER BRACE

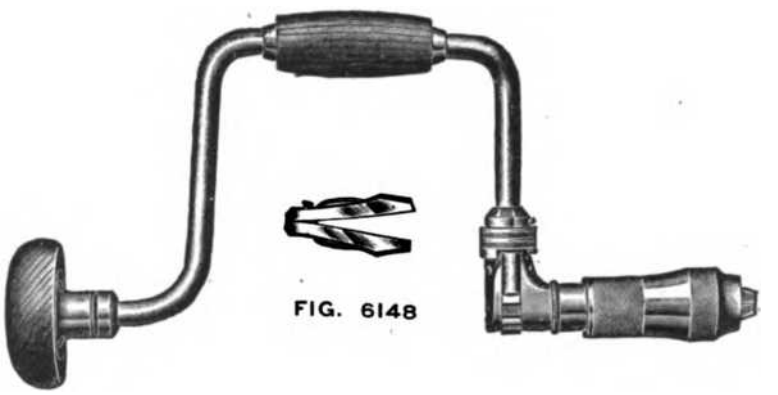


FIG. 6148

These are same grade of braces as Nos. 22 and 23 and 122 and 123, Fig. 6147, with the exception that they are nickeled.

Nos.		PRICES	Per Doz.
222	Plain 10 inch		$12 00
223	" 8 "		11 00
322	Ratchet 10 "		23 00
323	" 8 "		22 00

DRILL BRACE WITH BALL BEARINGS

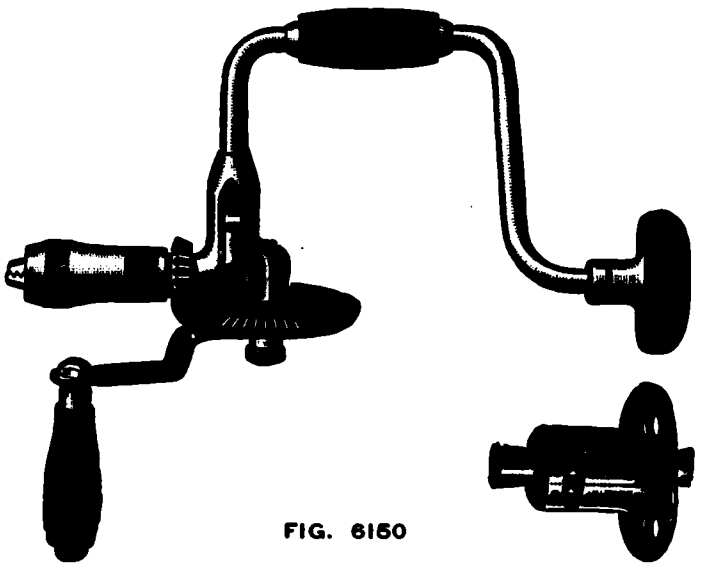


FIG. 6150

To be used as an ordinary ratchet bit brace, or as a breast drill. The brace is 10 inch sweep. The drill can be attached or detached in a moment's time.

Price, complete, $36.00 per dozen.

RATCHET BIT BRACE



Has forged steel, one piece, spring tempered jaw, dust proof ball bearing head, cocobola head and center, steel sweep, nickeled, positive ratchet. Will hold auger bits, or round shank drills equally well.

FIG. 6152

Nos.		PRICES	Per Doz.
1000	14 inch sweep		$54 50
1001	12 " "		49 00
1002	10 " "		45 00
1003	8 " "		39 50
1004	6 " "		37 50

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RATCHET BIT BRACE



FIG. 6154

Has forged steel, one piece, spring tempered jaw; steel sweep, nickeled; lignum vitae head; cocobola center; positive ratchet.

No. 0100	14	inch sweep, per dozen		$52 50
" 0101	12	"	"	46 00
" 0102	10	"	"	42 75
" 0103	8	"	"	39 00
" 0104	6	"	"	37 00

PIN RATCHET BIT BRACE

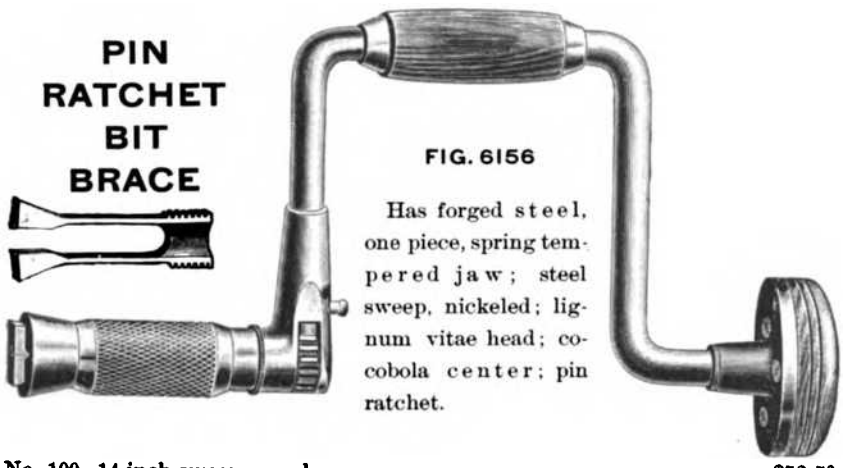


FIG. 6156

Has forged steel, one piece, spring tempered jaw; steel sweep, nickeled; lignum vitae head; cocobola center; pin ratchet.

No. 100	14	inch sweep, per dozen		$52 50
" 101	12	"	"	46 00
" 102	10	"	"	42 75
" 103	8	"	"	39 00
" 104	6	"	"	37 00

RATCHET BIT BRACE



FIG. 6158

Has mahogany stained head and center, incased ratchet, steel sweep.

No. 111	12	inch bright sweep, per dozen		$20 25
" 112	10	"	"	18 50
" 113	8	"	"	16 75

BRACE SCREW DRIVER

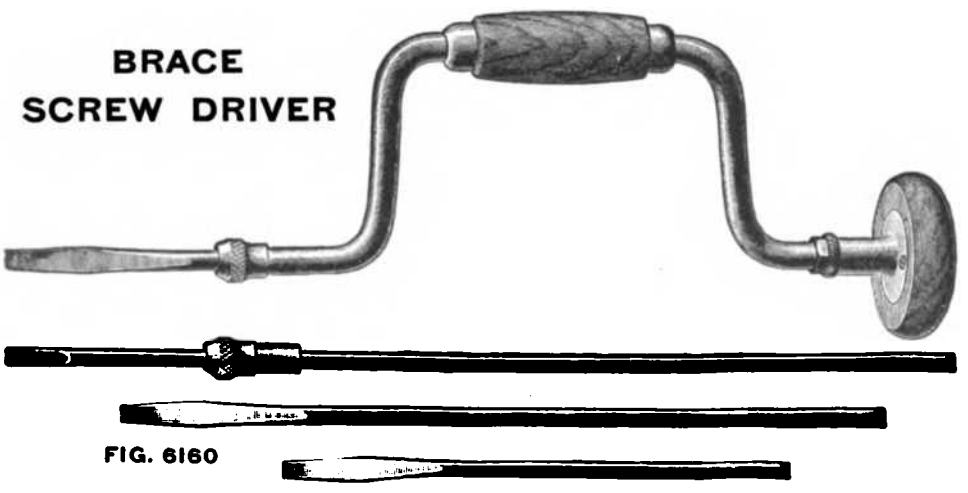


FIG. 6160

SPOFFORD BRACE

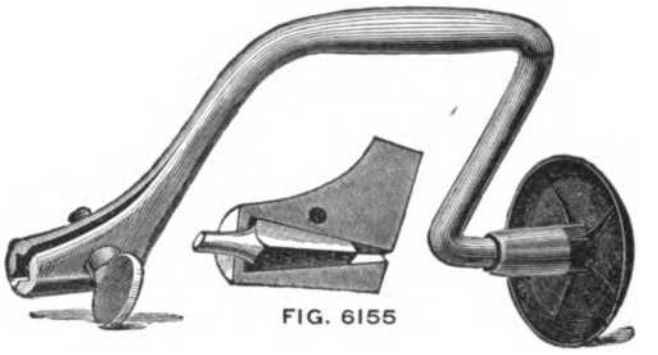


FIG. 6155

No. 7	7	inch sweep, per dozen		$16 00
" 8	8	"	"	19 00
" 10	10	"	"	22 00
" 12	12	"	"	25 00
" 14	14	"	"	28 00

SPOFFORD BRACE

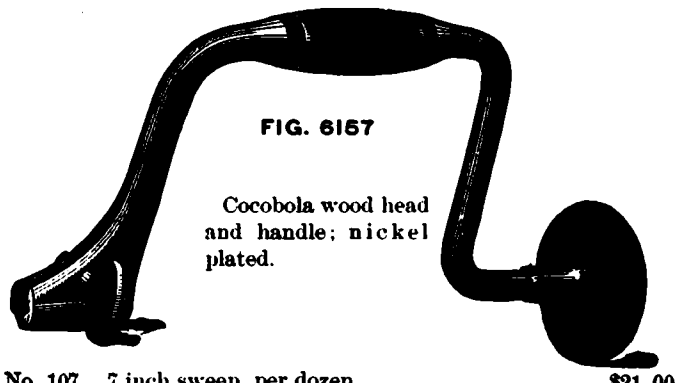


FIG. 6157

Cocobola wood head and handle; nickel plated.

No. 107	7	inch sweep, per dozen		$21 00
" 108	8	"	"	24 00
" 110	10	"	"	27 00
" 112	12	"	"	30 00
" 114	14	"	"	33 00
" 117	17	"	"	36 00

SPOFFORD DOUBLE CRANK OR WHIMBLE BRACE

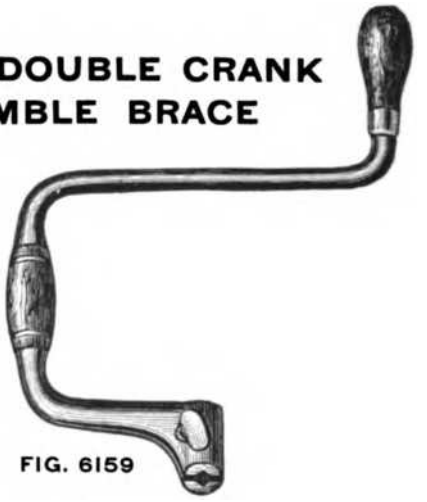


FIG. 6159

For millwrights, shipwrights, etc. Nickel plated, head and handle cocobola.

	Per Doz.
No. 10, 10 inch sweep	$33 00
No. 12, 12 inch sweep	36 00

DESCRIPTION, FIG. 6160

This tool has a six inch steel sweep, cocobola head and handle, with patent adjustable steel collar, and a chuck for holding the interchangeable blades, which is strong and quickly operated.

It is provided with four blades, from 4 to 12 inches long, made from the best tool steel carefully tempered. Also has a 12 inch extension, which, in combination with the blades, gives a variety of 4, 8, 12, 16, 20 and 24 inches in length. The whole tool is nicely finished and nickel plated.

PRICE

No. 1 brace, with extension and 4 blades, per dozen $21 00

Packed one set in a box.

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UNIVERSAL ANGULAR BIT STOCK

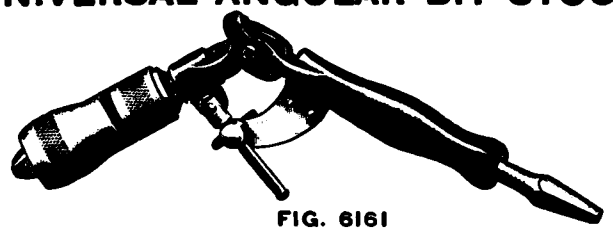


FIG. 6161

The Universal Angular Bit Stock is to be used in connection with a brace and bit for boring holes in places where the brace and a bit alone can not be used. It can be varied in any position from a straight line parallel with brace chuck to the angle shown in cut. The ability to vary the angles, either at the commencement or during the operation of boring a hole, is an important feature.

Per dozen.....$24 00

McCLELLAN BIT BRACE
NO. 2. SMALL SIZE

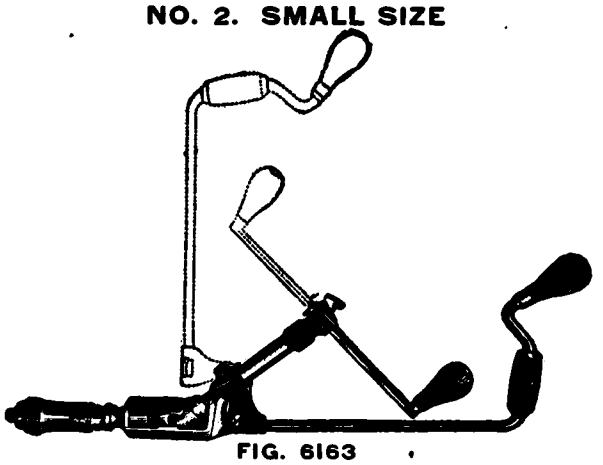


FIG. 6163

It will bore a hole up to ½ inch in any corner, against the ceiling, between joists, under floor, in counters or any place where a ratchet brace must be used. It is light and handy and can be carried in the coat pocket.

PRICE, $1.00

MEISTER'S ANGULAR BORING MACHINE

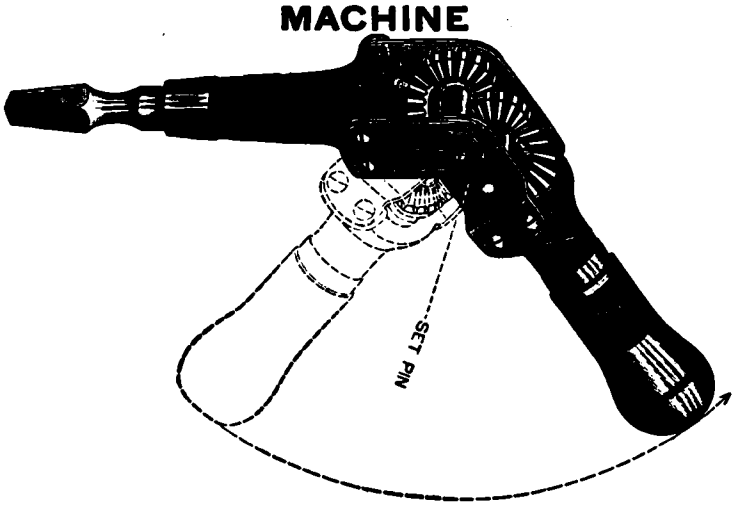


FIG. 6165

A tool adapted, in connection with an ordinary bit brace, to bore and ream holes, also for turning screws, nuts, etc., at awkward angles. The chuck part of machine bends as far as the dotted lines show and is locked firmly with the set pin at the desired angle. This implement is of value for boring where the ordinary brace can not be used, in all places where there is not room for the regular brace handle to turn, and can be used for boring in corners, against partitions, alongside of walls, between beams, around projections, shelves, etc., and is therefore a tool peculiarly suited to the use of gasfitters, plumbers, bell hangers, carpenters, blacksmiths, cabinetmakers, pattern makers, wheelwrights, agricultural implement makers, electricians, etc.

PRICE, $5.00

BARBER EXTENSION BIT HOLDER



FIG. 6168

12, 15, 18, 21 and 24 inches.

All lengths, per dozen.....$15 00

CORNER BRACE

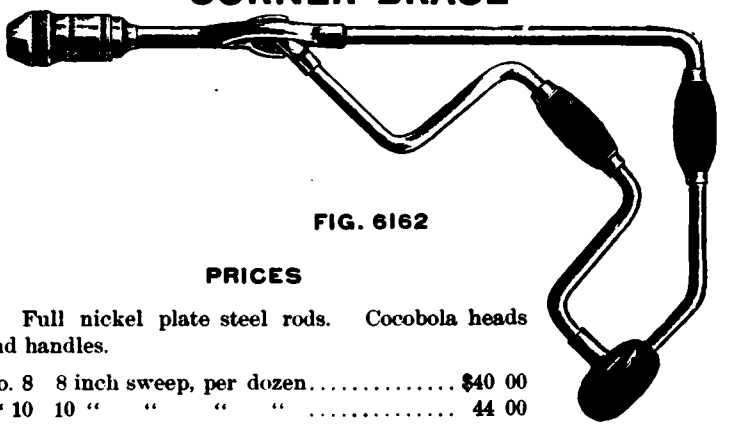


FIG. 6162

PRICES

Full nickel plate steel rods. Cocobola heads and handles.

No. 8 8 inch sweep, per dozen.....$40 00
" 10 10 " " " " 44 00

AUTOMATIC CHAIN DRILLS

No. 307

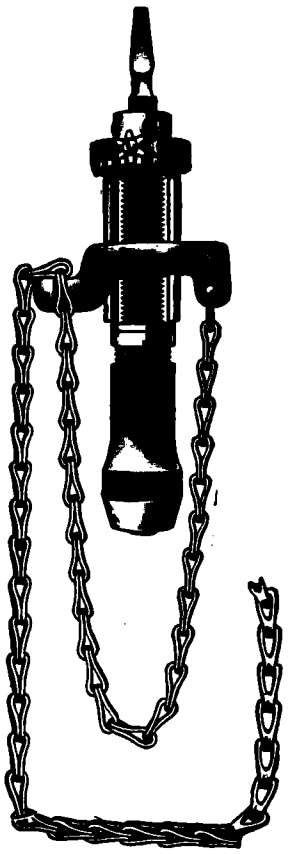


FIG. 6166

No. 316

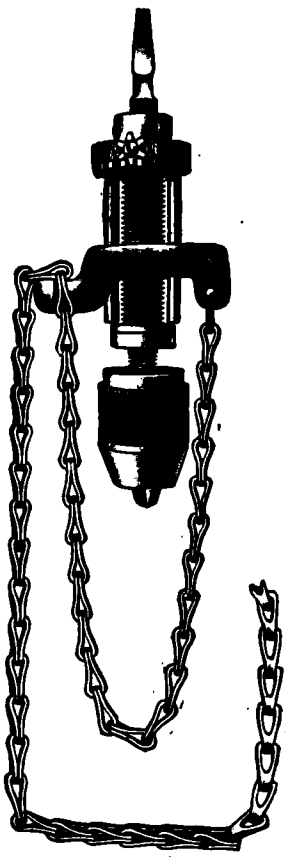


FIG. 6167

DESCRIPTION, FIG. 6166

This device will be found very useful in connection with a bit brace or breast drill in many places where it is not convenient to bring a ratchet drill into use. It has an entirely automatic feed; the end thrust has its friction reduced by ball bearings; it has an equipment of three feet No. AA steel chain. The chuck is suitable for holding square shanks.

PRICE, $3.00

DESCRIPTION, FIG. 6167

This tool is a companion to No. 307, Fig. 6166. The working mechanism of both are identical; they differ only in the style of the chuck. Fig. 6167 has a three jawed chuck for holding round shank drills 0 to ½ inch; this is a valuable addition, as it enables the operator to get a degree of accuracy not obtainable where square shanks are used.

PRICE, $5.00

COMBINED BIT EXTENSION AND SCREW DRIVER

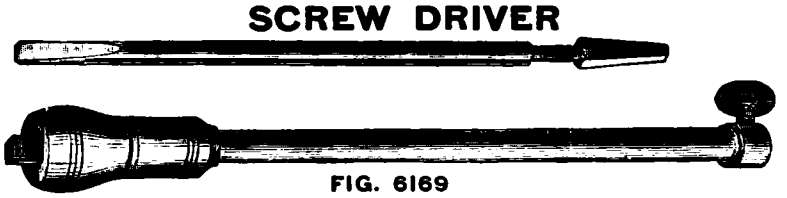


FIG. 6169

Half length, 7½ inches. Whole length, 14 inches.

Nickel plated, per dozen.....$24 00

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PLUMBS AND LEVELS

NO. 0

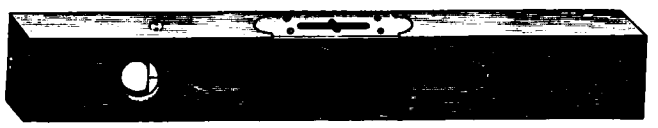


FIG. 6170

Nos.		Per Dozen.
00	Plumb and level, arch top plate, two side views, polished, assorted, 18 to 24 inches	$16 00
0	Plumb and level, arch top plate, two side views, polished, assorted, 24 to 30 inches	18 00

NO. 3

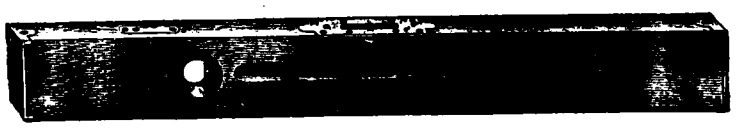


FIG. 6171

No.		Per Dozen.
3	Patent adjustable plumb and level, arch top plate, two side views, polished and tipped, assorted, 24 to 30 inches	$30 00

NO. 9



FIG. 6172

No.		Per Dozen.
9	Patent adjustable mahogany plumb and level, arch top plate, two ornamental brass lipped side views, polished and tipped, assorted, 24 to 30 inches	$48 00

NO. 30

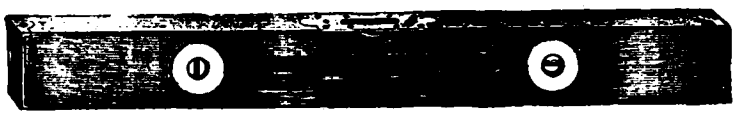


FIG. 6173

No.		Per Dozen
30	Patent adjustable plumb and level, cherry, arch top plate, improved duplex side views, polished, tipped, assorted, 24 to 30 inches	$18 00

PLUMB AND LEVEL
WITH GROUND GLASSES

NO. 90



FIG. 6174

Nos		Per Dozen.
60	Mahogany plumb and level, arch top plate, two brass lipped side views, with ground glasses, 24 to 30 inches	$35 00
90	Mahogany plumb and level, arch top plate, two brass lipped side views, tipped, with ground glasses, 24 to 30 inches	39 00

NO. 35



FIG. 6177

HEXAGON POCKET LEVELS
WITH DETACHABLE BASE PIECE

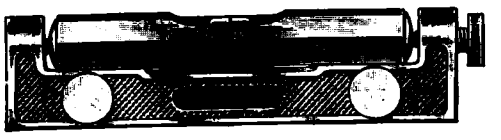


FIG. 6175

No. 33. Nickel plated, with ground glasses, one in a box, each.....$1 25



FIG. 6176

No. 31. Hexagon pocket levels, nickel plated, proved glasses, ½ dozen in a box.

Inches	2	2½	3	3½	4	4½
Per dozen	$3 25	$3 50	$4 25	$5 00	$6 00	$6 50

DESCRIPTION, FIG. 6177

No.		Per Dozen.
35	Adjustable mason's plumb and level, adapted also for plumb bob and line, 42 inches	$48 00

PLUMB AND LEVEL
WITH GROUND GLASSES
NO. 95



FIG. 6178

Nos.		Per Dozen.
95	Brass bound mahogany plumb and level, two brass lipped side views, with ground glasses, 24 to 30 inches	$72 00
96	Brass bound, rosewood plumb and level, two brass lipped side views, with ground glasses, 24 to 30 inches	80 00
98	Brass bound, rosewood plumb and level, two brass lipped side views, with ground glasses, 12 inches,	48 00

Packed separately, in pasteboard boxes. In ordering, designate the lengths of the levels wanted—24, 26, 28 or 30 inches.

ECLIPSE LEVEL

The outer shell of the level case can be turned, so as to completely protect the glass from damage when not in use.

NO. 34

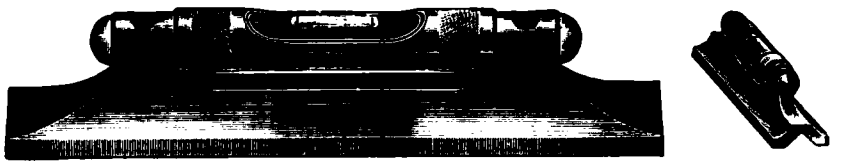


FIG. 6179

No. 34. Nickel plated, with ground glasses, one in a box.

Inches	4	6	8	10
Each	$1 00	$1 25	$1 75	$2 25

Will be sent with V bottoms (for leveling shafting, etc.) at same price, if so ordered.

MACHINIST'S IRON LEVEL



FIG. 6180

Nos.		
38½	Iron level, nickel plated, each 4 inches	$4 50
39½	" " " " 6 inches	5 50

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CROSS TEST LEVEL AND PLUMB

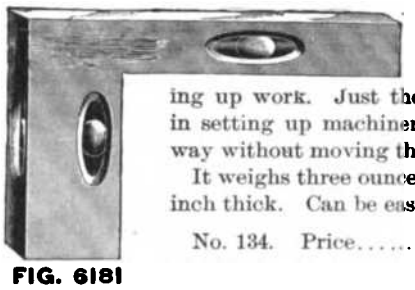


FIG. 6181

This is a well made and reliable tool, and valuable in plumbing, squaring and leveling up work. Just the thing to use about a planer or in setting up machinery. Leveling is indicated every way without moving the tool.

It weighs three ounces. Size: 2 inches x 3 inches x ½ inch thick. Can be easily carried in the pocket.

No. 134. Price.....$1 50

BENCH LEVEL



FIG. 6182

No. 130, 3½ inches; each, $0.30

BENCH LEVELS, WITH DOUBLE PLUMBS



FIG. 6185



FIG. 6186



FIG. 6187

PRICES, NO. 132

4 in., with square ends	$1 35	12 in., with square ends	$1 75
6 " " " "	1 50	18 " as in bottom cut	2 00
9 " " " "	1 65	24 " " " " "	2 25



FIG. 6188

The Nos. 132, 133, 95 and 96 levels all have a longitudinal groove in seat of frame, as shown in this small cut, Fig. 6188, adapting them to rest on cylindrical shafts or pipes as well as on flat surfaces, and even improving them for use on flat surfaces.

CARPENTERS' AND MACHINISTS' ADJUSTABLE IRON DOUBLE PLUMBS AND LEVELS

NO. 6

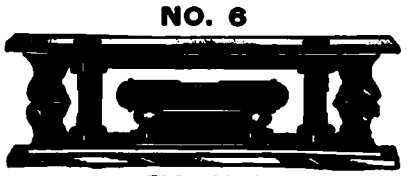


FIG. 6190

NO. 7

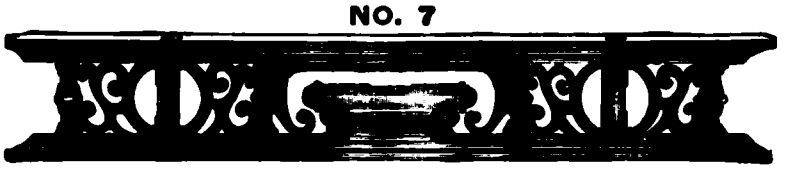


FIG. 6191

PRICES

Nos.	In.		Per Doz.		Per Doz.
6	6	With plain glasses,	$24 00	With surveyors' ground glasses,	$49 00
7	12	" " "	27 00	" " " "	54 00
8	18	" " "	30 00	" " " "	63 00
9	24	" " "	36 00	" " " "	72 00

ADJUSTABLE BENCH LEVELS

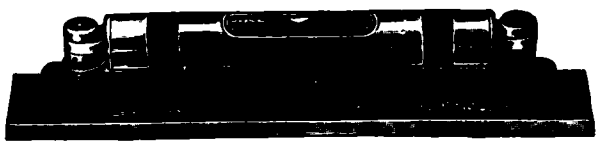


FIG. 6183

Sizes: 4, 6, and 8 inches.

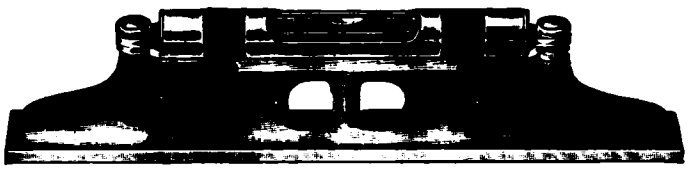


FIG. 6184

Size: 12 inches. The 18 inch size is similar, but with double plumb.

These levels have ground and graduated vials, accurate and very sensitive. Are so constructed that they can be accurately adjusted, and when so adjusted are not liable to get out of truth, the vials being set in tubes having solid ends which are firmly clamped to the base. The tubes are nickel plated, the bases japanned or nickel plated. The outer tube may be turned so as to protect the glass when not in use. These levels have a longitudinal groove, as per Fig. 6188.

PRICES, NO. 95

4 inches,	plain vial		$1 00
6 "	" "		1 25
8 "	" "		1 50
12 "	" "		2 00
18 "	" "		3 00

Either size, nickel base. 25 cents extra.

NO. 96

4 inches,	with ground and graduated vial		$2 50
6 "	" " " " " "		3 50
8 "	" " " " " "		4 00
12 "	" " " " " "	with plumb	5 50
18 "	" " " " " "	with double plumb	8 00

Either size, nickel base, 25 cents extra.
The bottoms of these levels are all ground true.

ENGINEER'S AND PLUMBER'S LEVEL



FIG. 6189

The above represents an adjustable incline level, a fixed level, and a plumb. The hinged tube inside the working faces of the frame, carrying a level glass, is adjustable to the graduated scale and shows any incline by 32ds, or less, to 2 inches to the foot without interfering in the least with the plumb or level.

A longitudinal groove in seat of frame—not shown in cut—adapts it to rest on a cylindrical shaft or pipe as well as on flat surfaces, making it convenient to determine the pitch of drain pipes, etc.

These instruments are supplied with either ground or plain glasses.

PRICES, NO. 133

10 inches,	with plain glasses	With ground glasses	$5 75
15 "	" " "	" " "	6 00

MACHINISTS' ADJUSTABLE IRON LEVELS, PLUMBS AND INCLINOMETERS

NO. 1

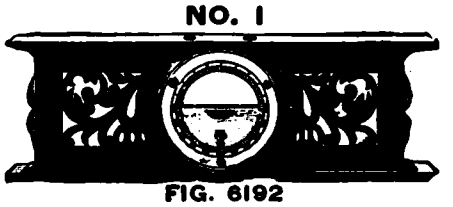


FIG. 6192

NO. 2

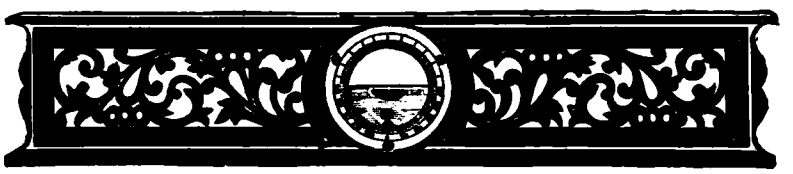


FIG. 6193

PRICES

No. 1	6 inches,	per doz	$24 00	No. 3	18 inches,	per doz	$36 00
" 2	12 "	" "	30 00	" 4	24 "	" "	42 00

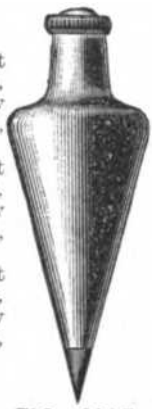
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ASS PLUMB BOBS


6194

PRICES
FIG. 6194

No. 5710. Weight about 14 ounces, steel point, screw cap, long neck, each, $2.25.
No. 5711. Weight about 24 ounces, steel point, screw cap, long neck, each, $3.24.
No. 5712. Weight about 32 ounces, steel point, screw cap, long neck, each, $3.75.


FIG. 6195

PRICES
FIG. 6195

No. 5700. Steel point, screw cap, weight about 6 oz., each, $1.20.
No. 5701. Steel point, screw cap, weight about 8 oz., each, $1.50.
No. 5702. Steel point, screw cap, weight about 12 oz., each, $1.80.
No. 5706. Steel point, screw cap, weight about 24 oz., each, $2.70.

BRASS PLUMB BOB

PRICES, FIG. 6196

Brass, Highly Polished, with Steel Points.

	Ounces.	Per Doz.
No. 50	2	$6 00
	4	7 25
	6	9 25
	8	12 00
	10	15 00
	12	17 00
	14	19 00
	16	21 00
	18	23 00
	20	25 00
	22	27 00
	24	29 00


FIG. 6196

MERCURY PLUMB BOB

PRICES, FIG. 6197

These Plumb Bobs are made of solid steel rod, bored out and filled with mercury. They are unusually heavy in proportion to their size, and the center of gravity is low. The points are hardened and the bodies and points are ground. These instruments are nickel plated and each is furnished with a braided silk line. The shape and comparatively small diameters render them more convenient than the ordinary plumb bobs. The 3½ ounce can easily be carried in a vest pocket.

Nos.	Ounces.	Lengths, Inches.	Diameters, Inches.	Each.
5721	3½	4	½	$1 20
5722	6	4½	⅝	1 80
5723	12	5⅜	⅞	2 40
5724	16	6	1	3 00


FIG. 6197

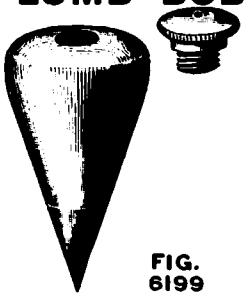
...T PLUMB BOB

PRICES
FIG. 6198

This plumb bob is made of steel, with a hardened point polished, nickel plated, and filled with mustard seed shot. The head is made spool shaped to provide for the line. A good silk line goes with each bob.

	Lengths, Inches.	Each.
No. 160	½ x 4½	$1 00
	¾ x 6	1 25
	1 x 7	1 50

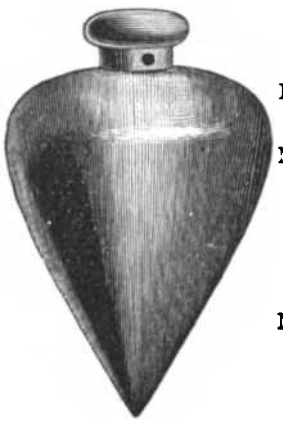
BRASS PLUMB BOB


FIG. 6199

Cast Brass, Steel Pointed, Screw Top.

Nos.	Weight, Ounces.	Per Doz.
5	6	$7 25
6	11½	10 00
8	16	11 40

JAPANNED PLUMB BOBS

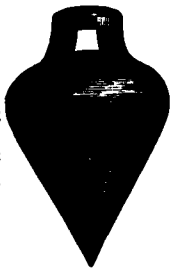

FIG. 6200

PRICES
FIG. 6200

Adjusted Top.
No. 00. Weight, 1 pound 2 ounces; per dozen $3.00.
No. 0. Weight, 2 pounds 10 oz.; per dozen, $5.00.

PRICE
FIG. 6201

Adjusted Top.
No. 2. Weight, 9½ ounces; per dozen, $1.60.


FIG. 6201

LEAD PLUMB BOB

PRICES
FIG. 6202

Steel Pointed.
No. 3. Weight, 12 ounces; per dozen, $6.25.
No. 4. Weight, 1¼ pounds; per dozen, $8.00.


FIG. 6202

PLUMB BOB CORD

Plumb Bob Cord, best linen, thin, medium or thick, per yard.$0 02
" " " " braided silk, per yard..... 06


6198

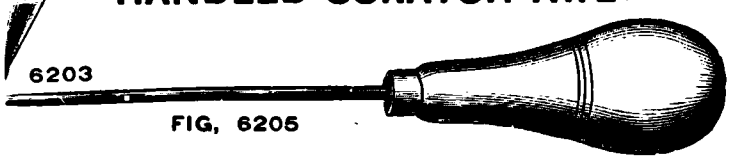
ADJUSTABLE PLUMB BOB

These plumb bobs are constructed with a reel at the upper end, upon which the line may be kept, and by dropping the bob with a slight jerk, while the ring is held in the hand, any desired length of line may be reeled off. A spring, which has its bearing on the reel, will check and hold the bob firmly at any point on the line. The pressure of the spring may be increased, or decreased, by means of the screw which passes through the reel. A suitable length of line comes already reeled on each plumb bob.

PRICES

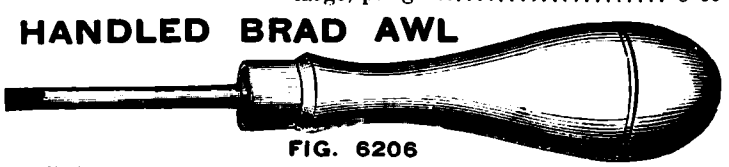
		Each.
No. 1	Small, bronze metal, with steel point	$1 50
" 2	Large, " " " "	1 75
" 5	" iron " "	1 00

HANDLED SCRATCH AWL.


6203
FIG. 6205

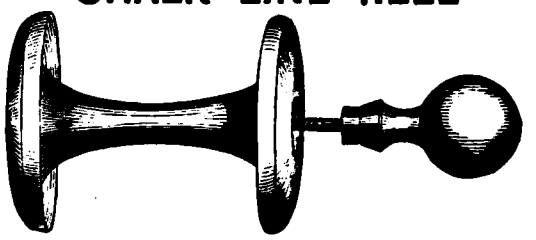
Handled Steel Scratch Awls, per gross.....$7 00
" " " " large, per gross..... 8 50

HANDLED BRAD AWL


FIG. 6206

Handled Brad Awls, assorted, 1 dozen in a box.....$6 50
" " " " large, 1 dozen in a box..... 7 00

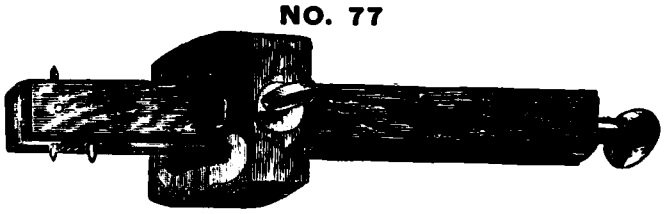
CHALK LINE REEL


FIG. 6204

Nos.	PRICES	Per Doz.
12	Chalk Line Reels	$0 36
13	" " " with 60 feet best quality chalk line	1 75
14	" " " " steel scratch awls	95
15	" " " " " " and 60 feet of best quality chalk line	2 25

MORTISE AND MARKING GAUGE

NO. 77

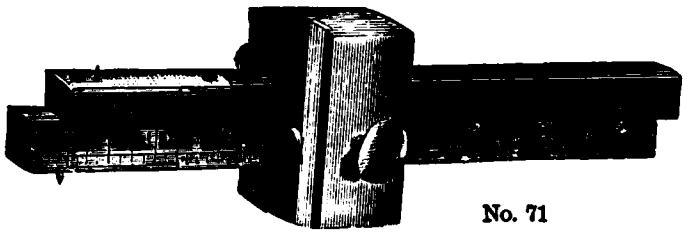

FIG. 6207

No. 77 Patent Mortise and Marking Gauge, rosewood, plated head, improved screw slide, brass thumb screw and shoe, oval bar, marked, steel points, ½ dozen in a box.....$10 00

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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DOUBLE GAUGE



No. 71

FIG. 6208

Nos.		Per Doz.
71.	Patent Double Gauge (marking and mortise gauge combined), beechwood, polished, plated head and bars, brass thumb screws and shoes, oval bars, marked, steel points, ½ dozen in a box	$8 00
72.	Patent Double Gauge (marking and mortise gauge combined), beechwood, polished, boxwood thumb screws, oval bars, marked, steel points, ½ dozen in a box	4 00

MARKING GAUGE

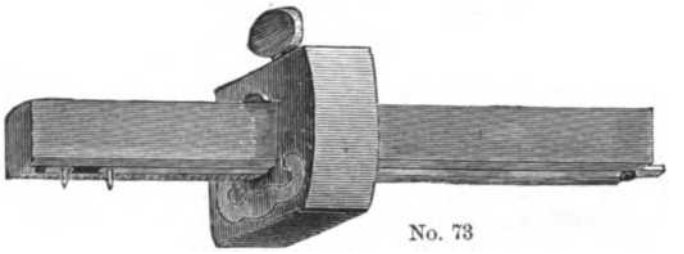


No. 61

FIG. 6210

Nos.		Per Doz.
0.	Marking Gauge, beechwood, boxwood thumb screw, marked, steel point, 1 dozen in a box	$0 75
61.	Marking Gauge, beechwood, boxwood thumb screw, oval bar, marked, steel point, 1 dozen in a box	1 00

MORTISE GAUGE

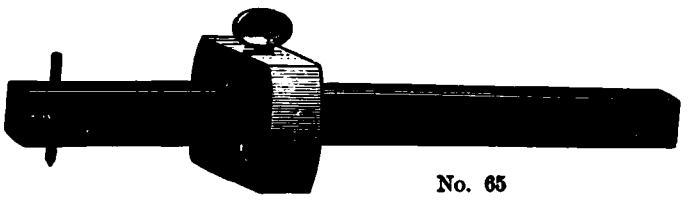


No. 73

FIG. 6209

Nos.		Per Doz.
73.	Patent Mortise Gauge, boxwood, polished, plated head, brass slide, brass thumb screw and shoe, oval bar, marked, steel points, ½ dozen in a box	$8 00
68.	Mortise gauge, plated head, adjustable wood slide, brass thumb screw and shoe, oval bar, marked, steel points, ½ dozen in a box	6 00

MARKING GAUGE



No. 65

FIG. 6211

Nos.		Per Doz.
65.	Patent Marking Gauge, boxwood, polished, plated head, brass thumb screw and shoe, oval bar, marked, adjusting steel point, ½ dozen in a box	$6 00
70.	Cutting Gauge, mahogany, polished, plated head, boxwood thumb screw, oval bar, marked, steel cutter, 1 dozen in a box	4 00

CHESTERMAN'S MEASURING TAPES

Nos.									
34 L.	Metallic wove linen tape, ⅝ inch wide, leather case with folding handle, brass trimmings. Marked 12ths or	25	33	40	50	66	75	—	100 feet
	10ths or marked in meters.	—	10	—	15	20	—	25	30 meters
	Prices for either marking.	$1 80	2 10	2 30	2 60	3 00	3 30	3 60	4 20 each
34 FH.	As 34L, but with flush handle.								
	Prices for either marking.	2 00	2 30	2 50	2 80	3 30	3 60	3 90	4 60 each
126.	Tapes only, for any of the above	0 90	1 10	1 30	1 50	1 80	2 00	2 20	2 90 each
38 L.	Steel tape, ⅜ inch wide, leather case, with flush folding handle.								
	Marked 12ths or 10ths and links	25	33	40	50	66	75	—	100 feet
	Or marked in meters	—	10	—	15	20	—	25	30 meters
	Prices for either marking.	$4 50	5 20	6 00	7 20	9 20	10 40	11 20	12 80 each
	Prices for feet one side, meters other side	5 10	6 00	7 00	8 40	10 80	12 20	13 40	15 20 each
127.	Tapes only, for the above.								
	Prices marked feet and links	2 90	3 60	4 40	5 40	7 20	8 00	8 80	10 80 each
	Prices marked meters and feet	3 50	4 40	5 40	6 60	8 80	9 80	11 00	13 20 each
1526.	"Constantia" (trade mark), Chesterman's best woven linen tape, ⅝ inch wide, with leather case and folding handles.								
	Marked 12ths or 10ths	25	33	40	50	66	75	—	100 feet
	Or marked in meters	—	10	—	15	20	—	25	30 meters
	Prices for either marking.	$1 80	2 10	2 30	2 60	3 00	3 30	3 60	4 20 each
1527.	As 1526, but with flush handle	2 00	2 30	2 50	2 80	3 30	3 60	3 90	4 60 each
2801.	Tapes only for the above	0 90	1 10	1 30	1 50	1 80	2 00	2 20	2 90 each
1533.	"Treble" (trade mark). All linen tape, 9/16 inch wide, without name, with leather case and folding handle.								
	Marked 12ths or 10ths	25	33	40	50	66	75	—	100 feet
	Or marked in meters	—	10	—	15	20	—	25	30 meters
	Prices for either marking.	$0 95	1 05	1 20	1 40	1 60	1 75	1 85	2 20 each
1533 FH.	As 1533, but with flush handle	1 25	1 35	1 50	1 70	2 00	2 15	2 25	2 60 each
2212.	Tapes only, for the above	35	45	55	65	85	95	1 05	1 30 each
1534.	"Metallic" wove linen tape, ⅝ inches wide, "Treble" (trade mark), without name, with leather case and folding handle.								
	Marked 12ths or 10ths	25	33	40	50	66	75	—	100 feet
	Or marked in meters	—	10	—	15	20	—	25	30 meters
	Prices for either marking	$1 30	1 50	1 70	2 00	2 40	2 70	3 00	3 40 each

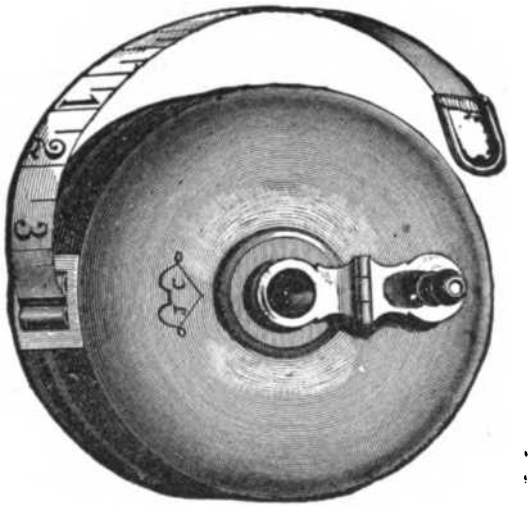


FIG. 6212

CHESTERMAN'S POCKET STEEL TAPE SPRING STOP

DESCRIPTION

FIG. 6213

No. 36SS. Pocket steel tape, with spring stop, German silver case, tape ¼ in. wide, marked both sides. Feet and inches one side. Meters and millimeters other side.

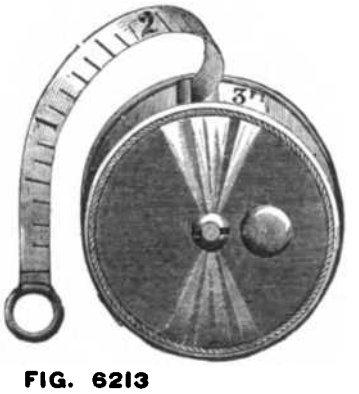


FIG. 6213

Sizes	3	4	5	6	9	12	18 feet
Prices	$1 20	1 40	1 60	1 80	2 40	2 95	4 15 ea.

No. 215SS. The same as No. 36SS, but with ⅝ inch tape.

Sizes	3	4	5	6 feet.	
Prices	$1 85	1 60	1 80	2 00 ea.	Not made larger.

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RELIABLE STEEL MEASURING TAPES

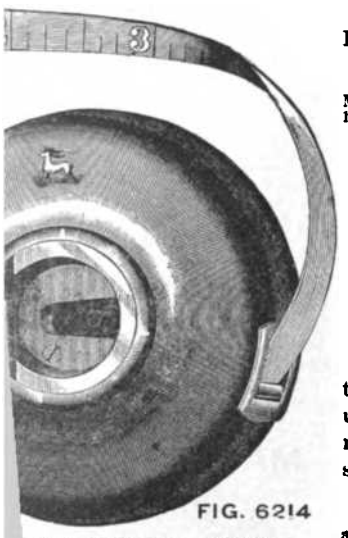


FIG. 6214

With double folding flush handle, opened by pressing small pin or button on opposite side. Hard leather cases. Nickel plated trimmings. Measurements guaranteed perfectly accurate.

WITH 3/8 INCH TAPES

Marked Feet and 12ths Inches and Eighths, Nos.	Marked Feet, 10ths and 100ths of Feet, for Surveyor's use. Nos.	Lengths, Feet.	Diameters of Case, Inches.	Prices, Each.	Extra for Nickel Plated Tapes.
200	200 D	25	2¾	$4 50	$1 00
201	201 D	33	2¾	5 20	1 00
202	202 D	40	3¼	6 00	1 50
203	203 D	50	3¼	7 20	1 50
204	204 D	66	3¾	9 20	1 75
205	205 D	75	4¼	10 40	1 75
206	206 D	100	4½	12 80	2 00

The above tapes are marked on the back with links and poles. When links are not wanted, they will be supplied marked at every foot instead at same price. Tapes marked metric measure, one side only, at same price as corresponding lengths in feet. Tapes marked feet one side, metric measure on the other, add 2½ cents per foot to list price. Tapes marked feet and 12ths one side, feet and 10ths on the other, add 2½ cents per foot to list price. Packed one in a box.

RELIABLE STEEL TAPES WITH 1/2 INCH TAPES

⅝ in. tapes, as shown above, are almost universally used, but occasionally a wider tape is wanted.

Marked feet and inches..... Nos.	303	304	305	306
" " 10ths and 100ths..... "	303 D	304 D	305 D	306 D
Lengths, feet.....	50	66	75	100
Prices, each.....	$8 10	$10 35	$11 70	$14 40

BLE TAPES ONLY
UT CASES
ch wide.

40	50	66	75	100
4 40	5 40	7 20	8 00	10 20

UNIOR STEEL MEASURING TAPES



With double folding flush handle, opened by pressing small pin or button on opposite side. Hard leather cases. Nickel plated trimmings. Measurements guaranteed perfectly accurate.

WITH 1/4 INCH TAPES

Marked Feet and 12ths Inches and Sixteenths, Nos.	Marked Feet, 10ths and 100ths of Feet, for Surveyor's use. Nos.	Lengths, Feet.	Diameters of Case, Inches.	Prices, per Dozen.	Extra for Nickel Plated Tapes, per Dozen.
100	100 D	25	2¼	$45 00	$12 00
103	103 D	50	2¾	55 00	15 00

Tapes marked metric measure, one side only, at same price.

Tapes marked feet one side, metric measure on the other, add 2½ cents per foot to list price.

Tapes marked feet and 12ths one side, feet and 10ths on the other, add 2½ cents per foot to list price.

cet steel tape; 25 feet
t only 5 ozs. complete.

OUT CASES
without cases, 25 ft.,
doz., $36.00.

RIVAL STEEL MEASURING TAPES

NICKEL PLATED STEEL CASES



FIG. 6216

Nickel plated steel cases, flush handle, ⅜ inch tapes, marked one side only in tenths or twelfths.

Marked Feet and 12ths, Inches and Eighths. Nos.	Marked Feet, 10ths and 100ths of Feet, for Surveyor's use. Nos.	Lengths, Feet.	Diameters of Case, Inches.	Prices, per Dozen.
240	240 D	25	2¾	$39 00
243	243 D	50	3⅜	48 00
245	245 D	75	3¾	63 00
246	246 D	100	4¼	81 00

Marked inches one side, metric measure other side, add 2½ cents per foot to list price.

Marked in meters and centimeters. One side only.

Millimeters the first 10 centimeters.

Nos.....	241M	243M	244M	245½M	246M
Length, meters, 10	15	20	25	30	
Prices, per doz.	$42	$48	$60	$72	$81

NGE STEEL MEASURING TAPES



HARD LEATHER CASES

PRICES, FIG. 6217

Marked Feet and 12ths, Inches and Eighths. Nos.	Marked Feet, 10ths and 100ths of Feet, for Surveyor's use. Nos.	Lengths, Feet.	Diameters of Case, Inches.	Per Dozen.
260	260 D	25	2¾	$39 00
263	263 D	50	3¼	48 00
265	265 D	75	4¼	63 00
266	266 D	100	4½	81 00

Marked inches one side, metric measure other side, add 2½ cents per foot to list price.

in meters and centimeters. One side only.

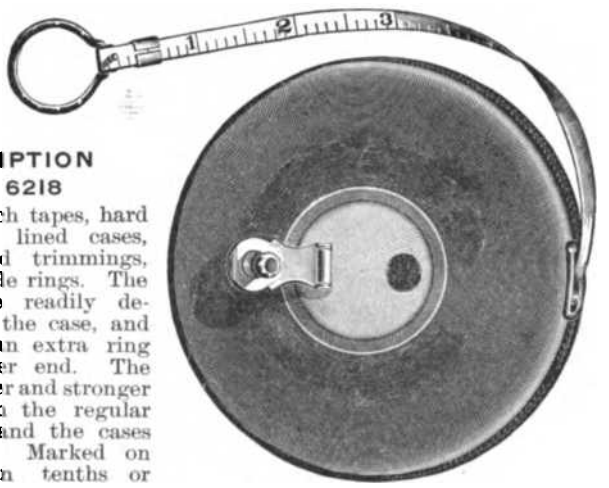
Millimeters the first 10 centimeters.

.....	261 M	263 M	264 M	265½ M	266 M
.....	10	15	20	25	30
.....	$42 00	$48 00	$60 00	$72 00	$81 00

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ENGINEERS' PATTERN STEEL TAPES

LEATHER CASE



DESCRIPTION
FIG. 6218

With ¼ inch tapes, hard leather steel lined cases, nickel plated trimmings, two detachable rings. The tape can be readily detached from the case, and we furnish an extra ring for the other end. The steel is heavier and stronger than used in the regular steel tapes and the cases are thinner. Marked on one side in tenths or twelfths.

FIG. 6218

Marked Feet and 12ths, Inches and Eighths, Nos.	Marked Feet, 10ths and 100ths of Feet, for Surveyors' use, Nos.	Lengths, Feet.	Diameters of Case, Inches.	Prices, Each.
233	233 D	50	4	$6 00
234	234 D	66	4½	8 00
235	235 D	75	4½	9 50
236	236 D	100	5	12 00

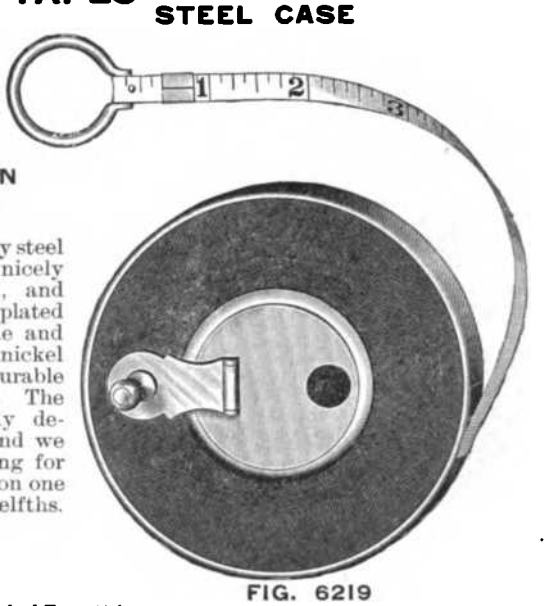
Tapes marked metric measure one side only same price as corresponding lengths in feet. Tapes marked feet on one side, metric measure on the other, add 2½ cents per foot to list price. Packed one in a box.

Tapes only, with two rings, without cases.

Lengths, feet	50	66	75	100
Prices, each	$4 00	$5 00	$6 00	$7 50

Extra detachable rings or handles, small, 1 in. round, per pair..... 50
" " " " large, 3 " oval, " 1 00

STEEL CASE



DESCRIPTION
FIG. 6219

With ¼ inch heavy steel tape; cases of steel, nicely enameled in black, and bound with nickel plated brass. Flush handle and trimmings also nickel plated. A strong, durable and handsome case. The tape can be readily detached from case and we furnish an extra ring for other end. Marked on one side in tenths or twelfths.

FIG. 6219

Marked Feet and 12ths, Inches and Eighths, Nos.	Marked Feet, 10ths and 100ths of Feet, for Surveyors' use, Nos.	Lengths, Feet.	Diameters of Case, Inches.	Prices, Each.
233½	233½ D	50	4¼	$5 25
234½	234½ D	66	4¾	7 00
235½	235½ D	75	4¾	8 75
236½	236½ D	100	5	10 50

Tapes marked metric measure one side only same price as corresponding lengths in feet. Tapes marked feet one side, metric measure on the other, add 2½ cents per foot to list price. Packed one in a box.

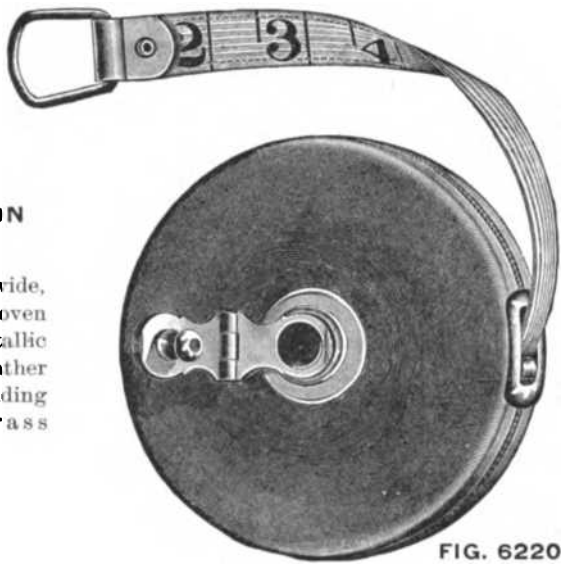
Tapes only, with two rings, without cases.

Lengths, feet	50	66	75	100
Prices, each	$4 00	$5 00	$6 00	$7 50

Extra detachable rings or handles, small, 1 in. round, per pair.... 50
" " " " large, 3 " oval " 1 00

METALLIC MEASURING TAPES

FOLDING HANDLE



DESCRIPTION
FIG. 6220

Tape ⅝ inch wide, made of best woven linen with metallic warp. Hard leather cases, brass folding handles and brass trimmings.

FIG. 6220

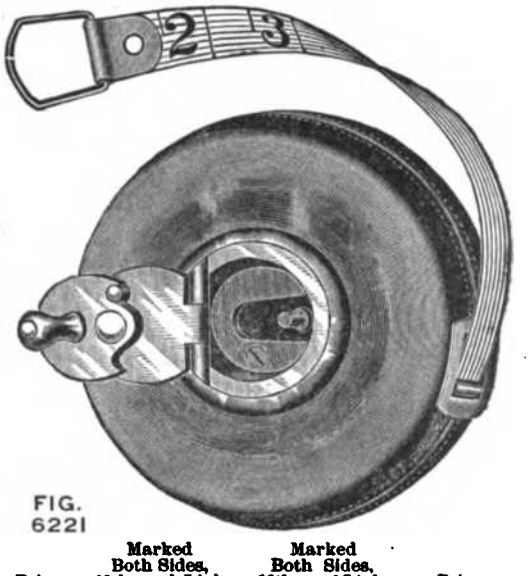
Lengths, Feet.	Marked One Side Only, 12ths, Nos.	Prices, per Dozen.	Marked Both Sides, 12ths and Links, Nos.	Marked Both Sides, 10ths and Links, Nos.	Prices, per Dozen.
25	500	$20 40	500 L	500 DL	$21 60
33	501	24 00	501 L	501 DL	25 20
40	502	26 40	502 L	502 DL	27 60
50	503	30 00	503 L	503 DL	31 20
66	504	33 60	504 L	504 DL	36 00
75	505	37 20	505 L	505 DL	39 60
100	506	46 80	506 L	506 DL	50 40

Tapes marked in meters and centimeters on back, instead of links, price same as tapes marked both sides. Tapes marked in feet on back, instead of links, price same as tapes marked both sides.

Marked in meters and centimeters, one side only.

Numbers	501 M	503 M	504 M	505½ M	506 M
Lengths, meters	10	15	20	25	30
Prices, per dozen	$24 00	$30 00	$33 60	$40 80	$46 80

FLUSH HANDLE



DESCRIPTION
FIG. 6221

With patent double folding flush handle, opened by pressing pin on opposite side. Tape ⅝ inch wide, made of best woven linen, with metallic warp. Hard leather cases.

FIG. 6221

Lengths, Feet.	Marked One Side Only, 12ths, Nos.	Prices, per Dozen.	Marked Both Sides, 12ths and Links, Nos.	Marked Both Sides, 10ths and Links, Nos.	Prices, per Dozen.
25	600	$24 00	600 L	600 DL	$25 20
33	601	27 60	601 L	601 DL	28 80
40	602	30 00	602 L	602 DL	31 20
50	603	33 60	603 L	603 DL	34 80
66	604	37 20	604 L	604 DL	39 60
75	605	40 80	605 L	605 DL	43 20
100	606	50 40	606 L	606 DL	54 00

Tapes marked in meters and centimeters on back, instead of links, price same as tapes marked both sides. Tapes marked in feet on back, instead of links, price same as tapes marked both sides.

Marked in meters and centimeters, one side only

Numbers	601 M	603 M	604 M	605½ M	606 M
Lengths, meters	10	15	20	25	30
Prices, per dozen	$27 60	$33 60	$37 20	$44 40	$50 40

PRICES, FIG. 6220

Metallic tapes only, without cases.

Lengths, feet	25	33	40	50	66	75	100
Marked one side, per dozen	$9 60	$12 00	$14 40	$16 80	$19 20	$21 60	$31 20
" both sides, "	10 80	13 20	15 60	18 00	21 60	24 00	34 80
Lengths, meters			10	15	20	25	30
Marked one side, per dozen			$12 00	$16 80	$19 20	$25 00	$31 20

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JUNIOR METALLIC MEASURING TAPES

FLUSH HANDLE

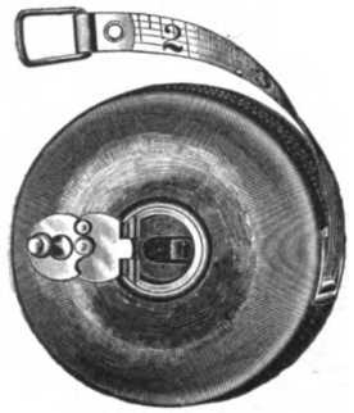


FIG. 6222

DESCRIPTION, FIG. 6222

With patent double folding flush handle, opened by pressing pin on opposite side. Tape is made of best woven linen, with metallic warp, hard leather cases, nickel plated trimmings. Marked one side only in tenths or twelfths.

PRICES FIG. 6223

With 9/16 inch pure linen tape, reinforced with leather the first four inches and heavily coated. Nickel plated trimmings, flush handle, hard leather cases. Marked one side only in tenths or twelfths.

Marked Feet and Inches. Nos.	Marked Feet and 10ths, for Surveyor's use, Nos.	Lengths, Feet.	Per Dozen.
400	400 D	25	$15 00
403	403 D	50	20 00
405	405 D	75	25 00
406	406 D	100	30 00

PRICES, WITH 3/8 INCH TAPES

Marked Feet and 12ths (Inches and Eighths). Nos.	Marked Feet, 10ths and 100ths of Feet, for Surveyor's use. Nos.	Lengths, Feet.	Diameters of Case, Inches.	Per Dozen.
660	660 D	25	2¾	$21 60
663	663 D	50	3½	27 00

STERLING LINEN MEASURING TAPES

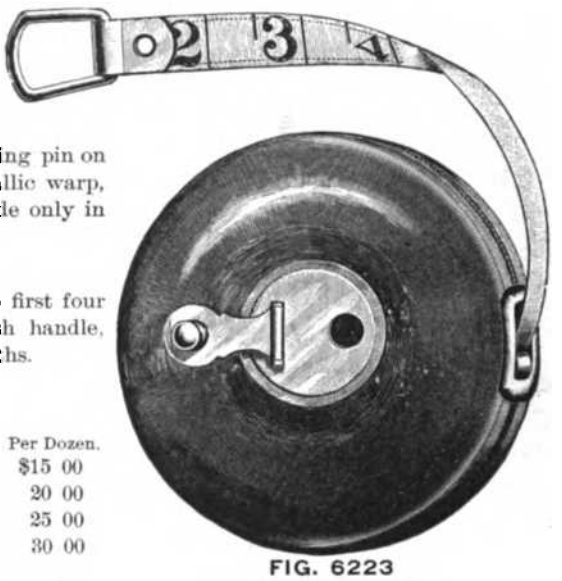


FIG. 6223

PRICES

Numbers	401 M	403 M	404 M	405½ M	406 M
Lengths, meters	10	15	20	25	30
Per dozen	$17 00	$20 00	$23 50	$27 00	$30 00

Marked in meters and centimeters, one side only.

UNIVERSAL MEASURING TAPES

ASS SKIN

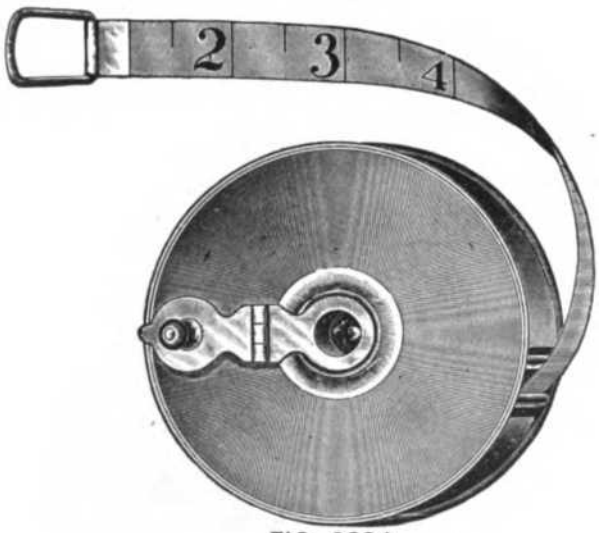


FIG. 6224.

PRICES, FIG. 6224

With ½ inch cotton tape.

Brass bound cases, brass folding handles and trimmings.

Nos.	Lengths, Feet.	Per Dozen.
710	25	$3 75
711	30	4 00
712	40	4 50
713	50	5 00
714	66	6 00
715	75	7 50
716	100	9 00

Marked in meters and centimeters, one side only.

Numbers	711 M	713 M	714 M	715½ M	716 M
Lengths, meters	10	15	20	25	30
Per dozen	4 25	5 00	6 00	8 25	9 00

EXTRA GRADE ASS SKIN

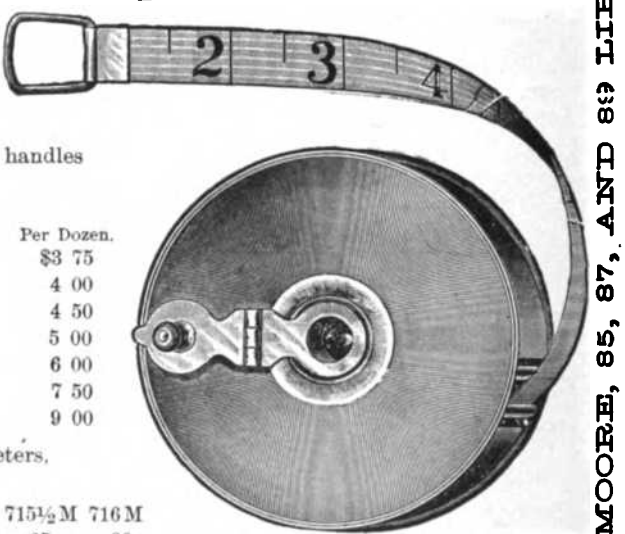


FIG. 6225

PRICES, FIG. 6225

With ½ inch linen corded tape.

Cases brass bound and sides handsomely enameled in black. Brass folding handles, brass rings, clips and trimmings.

Nos.	Lengths, Feet.	Per Dozen.
730	25	$5 00
731	30	5 50
732	40	7 00
733	50	8 00
734	66	9 00
735	75	10 00
736	100	12 50

Marked in meters and centimeters, one side only.

Nos.	Lengths, Meters.	Per Dozen.
731 M	10	$6 00
733 M	15	8 00
734 M	20	9 00
735½ M	25	11 00
736 M	30	12 50

PATENT LEATHER CASE



FIG. 6226

With ½ inch cotton tape.
Brass folding handles and trimmings

Numbers	810	811	812	813	814	815	816
Lengths, ft.	25	30	40	50	66	75	100
Per dozen	$4 75	$5 00	$5 75	$6 25	$7 25	$8 75	$10 75

MEDIUM GRADE PATENT LEATHER CASE

With ½ inch India tape, extra quality.

Brass folding handles, brass rings, clips and trimmings.

PRICES, FIG. 6226

Nos.	Lengths, Feet.	Per Dozen.
820	25	$5 00
821	30	5 50
822	40	7 00
823	50	8 00
824	66	9 00
825	75	10 00
826	100	12 50

Marked in meters and centimeters, one side only.

Lengths, meters.	10	15	20	25	30
Pat. Leather, Nos.	811 M	813 M	814 M	815½ M	816 M
Per dozen	$5 25	6 25	7 25	9 50	10 75
Med. Pat. Lea. Nos.	821 M	823 M	824 M	825½ M	826 M
Per dozen	$6 00	8 00	9 00	11 00	12 50

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POCKET STEEL TAPE

GERMAN SILVER CASES
SPRING WIND, WITH STOP

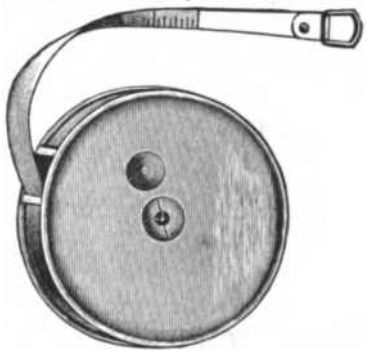


FIG. 6227

PRICES

Marked one side only.

Nos.	Length, Inches.	Width, Inches.	Marked	Per Dozen.
153	36	¼	inches and 1/16ths.	$14 00
154	48	¼	" "	16 00
155	60	¼	" "	18 00
156	72	¼	" "	20 00
157	84	¼	" "	23 00
158	96	¼	" "	25 00
1510	10 ft.	5/16	feet, inches and 1/16ths.	32 00
1512	12 "	5/16	" " "	36 00

Marked both sides.

No.	Length.	Width, Inches.	Marked	Per Dozen.
153M	36 inches, 1 meter	¼	inches and 1/16ths one side millimeters other side	$15 00
155M	60 " 1½ "	¼	inches and 1/16ths one side millimeters other side	20 00
156M	72 " 2 "	¼	inches and 1/16ths one side millimeters other side	22 00
1510M	10 feet 3 "	5/16	feet, inches and 1/16ths one side millimeters other side	35 00
1512M	12 " 4 "	5/16	feet, inches and 1/16ths one side millimeters other side	40 00

POCKET LINEN TAPE

NICKEL PLATED BRASS CASES, SPRING WIND, WITH CENTER STOP

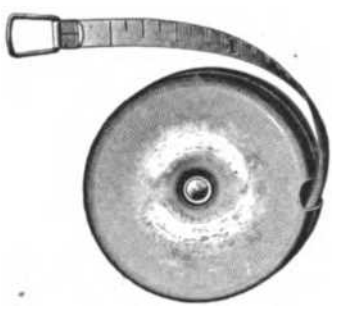


FIG. 6230

The cases have round edges, are compact, handsome, and durable ; they are put together with a screw and can be readily taken apart. The mechanism is entirely new, very simple and will not get out of order.

The tape is of pure linen, heavily coated with waterproof enamel and is very strong and durable.

PRICES

With ¼ inch enameled linen tape. Marked one side in inches and eighths.

Numbers.	Length, Inches.	Per Dozen.
173	36	$3 50
175	60	4 50
176	72	5 00

POCKET LINEN TAPE

Same style as above, excepting width of tape. Nickel plated brass cases, spring wind, with center stop. With 5/16 inch enameled linen tape. Marked one side in inches and eighths.

Numbers.	Length, Inches.	Per Dozen.
183	36	$4 00
185	60	5 25
186	72	6 00
188	96	8 50

UNIVERSAL MEASURING TAPES

PRESSED LEATHER CASE

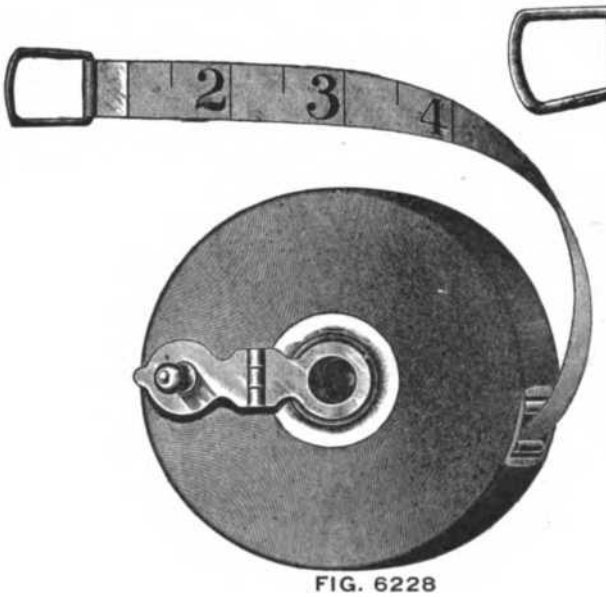


FIG. 6228

PRICES

With ½ inch India tape. Cases of pressed leather, nicely enameled. Brass folding handles and trimmings.

Numbers.	Length, Feet.	Per Dozen.
1020	25	$5 00
1021	30	5 50
1022	40	7 00
1023	50	8 00
1024	66	9 00
1025	75	10 00
1026	100	12 50

Marked in meters and centimeters. One side only.

Numbers.	Length, Meters.	Per Dozen.
1021M	10	$6 00
1023M	15	8 00
1024M	20	9 00
1025½M	25	11 00
1026M	30	12 50

BEND LEATHER CASE

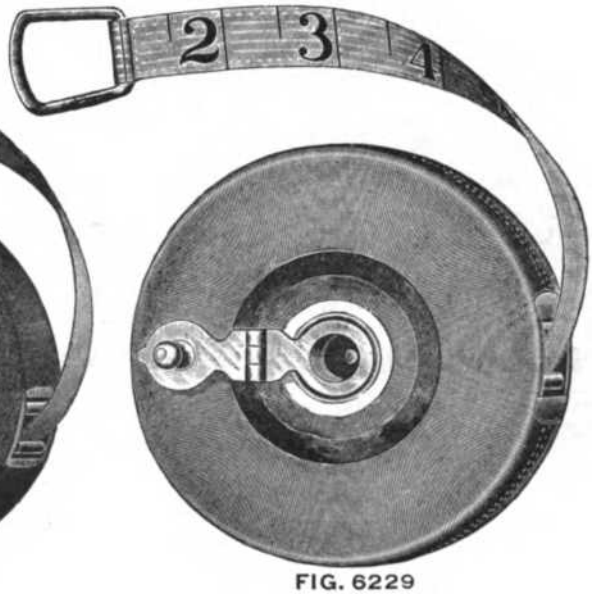


FIG. 6229

PRICES

With ½ inch linen corded tape. Cases russet leather, nicely finished in natural color. Brass folding handles and trimmings.

Numbers.	Length, Feet.	Per Dozen.
930	25	$11 00
931	30	12 00
932	40	13 00
933	50	14 00
934	66	15 00
935	75	16 00
936	100	18 00

Marked in meters and centimeters. One side only.

Numbers.	Length, Meters.	Per Dozen.
931M	10	$12 50
933M	15	14 00
934M	20	15 00
935½M	25	17 00
936M	30	18 00

PAINE'S PATENT STANDARD STEEL TAPE



FIG. 6231

¼ inch wide. In iron cases, brass bound, morocco covered, improved handle. All orders for steel tapes will be filled marked in 12ths unless otherwise directed. These tapes are not marked in links unless specially ordered. These tapes are graduated in 10ths and 12ths, and are detachable from the case, and are furnished with detachable rings to avoid breakage.

PRICES

Numbers	204	205	206	207	208	209
Length, feet	25	33	50	66	75	100
Each	$3 50	$4 50	$6 00	$8 00	$10 00	$12 00

STEEL STANDARD TAPE

Made of heavy steel 3/16 inch wide, with brass graduations, and used only for rough work.

PRICES, FIG. 6232

For each 100 feet of tape	$1 00
For each graduation	15
Pair of clamping handles	3 00
Wooden reel	3 00

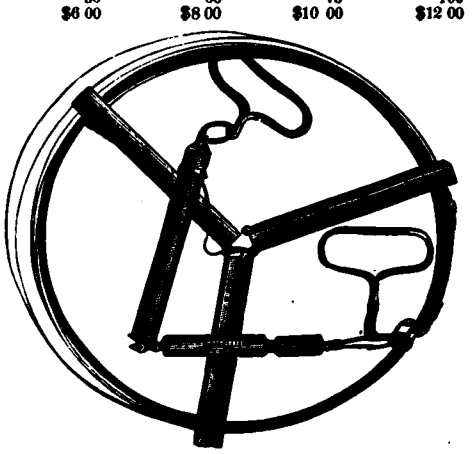


FIG. 6232

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ENGINEERS' PATTERN FRAME STEEL TAPES

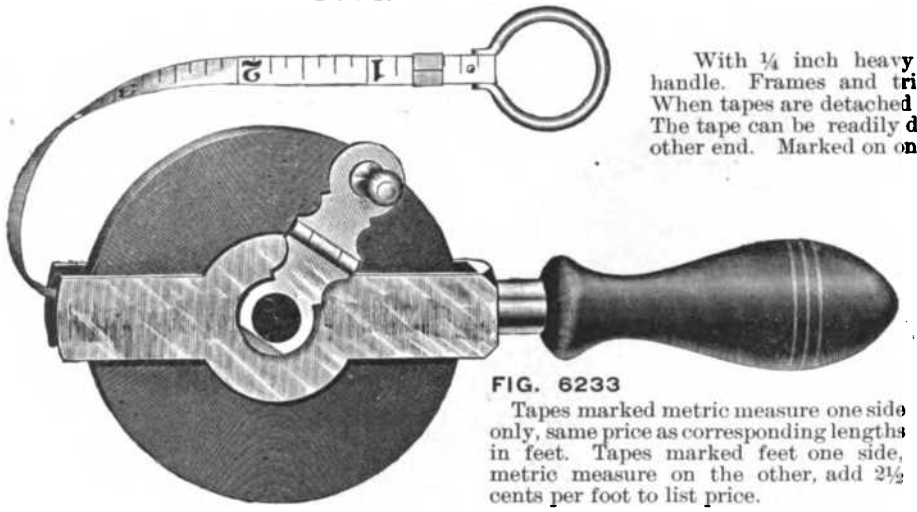


FIG. 6233

Tapes marked metric measure one side only, same price as corresponding lengths in feet. Tapes marked feet one side, metric measure on the other, add 2½ cents per foot to list price.

DESCRIPTION, FIG. 6233

With ¼ inch heavy steel tapes and two detachable rings. Folding winding handle. Frames and trimmings of brass, nicely nickel plated, rosewood handles. When tapes are detached for use, the frames can be conveniently carried in pocket. The tape can be readily detached from frame, and we furnish an extra ring for the other end. Marked on one side in tenths or twelfths.

PRICES, FIG. 6233

Marked Feet and Twelfths, Inches and Eighths. Nos.	Marked Feet, 10ths and 100ths of Feet, for Surveyors' Use. Nos.	Lengths, Feet.	Each.
273	273 D	50	$5 25
274	274 D	66	6 25
275	275 D	75	7 50
276	276 D	100	9 00

GERMANIA FRAME STEEL TAPES

DESCRIPTION, FIG. 6234

With regular ⅜ inch steel tapes. Folding winding handle. Frames and trimmings of brass, nicely nickel plated, with rosewood handles, and made very strong and serviceable. Tapes marked one side only in tenths or twelfths.

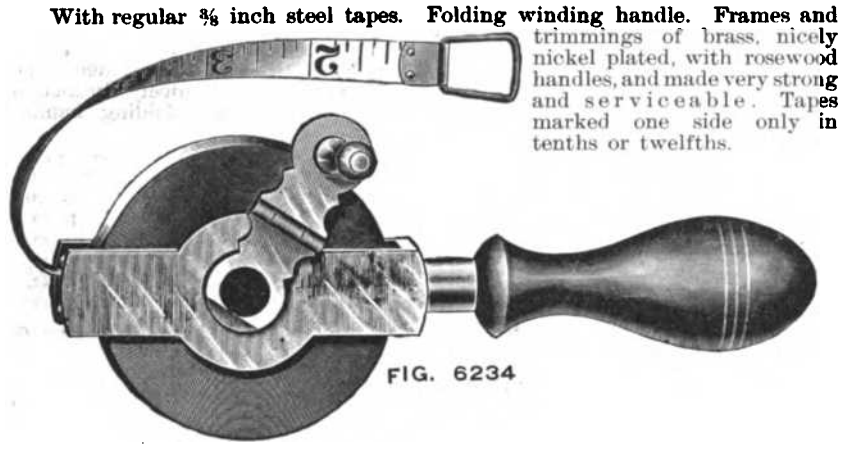


FIG. 6234

PRICES

Marked Feet and Twelfths, Inches and Eighths. Nos.	Marked Feet, 10ths and 100ths of Feet, for Surveyors' Use. Nos.	Lengths, Feet.	Each.
283	283 D	50	$4 50
284	284 D	66	5 25
285	285 D	75	6 25
286	286 D	100	7 75

With Regular ½ Inch Steel Tapes.

Marked Feet and Twelfths, Inches and Eighths. Nos.	Marked Feet, 10ths and 100ths of Feet, for Surveyors' Use. Nos.	Lengths, Feet.	Each.
293	293 D	50	$5 25
294	294 D	66	6 25
295	295 D	75	7 50
296	296 D	100	9 00

Tapes marked metric measure one side only, same price as corresponding lengths in feet. Tapes marked feet one side, metric measure on the other, add 2½ cents per foot to list price. Packed one in a box.

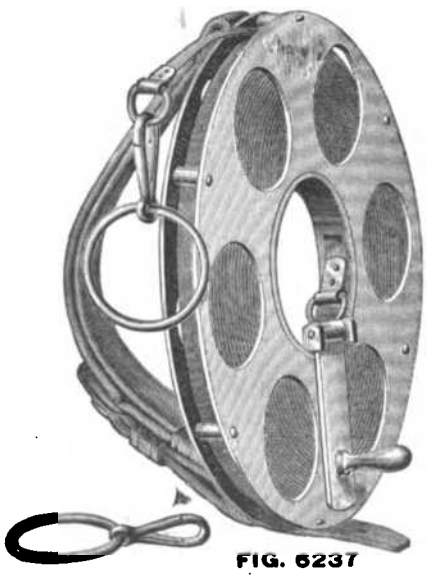


FIG. 6237

STEEL TAPE CHAINS

Nos. 5501-5512.

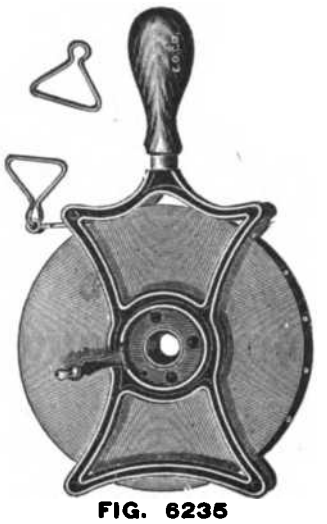


FIG. 6235

FOLDING REEL
No. 5525.

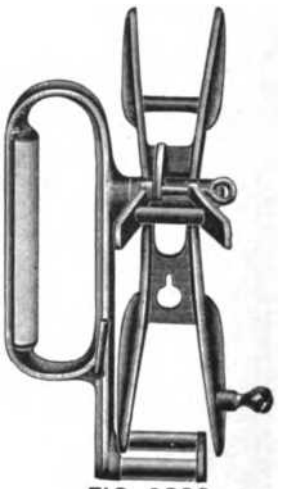


FIG. 6236

DESCRIPTION, FIGS. 6235 AND 6236

These tapes are made of superior polished steel, about ¼ inch wide, graduated every foot by a brass rivet, end feet in 10ths and the number of feet are stamped on brass plates every five feet. They are provided with a handy, substantial reel and a pair of round detachable handles. These tapes are not intended to take the place of the finely graduated steel tapes, but are especially designed for convenience and durability to replace the heavy chains in all land surveying, railroad and canal work and town plotting, and for country, field and town work. They can be dragged through woodland, brush, etc., and if they are plated they resist rusting better.

Nos.						Each.
5501	50 ft. lg.,	graduated	every ft.,	end feet in	10ths, plated..	$5 00
5502	50 "	"	"	"	" plain...	4 00
5506	66 "	"	"	link,	plated.....	6 00
5507	66 "	"	"	"	plain.....	5 00
5511	100 "	"	"	ft., end feet in	10ths, plated..	6 30
5512	100 "	"	"	"	" plain...	5 00
5517	200 "	"	"	"	" polished steel ribbon, with folding reel No. 5525.....	10 00
5519	The same as No. 5517, but 300 feet long.....					12 00
5521	" " 5512, but of extra heavy steel ribbon for rough work.....					10 00
5523	Plain reel only.....					1 25
5524	Pair of plain handles.....					35
5525	Folding reel only					5 00

EXTRA NARROW STEEL TAPE

No. 6580. Berkeley Excelsior Steel Tape, ¼ in. wide, nickel plated, brass reel, with strap handle, two handles for tape line, 100 feet, divided 10ths of feet, not made in 12ths of feet, each $10.50.

The Berkeley Excelsior Steel Tape is of the finest quality and divided in accordance with the standard of the U. S. Coast and Geodetic Survey at Washington.

The line is provided with a loop at each end, to receive the snaphook holding the ring. The reel is of heavy rolled brass and nickel plated. The crank for winding folds across the central opening in the reel, to accommodate the knob attached to it. A stout leather strap serves for holding the reel during use. It is very convenient and adds but little to the bulk of the tape. This is a very practical form of tape for use in mines, by surveyors, etc. The long crank affords ample power for winding, the open reel prevents the accumulation of earth or sand, and allows the line to dry more quickly than in a case.

New York Excelsior Steel Tape, 3/16 inch wide, bent leather case, plain folding handle, two handles for tape line.

No. 6570, 10ths of feet; 50 feet in length, each $5 85
" " " 100 " " " 10 50

This tape is not made in 12ths of feet.

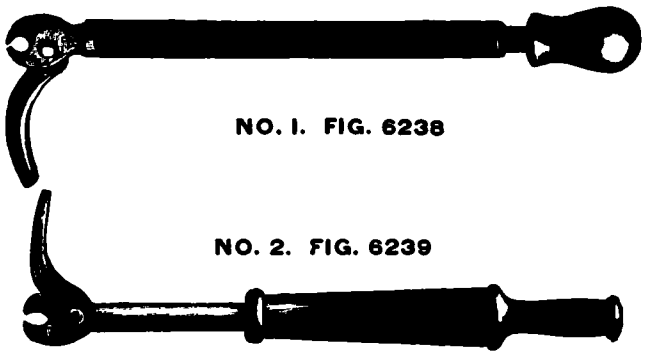
The New York Tape is an extra narrow full divided tape, and is of heavy tough steel ribbon, so that it has good wearing qualities. It is intended specially for the use of surveyors.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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NAIL PULLERS

SCRANTON



NO. 1. FIG. 6238

NO. 2. FIG. 6239

PRICES, FIGS. 6238 AND 6239

No. 1 Large, height 18 in., weight 5 lbs., japan and polish, per doz., $18 00
" 2 " " 18 " " 5 " " " " " 18 00
" 3 Small " 18 " " 3 " " " " " 15 00

CYCLOPS

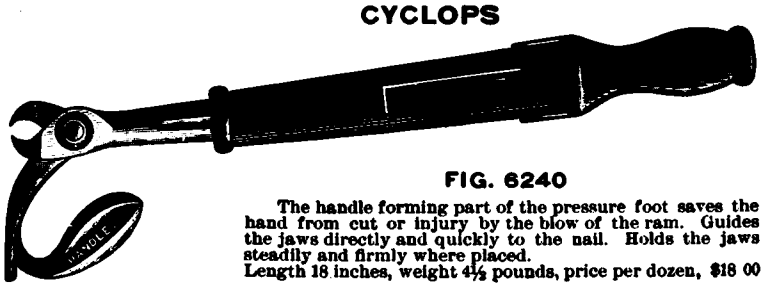


FIG. 6240

The handle forming part of the pressure foot saves the hand from cut or injury by the blow of the ram. Guides the jaws directly and quickly to the nail. Holds the jaws steadily and firmly where placed.
Length 18 inches, weight 4½ pounds, price per dozen, $18 00

NAIL SET



FIG. 6243

No. 1. Knurled. Cup Points, 1/16 to 5/16 inch, polished, per gross.....$24 00

GIANT NAIL PULLER AND BOX OPENER

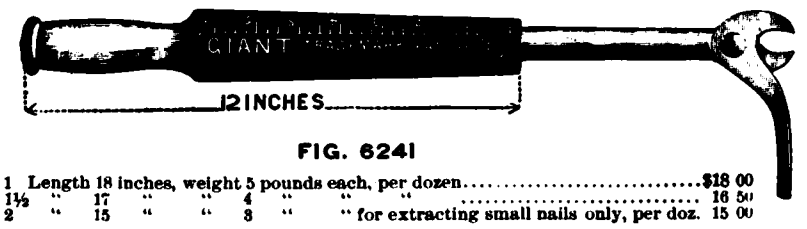


FIG. 6241

No. 1 Length 18 inches, weight 5 pounds each, per dozen.....$18 00
" 1½ " 17 " " 4 " " " " 16 50
" 2 " 15 " " 3 " " for extracting small nails only, per doz. 15 00

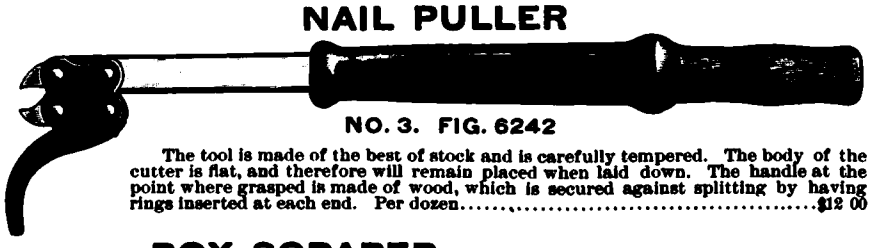
RIPPING CHISEL



FIG. 6245

No. 85. 1½ inches wide, ¾ inch octagon steel; per dozen, 14 inches, $10.00; 16 inches, $13.00; 18 inches, $16.00.

NAIL PULLER



NO. 3. FIG. 6242

The tool is made of the best of stock and is carefully tempered. The body of the cutter is flat, and therefore will remain placed when laid down. The handle at the point where grasped is made of wood, which is secured against splitting by having rings inserted at each end. Per dozen.....$12 00

FLOOR CHISEL



FIG. 6246

No. 60. 2¼ in. wide, ⅝ in. octagon steel, 18 in. long, per dozen.....$15 00

BOX SCRAPER
TWO HANDLES

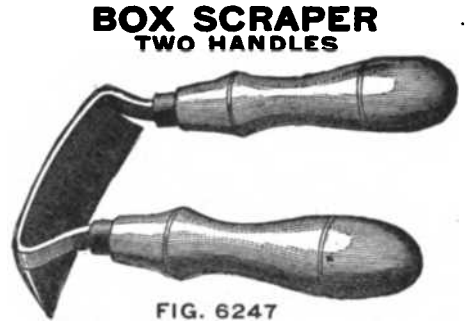


FIG. 6247

Per dozen.....$7 50

BOX CHISELS

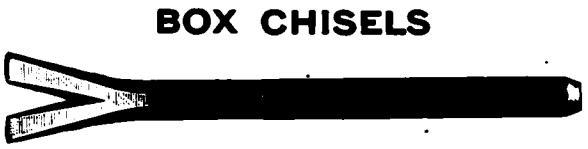


FIG. 6249

No. 70. ¾ inch octagon steel; per dozen. 10 inches, $8.00; 12 inches, $8.50; 15 inches, $10.50; 18 inches, $12.50; 21 inches, $14.50.

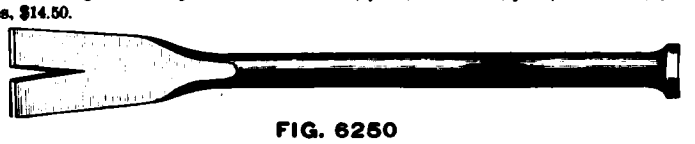


FIG. 6250

No. 80. ¾ inch round steel; per dozen, 10 inches, $11.25; 12 inches, $11.50; 14 inches, $13.00; 16 inches, $14.50; 18 inches, $16.00.

ADJUSTABLE BOX SCRAPER

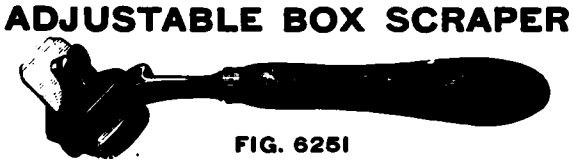
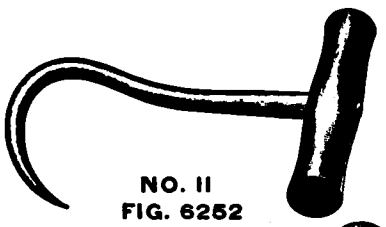


FIG. 6251

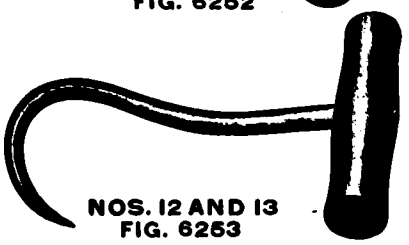
PRICES, FIG. 6251

No. 70. Malleable iron, 2 inch Steel Cutter, per dozen.....$6 00
Cast Steel Cutter, per dozen..... 1 50

BOX AND COTTON HOOKS



NO. 11
FIG. 6252



NOS. 12 AND 13
FIG. 6253

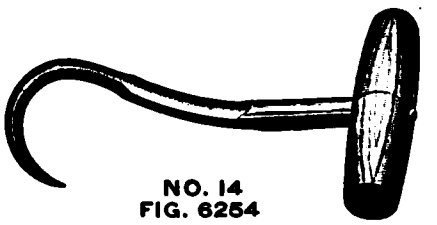
HARDWOOD HANDLE

Nos.	Lengths, Inches.		Per Dozen.
11	7	Box Hook, Ebonized Handle, Bright Hook	$5 60
12	7	Cotton Hook, Ebonized Handle, Polished Hook, New Orleans Pattern	8 00
13	7	Cotton Hook, Ebonized Handle, Bright Hook, New Orleans Pattern	6 00
14	8	Cotton Hook, White Handle, Polished Hook, Texas Pattern	8 40

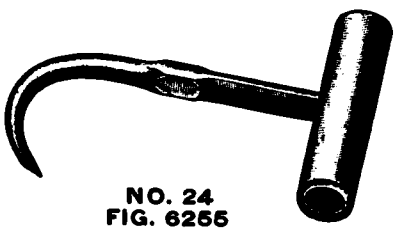
IRON HANDLE

24	5	Cotton Hook, Iron Handle	9 60

Length is measured under handles.



NO. 14
FIG. 6254



NO. 24
FIG. 6255

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TWISTED WIRE BOX STRAPS
NO. 1



FIG. 6256

Put up in bundles of 50 pairs and 100 pairs.

Feet.	Per Pair.	Feet.	Per Pair.
4	2½ cents.	9	5 cents.
5	3 "	10	5½ "
6	3½ "	11	6 "
7	4 "	12	6½ "
8	4½ "	14	7½ "

Coils on wooden reels, 3,000 to 5,000 feet, 27½ cents per 100 feet.

TWISTED WIRE BOX STRAPS—NO. 2

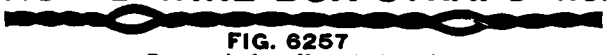


FIG. 6257

Put up in bundles of 100 pairs.

Feet.	Per Bundle.	Feet.	Per Bundle.
4	$1 60	8	$3 20
5	2 00	9	3 60
6	2 40	10	4 00
7	2 80		

Coils on wooden reels, 3,000 to 5,000 feet, 20 cents per 100 feet.

CORRUGATED STEEL BOX BANDS



FIG. 6259

NO. 3, 5/16 INCH WIDE

Coppered and smooth edged; put up in bundles of 100 pairs.

Feet.	Per Pair.	Feet.	Per Pair.
4	2 cents.	9	4½ cents.
5	2½ "	10	5 "
6	3 "	11	5½ "
7	3½ "	12	6 "
8	4 "	14	7 "

CORRUGATED STEEL BOX BANDS

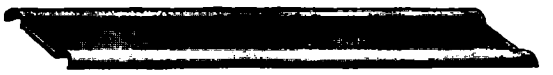


FIG. 6258

NO. 1, ⅞ INCH WIDE

Put up in bundles of 100 pairs.

Feet.	Per Pair.	Feet.	Per Pair.
4	2¼ cents.	8	4½ cents.
5	2¾ "	9	5 "
6	3¼ "	10	5½ "
7	3¾ "		

NO. 2, ⅝ INCH WIDE

Put up in bundles of 100 pairs.

Feet.	Per Pair.	Feet.	Per Pair.
4	2 cents.	8	4 cents.
5	2½ "	9	4½ "
6	3 "	10	5 "
7	3½ "		

DESCRIPTION, FIG. 6259

Coils on wooden reels 3,000 to 4,000 feet, 25 cents per 100 feet. Any intermediate sizes cut without extra charge on special order at proportionate prices. For the convenience of shippers who do not desire to use the larger size coils or the cut length sizes, we have this strap put up in convenient 300 foot coils packed one dozen in a case and accompanied by an adjustable reel.

Price, per case.....$10 80 Price, per single reel.....$1 00

STANDARD STEEL WIRE NAILS

COMMON FLAT HEAD NAILS



FIG. 6260

Full size cut of 8d. Common Nail.

FENCE NAILS



FIG. 6261

Full size cut of 8d. Fence Nail.

SHINGLE NAILS



FIG. 6262

Full size cut of 6d. Shingle Nail.

FLOORING BRADS



FIG. 6263

Full size cut of 8d. Flooring Brad.

COMMON BRAD HEADS



FIG. 6264

CASING NAILS



FIG. 6265

Full size cut of 8d. Casing Nail.

BARREL NAILS



FIG. 6266

Full size cut of ⅞ inch Barrel Nail.

SLATING NAILS



FIG. 6267

Full size cut of 3d. Slating Nail.

FINISHING NAILS



FIG. 6268

FINE NAILS



FIG. 6269

Full size cut of 8d. Fine Nail.

LINING NAILS



FIG. 6270

Full size cut of 1 inch Lining Nail.

HINGE NAILS—LIGHT



FIG. 6271

Full size cut of 8d. Light Hinge Nail.

BARBED ROOFING NAILS



FIG. 6272

Full size cut of 1 inch Barbed Roofing Nail.

CLINCH NAILS



FIG. 6273

Full size cut of 8d. Clinch Nail.

SIZES OF WIRE NAILS
APPLYING TO ALL NAILS, EXCEPT STANDARD NAILS IN KEGS

Length, ¼ Inch. Gauge Nos.	Per Pound.
19	
20	
21	
22	
Length, ⅜ Inch.	
18	
19	
20	
21	
22	
Length, ½ Inch.	
14, 15, 16	
17	
18	
19	
20	
21	
22	

Length, ⅝ Inch. Gauge Nos.	Per Pound.
12, 13, 14	
15	
16	
17	
18	
19	
20	
21	
22	
Length, ¾ Inch.	
10, 11, 12	
13	
14	
15	
16	
17	
18	
19	

Length, ¾ Inch. Gauge Nos.	Per Pound.
20	
21	
Length, ⅞ Inch.	
8, 9, 10, 11, 12	
13	
14	
15	
16	
17	
18	
19	
20	
Length, 1 Inch.	
7 to 12	
13	
14	
15	
16	
17	

Length, 1 Inch. Gauge Nos.	Per Pound.
18	
19	
20	
Length, 1⅛ Inches.	
7 to 12	
13	
14	
15	
16	
17	
18	
19	
Length, 1¼ and 1⅜ Inches.	
6 to 12	
13	
14	
15	
16	
17	
Length, 1½ and 1⅝ Inches.	
4 to 13	
14	
15	
16	
17	

Length, 1½ and 1⅝ Inches. Gauge Nos.	Per Pound.
16	
17	
Length, 1¾ Inches.	
4 to 13	
14	
15	
16	
17	
Length, 2 Inches.	
3 to 10	
11	
12	
13	
14	
15	
16	
Length, 2¼ Inches.	
3 to 10	
11	
12	
13	
14	

Length, 2½ Inches. Gauge Nos.	Per Pound.
3 to 10	
11	
12	
13	
Length, 2¾ Inches.	
3 to 10	
11	
12	
Length, 3 Inches.	
3 to 10	
11	
12	
Length, 3¼ Inches.	
3 to 10	
11	
12	
Length, 3½ Inches.	
3 to 10	
11	
Length, 4 Inches.	
3 to 10	
11	

EXTRAS—Add to List.

For ½ pound paper boxes, cents per pound: for ¼ pound paper boxes, cents per pound; for barbing, cents per pound; for annealing, cents per pound; for cone heads, special heads and headless, cents; for needle points and special points, cents. For nails combining several specialties, add as above for each; for sizes not appearing on the list, use the list prices for the desired gauge in the nearest shorter length. Nails heavier than listed, at special net prices, according to quantity.

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DOCK OR WHARF SPIKE

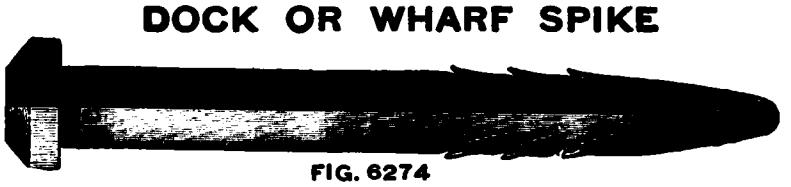


FIG. 6274

ROUND OR SQUARE

Made of Iron or Steel, with Nail, Oval or Countersunk Heads or Headless, and Points Plain or Ragged, as Specified. Average Weight per 100:

Sizes, Inches.	Inch Square. ½	⅝	¾	⅞	1
6	51	....	....	....	....
8	64	....	....	....	....
10	78	121	171	238	....
11	85	132	187	260	....
12	92	143	203	281	388
13	99	154	219	303	416
14	106	165	234	324	444
15	113	176	250	346	472
16	120	187	266	367	500
17	....	198	282	389	528
18	....	209	298	411	558
19	....	220	314	432	586
20	.	231	329	454	614
22	....	....	360	497	670
24	....	....	390	540	726
26	....	....	420	584	782

Prices on application.

WIRE SPIKE



FIG. 6275

EXTRAS, ON SPIKES, FIG. 6275

Sizes.	Length and Gauge. Inches.	Nos.	Approximate Number to Pounds.	Advance Over Base Price.
10d	3	6	41	$0 10
12d	3¼	6	38	10
16d	3½	5	30	10
20d	4	4	23	10
30d	4½	3	17	10
40d	5	2	13	10
50d	5½	1	10	10
60d	6	1	8	10
7 inch.	7	0	7	10
8 "	8	00	6	10
9 "	9	00	5	10
10 "	10	⅜ inch	4	25
12 "	12	⅜ "	3	25

EXTRAS FOR CUT NAILS

OVER BASE PRICES, PER KEG

Common, Fence and Sheathing.

	Extra.
20d to 60d	Base
10d " 16d	$0 05
8d and 9d	10
6d " 7d	20
4d " 5d	30
3d	45
2d	70

Casing, Box, Flooring and Finishing.

10d and larger	$0 15
8d " 9d	25
6d " 7d	35
4d " 5d	50
3d	65
2d	1 00

Casing, Box, Flooring and Finishing.

	Extra.
3d	70
2d	1 00

Fine Finishing.

10d and larger	$0 25
8d " 9d	35
6d " 7d	45
4d " 5d	65
3d	85
2d	1 15

Fine Nails.

4d	$0 50
3d	65
2d	1 00

Cut Spikes.

	Extra.
All sizes	$0 10

Light Barrel and Lining.

1 inch	$0 80
⅞ "	1 00
¾ "	1 20

Common Barrel, Roofing and Cement.

1½ inch	$0 30
1⅜ "	40
1¼ "	50
1⅛ "	60
1 "	70
⅞ "	85
¾ "	1 00

Slating.

	Extra.
6d	$0 30
4d and 5d	40
3d	60
2d	80

Clinch, Car, Boat, Chute, Clout and Hoop.

3 inch and larger	$0 35
2½ " " 2¾ in.	45
2 " " 2¼ "	55
1½ " " 1¾ "	65
1¼ "	85
1⅛ "	95
1 "	1 05
⅞ "	1 20
¾ "	1 35

Tobacco Manufacturers' Box Nails.

	Extra.
6d and 7d lining	$0 20
4d " 5d	30
5d caddy	30
4d "	50
3d "	70

Cooper, Tobacco and Warehouse.

8d	$0 10
6d and 7d	20
4d " 5d	30
3d	50

Each half keg, 10 cents extra.

LENGTH OF NAILS

	2d	3d	4d	5d	6d	7d	8d	9d	10d	12d	16d	20d	30d	40d	50d	60d
Inches	1	1¼	1½	1¾	2	2¼	2½	2¾	3	3¼	3½	4	4½	5	5½	6

BOAT OR SHIP SPIKE

PLAIN AND GALVANIZED

Inches.	Per Pound.
¼ x 3 to 6	
5/16 x 4 " 7	
⅜ x 4½ " 8	
7/16 x 7 " 10	
½ x 8 " 12	
⅝ x 10 " 16	
¾ x 12 " 20	

COPPER NAILS

Inches.	Per Pound.
1 to 4½	

BOAT NAILS

ROUND HEAD, BLUNT POINT

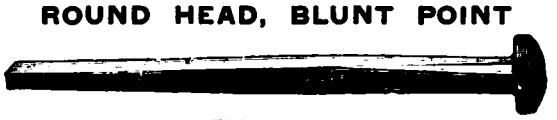


FIG. 6278

Sizes, Plain and Galvanized.....From ¾ to 4½ inches.

ROUND HEAD, CHISEL POINT

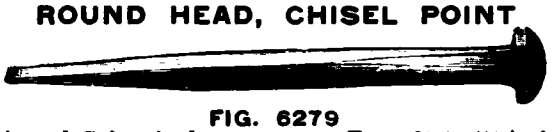


FIG. 6279

Sizes, Plain and Galvanized.....From ¾ to 4½ inches.

COUNTERSUNK HEAD, BLUNT POINT

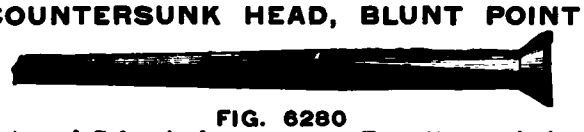


FIG. 6280

Sizes, Plain and Galvanized.....From ¾ to 4½ inches.

Prices, Figs. 6278 to 6280, on application.

BOAT SPIKE

COMPOSITION

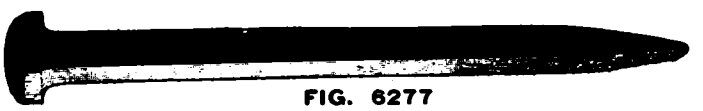


FIG. 6277

Inches.	Per Pound.
5/16 x 4 and 4½	
⅜ x 5 " 6	
7/16 x 7 " 8	
½ x 9 " 10	

COUNTERSUNK HEAD HINGE NAIL

WROUGHT IRON

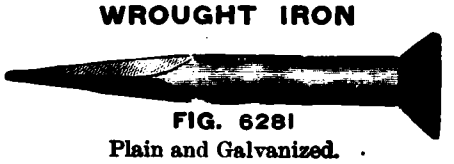


FIG. 6281

Plain and Galvanized.

Inches.	Per Pound.
2 x ¼	
2½ x ¼	
3 x ¼	
3½ x 5/16	
4 x 5/16	
5 x ⅜	

SHEATHING NAILS

Composition.

Inches.	Per Pound.
1 to 2	

Zinc.

Inches.	Per Pound
1 to 2	

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NAILS IN PACKAGES

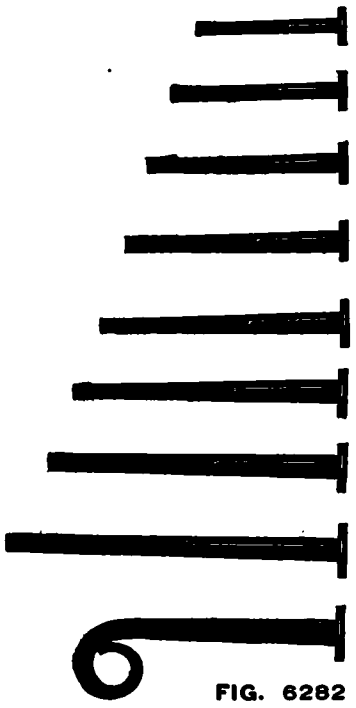


FIG. 6282

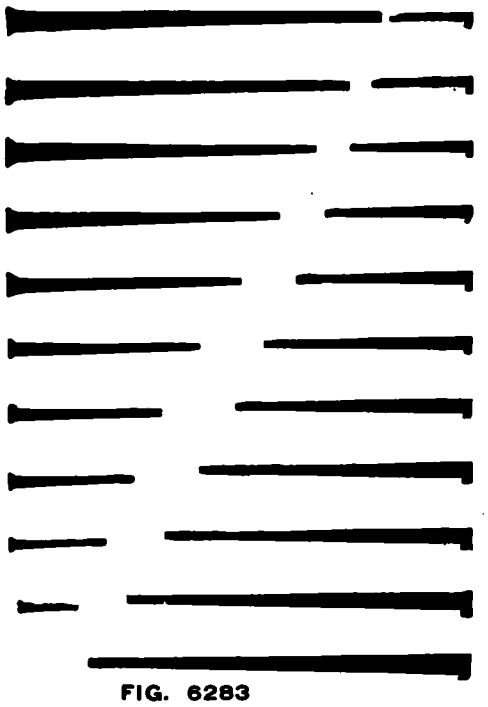


FIG. 6283

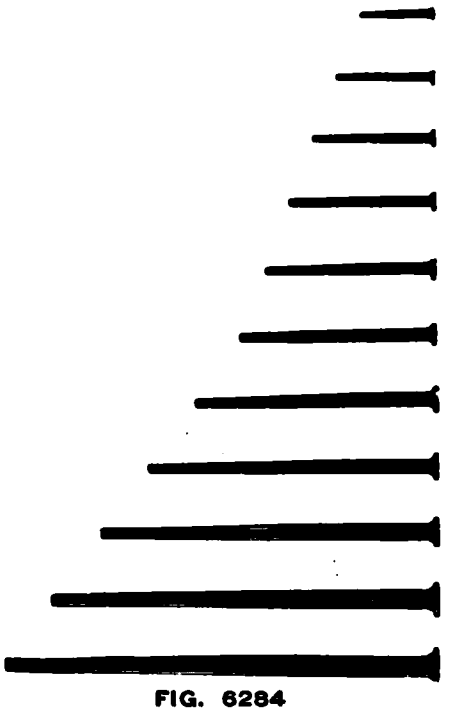


FIG. 6284

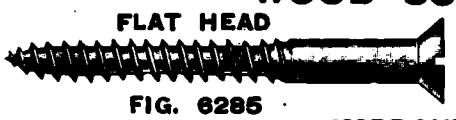
Sold by length. Prices per pound, paper or dozen.

PRICES, FIGS. 6282 TO 6284

Inches	2	2½	3	3½	4	4½	5	5½	6	7	1	1⅛	1¼	1½	1¾	2
	8	8	8	8	8	8	8	8	4	8						
Finishing, trunk and clout nails, in pound or bulk.....per pound	....	....	$0 58	$0 48	$0 39	$0 34	$0 32	$0 29	$0 27	$0 24	$0 23	$0 23	$0 23	$0 23	$0 23	$0 23
Tinned trunk and clout nails, in pound or bulk..... "	....	....	70	60	50	45	43	40	38	35	34	34	34	34	34	34
Basket, cigar box and chair nails, in pound or bulk..... "	....	....	66	56	46	40	38	35	33	30	28	26	....	....	....	....
" " " " " " tinned, in pound or bulk... "	....	....	81	71	61	53	49	46	43	41	39	37	....	....	....	....
Copper and brass finishing and cigar box nails..... "	....	....	78	....	68	....	64	64	62	60	58	58	56	....	....	....
" " " trunk and clout nails, in pound or bulk.. "	....	....	60	....	56	....	56	56	56	56	56	56	56	....	....	....
Common and patent brads, half weight, per dozen papers... "	$0 70	....	84	....	91	....	1 00	....	1 15	1 25	1 40	1 60	1 75	2 60	3 15	3 40
" " " " in pound or bulk..... "	1 75	$1 40	1 20	....	81	....	67	....	50	42	37	35	34	31	28	25

For ½ pound papers where prices are not given, add 4 cents per pound to list. For ¼ pound papers where prices are not given, add 8 cents per pound to list.

WOOD SCREWS, IRON OR BRASS



FLAT HEAD

FIG. 6285



ROUND HEAD

FIG. 6286

IMPROVED STEEL WOOD SCREWS

PRICES PER GROSS

Nos.	¼ In.	⅜ In.	½ In.	⅝ In.	¾ In.	⅞ In.	1 In.	1¼ In.	1½ In.	1¾ In.	2 In.	2¼ In.	2½ In.	2¾ In.	3 In.	3½ In.	4 In.	4½ In.	5 In.	6 In.
0	$0 68	$0 68	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1	68	68	$0 68	$0 68	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
2	68	68	68	68	$0 68	$0 65	....	....	....	....	....	....	....	....	....	....	....	....	....	....
3	68	68	68	68	64	67	$0 73	$0 80	$0 90	....	....	....	....	....	....	....	....	....	....	....
4	68	68	68	68	65	70	76	88	95	....	....	....	....	....	....	....	....	....	....	....
5	....	68	64	67	70	75	80	91	1 00	$1 20	$1 30	$1 45	$1 75	....	....	....	....	....	....	....
6	....	64	66	72	77	82	87	98	1 05	1 25	1 35	1 50	1 80	$2 20	$2 60	....	....	....	....	....
7	....	71	76	78	82	87	93	1 05	1 10	1 33	1 40	1 55	1 85	2 25	2 65	....	....	....	....	....
8	....	80	80	85	88	92	98	1 10	1 20	1 40	1 50	1 60	1 90	2 30	2 70	$3 50	$4 40	....	....	....
9	....	84	84	88	92	95	1 05	1 15	1 25	1 45	1 55	1 65	2 00	2 35	2 75	3 60	4 50	....	....	....
10	....	....	87	91	97	1 05	1 15	1 20	1 30	1 50	1 60	1 75	2 10	2 40	2 80	3 70	4 60	....	....	....
11	....	....	92	95	1 05	1 10	1 20	1 30	1 40	1 60	1 70	1 85	2 15	2 45	2 85	3 80	4 70	....	....	....
12	....	....	1 00	1 00	1 10	1 15	1 25	1 40	1 55	1 70	1 80	2 00	2 25	2 55	2 90	3 95	4 80	$6 10	$7 10	$8 70
13	....	....	....	1 05	1 15	1 25	1 40	1 55	1 70	1 85	2 05	2 20	2 40	2 65	3 00	4 05	4 90	6 20	7 30	9 00
14	....	....	....	1 15	1 25	1 35	1 60	1 75	1 90	2 05	2 35	2 45	2 60	2 85	3 15	4 15	5 00	6 35	7 60	9 30
15	....	....	....	....	1 40	1 60	1 85	2 00	2 20	2 35	2 65	2 85	3 05	3 25	3 40	4 35	5 20	6 65	8 00	9 90
16	....	....	....	....	1 65	1 85	2 10	2 30	2 45	2 65	2 95	3 25	3 40	3 65	3 85	4 60	5 35	6 90	8 40	10 60
17	....	....	....	....	....	....	2 30	2 55	2 75	3 00	3 30	3 55	3 75	4 05	4 40	4 95	6 05	7 25	8 80	11 25
18	....	....	....	....	....	....	2 65	2 80	3 15	3 40	3 85	4 10	4 35	4 75	5 10	5 75	6 75	7 85	9 40	12 65
20	....	....	....	....	....	....	3 15	3 35	3 50	4 00	4 40	4 85	5 20	5 70	6 15	6 80	7 85	8 70	10 10	13 80
22	....	....	....	....	....	....	....	4 00	4 20	4 70	4 80	5 25	5 85	6 60	6 85	7 60	8 75	10 15	11 70	15 00
24	....	....	....	....	....	....	....	4 75	4 95	5 25	5 50	5 75	6 50	7 40	7 70	8 75	10 05	11 65	13 25	16 20
26	....	....	....	....	....	....	....	....	....	....	....	....	....	....	9 40	10 60	12 10	13 80	15 75	20 00
28	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	14 10	15 95	17 80	22 55
30	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	16 25	18 10	20 00	25 15

Screws invoiced from this list at varying discounts: Flat and round head steel, bright, blued, brassed, bronzed, japanned and tinned.

IMPROVED BRASS WOOD SCREWS

PRICES PER GROSS

Nos.	¼ In.	⅜ In.	½ In.	⅝ In.	¾ In.	⅞ In.	1 In.	1¼ In.	1½ In.	1¾ In.	2 In.	2¼ In.	2½ In.	2¾ In.	3 In.	3½ In.	4 In.	4½ In.	5 In.	6 In.
0	$0 80	$0 80	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
1	80	82	$0 86	$0 91	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....	....
2	84	86	89	91	$1 06	$1 35	....	....	....	....	....	....	....	....	....	....	....	....	....	....
3	87	89	93	99	1 10	1 40	$1 55	$2 05	....	....	....	....	....	....	....	....	....	....	....	....
4	91	95	1 03	1 06	1 15	1 45	1 60	2 10	$2 85	....	....	....	....	....	....	....	....	....	....	....
5	97	1 03	1 10	1 20	1 30	1 50	1 65	2 15	2 90	....	....	....	....	....	....	....	....	....	....	....
6	....	1 10	1 20	1 30	1 45	1 55	1 70	2 20	2 95	$3 75	$4 80	....	....	....	....	....	....	....	....	....
7	....	1 20	1 30	1 50	1 60	1 80	1 95	2 25	3 00	3 80	4 85	....	....	....	....	....	....	....	....	....
8	....	1 35	1 50	1 70	1 90	2 05	2 20	2 65	3 05	3 85	4 90	$6 85	....	....	....	....	....	....	....	....
9	....	....	1 70	1 90	2 15	2 35	2 60	3 00	3 45	3 90	4 95	6 90	$9 40	$11 50	....	....	....	....	....	....
10	....	....	1 90	2 15	2 40	2 65	2 95	3 25	3 95	4 45	5 00	6 95	9 50	11 60	$13 70	$15 85	....	....	....	....
11	....	....	....	2 40	2 65	2 95	3 30	3 85	4 45	5 05	5 65	7 00	9 55	11 65	13 75	15 90	....	....	....	....
12	....	....	....	2 65	3 00	3 35	3 65	4 35	5 00	5 70	6 40	7 05	9 60	11 70	13 80	15 95	$18 40	....	....	....
13	....	....	....	3 00	3 35	3 70	4 10	4 85	5 60	6 35	7 15	7 90	9 65	11 75	13 85	16 00	18 60	....	....	....
14	....	....	....	3 35	3 70	4 10	4 55	5 35	6 25	7 10	7 95	8 80	9 70	11 80	13 90	16 05	18 80	$22 40	....	....
15	....	....	....	3 70	4 10	4 55	5 00	5 95	6 90	7 90	8 80	9 80	10 75	11 95	13 95	16 10	19 00	22 60	....	....
16	....	....	....	4 10	4 50	5 05	5 55	6 55	7 60	8 65	9 75	10 75	11 85	12 00	14 00	16 20	19 20	22 80	$25 60	$28 20
17	....	....	....	....	....	....	6 05	7 20	8 35	9 50	10 00	11 90	13 00	14 20	15 40	17 70	20 35	23 40	26 90	31 00
18	....	....	....	....	....	....	....	7 85	9 15	10 45	11 70	13 00	14 30	15 65	16 80	19 40	22 30	25 75	29 60	34 05
20	....	....	....	....	....	....	....	9 35	10 85	12 40	13 90	15 40	16 95	18 40	19 95	22 75	26 20	30 90	35 50	40 80
22	....	....	....	....	....	....	....	....	12 65	14 50	16 30	18 05	19 85	21 60	23 40	26 90	30 80	35 40	40 70	46 80
24	....	....	....	....	....	....	....	....	....	16 85	18 90	20 95	23 00	25 00	27 10	31 20	36 00	41 40	47 60	54 75
26	....	....	....	....	....	....	....	....	....	....	....	....	....	....	31 15	35 80	40 70	46 80	53 80	61 90
28	....	....	....	....	....	....	....	....	....	....	....	....	....	....	35 85	41 20	47 35	54 40	62 60	72 05
30	....	....	....	....	....	....	....	....	....	....	....	....	....	....	41 18	47 45	54 56	62 70	72 15	83 05

Screws invoiced from this list at varying discounts: Flat and round head brass and bronze metal.

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REVOLVING SCREEN



FIG. 6287

For screening coal and other materials we are prepared to furnish Revolving Screens, from 24 to 48 inches in diameter, and from 6 to 18 feet in length.

These screens are generally constructed in sections of steel wire cloth rolled to the required diameter, with only one longitudinal seam, which is secured by iron bands.

The ends of the sections are joined by being bolted to strong wrought iron spiders fastened to the axial shaft.

We also furnish screens made in panel sections made to templet. each constituting a quadrant, which are bolted together and to the spiders of the axial shafts. The quadrants consist either of sections of perforated steel plates, or steel cloth bolted to wrought iron frames.

With this construction repairs can be quickly and cheaply made. Prices on application.

SAND SCREEN

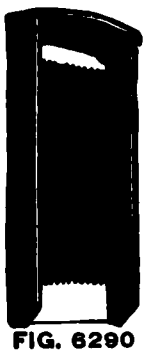


FIG. 6290

PRICES, FIG. 6290

One-quarter inch for sand. One-eight inch for fine sand. One eighth space between wires for gravel. Three-sixteenths inch for medium sand.

In.	Mesh, In.	Each.
26	¼	$4 50
24	¼	4 00
	⅛ extra,	1 00

STEEL WIRE COAL SCREENS

PLAIN



FIG. 6288

PRICES, FIGS. 6288 AND 6289

Inches.	Inches.	Each.
33	1 to 2 mesh,	$10 00
33	¼ " ⅞ "	10 00
24	¼ " ⅞ "	7 00

With foot and leg extra, $2.00 net.

THE SIZES REQUIRED FOR SCREENING DIFFERENT GRADES

2, 2¼ or 2½ inch mesh screens furnace coal.
1½ or 1¾ inch mesh screens stove out of egg coal.
1 or 1¼ inch mesh screens nut out of stove coal.
⅝ or ¾ " " " stove coal.
⅜ or ½ " " " nut coal.
¼ inch mesh screens pea coal.
3/16 " " " buckwheat.
⅛ " " " brickmakers' dust.

WITH FOOT AND LEG



FIG. 6289

IMPROVED SAND SCREEN

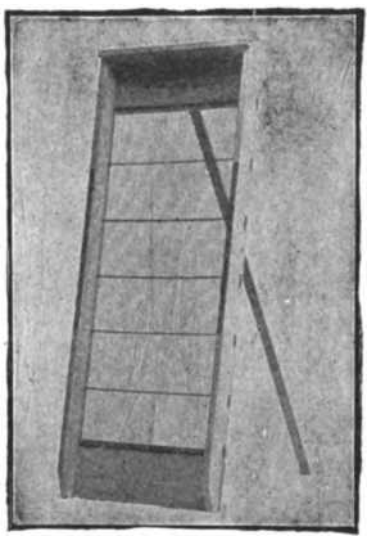


FIG. 6291

PRICES FIG. 6291

Size.	Inches.	Each.
Large,	27 x 68	$5 00
Small,	22 x 60	4 25

PRICES FIG. 6292

Nos.	Inches.	Each.
1	20 x 61	$6 00
2	22 x 66	6 50
3	24 x 61	7 00
4	28 x 66	7 50
5	32 x 71	8 00

Other sizes furnished to order.

Iron Legs for Screens.

Single leg for Nos. 1, 2 and 3, $1.50.

Double leg for Nos. 4 and 5, $2 00.

Any desired size of perforation can be furnished—square, round or oblong.

FLANGED STEEL COAL SCREEN

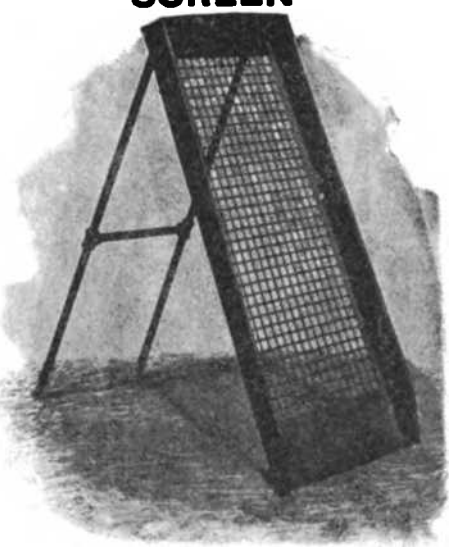


FIG. 6292

MINER'S RIDDLE

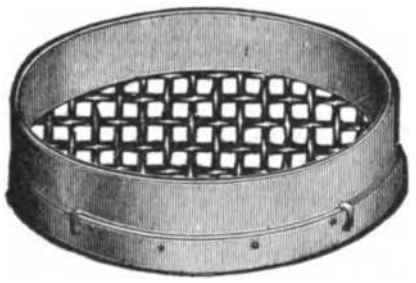


FIG. 6293

EXTRA HEAVY RIMS
STEEL WIRE

Diams., Inches.	Stock Numbers, Inches.	Per Doz.
18	½, ⅝, ¾, ⅞, 1, 1¼, 1½	$16 00
20	½, ⅝, ¾, ⅞, 1, 1¼, 1½	18 00

GALVANIZED WIRE

18	½, ⅝, ¾, ⅞, 1, 1¼, 1½	20 00
20	½, ⅝, ¾, ⅞, 1, 1¼, 1½	24 00

FOUNDRY OR MOLDER'S SIEVE



FIG. 6294

OAK RIMS

EXTRA HEAVY STEEL WIRE Diams., In.	Per Doz.	GALVANIZED STEEL WIRE Diams., In.	Per Doz.
16	$8 00	16	$10 00
18	10 00	18	12 00
20	12 00	20	15 00

HEAVY BRASS WIRE

Diameters, Inches.	Per Dozen.
16	$16 00
18	18 00
20	20 00

This grade of Riddles is usually made with a lining or batten inside the rim, under the cloth, which effectually prevents it from sagging, and does not cut out the wire. Can furnish with cross bars, or with both lining and cross bars.

HAND POWER SAND SIFTER

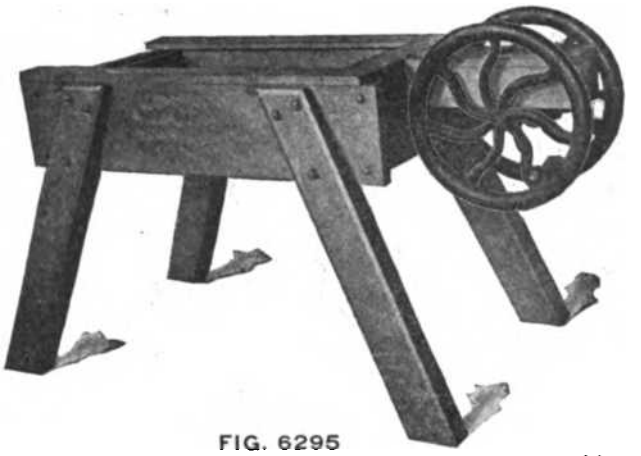


FIG. 6295

Is heavily constructed to withstand the constant knocking of the rapping device, the latter being protected by a box covering.

SIZE

Extreme length, 4 ft., 9 in. Extreme Height, 2ft., 9 in.
" breadth, 2 ft. Sieve bottoms, 20 x 30 in.

PRICES

With one sieve, each.....$57 00
Extra boxes, complete, each..... 5 00

FLASK RIDDLE

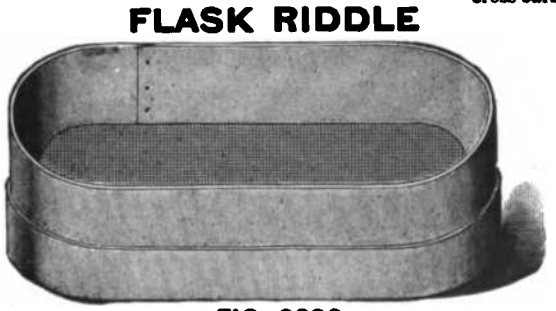


FIG. 6296

PRICE, FIG. 6296

This Riddle has been constructed particularly for use on snap flasks.

For 18 in. Oval Riddles of brass wire cloth, from No. 2 to No. 16 mesh, $8.00 per dozen.

Size, 18 inches long by 12 inches wide.

FOUNDRY SIFTER

PRICES, FIG. 6297

This Sifter complete, 36 x 24, 30 inches high.

With power and hand, $25.00
Movement only, $15.00

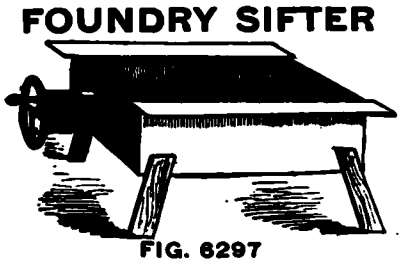


FIG. 6297

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MOULDER'S BELLOWS



FIG. 6299

PRICES

Inches	9	10	11	12	13	14	16
Per dozen	$15 00	$17 00	$20 00	$24 00	$26 00	$28 00	$33 00

BENCH BELLOWS

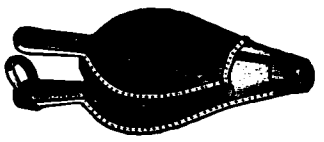


FIG. 6300

PRICES

8 inches, per dozen	$10 00	12 inches, per dozen	$15 00
9 " " "	11 00	14 " " "	18 00
10 " " "	12 00		

FACING BELLOWS



FIG. 6301

For distributing blacking upward, and where it can not be applied with the dust bag.

PRICE, $3.25

LIFTING SCREW

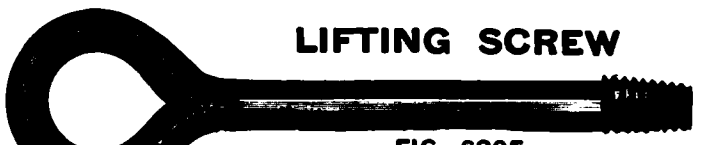


FIG. 6305

PRICES

⅝ inch; per dozen	$1 20	⅝ inch; per dozen	$1 80
½ " "	1 50	¾ " "	2 20

RAPPING PLATES AND DRAWING IRONS

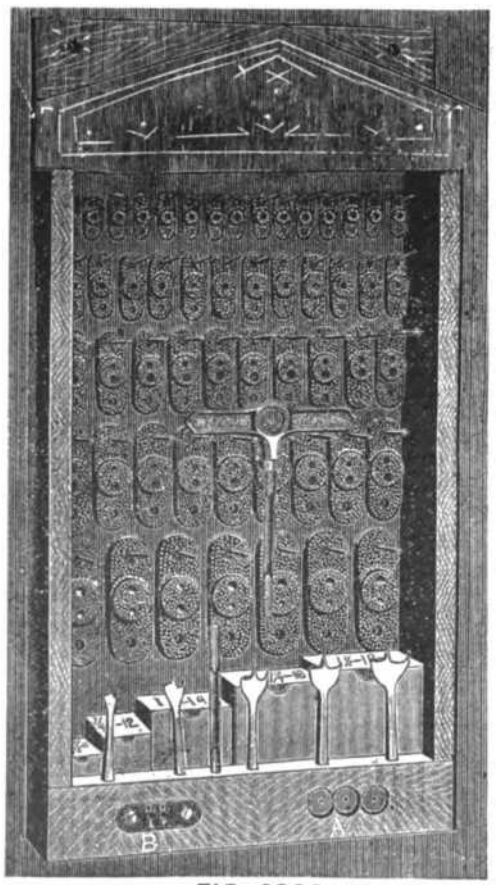


FIG. 6306

DESCRIPTION, FIG. 6306

These rapping plates are so designed that they are easily let into the pattern by boring three holes, as shown in cut at A; and, knowing the probability of spoiling a good bit at this work, we furnish a strong center bit that can be filed.

The drawing screws are four inches long and threaded at both ends, so as to be reversed in the handle when worn out. They also have a flute cut in them to prevent clogging.

PRICES RAPPING PLATES, ETC. PER DOZEN

1 dozen	½ inch plates		$0 20
1 "	¾ " "		25
1 "	1 " "		35
1 "	1¼ " "		50
1 "	1½ " "		75
1 "	handles "		90
1 "	drawing irons		75

PRICES, PER 100

100 ½ inch plates			$1 50
100 ¾ " "			2 00
100 1 " "			2 75
100 1¼ " "			4 00
100 1½ " "			6 00
100 handles			7 25
100 drawing irons			6 00

SPRINKLING BELLOWS



FIG. 6302

For saturating the mould, when advantageous, with water, benzine, kerosene, etc.

PRICE, $3.50

FRASER'S RAPPING PLATES

NO. 11

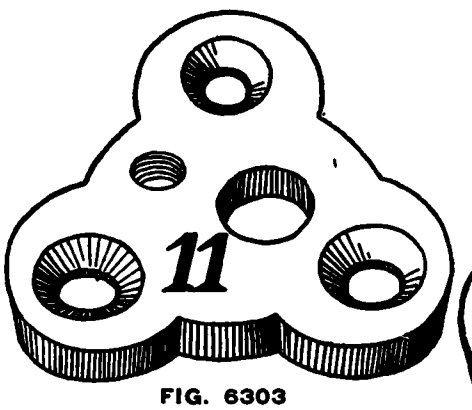


FIG. 6303

NO. 13

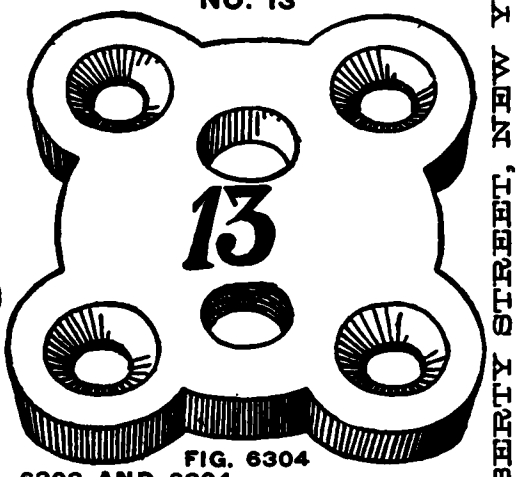


FIG. 6304

PRICES, FIGS. 6303 AND 6304

Made of malleable iron with rapping holes, tapped draw hole and screw holes.

1	tapped,	⅝	in..	$0 35	6	tapped,	⅝	in..	$0 45	11	tapped,	½	in..	$0 70	16	tapped,	⅝	in.	$1 40
2	"	⅝	" ..	35	7	"	½	" ..	50	12	"	⅝	" ..	75	17	"	⅝	" ..	1 90
3	"	⅝	" ..	35	8	"	½	" ..	55	13	"	⅝	" ..	85	18	"	¾	" ..	2 30
4	"	⅝	" ..	40	9	"	½	" ..	60	14	"	⅝	" ..	95	19	"	¾	" ..	2 60
5	"	⅝	" ..	40	10	"	½	" ..	65	15	"	⅝	" ..	1 10	20	"	¾	" ..	2 90

DOWEL PINS

FULL SIZES

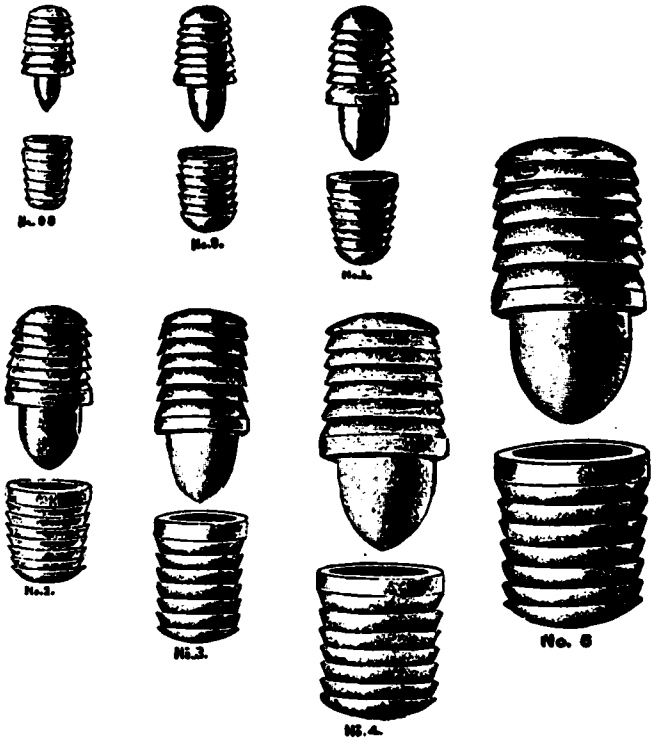


FIG. 6307

These Pins require no mortising—no wood screws—no squaring over of center; but are put in the old reliable way. To put in the Pin, bore a hole through the cope and part way into the drag, the same as for wood dowels. Drive the brass pin in from the parting and plug up the hole in the cope.

PRICES

Numbers	00	0	1	2	3	4	5
Use bit, inches	5/16	¼	5/16	⅜	7/16	⅜	¾
Per 100	$2 50	$3 00	$3 50	$4 50	$5 75	$8 50	$11 50

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FLEXIBLE METALLIC FILLET



FIG. 6308

Inches....	¼	5/16	⅜	½	5/8	¾	⅞	1
Per foot..	$0 04	0 05	0 06	0 08	0 10	0 12	0 15	0 20

In 100 foot, 50 foot, and 25 foot Rolls.

OBTUSE ANGLE WOOD FILLET

This Wood Fillet is constructed upon an obtuse angle, the back being worked sufficiently more than 90 degrees, to permit the feather edges to press firmly to the pattern, when applied, as shown in Fig. 6309. Made of the best clear white pine, kiln dried and free from knots, shakes, sap and blemishes. Worked perfect in curve to feather edge. Carefully selected; no haggled edges. Shellac face or curved side of Fillet a few moments before applying.

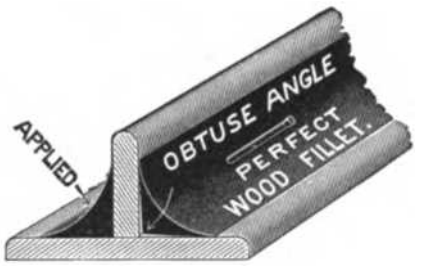


FIG. 6309

Numbers	4	6	8	10	12	14	16
Size or Radius in inches	¼	⅜	½	5/8	¾	⅞	1
Per 100 feet	$1 40	1 60	1 60	1 90	2 20	2 20	2 50

DIRECTIONS FOR APPLYING

Place Fillet face down, apply ordinary glue for wood patterns, shellac for metallic patterns or old work; press to position with a round stick, the diameter of which is double the size or radius of Fillet applied, (i.e., in applying a ¼ inch Fillet, use a round stick ½ inch in diameter, etc.), and remove surplus glue with a damp cloth.

LEATHER FILLETS

These Leather Fillets can be easily and quickly applied on single or compound curves, and on straight work, with a single operation; tacking, clamping and use of miter box being dispensed with. They are not affected by heat, cold or moisture, and are light, neat and durable.

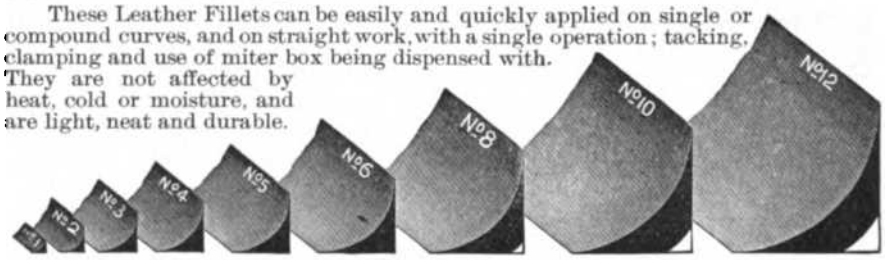


FIG. 6310

Size or Radius in inches	1/16	⅛	3/16	¼	5/16	⅜	½	5/8	¾	⅞	1
Width of Flat Face	3/32	5/16	5/16	⅜	½	9/16	¾	31/32	1 5/32	1⅜	1 9/16
Per 100 feet	$1 00	$1 50	$2 00	$2 50	$3 00	$3 50	$4 00	$5 00	$6 00	$7 00	$8 00

WROUGHT IRON CHAPLET

With Forged Head.

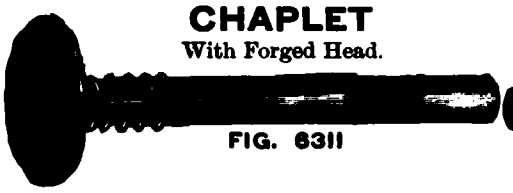


FIG. 6311

PRICES, PER HUNDRED

PLAIN AND TINNED.

Diameters of Head	½	11/16	13/16	1⅛	1¼	1½	1¾
Diameters of Stem	⅛	9/16	¼	5/16	⅜	½	5/8
Length, Inches.							
3	$1 55	$1 83	$2 10	$3 53	$5 33		
3½	1 60	1 90	2 20	3 70	5 60		
4	1 65	1 97	2 30	3 87	5 87		
4½	1 70	2 05	2 40	4 05	6 15		
5	1 75	2 13	2 50	4 22	6 42		
5½	1 80	2 20	2 60	4 40	6 70		
6	1 85	2 27	2 70	4 58	6 98		
6½	1 90	2 35	2 80	4 75	7 25		
7	1 95	2 43	2 90	4 97	7 57		
7½	2 00	2 50	3 00	5 10	7 80		
8	2 05	2 57	3 10	5 30	8 10		
9	2 10	2 62	3 30	5 65	8 65		
10	2 15	2 68	3 50	6 00	9 20		
11	2 20	2 75	3 70	6 35	9 75		
12	2 25	2 80	3 90	6 70	10 30		

WROUGHT IRON CHAPLET STEM

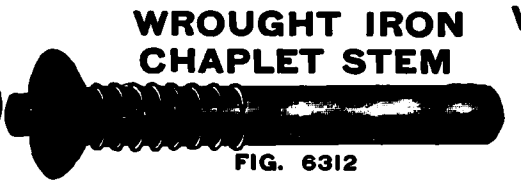


FIG. 6312

PRICES, PER HUNDRED

PLAIN AND TINNED.

Length, Measuring from Face of Stem, Inches.	Diameters. ¼	5/16	⅜	½	5/8	¾
3	$1 55	$1 83	$2 10	$3 58	$5 33	$7 47
3½	1 60	1 90	2 20	3 70	5 60	7 85
4	1 65	1 97	2 30	3 87	5 87	8 23
4½	1 70	2 05	2 40	4 05	6 15	8 60
5	1 75	2 13	2 50	4 22	6 42	8 97
5½	1 80	2 20	2 60	4 40	6 70	9 35
6	1 85	2 27	2 70	4 58	6 98	9 72
6½	1 90	2 35	2 80	4 75	7 25	10 10
7	1 95	2 43	2 90	4 97	7 57	10 47
7½	2 00	2 50	3 00	5 10	7 80	10 85
8	2 05	2 57	3 10	5 30	8 10	11 25
9	2 10	2 62	3 30	5 65	8 65	12 00
10	2 15	2 68	3 50	6 00	9 20	12 75
11	2 20	2 75	3 70	6 35	9 75	13 50
12	2 25	2 80	3 90	6 70	10 30	14 25

WROUGHT IRON CHAPLET STEM

With Square Plate Fitted.

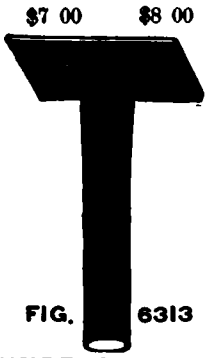


FIG. 6313

PRICES, PER HUNDRED

PLAIN AND TINNED.

Diameters of Plates, Inches.	1¼	1½	1¾	2	2½	3
Thickness of Plates, Inches.	1/16	7/64	⅛	11/64	5/16	¼
Diameters of Stem, Inches.	¼	5/16	⅜	½	5/8	¾
Length, Inches.						
3	$2 80	$3 43	$4 00	$6 43	$9 83	$13 97
3½	2 85	3 50	4 10	6 60	10 10	14 35
4	2 90	3 57	4 20	6 77	10 37	14 73
4½	2 95	3 65	4 30	6 95	10 65	15 10
5	3 00	3 73	4 40	7 13	10 92	15 47
5½	3 05	3 80	4 50	7 30	11 20	15 85
6	3 10	3 87	4 60	7 47	11 48	16 22
6½	3 15	3 95	4 70	7 65	11 75	16 60
7	3 20	4 03	4 80	7 83	12 07	16 97
7½	3 25	4 10	4 90	8 00	12 30	17 35
8	3 30	4 17	5 00	8 20	12 60	17 75
9	3 35	4 25	5 20	8 55	13 15	18 50
10	3 40	4 33	5 40	8 90	13 70	19 25
11	3 45	4 40	5 60	9 25	14 25	20 00
12	3 50	4 50	5 80	9 60	14 80	20 75
Prices for Curving Plates to Suit Diams. of Core.	$0 25	0 35	0 45	0 60	0 75	1 00

DOUBLE HEAD CHAPLET

With Forged Head.



FIG. 6314

PRICES, FIG. 6314

PLAIN AND TINNED.

Made of ⅜ inch round iron, from ¾ to 2½ inches long, with heads about ¾ inch diameter.

Per hundred, from ⅝ to 1⅜ inches..... $5 00
" " " 1½ to 2½ " 6 00

DOUBLE HEAD CHAPLET STEM

With Square Plate Fitted.

PRICES, FIG. 6315

PLAIN AND TINNED.

Stems made of ⅜ inch round iron, from ½ to 2½ inches long.

Per hundred, ½ to 1 inch, with plates from ¾ to 1¼ inches.. $8 00
Per hundred, 1⅛ to 1½ inches, with plates from 1½ to 2 inches..... 9 00
Per hundred, 1⅝ to 2½ inches, with plates from 2 to 2½ inches..... 10 00

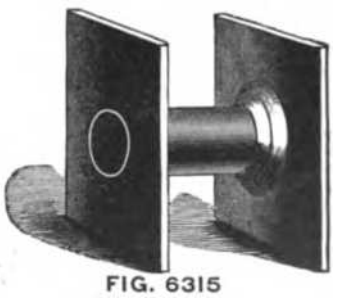


FIG. 6315

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SQUARE TROWEL

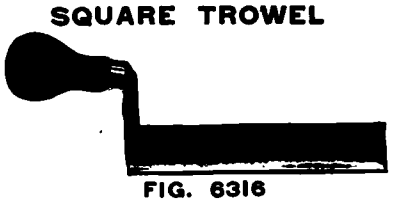


FIG. 6316

PRICES, PER DOZEN, FIGS. 6316, 6317 AND 6319

Length, in.,	4	4½	5	5½	6	6½	7
Width, in., 1	$5 40	$6 00	$6 60	$7 20	$7 80	.. .	....
" " 1¼	5 40	6 00	6 60	7 20	7 80	....	....
" " 1½	6 60	7 20	7 80	8 40	9 00	$9 60	$10 20
" " 1¾	....	....	9 00	9 60	10 20	10 80	11 40
" " 2	....	....	10 20	10 80	11 40	12 00	12 60

HEART AND SQUARE



FIG. 6321

Width, in.	¾	1	1¼	1½	1¾	2
Per doz.	$4 80	$5 40	$6 60	7 80	$9 00	$10 20

TAPER AND SPOON



FIG. 6324

Width, inches	1	1¼	1½
Per dozen	$5 40	$6 60	$7 80

BOX LIFTER

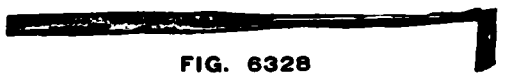


FIG. 6328

⅝ x 14	⅝ x 16	⅝ x 18	¾ x 16	¾ x 18	¾ x 20
$13 20	$13 80	$14 40	$14 40	$15 00	$15 60

Per dozen.

YANKEE



FIG. 6329

Width, inches.	⅜	½	⅝	¾	1
Per dozen	$4 80	$5 40	$6 00	$6 60	$7 80

OVAL DOG TAIL



FIG. 6332

Width, inches	¾	1	1¼
Per dozen	$6 00	$6 60	$7 80

HALF ROUND CORNER



Width, inches, 1 1¼ 1½ 2
Per dozen, $6.00.

FIG. 6335

CIRCULAR FLANGE



FIG. 6338

Width, inches.	½	⅝	¾	1
Per dozen	$9 60	$10 80	$12 00	$14 40

HUB TOOL



FIG. 6341

Width, inches	¾	1
Per dozen	$9 00	$10 80

FLANGE AND BEAD



FIG. 6344

Width, inches..	½	⅝	¾	1
Per dozen	$8 40	$9 60	$10 80	$13 20

FINISHING TROWELS



FIG. 6317

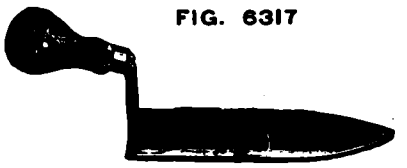


FIG. 6319

Width, 1¼ x 5 / 1½ x 5 } Length, 5½ 6 / 5½ 6

HEART AND SPOON



FIG. 6322

Width, inches	1	1¼	1½
Per dozen	$5 40	$6 60	$7 80

SPOONS



FIG. 6325



FIG. 6326

Width, inches	1	1¼	1½
Per dozen	$5 40	$6 60	$7 80

SQUARE STRAIGHT



FIG. 6330

Width, inches	½	⅝	¾	1
Per dozen	$5 40	$6 00	$6 60	$7 80

FLUTE



FIG. 6333

Width, inches	⅜	⅝	⅞
Per dozen	$6 00	$7 20	$8 40

SQUARE CORNER



Width, inches, 2 2½ 3
Per dozen, $6.00.

FIG. 6336

FLAT FLANGE



FIG. 6339

Width, inches	½	⅝	¾	1
Per dozen	$9 60	$10 80	$12 00	$14 40

LIFTER



FIG. 6342

Inch.	10	12	14	16	18	20
⅛ x	$4 20	$4 80	$5 40	$6 00	....	....
¼ x	4 20	4 80	5 40	6 00	....	....
⅜ x	4 80	5 40	6 00	6 60	....	....
½ x	5 40	6 00	6 60	7 20	$7 80	....
⅝ x	....	6 60	7 20	7 80	8 40	....
¾ x	....	7 20	7 80	8 40	9 00	$9 60
1 x	....	....	9 00	9 60	10 20	10 80

Per dozen.

HEART TROWEL

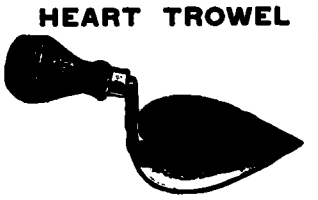


FIG. 6318

Width, inches....	2	2¼	2½	3
Per dozen	$6 00	$7 50	$9 00	$12 00

HEART AND LEAF



FIG. 6320

Width, inches	1	1¼	1½
Per dozen	$5 40	$6 60	$7 80

TAPER AND SQUARE



FIG. 6323

Width, inches....	¾	1	1¼	1½
Per dozen	$4 80	$5 40	$6 60	$7 80

STOVE TOOL



FIG. 6327

Width, inches..	⅜	½	⅝	¾	1
Per dozen	$4 80	$5 40	$6 00	$6 60	$7 80

DOUBLE SQUARE



FIG. 6331

Width, inches	½	⅝	¾	1
Per dozen	$5 40	$6 00	$6 60	$7 80

BEAD SLICK



FIG. 6334

Width, inches	½	⅝	¾
Per dozen	$5 40	$6 00	$6 60



FIG. 6337

PIPE

Per dozen, $4.80.



FIG. 6340

INSIDE SQUARE CORNER

Width, inches, 2 2½ 3
Per dozen, $9.00.

FLAT AND CIRCULAR FLANGE

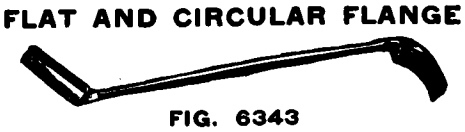


FIG. 6343

Width, inches..	½	⅝	¾	1
Per dozen	$9 60	$10 80	$12 00	$14 40

FLANGE LIFTER

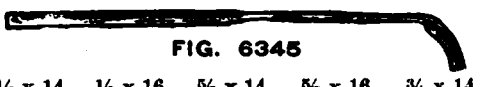


FIG. 6345

½ x 14	½ x 16	⅝ x 14	⅝ x 16	¾ x 14
$10 80	$11 40	$11 40	$12 00	$12 00
¾ x 16	¾ x 18	1 x 16	1 x 18	1 x 20
$12 60	$13 20	$15 00	$15 60	$16 20

Per dozen.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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MOLDERS' TOOLS

BOX LIFTER



FIG. 6346

HUB LIFTER



FIG. 6347

5/8 x 14 in.	5/8 x 16 in.	5/8 x 18 in.	3/4 x 16 in.	3/4 x 18 in.	3/4 x 20 in.
$18 20	$13 80	$14 40	$14 40	$15 00	$15 60



FIG. 6348

BENCH RAMMER

HARD WOOD

	Per Doz.
Best Quality, Seasoned	$9 00
Second Quality	4 50

PRICES, PER DOZEN

Inches.	10	12	14	16	18	20
1/8 x	$4 20	$4 80	$5 40	$6 00	.....	.....
1/4 x	4 20	4 80	5 40	6 00	.....	.....
3/8 x	4 80	5 40	6 00	6 60	.....	.....
1/2 x	5 40	6 00	6 60	7 20	$7 80	.....
5/8 x	.....	6 60	7 20	7 80	8 40	.....
3/4 x	.....	7 20	7 80	8 40	9 00	$9 60
1 x	.....	.....	9 00	9 60	10 20	10 80

WHITE METAL PATTERN LETTERS AND FIGURES

FOR FOUNDRYMEN, MACHINISTS AND PATTERN MAKERS

SHARP FACE GOTHIC



FIG. 6350

5/8 in. 3c. 3/4 in. No. 2, 3½c. 1 in. No. 2, 5c.



FIG. 6351

1/8"	3/16"	1/4"	5/16"	3/8"	1/2"
2c.	2c.	2c.	2c.	2½c.	2½c.

ROMAN STYLE

The dark lines over the letters show their thickness.

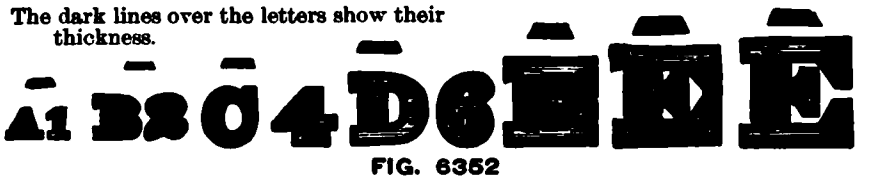


FIG. 6352

1/8 in. 2c. 3/16 in. 2c. 1/4 in. 2c. 5/16 in. 2c. 3/8 in. 2½c. 7/16 in. 2½c. 1/2 in. 2½c.

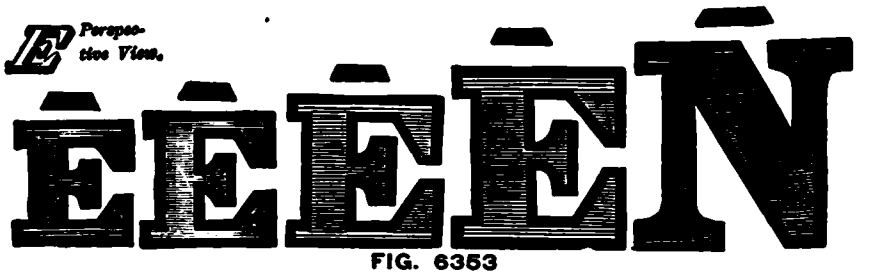


FIG. 6353

9/16 in. 3c. 5/8 in. 3c. 3/4 in. 3½c. 7/8 in. 4c. 1 in. 4½c.

HAIR LINE GOTHIC



FIG. 6354

7/16 in.	1/2 in.	9/16 in.	5/8 in.
2½c.	2½c.	3c.	3c.



FIG. 6355

3/32"	1/8"	3/16"	1/4"	5/16"	3/8"
3c.	2c.	2c.	2c.	2c.	2½c.

FLATTENED FACE SHARP GOTHIC

3/4	inch,	3½	cents.
1¼	"	6	"
1½	"	8	"
2	"	10	"
3	"	15	"

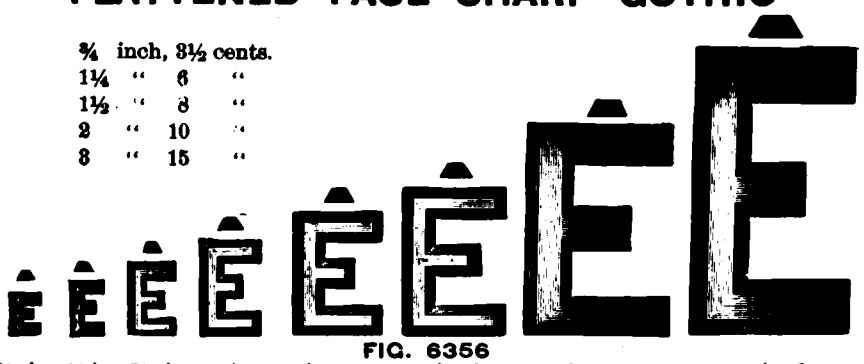


FIG. 6356

3/16 in.	1/4 in.	5/16 in.	3/8 in.	1/2 in.	5/8 in.	1 in.	1⅜ in.
2c.	2c.	2c.	2½c.	2½c.	3c.	5c.	7c.

BRASS LETTERS

FURNISHED IN ANY OF THE ABOVE STYLES AT THE FOLLOWING PRICES

Sizes, inches	1/8	3/16	1/4	5/16	3/8	1/2	5/8	3/4	7/8	1	1¼	1½	2	2½	3	4
Each	4c.	4c.	4c.	4c.	5c.	5c.	6c.	7c.	8c.	9c.	10c.	12c.	15c.	18c.	20c.	30c.

WHITE METAL RELIEF FIGURE NUMBERING PLATES

WITH JAPANNED BACK GROUND

FIGURES WITH TACKS IN BACK



FIG. 6357

1 inch, 8 cents per figure, with tacks cast in each for fastening.

1¼ inch, each	$0 10
1½ " "	12
2 " "	15

Nickel plating extra.

FIGURE PLATE



FIG. 6358

¼ inch	$0 10	½ inch	$0 12
3/8 "	10	3/4 "	16
7/16 "	10	1 "	20

Inches	¼	3/8	½	3/4	1
Nickel plated	$0 12	0 12	0 14	0 19	0 23

IMITATION ENGRAVED PLATE



FIG. 6359

7/8 inch figures, each $0 18

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HAND LADLES

STAMPED STEEL
NO. 116



FIG. 6360

ROUND BOTTOM CAST
NO. 118



FIG. 6361

FLAT BOTTOM CAST
NO. 120

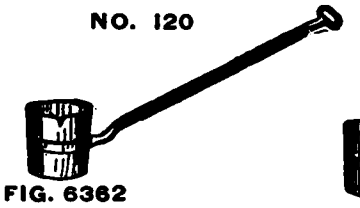


FIG. 6362

FLAT BOTTOM WROUGHT
NO. 122

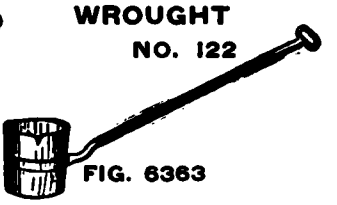


FIG. 6363

PRICES, FIGS. 6360 TO 6364

No. 116 Stamped steel bowl, ladle complete, capacity 50 pounds, each, $3.00.
" 118 Round bottom cast bowl, ladle complete, capacity 40 pounds, $2.55; 50 pounds, $2.80.
" 120 Flat " " " " " " 40 " $2.55; 50 " $2.80.
" 122 " " welded steel bowl, ladle complete, capacity 40 pounds, $4.00; 50 pounds, $4.20.
" 123 " " cast bowl, ladle with detachable shank, capacity 35 pounds, $1.85; 50 pounds, $2.10; 75 pounds, $2 40.

SPECIAL HAND LADLE

NO. 123

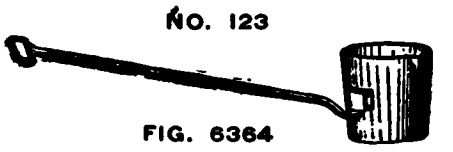


FIG. 6364

CAST BOWL BULL LADLE

NO. 124

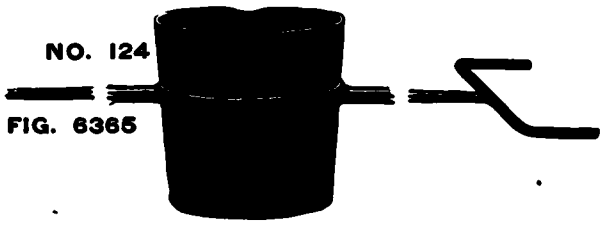


FIG. 6365

PRICES, COMPLETE

Capacity, pounds	100	150	200	250
Each	$9 00	$9 35	$9 70	$10 20

WROUGHT BOWL BULL LADLE

NO. 126

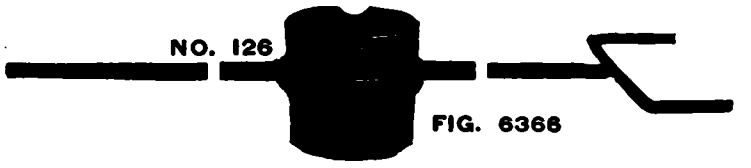


FIG. 6366

PRICES, COMPLETE

Capacity, pounds	80	100	150	200	250	300	350
Each	$9 00	$9 00	$10 00	$10 00	$10 00	$13 00	$14 50

WROUGHT BOWL BULL LADLE

NO. 126 D DOUBLE SHANK

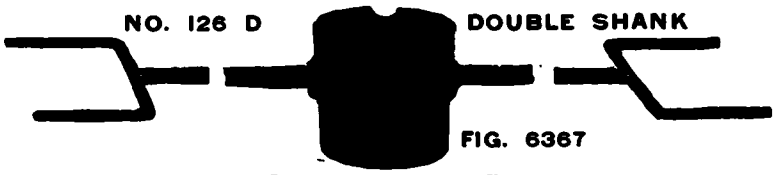


FIG. 6367

PRICES, COMPLETE

Capacity, pounds	80	100	150	200	250	300	350
Each	$13 25	$13 60	$14 10	$14 75	$15 55	$16 60	$17 95

WROUGHT BOWL BULL LADLE

NO. 126 S SWIVEL SHANK



FIG. 6368

PRICES, COMPLETE

Capacity, pounds	80	100	150	200	250	300	350
Each	$14 50	$14 90	$15 45	$16 10	$17 00	$18 10	$19 50

BLACK LEAD CRUCIBLES

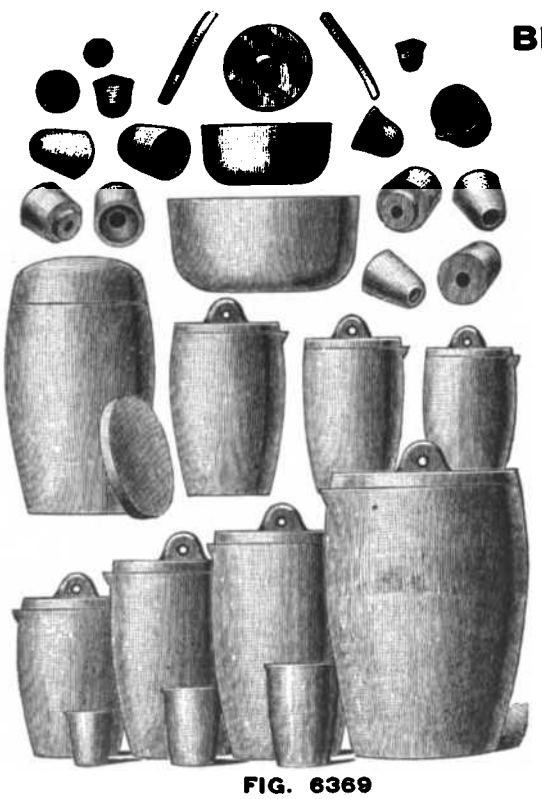


FIG. 6369

PRICES OF COVERS

Nos.	Each.
1	$0 10
2	10
3	10
4	10
5	10
6	15
7	15
8	15
9	15
10	15
12	18
14	18
16	18

18 and upward, 1 cent per number.

PRICES, FIG. 6369

Nos.	Holding Liquid Measure, Gals.	Qts.	Pts.	Height Outside, In.	Diams. at the Top Outside, In.	Diams. at the Bilge Outside, In.	Diams. at the Bottom Outside, In.	
0	..	..	..	2	1½	1⅝	1¼	$1 80 per dozen.
00	..	..	..	2⅜	1⅞	1⅞	1⅜	1 80 " "
000	..	..	..	2½	1⅞	2⅛	1½	1 80 " "
0000	..	..	..	3	2⅜	2½	1¾	1 80 " "
1	..	..	..	3⅝	3⅛	3	2¼	25 cents each.
2	..	..	..	4½	3¾	3⅝	2¾	30 " "
3	..	..	..	5¼	4¼	4⅛	3	35 " "
4	..	..	..	5⅝	4⅝	4½	3¼	40 " "
5	..	..	1½	6	4⅞	4¾	3½	45 " "
6	..	1	..	6½	5¼	5⅛	3¾	50 " "
7	..	1	¼	6¾	5½	5½	4	55 " "
8	..	1	½	7¼	5¾	5¾	4¼	60 " "
9	..	1	¾	7⅝	6	6¼	4½	65 " "
10	..	1	1	8	6	6½	4¾	70 " "
12	..	2	..	8	6¼	6¾	5	No. 12 and upwards 6½ cents per number.
14	..	2	1	8½	6¾	7¼	5½	
16	..	2	1	8¾	7	7½	5½	
18	..	3	1	9¾	7⅜	8	5¾	
20	1	..	..	10¼	7¾	8⅜	6	
25	1	..	1	10¼	8	8⅝	6¼	
30	1	1	1	11	8⅝	9¼	6½	
35	1	2	1	11⅝	9¼	9¾	7	
40	2	..	..	12⅜	9¼	10¼	7¾	
45	2	1	..	13	9¾	10½	7⅝	
50	2	3	..	13½	10⅛	11¼	7⅞	
60	3	..	..	14	10⅜	11⅝	8	
70	3	1	..	14½	10⅞	12	8¼	
80	3	2	1	15⅜	11⅛	12⅝	8⅝	
90	4	..	..	15⅞	11½	12½	9	
100	4	2	1	16	11⅞	13⅛	9⅜	
125	4	3	1	16⅝	12½	13¾	9½	
150	6	3	..	18¼	13¼	14¾	10⅜	
175	7	3	1	19½	14¼	15¾	10¾	
200	9	3	1	20½	15	16½	11¼	
225	10	1	1	20¾	15¼	16¾	12½	
250	10	3	..	20½	15¼	17	11¾	
275	11	3	..	22⅜	15	16⅝	12½	
300	12	2	..	22	16¼	17½	12½	

PRICES, CRUCIBLES FOR FILE TEMPERING

Nos.	Height Outside, Inches.	Diameters at Top Outside, Inches.	Diameters at Bilge Outside, Inches.	Diameters at Bottom Outside, Inches.	
60	17¼	9	9¼	8	6½ cents per number.
70	20½	9	9¼	8	
80	22¼	9	9¼	8	
100	24½	9	9¼	8	

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MORTAR AND PESTLE

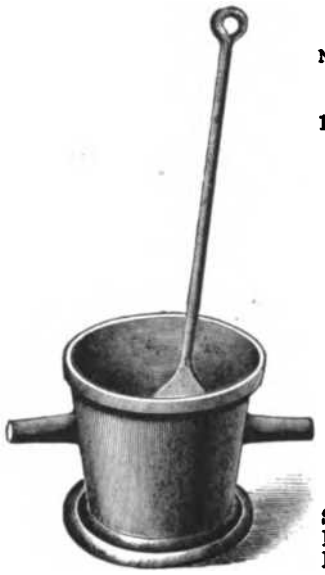


FIG. 6371

Nos.	Capacity, Gallons.	Diameters Over Top, Inches.	Depth Inside, Inches.	Prices, Net.
8	1	9½	9	$5 50
9	2	11	8	6 50
10	3½	13½	12	13 00

HARD IRON STARS



FIG. 6370

STARS FOR TUMBLING BARRELS

Small, per pound	12 cents
Medium, "	8 "
Large, "	8 "

BRASS FOUNDERS' SPILL TROUGHS

NO. 1

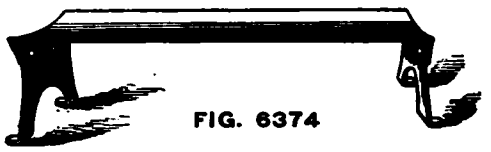


FIG. 6374

NOS. 2 AND 3



FIG. 6375

Nos.	Height, Inches.	Length, Inches.	Width, Inches.	Prices.
1	10	48	14	$4 00
2	10	48	14	6 00
3	10	74	14	10 00

EUREKA IMPROVED SNAP FLASK

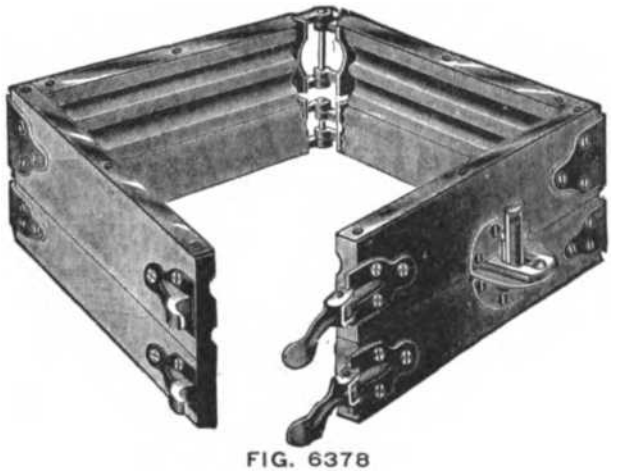


FIG. 6378

PRICES

Trimmings Riveted On.

No. 1 of 1¼ inch cherry, any size	$3 25
" 2 " 1¼ " oak, "	2 75
" 3 " 1¼ " white wood, any size	2 50

PRICES

Trimmings Screwed On.

No. 4 of 1¼ inch cherry, any size	$3 00
" 5 " 1½ " oak, "	2 50
" 6 " 1½ " white wood, any size	2 25

Three part flasks one-half extra.

CRUCIBLE TONGS

MADE OF STEEL

A



FIG. 6372

B



FIG. 6373

No. 18, for Nos. 18 to 20 crucible	$5 00
" 20, " 20 " 30 "	6 00
" 30, " 30 " 40 "	7 00
" 40, " 40 " 50 "	8 00
" 50, " 50 " 60 "	9 00
" 60, " 60 " 70 "	10 00
" 80, " 80 " 90 "	18 00
" 100, for No. 100 "	20 00
" 125, " 125 "	22 00

Larger sizes to order.

Pick up Tongs	$2 50
Charging Tongs	3 00

Tongs like A will be furnished, unless otherwise ordered. Special Loop Tongs like B cost $1.50 extra.

STEEL INGOT MOLD



FIG. 6376

	Sizes, Inside Measure, Inches.	Weight, Pounds.	Prices, per Pound. Cents.
Steel Double	13 x 3½ x 2½	24	6
" Single Mold	7 x 3 x 3	15	6

STIRRER HOLDER

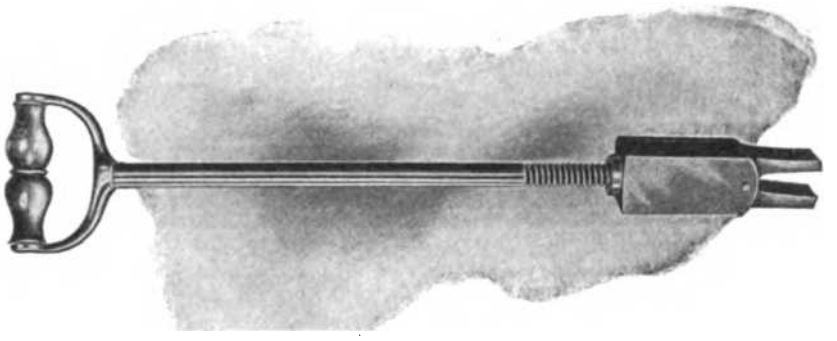


FIG. 6377

Metal workers who use Graphite Stirrers will be interested in the accompanying illustration, which represents a new and simple device for holding the stirrer. It consists of four parts, viz: jaws, fork, wedge, and handle. The handle screws through the upper end of fork, which holds the jaws in place. The wedge is fastened on end of handle bar inside of fork. This wedge engages between the upper end of jaws, and a movement in or out fastens and releases the grip. Thus, to fasten a stirrer means a turn or two of the handle to the right, and the stirrer is fastened beyond any possibility of its being moved until the handle is turned back, which will withdraw the wedge and release the jaws. It is simple in construction and thoroughly practical in its workings. Malleable iron.

PRICE, $2.50

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IMPROVED RIBBED AND BEVELED FLASK

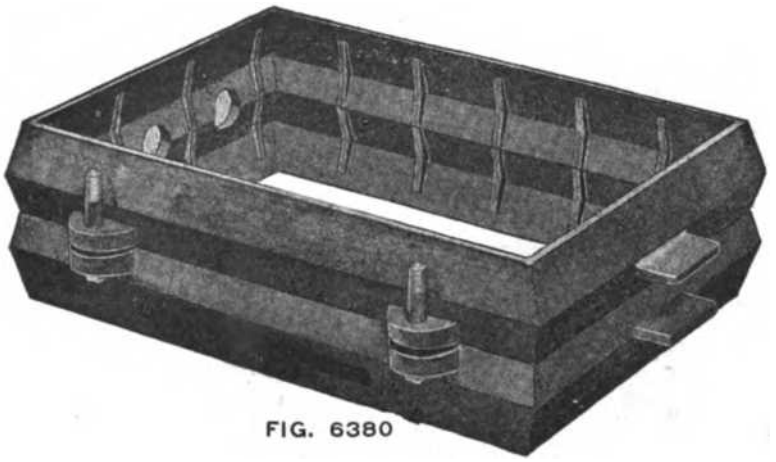


FIG. 6380

PRICES ON APPLICATION, GIVING SIZE REQUIRED

ADJUSTABLE MALLEABLE IRON FLASK PIN

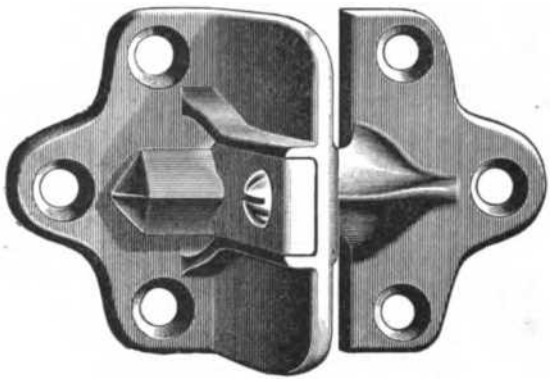


FIG. 6381

Quickly Applied and Easily Adjusted.

PRICES

No. 1 Width of plate 3 in., length of pin 2½ in.; per dozen....$2 40
" 2 " " 4 " " " 3½ " " 4 00

ADJUSTABLE FLASK CLAMP



FIG. 6382

The heads are made of good malleable iron, with hardened balls, and the tails of standard square bar iron, in three sizes, viz: ⅝, ¾, and ⅞. We sell the heads by the dozen or the clamps complete.

PRICES, FIG. 6382, COMPLETE

Nos. Clamp.	Nos. Head.	Adjustment, Inches.	Per Dozen.	Nos. Clamp.	Nos. Head.	Adjustment, Inches.	Per Dozen.
5	1	from 6 to 10	$3 40	11	2	from 17 to 22	$5 80
6	1	" 10 " 14	3 70	12	2	" 22 " 27	6 10
7	1	" 14 " 18	3 80	13	3	" 8 " 14	6 75
8	1	" 18 " 22	4 00	14	3	" 14 " 20	7 25
9	2	" 7 " 12	5 00	15	3	" 20 " 26	7 80
10	2	" 12 " 17	5 40	16	3	" 26 " 32	8 50

PRICES, HEADS ONLY

Nos. Head.		Per Dozen.	No. Head.		Per Dozen.
1	For ⅝ in. x ⅝ in. bar iron tail...	$2 10	3	For ⅞ in. x ⅞ in. bar iron tail...	$3 75
2	" ¾ " x ¾ " " " " ...	3 00			

ADJUSTABLE MALLEABLE IRON FLASK CLAMP

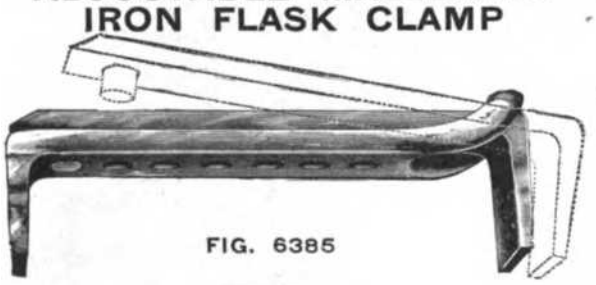


FIG. 6385

PRICES

5 in. extends to 8 in.; per dozen..... $1 20
7 " " " 11 " " 2 50
10 " " " 16 " " 4 50
15 " " " 28 " " 10 00

FLASK CLAMP



FIG. 6386

It requires no blocking, and can be adjusted to any sized flask without the use of bars or levers. Constructed of malleable iron; it is strong, light, durable.

PRICES

No. 2 8¼ inches to 14 inches; per dozen..... $4 50
" 3 13 " " 24 " " 10 50

CORE BOX CLAMPS

Nos. 2 and 3.

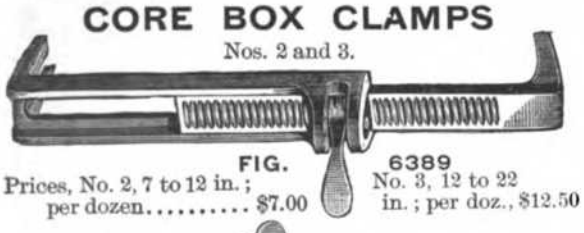


FIG. 6389

Prices, No. 2, 7 to 12 in.; per dozen..... $7.00
No. 3, 12 to 22 in.; per doz., $12.50

No. 1.

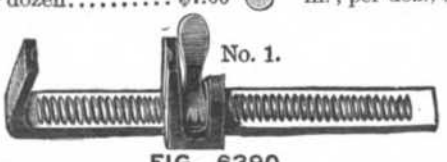


FIG. 6390

Price, No. 1, 0 to 6 inches; per dozen..... $5 00

STATIONARY LIGHTNING GRIP CORE BOX CLAMP AND VENT ROD GUIDE

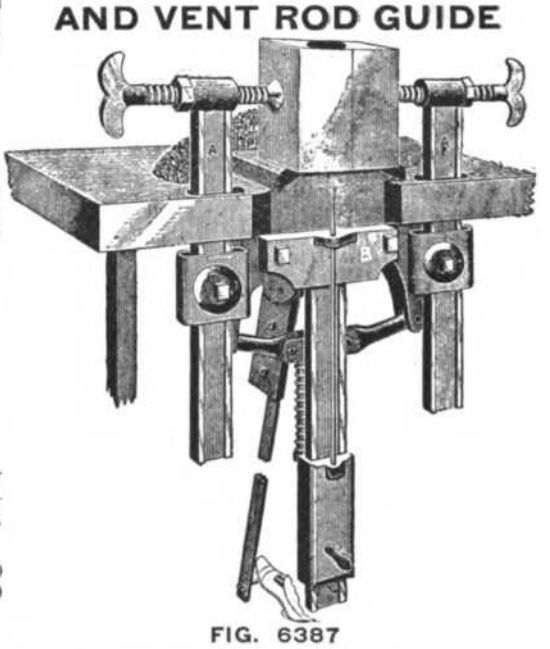


FIG. 6387

Clamp, with Vent Rod Attachment.

This Clamp bolts under the core bench, as shown, and the two arms, A A, project through. These arms can be adjusted to suit any length box from 6 inches square to 12 inches long.

The Vent Rod device, B, guides the Vent Rod from underneath, and is a separate attachment.

We also furnish a blower attachment that does away with hand brushing.

PRICES

Clamp..... $6 00

In ordering, state what attachment is wanted.

SPRUE CUTTER

Foot Power.

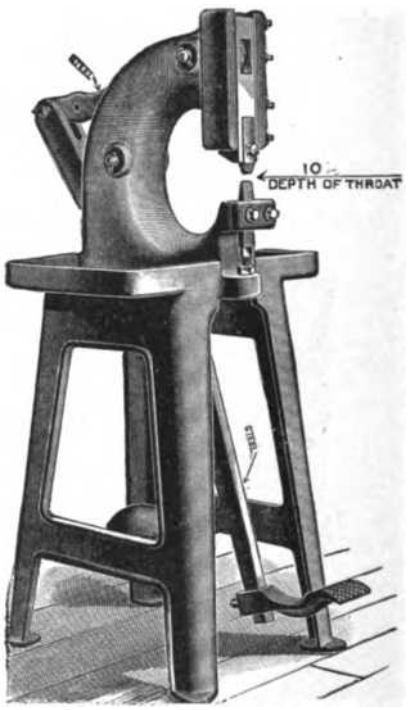


FIG. 6388

Knives can be adjusted as they are ground off. Foot lever also has an adjustable stop for setting knives.

Knives are ⅝ x 1¼ inch tool steel, and can be easily taken out to grind and to reverse, if necessary.

Depth of throat from knives to frame, 10⅜ inches; height of throat, 11 inches; weight, 600 lbs.

Price..... $65 00

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ROUND CASTING BRUSH

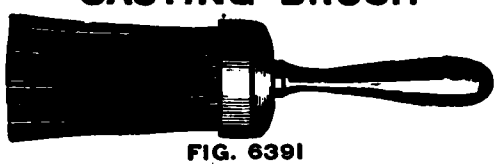


FIG. 6391

4½	inch	wire,	per dozen	$7 00
6	"	"	"	9 00
8	"	"	long handle, per dozen	12 00

STEEL CASTING BRUSH WITH HANDLE



FIG. 6392

PRICES

1	row,	2½	inch wire	$3 00
2	"	2½	" "	4 00
3	"	2½	" "	5 00
4	"	2½	" "	6 00
5	"	2½	" "	7 00

Made of any length wire or any number of rows.

DECK SCRUB BRUSH



FIG. 6396

Bass, per dozen.....$6 00

MOULDER'S DUSTER

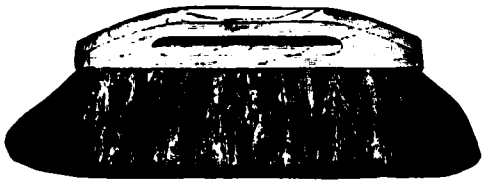


FIG. 6399

Made of Pure Gray Bristles for Foundry Use.

PRICES

No. 35,	8	inch	block,	per dozen	$10 25
" 55,	9	"	"	"	11 50
" 45,	9	"	"	"	12 20
" 65,	9	"	"	"	13 75
" 5,	8½	"	"	"	14 50
" 75,	10½	"	"	"	15 00

CAMEL'S HAIR CORE BRUSH

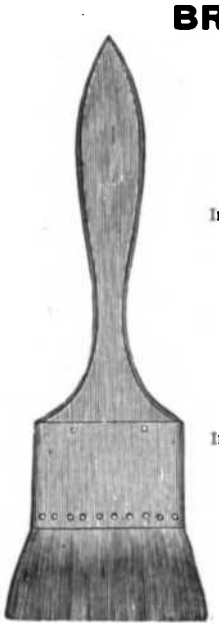


FIG. 6401

PRICES, FIG. 6401

Single Thick.

Inches.	Per Dozen
1	$4 00
1½	6 00
2	8 50
2½	12 00
3	14 00

Double Thick.

Inches.	Per Dozen.
1	$6 80
1½	9 40
2	12 00
2½	16 00
3	20 00

HARD FOUNDRY BRUSH



FIG. 6393

With handle, per dozen.....$7 50
Without " " 7 00

STEEL CASTING BRUSH



FIG. 6395

Price, 25 cents less per dozen than Fig. 6394.

ROTARY STEEL WIRE BRUSH



FIG. 6397

The above brush, without adjustable table, made any length or diameter required. The supporting bars to each row of wires prevent them from snapping, and can be adjusted lower when bristles wear down.

PRICE, $45.00

HARD BRISTLE BRUSH



FIG. 6400

PRICES

No. 2	Brush,	per dozen	$4 50
" 2	Extra Brush,	"	8 00
" 3	Brush,	"	5 50
" 22	G-H Brush,	"	7 00

STEEL CASTING BRUSH



FIG. 6394

PRICES

4	rows, 2	inch	wire,	per dozen	$5 50
4	" 2½	"	"	"	6 00
4	" 3	"	"	"	6 50
4	" 3½	"	"	"	7 00
4	" 4	"	"	"	7 50
4	" 4½	"	"	"	8 00
4	" 5	"	"	"	8 50
5	" 2	"	"	"	6 50
5	" 2½	"	"	"	7 00
5	" 3	"	"	"	7 50
5	" 3½	"	"	"	8 00
5	" 4	"	"	"	8 50
5	" 4½	"	"	"	9 00
5	" 5	"	"	"	9 50
6	" 3	"	"	"	9 00
6	" 4	"	"	"	10 50
6	" 5	"	"	"	12 00

ROTARY STEEL WIRE CLEANING BRUSH

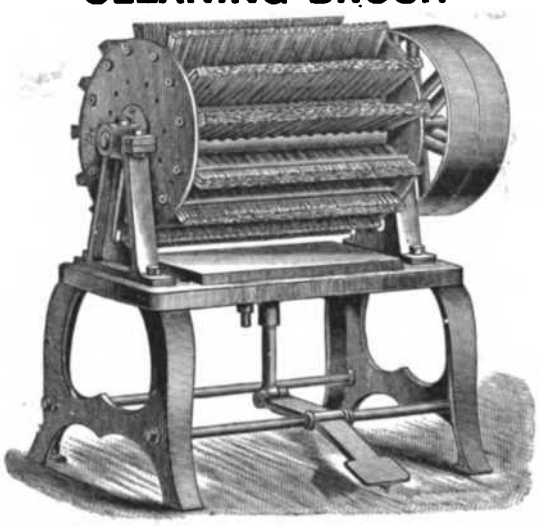


FIG. 6398

With adjustable table; especially adapted for scaling in shovel factories, and other steel or iron plates. Can be made any size to suit plates to be scaled.

Give length and diameter of brush when writing for price.

The adjustable table is designed more particularly for shovel factories, but we have no doubt of its utility for other scaling and cleaning purposes.

PRICES ON APPLICATION

ENGLISH BRISTLE CORE BRUSH



FIG. 6402

PRICES, FIG. 6402

White Bristles, Chisel Point.

Inches.	Per Dozen.
1	$2 35
1½	3 50
2	4 40
2½	6 30
3	7 50

WHITE BRISTLE FAN TOP CORE BRUSH



FIG. 6403

PRICES, FIG. 6403

Single Thickness.

Inches.	Per Dozen.
1	$4 75
1½	5 20
2	6 00
2½	7 60
3	8 00
3½	9 50
4	11 00

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FLAT SCOURING BRUSH

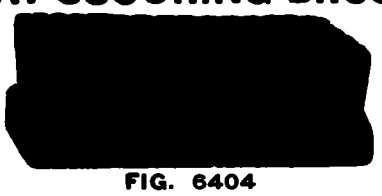


FIG. 6404
TAMPICO

5 Rows, 12 knots long, per dozen..... $1 00
4 " 18 " " " 1 50

POINTED SCOURING BRUSH



FIG. 6405
TAMPICO

5 Rows, 14 knots long, per dozen..... $1 25

BENCH BRUSH

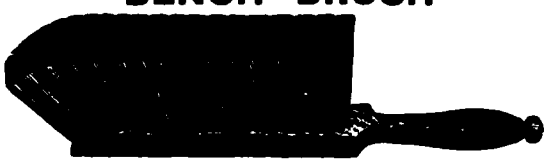


FIG. 6406
HORSEHAIR

6 Inches, per dozen..... $4 00
8 " " 5 00
10 " " 6 00

PLATERS' HAND BRUSHES

STRAIGHT HANDLE



PRICES, FIG. 6407

Rows.		Brass.	Steel.	Pure Bristle.	Mixed.	Tampico.
1	Per dozen.....	....	....	$1 50	$1 25	....
2	"	$4 00	$4 00	2 00	1 75	$0 90
3	"	5 00	5 00	2 75	2 00	1 25
4	"	6 00	6 00	3 25	2 50	1 50
5	"	7 00	7 00	4 00	3 00	1 75
6	"	8 50	8 50	4 50	3 50	2 00

CURVED HANDLE



PRICES, FIG. 6408

Rows.		Brass.	Steel.	Pure Bristle.	Mixed.	Tampico.
1	Per dozen.....	....	....	$1 50	$1 25	....
2	"	$4 00	$4 00	2 00	1 75	$1 00
3	"	5 00	5 00	3 00	2 00	1 25
4	"	6 00	6 00	3 50	2 50	1 50
5	"	7 00	7 00	4 25	3 00	1 75
6	"	8 50	8 50	4 75	3 50	2 06

SHOE HANDLE PLATER'S BRUSH



FIG. 6409

PRICES

Rows.		Brass.	Steel.	Pure Bristle.	Mixed.	Tampico.
1	Per dozen.....	....	....	$1 75	$1 25	....
2	"	$4 00	$4 00	2 25	1 75	$1 00
3	"	5 00	5 00	3 00	2 25	1 25
4	"	6 00	6 00	3 50	2 75	1 50
5	"	7 00	7 00	4 25	3 00	2 00
6	"	8 50	8 50	4 75	3 50	2 25

GLUE BRUSH

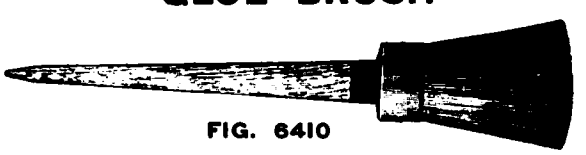


FIG. 6410

Made of Gray Bristles With Iron Ferrule Pinned to the Handle.

PRICES

Nos.	6	5	4	3	2	1
Per dozen.....	$5 00	$6 00	$7 00	$8 50	$11 50	$13 00

Assorted, 1 to 6, one dozen in a box, $8.50.

PRICES, GLUE BRUSHES, IRON HANDLES

All Bristles, Brass Ferrules Pinned to Handles.

Nos.	20	30	40	50	60	70
Per dozen.....	$5 75	$7 00	$8 00	$9 00	$10 00	$13 00

Assorted, 20 to 70, one dozen in a box, $9.00.

STEEL WIRE CASTING BRUSH

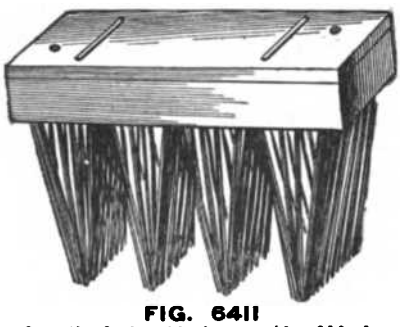
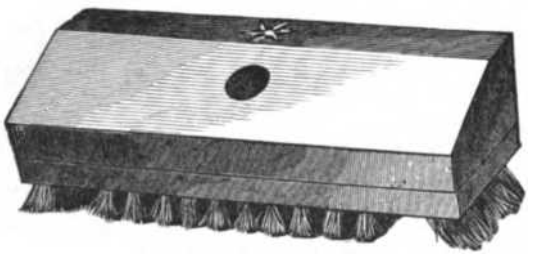


FIG. 6411

Length of wire, 4 inches outside of block.
Price, per dozen..... $7 50

DECK SCRUB BRUSH



PRICES, FIG. 6412

Sizes.		Sizes.	
5 Rows, per dozen....	$2 50	7 Rows, per dozen.....	$3 00
6 " "	2 75	8 " "	3 50
1 Oblong, 3 x 9, Bass Deck Scrubs		"	5 00
2 Oval, 3½ x 9 " "		"	6 00
Bristle, 3 x 9 " "		"	8 00

SHIP SEAM BRUSH DRAWN WITH WIRE



FIG. 6413

PRICES

Sizes.				
4 Inches, gray bristle, per dozen.....				$2 50
5 " " " "				2 75
6 " " " "				3 15
4 " white " "				3 00
5 " " " "				3 75
6 " " " "				5 00

OVAL MARINE BRUSH

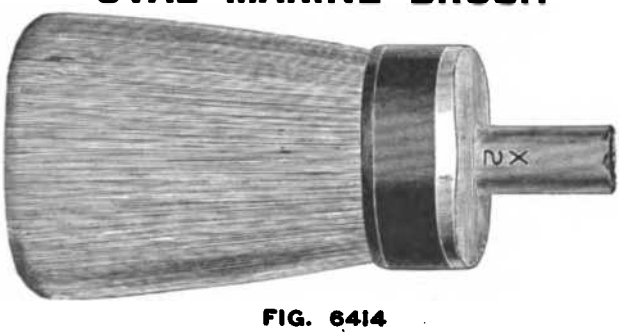


FIG. 6414

No. 104. All gray, extra quality stiff bristles.
Made especially for painting vessels and heavy iron work.

PRICES

Nos.	Width, Inches.	Length of Bristle, Inches.	Per Dozen.
1	2½	4½	$30 00
2	2⅞	4¾	33 00

FLAT MARINE BRUSH



FIG. 6415

No. 105. All gray, extra stiff bristle.
Made especially for use in copper paint for bottoms of vessels and any heavy paint.

PRICES

Inches.	Length of Bristle, Inches.	Per Dozen.
3½	4¼	$16 00
4	4½	20 00
4½	4¾	26 00

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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WAX BRUSH



FIG. 6416

This brush is iron weighted, and used for waxing and polishing inlaid and hard wood floors. The sides and edges are protected so as to prevent any possibility of injuring either furniture, molding or woodwork.

TAR BRUSHES

Three Knot.



FIG. 6419

One Knot.



FIG. 6420

1 Knot, per dozen	$6 00
2 " " "	10 00
3 " " "	14 00
4 " " "	18 00

STEEL BROOM
MADE OF FLAT STEEL WIRE

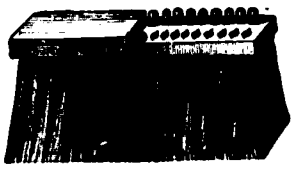


FIG. 6417

PRICES

12 inches,	4	rows,	per	dozen		$10 00
12 "	6	"	"	"		12 00
14 "	4	"	"	"		14 00
14 "	6	"	"	"		16 00
16 "	4	"	"	"		18 00
16 "	6	"	"	"		20 00

STEEL WIRE UPRIGHT BROOM



FIG. 6418

PRICES

10 inches,	4	rows,	per	dozen	$7 50
12 "	4	"	"	"	8 50

PRICES, FIG. 6416

Nos.	Weight.	Sizes.	
0	15 pounds,	5 x 8 inches,	made of Gray Fiber, each $2 00
1	12 "	7 x 7 "	" " " " " 3 75
2	12 "	7 x 7 "	" " Extra Bristles, each 5 50
3	16 "	7 x 9 "	" " " " " 7 00
4	20 "	9 x 12 "	" " " " " 10 50
828	.. ....	2½ x 10,	no weight, per dozen 13 50

UPRIGHT RATTAN BROOM



FIG. 6421

PRICES, FIG. 6421

	Per Dozen.
A Upright Rattan	$5 50
AA " "	6 00
AAX " "	6 50
Upright Rattan, Yacht	7 00
" Bass "	8 00

ALDEN UPRIGHT RATTAN AND BASS BROOM

PRICES, FIG. 6422

	Per Dozen.
Rattan	$6 00
Bass	8 00



FIG. 6422

RATTAN PUSH BROOM

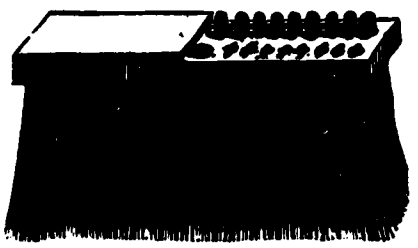


FIG. 6423
Wire Drawn or Pitch Set.

PRICES

12 inches,	4	rows,	per	dozen		$5 00
12 "	5	"	"	"		5 50
14 "	4	"	"	"		6 00
14 "	5	"	"	"		6 50
14 "	6	"	"	"		7 00
16 "	4	"	"	"		7 00
16 "	5	"	"	"		7 50
16 "	6	"	"	"		8 00
16 "	4	"	Boston	Pattern, Round Top		10 00

STREET SWEEPING MACHINE BROOM

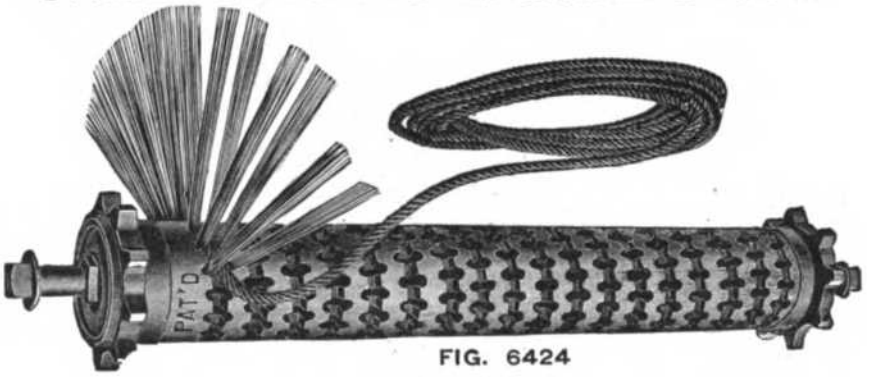


FIG. 6424

In making this Sweeping Machine Broom the fiber is double U shape and then inserted into the recesses on the sides of grooves, and the rope passing into the grooves holds it there absolutely, preventing the fiber from falling out. This groove is spiral and the rope is a continuous piece, being secured at both ends of the block by means of staples. The rope, as well as the block, can be used for refilling over and over again.

PRICES ON APPLICATION

IRON BOUND STEEL WIRE MILL BROOM



FIG. 6425

PRICE, FIG. 6425

Per dozen $13 50

PRICES, FIG. 6426

Scraper only for 16 inch broom, per dozen	$3 00
Scraper only for 18 inch broom, per dozen	3 00

WARING'S COMBINATION SCRAPER ATTACHMENT



FIG. 6426

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STEEL WIRE MILL OR FURNACE CHILL BROOM

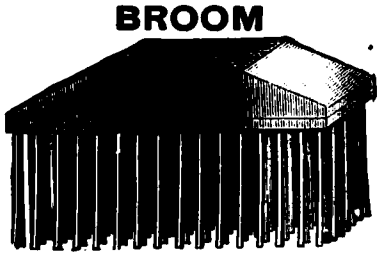


FIG. 6427

		4 Rows, per Doz.	5 Rows, per Doz.
Nos. 1	8 inch	$4 00	$5 00
" 2	10 "	5 00	6 00
" 3	12 "	6 00	7 00

STEEL WIRE MILL BROOM OR HOT METAL SCRAPER

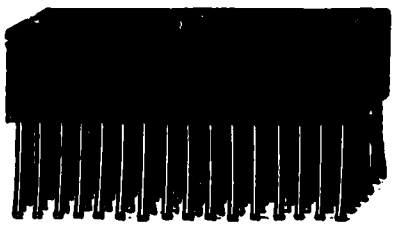


FIG. 6428

Iron bound.

		Per Doz.
No. 1	12 inch	$7 00
" 2	14 "	8 50
" 3	16 "	10 00
" 4	18 "	12 00

MACHINE SHOP SWEEPING OR PUSH BROOM

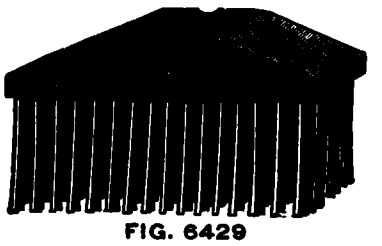


FIG. 6429

Steel wire, without iron bands.

Nos.	Length, Inches.	Length of Wire, In.	4 Rows, per Doz.	5 Rows, per Doz.	6 Rows, per Doz.
1	8	5	$4 00	$5 00	$6 00
2	10	5	5 00	6 00	7 00
3	12	5	6 00	7 00	8 00

RAILROAD STEEL WIRE TRACK BRUSH



FIG. 6430

Price, per doz.....$16 00

We can furnish any shape or style to order.

TROLLEY CAR TRACK BRUSH

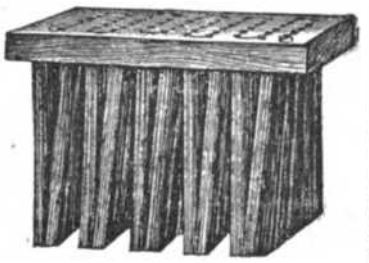


FIG. 6431

To go in front of wheels.

Price, per doz.....$10 00

FROG AND SWITCH BROOM

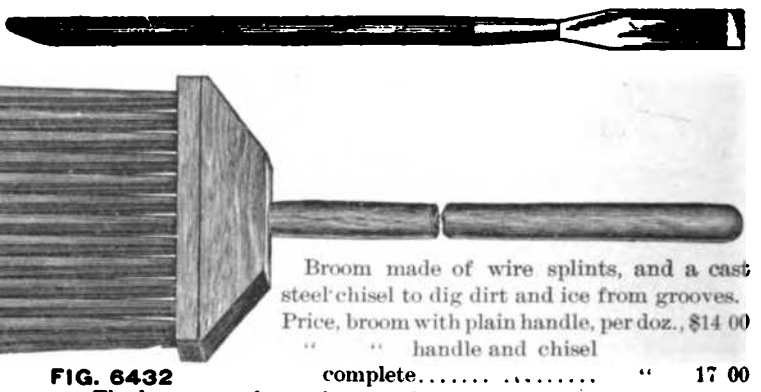


FIG. 6432

Broom made of wire splints, and a cast steel chisel to dig dirt and ice from grooves.

Price, broom with plain handle, per doz., $14 00

" " handle and chisel complete..... " 17 00

The broom can be made of reed, bamboo or corn.

OBLONG CAR WASHER

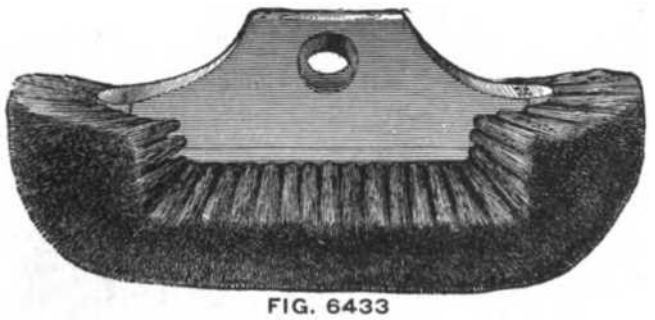


FIG. 6433

All copper fastened; blocks waterproofed.

Nos.		Per Doz.
80	All gray bristles	$33 75
95	Black horse hair	37 50
Extra.	Gray bristles cased with white	41 25
90	Black horse hair	43 25
100	" " "	50 00

ROUND CAR WASHER



FIG. 6434

Made of the best quality of bristles fastened with copper wire. The block is surrounded by a rubber band which protects sashes and other woodwork from injury.

Nos.	Per Doz.
14	$37 50
15	47 50
16	52 50
112 Mixed gray stock	28 25

LOCOMOTIVE BROOM



FIG. 6435

No. 1, per dozen.....$12 00

" 2, " " 15 00

POPE'S EYES



FIG. 6436

PRICES, FIG. 6436

Nos.		Per Doz.
3	All bristles	$11 00
0	" "	13 00
1	Gray bristles cased with white	20 00
2	" " " " "	25 00

WIRE DRAWN POPE'S EYES

For washing windows, cars, etc.

Made of black hair fastened with brass wire.

Nos.	Per Doz.
18	$10 00
20	12 50
22	15 00

TIN RESERVOIR WINDOW BRUSH

ALL HAIR



FIG. 6437

No.	Per Doz.
00	$8 75
Extra. Very full	12 50

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FLOOR BROOM

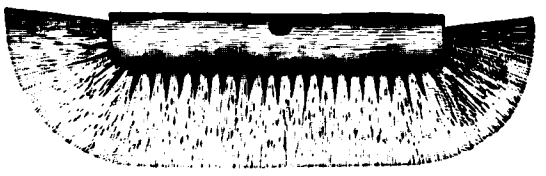


FIG. 6438

All these brooms are made on polished blocks, with threaded handles. Single or double hole blocks.

PRICES

Nos.	Sizes Blocks, Inches.	Per Dozen.
11	10	$15 00
12	11	17 00
13	12	25 00
14	13	28 25
15	14	31 25
16	12	32 50
17	13	36 25
18	14	37 50
19	12	41 25
20	13	43 75
21	14	47 50
22	15	52 50
150	12	37 50
160	13	41 25
170	14 double hole blocks,	46 00

Nos.	Sizes Blocks, Inches.		Per Dozen.
27	12	Stiff, for carpets	$25 00
28	12	" "	37 50
29	12	Double hole block	42 50
31	14	" " "	50 00
8	12	Round ends	52 50
300	14	For janitors' use	60 00
260	14	" "	80 00
33	14	Long stock	46 00
2	12	Russia bristles, D. H. blocks	38 00
4	14	Russia bristles, D. H. blocks	50 00
6	16	Russia bristles, D. H. blocks	60 00
7	18	Russia bristles, D. H. blocks	65 00

WIRE DRAWN FLOOR BROOM



FIG. 6439

Wire Fastened. Polished Block.

Sizes, Inches.	PRICES	Per Dozen.
X10	Gray middle cased with gray hair	$12 50
X12	" " "	15 00
X14	" " "	17 00
X16	" " "	20 00
A12	Gray middle cased with white; double hole blocks	18 00
A14	Gray middle cased with white; double hole blocks	22 00
A16	Gray middle cased with white; double hole blocks	25 00
A18	Gray middle cased with white; double hole blocks	30 00

All Black. Polished Double Hole Blocks.

Nos.	Sizes Blocks, Inches.	Per Dozen.
132	12	$22 00
134	14	25 00
136	16	29 00
138	18	35 00

DOUBLE DUSTER



FIG. 6440

Short Side Made of Stiff Stock.

Nos.	Per Dozen.
0	$14 50
1	18 75
2	28 00

FACTORY AND MILL DUSTER

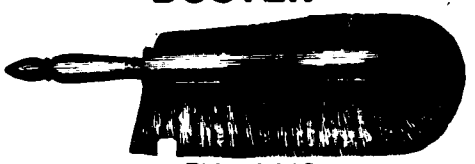


FIG. 6443

These brushes are made of the best bristles; specially for mill, factory and railway use.

Nos.	Per Dozen.
1	$8 75
2	11 25
3	30 00
170	23 25
62	31 50
69	35 50
70	35 00
79	40 00
78	41 25
87	45 00

ROUND END DUSTER



FIG. 6444

Quality G-X.

Made of All Gray Bristles, on Polished Block.

Nos.	Per Dozen.
1	$14 50
2	19 50
3	23 75

Quality G.

Made of White Bristles, on Polished Block.

Same Style as G-X.

Nos	Per Dozen.
00	$11 00
0	12 50
1	17 25
2	23 00
3	27 00

DUSTING BRUSH



FIG. 6441

All Gray Bristles. Polished Block.

Quality A-G.

Nos.	Per Dozen.
0	$5 20
1	5 75
2	6 50
3	7 50
4	8 10

All Bristles, White and Gray. Polished Block.

Quality A-H.

Nos.	Per Dozen.
1	$6 00
2	6 90
3	8 20
4	9 00

Gray Middle, White Outside. Polished Block.

Quality T.

Nos.	Per Dozen.
61	$4 88
62	5 50
63	6 30

SHORT HANDLE WINDOW BRUSH



FIG. 6445

Polished Block.

No. 1	Flat end,	2	foot handle,	per doz.		$9 50
" 2	"	2	"	"		14 50
" 0-3	"	3½	"	"		17 50
" 3	"	3½	"	"		20 75
" 0-4	Round end,	2	foot handle,	"		16 25
" 4	"	2	"	"		18 50
" 5	"	2	"	"		23 75
" x-6	"	3½	"	"		25 00
" 6	"	3½	"	"		28 25

DUSTING BRUSH

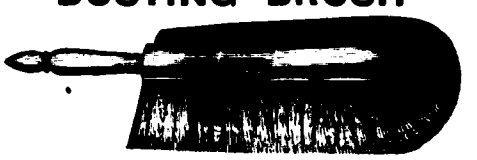


FIG. 6442

All Gray Bristles. Polished Boston Block.

Quality D-G.

Nos.	Per Dozen.
11	$12 20
12	14 00
13	17 00
14	20 00

All Bristles, Extra Heavy Gray Middle, Cased with White. Polished Block.

Quality C-X.

Nos.	Per Dozen.
4	$12 20
5	15 00
6	16 50
7	18 50
8	20 00

FEATHER DUSTER



FIG. 6446

Turkey Feather Dusters.

10 inches,	per dozen		$4 50
11 "	"		5 00
12 "	"		6 00
13 "	"		7 00
14 "	"		8 00
15 "	"		8 50
16 "	"		9 50
18 "	"		11 50

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BUCKEYE OIL PAINT SPRAYER

HAND MACHINE



FIG. 6447

This machine is designed for service where there is already installed a compressed air system, and will successfully and satisfactorily handle oil paints having a lead base.

It has no paint hose to rot or renew. Requires one hose only, viz : the air supply. Does good work, as well as very rapid work. Machine holds about two-thirds of one gallon.

The air hose is connected underneath the lever handle, and the can, being filled, say, two-thirds full, is operated by the right hand, the left grasping the can handle and acting in unison with the right in directing the spray, which is produced and regulated as desired.

The machine is held three to five feet away from the surface to be coated, and will work in any position except upside down.

It is also used extensively by railroads, iron works, collieries and factories.

Capacity, 25 square feet per minute. Net weight, 4 pounds; gross weight, 10 pounds.

PRICE, COMPLETE, $20.00

FOUNTAIN CAR WASHER

DESCRIPTION, FIG. 6448

Fig. 6448 can be placed on the end of a hose. The brushes are made of the best material, and put together in a strong and durable manner. They are complete, with stop cock and coupling to three-fourths inch hose—female end.

PRICE

Per dozen $60 00

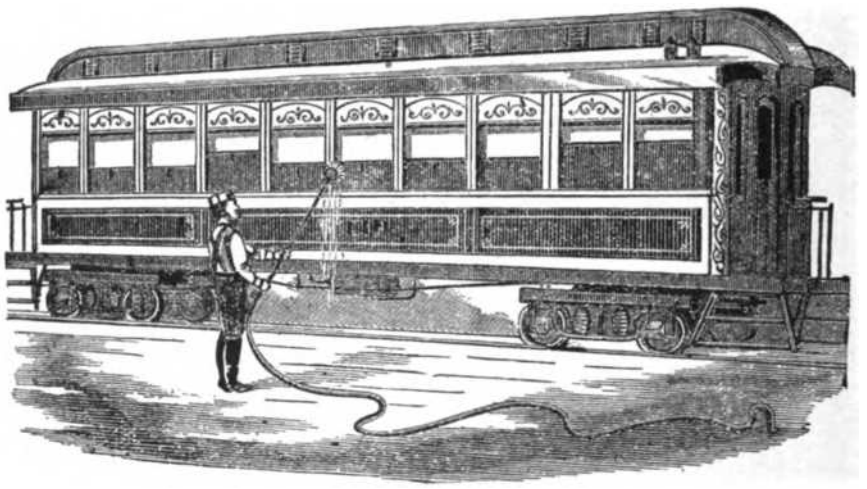


FIG. 6448

BUCKEYE WHITEWASH SPRAYER



FIG. 6449

DESCRIPTION, FIG. 6449

This machine is used for whitewashing, kalsomining, or cold water paints. Will save its cost on the labor bill almost on the first application. One man with this machine can do the work of ten men with the brush.

Factories have at small cost perfect sanitation, good light, cleanliness. Textile factories will find this machine will pay its cost the first year. Steamship owners will do well to look into the merits of this machine for whitewashing and painting the holds and sides of ship. Railroads will find this machine valuable for whitewashing roundhouses, car shops, repair shops, foundries, iron works, bridges, trestles, roofs, elevators, fences and outbuildings, etc.

PRICE

The machine is sold complete, with truck, tank, gauge, pump, pipes, etc., 10 feet of suction hose, strainer attached, 25 feet of delivery hose, three different styles of nozzles, adjustable disgorger, with lever, whitewash circular strainer, unions, cocks and connections. Net weight, 175 pounds; gross weight, 300 pounds.

All complete, $75.00. Extra delivery hose, per foot, 30 cents.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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MOLDED CAR STEP TREADS



FIG. 6452

We can furnish a corrugated style of Car Step Tread as illustrated above. We can also furnish a number of sizes suitable for ordinary car steps. We can also put the initials of the railroad in the center of the step for a slight extra expense.

PRICES ON APPLICATION

HEMISPHERE PATTERN

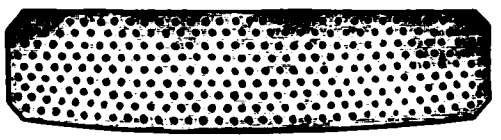


FIG. 6453

The danger of stepping off or on cars is well realized by everyone. In the foregoing cut we show a pattern of tread designed to lessen this danger. The small knobs or hemispheres present a rough and adhesive surface that assists one to be sure footed and increases safety.

PRICES ON APPLICATION

CORRUGATED RUBBER MATTING

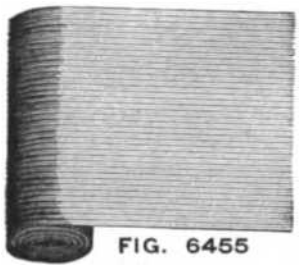


FIG. 6455

Small corrugations made in any thickness.



FIG. 6456

Large round corrugations made only in 3/16 and above.

Made in rolls, about 30 yards long, and in any width up to 72 inches, and cut to order any size or shape desired.

PRICES

Thickness, Inches.	Per Square Foot.	Thickness, Inches.	Per Square Foot.
3/32	$0 33	1/4	$0 73
1/8	40	3/8	1 03
3/16	56	1/2	1 30

		Per Pound.
3/32 inch thick weighs about	7½ pounds per square yard	$0 40
1/8 " " " "	10 " " " "	40
3/16 " " " "	15 " " " "	40
1/4 " " " "	20 " " " "	40

PERFORATED MAT

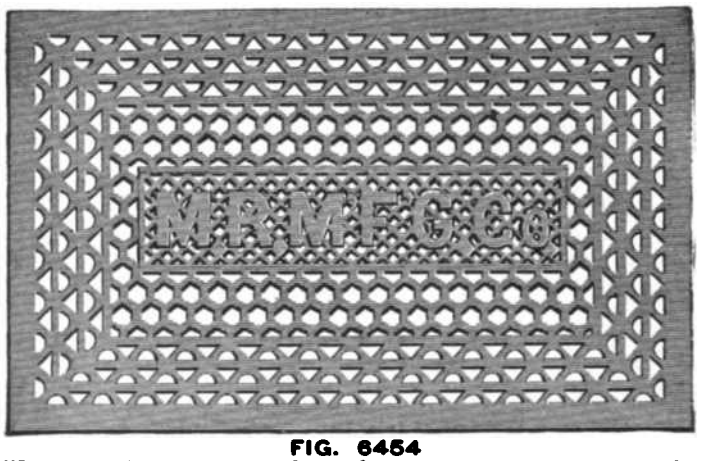


FIG. 6454

We can produce names, trade marks, monograms, or street numbers in these mats, and will submit designs of same whenever desired. Names may be made either with capital letters, script letters, or in enlarged fac-simile of signatures. All forms of lettering appear to best advantage in a frame as shown in cut. Always give the length, breadth and thickness in inches when ordering.

PRICES

Thickness, Inches.	Per Square Foot.	Thickness, Inches.	Per Square Foot.
1/4	$0 75	5/8	$1 50
3/8	1 00	3/4	1 75
1/2	1 25	1	2 00

Lettering, 25 cents per letter extra. Red or white letters, 50 cents per letter extra.

GALVANIZED METAL MAT

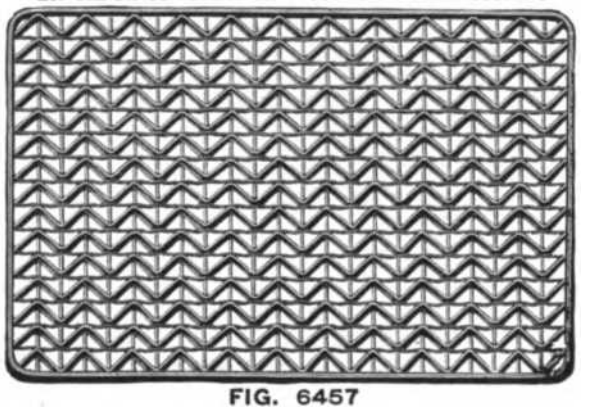


FIG. 6457

PRICES

Nos.	Sizes.	Each.	Nos.	Sizes.	Each.
1	16x24	$2 00	5	30x48	$6 00
2	18x30	2 50	6	36x48	7 00
3	22x36	3 50	7	36x60	9 00
4	24x48	5 00	8	36x72	11 00

Extra sizes, 90 cents per square foot.

CORRUGATED TENDER HOSE



FIG. 6458

PRICES

Internal Diameter.

Sizes. Inches.	3 Ply. per Foot.	4 Ply. per Foot.
1¾	$0 70	$0 87
2	80	1 00
2¼	90	1 12
2½	1 00	1 25

U SHAPED CAR HEATING HOSE

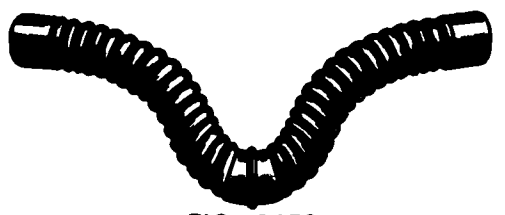


FIG. 6459

PRICES ON APPLICATION

CANVAS TANK HOSE FOR RAILROADS

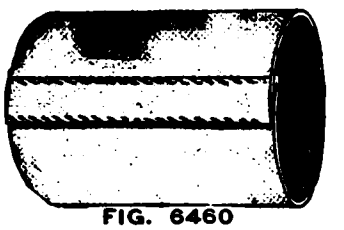


FIG. 6460

Double stitched seam or triple stitched seam. In various weights of duck from No. 1-0 to No. 12-0. Diameters from 4 inches to 10 inches.

PRICES ON APPLICATION

AIR BRAKE AND SIGNAL HOSE

FOR WESTINGHOUSE AIR BRAKE AND AUTOMATIC SIGNAL



FIG. 6461

1 inch, 4 ply, per foot	$0 83
1¼ " 4 " " "	1 04

Made in 50 foot lengths, or in short lengths as ordered, with capped ends. May be plain or corrugated.

TANK HOSE FOR RAILROADS



FIG. 6462

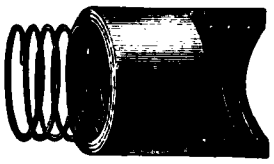
Internal Diameters, Inches.	2 Ply, per Foot.	Internal Diameters, Inches.	2 Ply. per Foot.
3	$0 99	7	$2 31
4	1 32	8	2 64
5	1 65	9	2 97
6	1 98	10	3 33

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SUCTION HOSE

WIRE LINED

For wrecking and mining purposes.

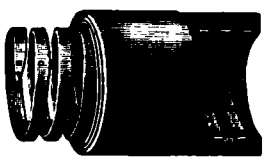


No. 67

FIG. 6463

Small suction hose on spiral round galvanized iron wire.

Int. Diams., Inches.	Per Ft.	Int. Diams. Inches.	Per Ft.
¾	$0 70	2½	$3 10
1	90	3	4 00
1¼	1 15	3½	4 90
1½	1 50	4	5 80
2	2 30		



No. 68

FIG. 6464

Large suction hose on spiral flat galvanized iron wire.

Int. Diams., Inches.	Per Ft.	Int. Diams., Inches.	Per Ft.
4½	$6 70	7½	$13 50
5	7 60	8	15 00
5½	8 50	9	17 50
6	9 50	10	20 00
6½	10 50	12	25 00
7	12 00		

Sizes up to and including 5 inches diameter made on round iron wire; above 4 inches diameter made on flat wire, unless otherwise specified.

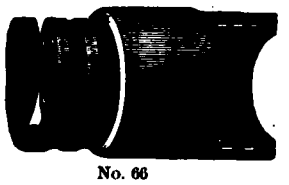
On spiral spring brass wire.

Int. Diams., Inches.	Per Foot.	Int. Diams., Inches.	Per Foot.
¾	$0 77	1¾	$2 10
1	1 00	2	2 50
1¼	1 25	2½	3 30
1½	1 65		

SUCTION HOSE

SMOOTH BORE, PLAIN OR CORRUGATED

For excavating, mining, wrecking and sand pumps.



No. 66

FIG. 6465

On spiral, round or flat galvanized iron wire.

Int. Diams., Inches.	Per Foot.	Int. Diams., Inches.	Per Foot.
½	$0 65	4½	$7 50
¾	1 00	5	8 50
1	1 30	5½	9 50
1¼	1 65	6	10 50
1½	1 95	6½	12 00
2	2 60	7	13 50
2½	3 50	7½	15 00
3	4 50	8	16 50
3½	5 50	9	19 50
4	6 50	10	22 50
		12	27 50

Sizes up to and including 4 inches diameter made on round iron wire; above 4 inches diameter made on flat wire, unless otherwise specified.

SUCTION HOSE

SMOOTH BORE

For steam fire engines.

Int. Diams., Inches.	Per Foot.	Int. Diams., Inches.	Per Foot.
2½	$3 50	4½	$7 50
3	4 50	5	8 50
3½	5 50	5½	9 50
4	6 50	6	10 50

For mining and marine pumps and dredging.

Int. Diams., Inches.	Per Foot.	Int. Diams., Inches.	Per Foot.
7	$13 50	14	$32 50
8	16 50	15	35 00
9	19 50	16	37 50
10	22 50	17	40 00
12	27 50	18	42 50

HARD RUBBER

Four ply.

Int. Diams., Inches.	Per Foot.	Int. Diams., Inches.	Per Foot.
¾	$0 65	1¼	$0 98
1	75	1½	1 13

This hose is less expensive than the regular hose made on wire, but will serve as well for many purposes.

STEAM HOSE

For car heating, cleaning boiler flues, flexible steam pipes, joints, etc.



FIG. 6467

Furnished in 20, 25 and 50 foot pieces. Buyers must bear in mind that inasmuch as steam is the agent used in the vulcanizing of rubber, it naturally follows that with continual use steam hose will gradually become overvulcanized or hardened. This hose is specially designed to withstand the action of steam for the longest possible time, in the meanwhile remaining soft and pliable. In ordering steam hose the table to the right is a good one to consult.

20 Pounds Working Pressure Generates 259° Heat.

Order 4 Ply for ½
" 4 " ¾
" 4 " 1
" 4 " 1¼
" 4 " 1½
" 4 " 2

30 Pounds Working Pressure Generates 274° Heat.

Order 4 Ply for ½
" 4 " ¾
" 4 " 1
" 4 " 1¼
" 4 " 1½
" 5 " 2

40 Pounds Working Pressure Generates 287° Heat.

Order 4 Ply for ½
" 4 " ¾
" 4 " 1
" 4 " 1¼
" 5 " 1½
" 6 " 2

50 Pounds Working Pressure Generates 298° Heat.

Order 4 Ply for ½
" 4 " ¾
" 5 " 1
" 5 " 1¼
" 5 " 1½
" 8 " 2

60 Pounds Working Pressure Generates 307° Heat.

Order 4 Ply for ½
" 5 " ¾
" 6 " 1
" 6 " 1¼
" 6 " 1½
" 8 " 2

70 Pounds Working Pressure Generates 316° Heat.

Order 5 Ply for ½
" 6 " ¾
" 7 " 1
" 7 " 1¼
" 8 " 1½
" 10 " 2

80 Pounds Working Pressure Generates 324° Heat.

Order 6 Ply for ½
" 6 " ¾
" 8 " 1
" 8 " 1¼
" 9 " 1½
" 10 " 2

90 Pounds Working Pressure Generates 331° Heat.

Order 6 Ply for ½
" 6 " ¾
" 8 " 1
" 9 " 1¼
" 10 " 1½

100 Pounds Working Pressure Generates 338° Heat.

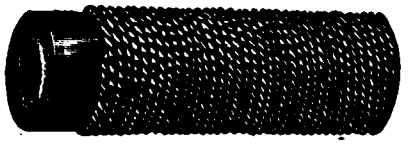
Order 8 Ply for ½
" 8 " ¾
" 10 " 1
" 10 " 1¼
" 10 " 1½

PRICES, PER FOOT

Internal Diameters, Inches.	3 Ply.	4 Ply.	5 Ply.	6 Ply.	7 Ply.	8 Ply.
½	$0 43	$0 51	$0 63	$0 76	$0 89	$1 02
¾	51	67	83	1 00	1 17	1 34
1	67	83	1 03	1 24	1 45	1 66
1¼	85	1 04	1 30	1 56	1 82	2 08
1½	1 02	1 25	1 56	1 87	2 18	2 50
1¾	1 18	1 45	1 81	2 17	2 53	2 90
2	1 34	1 66	2 07	2 49	2 90	3 32
2¼	1 50	1 87	2 33	2 80	3 27	3 74
2½	1 66	2 08	2 60	3 12	3 64	4 16

COVERINGS FOR STEAM HOSE

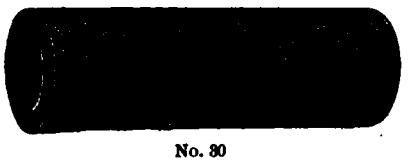
MARLINE WRAPPED



No. 31

FIG. 6468

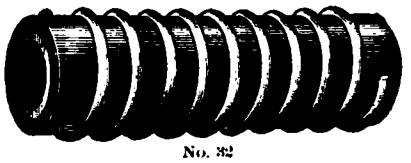
CANVAS COVERED



No. 30

FIG. 6469

WIRE WOUND



No. 32

FIG. 6470

The outside of all steam hose should be protected, as it will be chafed on the rocks in rock drilling service or burned by hot cinders in shop use or blistered from excessive heat. We furnish the hose served with marline at an additional cost over above list, Fig. 6467, of 10 per cent., or cover it with coarse duck at the price of 1 ply more, or wind it with flat or round steel wire for 15 per cent extra.

STEAM DRILL HOSE

CANVAS COVERED

For rock drill and similar purposes.

Made of materials especially adapted to withstand the heavy pressure to which this hose is subjected.



FIG. 6471

Diameters in Inches.	4 Ply. 3 Ply Inside, 1 Ply Outside, per Foot.	5 Ply. 4 Ply Inside, 1 Ply Outside, per Foot.	6 Ply. 5 Ply Inside, 1 Ply Outside, per Foot.
¾	$0 67	$0 83	$1 00
1	83	1 03	1 24
1¼	1 04	1 30	1 56
1½	1 25	1 56	1 87
2	1 66	2 07	2 49
2¼	1 87	2 33	2 80
2½	2 08	2 60	3 12

This hose is made with heavy tube and heavy duck insertion on the same principle as the regular steam hose. It should, however, always be covered with canvas to protect the cover, as it would otherwise suffer from rough handling. Marline wrapped for 10 per cent. extra. Wound with round or flat steel wire for 15 per cent extra.

Note.—If a 4 ply is ordered we will furnish a 3 ply inserted and 1 ply as cover, according to the list.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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AIR HOSE

For Rock Drills, Pneumatic Engines and Compressors.



FIG. 6472

CANVAS COVERED

Diameters in Inches.	4 Ply, 3 Ply Inside, 1 Ply Outside, per Foot.	5 Ply, 4 Ply Inside, 1 Ply Outside, per Foot.	6 Ply, 5 Ply Inside, 1 Ply Outside, per Foot.
¾	$0 67	$0 83	$1 00
1	83	1 08	1 24
1¼	1 04	1 30	1 56
1½	1 25	1 56	1 87
2	1 66	2 07	2 49
2¼	1 87	2 33	2 80
2½	2 08	2 60	3 12

The general construction of air hose is similar to steam hose. It, however, is not subject to the hard effect of steam. It is used generally for heavy pressure and we recommend winding with wire over the canvas cover. This plan protects the hose from having the wire imbedded in the cover when an excessive pressure is used.

Marline wrapped for 10 per cent. extra. Wound with round or flat steel wire for 15 per cent. extra.

NOTE.—If 4 ply hose is ordered we will furnish 3 ply inserted and 1 ply outside, according to list.

UNDERWRITERS' HOSE

COTTON RUBBER LINED HOSE

WOVEN

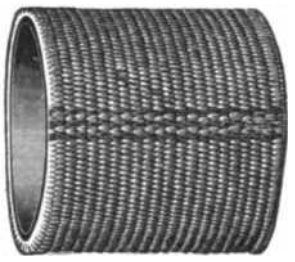


FIG. 6475

2⅝ inches..... $1 00 per foot

LINEN HOSE, UNLINED

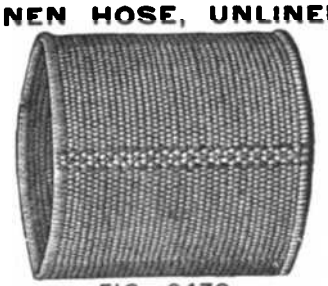


FIG. 6479

1 in..	$0 27 per foot	2 in..	$0 42 per foot
1¼ " ..	30 " "	2¼ " ..	46 " "
1½ " ..	33 " "	2½ " ..	50 " "

In 50, 100, and 150 foot lengths.

Both of the above grades of hose are manufactured especially to conform with the requirements of the Associated Factory Mutual Insurance Companies. They are thoroughly reliable for factory fire protection.

COTTON GARDEN HOSE

RUBBER LINED

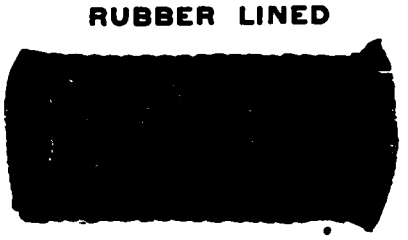


FIG. 6482

½ inch.....	$0 20 per foot
¾ inch.....	0 25 " "

ACID HOSE

For All Kinds of Acid, Alkalies and Dye Stuffs.

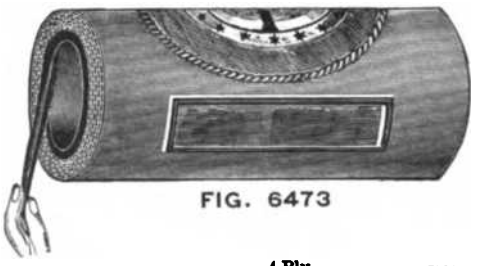


FIG. 6473

Inches.	4 Ply Tube, ⅛ In. Thick, per Foot.	4 Ply Tube, 5/16 In. Thick, per Foot.	4 Ply Tube, ¼ In. Thick, per Foot.
¾	$0 75	$0 90	$1 10
1	1 00	1 15	1 35
1½	1 30	1 55	1 80
2	1 55	1 85	2 25
2½	1 85	2 30	2 75
3	2 25	2 75	3 25
4	3 25	3 75	4 25

The tube of this hose is made of the best elastic gum, as this is the only article that is not affected by acids. State the kind of acid and we will recommend the hose.

FIRE HOSE

COTTON RUBBER LINED DOUBLE JACKET

For Fire Departments and Mill Protection.

WOVEN

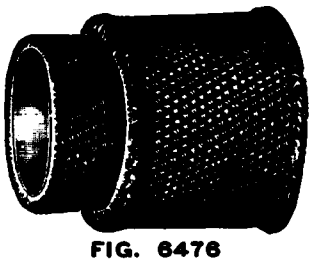


FIG. 6476

2½ inch.....	$1 00 per foot
3 "	1 40 " "

The weave of this hose is known as the square or basket weave. It is made in this way because experience has proven that it can be depended upon under all circumstances.

KNIT

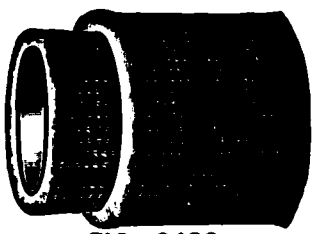


FIG. 6480

1 in..	$0 40 per foot	2 in..	$0 60 per foot
1½ " ..	50 " "	2½ " ..	70 " "

RUBBER GARDEN HOSE



FIG. 6483

½ inch 2 ply.....	$0 20 per foot
½ " 3 ply.....	25 "
½ " 4 ply.....	30 "
¾ " 3 ply.....	30 "
¾ " 4 ply.....	37 "

We furnish a light duck, high pressure, 5 ply garden hose.

½ inch 5 ply.....	$0 25 per foot
¾ " "	30 "

LINEN FIRE HOSE

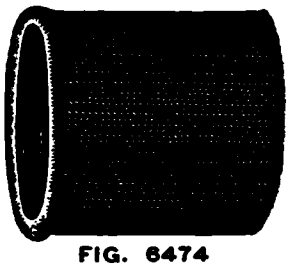


FIG. 6474

PLAIN AND RUBBER LINED

Sizes, Inches.	Unlined, per Foot.	Lined, per Foot.
1	$0 20	
1¼	22	$0 50
1½	25	55
2	30	65
2¼	33	70
2½	35	75
3	50	1 00

NAVY

1 in..	$0 15 per foot	2¼ in..	$0 26 per foot
1¼ " ..	18 "	2½ " ..	28 "
1½ " ..	20 "	3 " ..	40 "
2 " ..	24 "		

All sizes carried in stock in lengths of 25 50, and 100 feet, but can furnish longer lengths to order.

FIRE HOSE

COTTON RUBBER LINED SINGLE JACKET

For Fire Departments and Mill Protection.

WOVEN

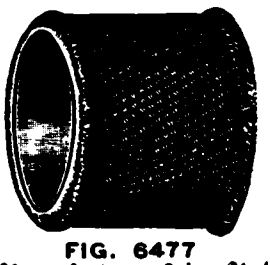


FIG. 6477

2 in..	$0 80 per foot	3 in..	$1 40 per foot
2½ " ..	1 00 "		

COTTON RUBBER LINED MILL HOSE

For Protection Against Fire in Factories, Mills, Public Buildings and the Like.

KNIT

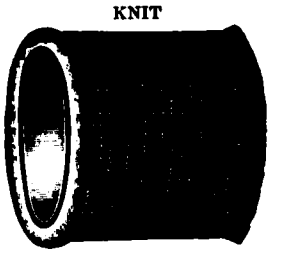


FIG. 6481

1 in...	$0 40 per foot	2 in...	$0 60 per foot
1½ " ...	50 " "	2½ " ...	70 " "

RUBBER GARDEN HOSE

WIRE WOUND

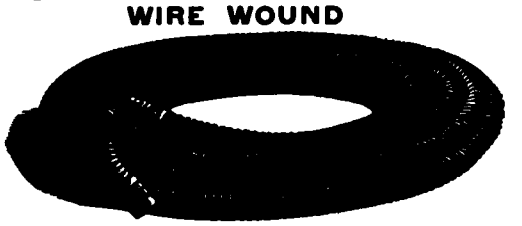


FIG. 6484

Armored or wire wound garden hose is made especially for use where it is liable to meet with hard service, such as dragging over stones and around rough places. It will not kink. We furnish any brand of hose, wound, on short notice. We also recommend covering rubber garden hose with one ply of heavy duck outside. This prevents chafing and wear of the rubber cover, and for some purposes is preferable to wire winding. Prices on application.

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RUBBER WATER HOSE

REGULAR BRANDS

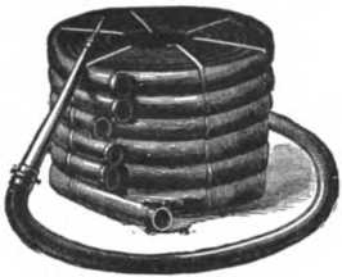


FIG. 6485

PRICES

Int. Diams., Inches.		Conducting Hose, 2 Ply, per Foot.	Hydrant Hose, 3 Ply, per Foot.	Engine Hose, 4 Ply, per Foot.	Engine Hose, 5 Ply, per Foot.
½		$0 20	$0 25	$0 30	$0 37
¾		25	30	37	46
1		33	40	50	62
1¼		42	50	62	77
1½		50	60	75	93
1¾		58	70	87	1 08
2		66	80	1 00	1 25
2¼		75	90	1 12	1 40
2½		83	1 00	1 25	1 56
2¾		92	1 10	1 37	1 71
3		99	1 20	1 50	1 87
4	Tank Hose for Railroads.	1 32	1 60	2 00	2 50
5		1 65			
6		1 98			
7		2 31			
8		2 64			
9		2 97			
10		3 33			

On all kinds of hose intermediate sizes will be charged at the list price of the next larger size. Thus, ⅞ inch will be charged at 1 inch price, etc.; 5 and 6 ply hose made at an advance of 25 and 50 per cent., respectively, on 4 ply prices.

DREDGING SLEEVE

For Harbor and River Dredging and All Work Where Large Flexible Joints Are Required.



FIG. 6488

Made in Black or Red Rubber, Any Diameter.

We make a specialty of a red sleeve of pure Para gum to withstand the action of sharp cutting substances, such as shells and the like, often met with in dredging and which quickly wear out an ordinary sleeve. Prices on application.

RUBBER FIRE HOSE



FIG. 6486

RED, LIGHT

Estimated weight per fifty foot section, two and one-half inches, four ply, uncoupled, forty-seven pounds.

BLACK

Estimated weight per fifty foot section, two and one-half inches, four ply, uncoupled, fifty-two pounds.

PRICES, BOTH ABOVE

2½ inches, 4 ply, per foot.... $1 25
3 " " " 1 50

GAS HOSE

For Use on Pintsch and Other Systems.

PRICE

⅝ in. internal diam., per foot. $1 00

CHEMICAL OR FIRE EXTINGUISHER HOSE

For Use on Chemical Engines. Acid Proof, Strong and Pliable.

PRICES

¾ in. int. diam., 4 ply, per ft. $0 37
1 " " " " 50

SUBMARINE OR DIVER'S HOSE

Specially compounded to prevent chafing and kinking and to withstand the action of salt water.

PRICE

½ in. int. diam., 5 ply, per ft. $0 50

PURE RUBBER TUBING

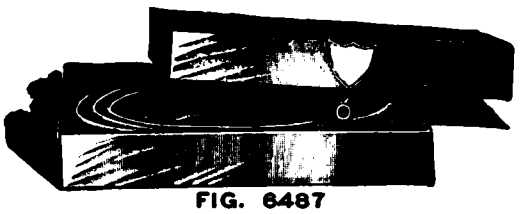


FIG. 6487

PRICES

Int. Diams., Inches.	Per Foot.	Int. Diams., Inches.	Per Foot.
⅛	$0 08	½	$0 25
5/16	12	⅝	30
¼	16	¾	35
5/16	18	⅞	40
⅜	20	1	45

All sizes made in either twelve or fifty foot lengths, and in three grades, according to thickness of wall—light, medium, and heavy. Plain or corrugated.

CLOTH INSERTION TUBING

PRICES

Int. Diams., Inches.	Per Foot.	Int. Diams., Inches.	Per Foot.
⅛	$0 10	½	$0 28
3/16	14	⅝	33
¼	18	¾	38
5/16	20	⅞	44
⅜	23	1	50

Made in lengths of twelve and fifty feet.

SPECIAL TUBING

For beer, soda, gas, fire extinguishers, acid, brake, and elevators. Furnished to order. Prices on application.

FLEXIBLE COTTON PLAY PIPES

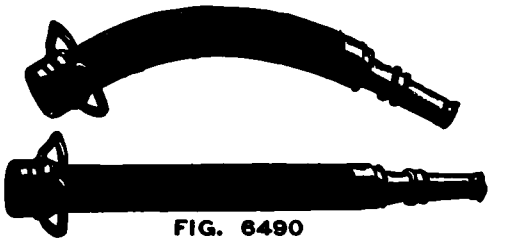


FIG. 6490

This pipe is made of the strongest wax and gum treated fabric, with which nickeled brass wire is interwoven and the whole lined with the best Para rubber. It is flexible and from its construction offers no weak parts. Always bends straight of itself.

PRICES

2½ inch, with brass swivel handles. Each. $16 50
2½ " plain. Each..... 15 00

LEATHER PLAY PIPE



FIG. 6491

Made of first grade heavy leather, double riveted in the seam. Made especially for heavy pressure and hard usage.
Each..... $10 00

UNDERWRITER PLAY PIPE

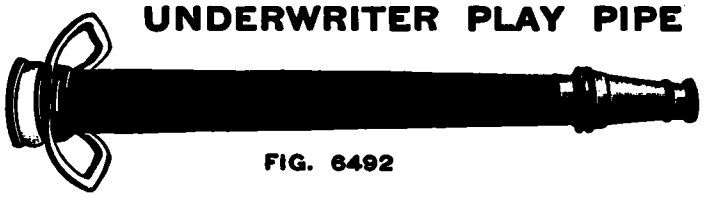


FIG. 6492

Screw nozzle, swivel handle, marline wound and painted red. This pipe is made in conformity with the requirements of the Associated Factory Mutual Insurance Companies.
2½ inch butt, 30 inches long. Each..... $8 00

RUBBER PLAY PIPES

BLACK OR WHITE RUBBER

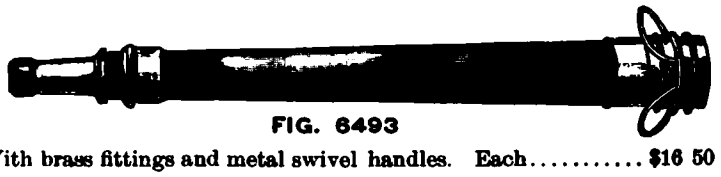


FIG. 6493

With brass fittings and metal swivel handles. Each..... $16 50

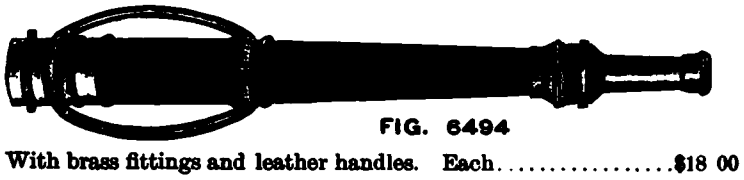


FIG. 6494

With brass fittings and leather handles. Each..... $18 00

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BRASS HOSE PIPES FINISHED

PLAIN, WITH SCREW TIP

PRICES, FIG. 6495



FIG. 6495

Sizes, Inches.	Lengths, Inches.	Hose Thread, per Dozen.	Iron Pipe Thread, per Dozen.
¾	6	$7 00	$8 20
¾	8	8 00	9 20
¾	12	10 00	11 20
1	8	10 00	11 20
1	12	12 00	13 20
1¼	12	20 00	21 20
1¼	15	24 00	25 75
1¼	20	30 00	31 75
1½	12	25 00	27 50
1½	15	30 00	32 50
1½	20	36 00	38 50
2	12	38 00	41 00
2	15	45 00	48 00
2	20	50 00	53 00
2½	15	75 00	78 50
2½	24	100 00	103 50

WITH COCK AT LARGE END. WITH SCREW TIP

FIG. 6496

Sizes, Inches.	Lengths, Inches.	Hose Thread, per Dozen.	Iron Pipe Thread, per Dozen.
¾	6	$11 00	$12 20
¾	8	13 00	14 20
¾	12	18 00	19 20
1	8	15 00	16 20
1	12	20 00	21 20
1¼	12	40 00	41 75
1¼	15	45 00	46 75
1¼	20	55 00	56 75
1½	12	55 00	57 50
1½	15	60 00	62 50
1½	20	80 00	82 50
2	12	80 00	83 00

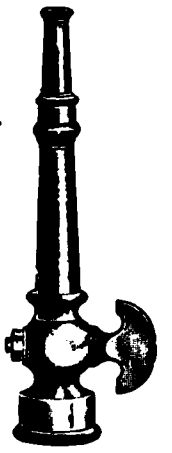


FIG. 6496

HOSE NOZZLES TO TIE ON

FINISHED BRASS



FIG. 6497

PRICES

Sizes, inches	¾	¾	1	1
Lengths, "	4½	6	4½	6
Per dozen	$3 50	$4 50	$4 00	$5 00

REGULAR HEAVY BRASS SERVICE PIPE

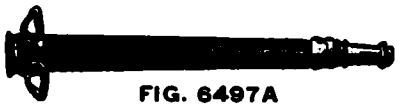


FIG. 6497A

These Pipes are substantially made for fire department or mill service, with or without handles, with screw nozzles; 30 and 36 in. long.

2, 2¼, 2½ inch 30 inch Butt Screw Nozzle, metal handle, each..$12 00
2, 2¼, 2½, " 36 " " " " " " " 14 00

Winding and Painting, $1.00 extra.

HOSFORD'S COMBINATION HOSE PIPE

THROWS SOLID STREAM OR SPRAY

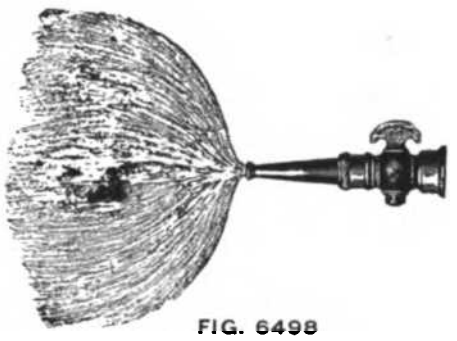


FIG. 6498

Sizes coupling, inch	¾	1
Finished, per dozen	$12 00	$12 00
Nickel plated "	Extra.	

GEM NOZZLE



FIG. 6499

Price, per dozen..... $6 00

BOSS NOZZLE

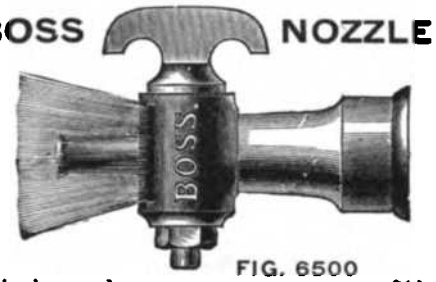


FIG. 6500

¾ inch, per dozen..... $12 00
1 " " 14 00

SWIFT NOZZLE

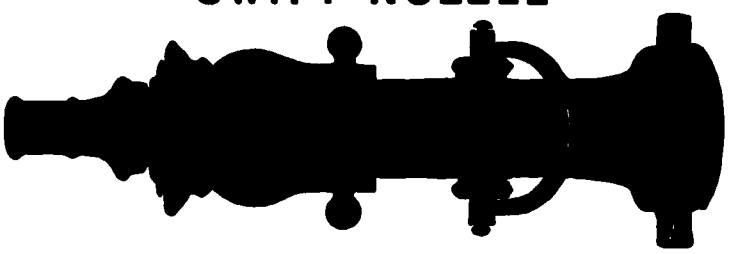


FIG. 6502

DESCRIPTION

This Nozzle enables a fireman to approach as close to a fire as he may desire, and affords complete protection against heat, cinders, burning coals and smoke, or noxious gases, produced by burning chemicals. The spray, though issuing from the same straight nozzle as solid stream, can be shut off, turned on or deflected to any angle that may be desired, without interference with solid stream. Price, each..... $35 00

THE NEW YORK NOZZLE



FIG. 6503

DESCRIPTION

This Nozzle is a device for fire extinguishing. Its chief feature is two metallic deflector jaws pivoted to the end of a round stream nozzle. These jaws can be opened and closed instantly at the will of the operator, so that the stream of water will issue either in its ordinary round form, or in the shape of a flat sheet or stream, approximating, under ordinary pressure, 40 feet wide at a distance of 50 to 75 feet from the nozzle. The Nozzle, with its flat stream, enables the firemen to cover large surfaces instantly; and where great penetrative force is desired to reach the interior of an incandescent or burning mass, the round stream which it will throw is available in an instant. Can be furnished to fit any shut off nozzle.

PRICES

Nozzle, complete with Shut Off	$25 00
Nozzle only, without "	15 00

CONTROLLING NOZZLE



FIG. 6504

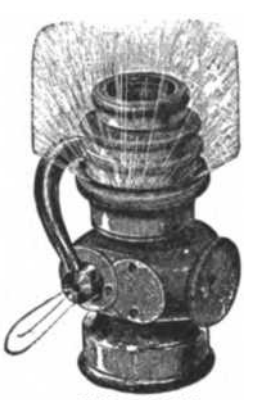


FIG. 6505

Throws a solid stream or spray, or both combined.

¾ to 1¼ inch, Plain	$15 00
¾ " 1¼ " with Spray	20 00
¾ " 1¼ " " Double Spray	22 00

PEERLESS SHUT OFF



FIG. 6506

Price, each..... $10 00

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SIAMESE CONNECTIONS

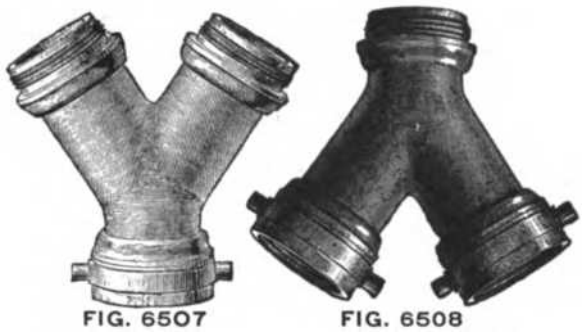


FIG. 6507 — To Divide One Stream.

FIG. 6508 — To Unite Two Streams.

PRICE

2½ inches, each.....$10 00

Special sizes furnished to order.

STEAM HOSE COUPLING

Extra Long Shank Iron Pipe Thread with Lugs for Spanner Wrench.

PRICES, FIG. 6509

Sizes.	Per Dozen.	Sizes.	Per Dozen.
½	$16 00	1½	$33 00
¾	16 00	2	42 00
1	18 00	2½	75 00
1¼	25 00		



FIG. 6509

STEAM HOSE COUPLING

Extra Long Shank. Iron Pipe Thread, with Nut for Monkey Wrench.

PRICES FIG. 6510

Sizes.	Per Dozen.	Sizes.	Per Dozen.
½	$15 00	1½	$30 00
¾	15 00	2	42 00
1	18 00	2½	72 00
1¼	24 00		



FIG. 6510

WATER HOSE COUPLINGS



FIG. 6510A

Regular Shank.



FIG. 6511

PRICES, FIG. 6510A

Style of ¾ and 1 inch.

Sizes.	Per Dozen.	Sizes.	Per Dozen.
½	$2 40	1	$4 40
¾	2 40	1¼	10 00
⅞	4 40	1½	14 00

PRICES, FIG. 6511

Style of 1¼ to 3 inches.

Sizes.	Per Dozen.	Sizes.	Per Dozen.	Sizes.	Per Dozen.
1¼	$20 00	2½	$48 00		
2	30 00	3	76 00		
2¼	48 00				

In ordering, state whether hose thread or iron pipe thread is wanted.

SPECIAL STEAM HOSE COUPLING

With Wire Attachment to Clamps. Extra Long Shank. Iron Pipe Thread.



FIG. 6512

These couplings have been tested to 1000 pounds pressure. They can not blow off, as the shanks are firmly lashed to the clamps.

PRICES

Sizes.	Per Dozen.	Sizes.	Per Dozen.
½	$17 00	1½	$33 00
¾	17 00	2	44 00
1	19 50	2½	75 00
1¼	25 00		

ROCK DRILL COUPLING

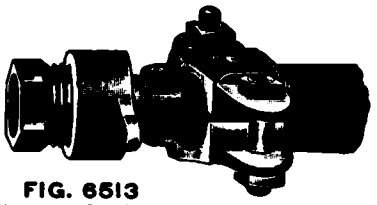


FIG. 6513

Made of malleable iron or composition gun metal. These couplings are intended for rough quarry work and are made especially heavy to withstand knocking about and the hardest use.

Size, ¾ inch.....$5 25 Size, 1 inch....$6 00

FLANGED HOSE NIPPLES

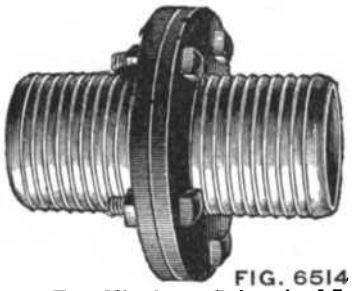


FIG. 6514

Cut Shows Two Nipples. Galvanized Iron.

Sizes,	3	4	5	6	8	9	10
Each,	$6 00	8 00	11 00	14 00	20 00	26 00	30 00
Sizes,	12	14	15	16	18	20	22	30
Each,	$26 00	30 00	34 00	36 00	40 00	44 00	50 00	88 00

SUCTION HOSE COUPLING

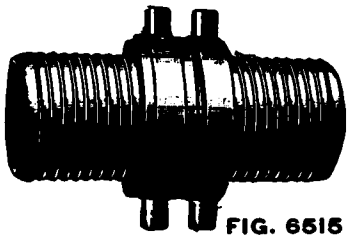


FIG. 6515

Sizes,	2	2½	3	3½	4	4½
Per Set,	$4 00	5 25	7 50	9 50	12 50	16 00
Sizes,	5	5½	6	6½	7	8
Per Set,	$20 00	24 00	28 00	40 00	54 00	80 00

EXPANSION RING COUPLINGS

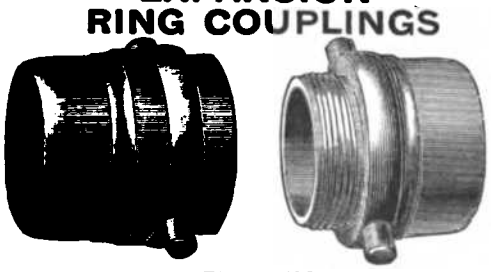


FIG. 6516

Inches.	Per Set.	Inches.	Per Set.
1	$4 00	2½ light*,	$4 65
1½	4 40	2½ medium,	5 60
2	4 85	2½ ex. heavy,	8 00

Couplings nickel plated at slight additional cost. When ordering couplings, send us a cap from the hydrant or a sample coupling from which to cut the thread. If the thread is large it will require an extra heavy coupling.

*Can be used only for New York corporation or iron pipe thread.

SUCTION HOSE EXPANSION RING COUPLING



FIG. 6517

Inches.	With Lugs.	With Handles.	Inches.	With Lugs.	With Handles.
2½	$3 60	.....	4	$12 00	$13 50
3	6 50	.....	4½	18 00	20 00
3½	9 00	$10 50	5	20 00	22 00

JONES EXPANSION RING COUPLINGS

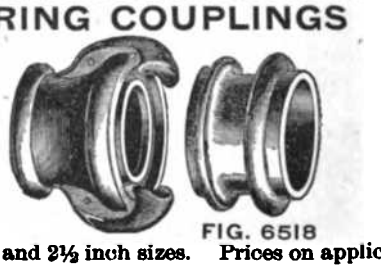


FIG. 6518

Made in 2 and 2½ inch sizes. Prices on application.

HOSE MENDER

Sizes.	Brass, per Dozen.	Iron, Bronzed, per Doz.
½	$1 20	$0 40
¾	1 20	50
1	2 00	1 00

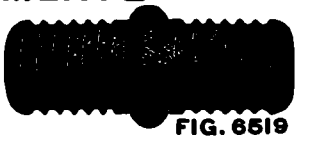


FIG. 6519

WROUGHT IRON BOLT BAND

For Suction Hose. Cut Represents One Band.

For 2½	in.	internal	diam.	hose,	each	$2 00
" 3	"	"	"	"	"	2 20
" 4	"	"	"	"	"	2 40
" 5	"	"	"	"	"	2 80
" 6	"	"	"	"	"	3 20
" 8	"	"	"	"	"	4 00
" 10	"	"	"	"	"	4 80
" 12	"	"	"	"	"	5 60

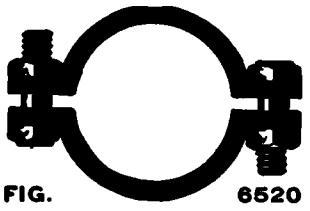


FIG. 6520

HOOK CLAMP

Inside Diams. of Clamp.	Per Doz.	Inside Diams. of Clamp.	Per Doz.	Inside Diams. of Clamp.	Per Doz.
1¼	$2 25	2⅛	$4 00	3	$7 00
1⅜	2 50	2¼	4 00	3⅛	7 75
1½	2 75	2⅜	4 30	3¼	8 50
1⅝	3 00	2½	4 60	3⅜	9 25
1¾	3 25	2⅝	5 20	3½	10 00
1⅞	3 50	2¾	5 80	3⅝	10 75
2	3 75	2⅞	6 40	3¾	11 50



FIG. 6521

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EXPANDING TOOL

FOR ATTACHING PATENT EXPANSION COUPLINGS

DIRECTIONS FOR ATTACHING COUPLINGS

The Expanding Tool is held in an ordinary bench vise during the entire operation. Slip an expansion ring over the segments up to the shoulder, and tighten the nut enough to keep it in place. Now place the band over the end of the hose until it brings up against the shoulder, taking pains to have it square and true with the hose. Place the end of the hose and the encompassing band over the expander, and keep them up against the shoulder. This will bring the ring exactly opposite the recess in the band. Now run the screw out until the ring is sufficiently expanded. This will, of course, vary with the thickness of the hose; but by measuring the distance which the screw projects when a proper degree of expansion is secured, this will serve as a gauge to indicate the point to which the nut should be run thereafter. Run the nut back, and strike the end of the spindle a sharp blow with a wooden mallet, and the band will come off readily, leaving the operation complete. Keep the thread and taper portion of the spindle well oiled.



FIG. 6522

1 inch, each.....$6 00 1¼ and 1½ inches, each.....$7 00 2 and 2½ inches, each.....$12 00

BRASS HOSE CLAMP



FIG. 6523

Size.	Per Doz.	Size.	Per Doz.	Size.	Per Doz.
⅞	$3 00	3½	$10 00	6⅛	$26 00
1	3 25	3⅝	10 75	6¼	27 00
1⅛	3 50	3¾	11 50	6⅜	28 00
1¼	3 75	3⅞	12 25	6½	29 00
1⅜	4 00	4	13 00	6⅝	30 00
1½	4 25	4⅛	13 75	6¾	31 00
1⅝	4 50	4¼	14 50	6⅞	32 00
1¾	4 75	4⅜	15 00	7	33 00
1⅞	5 00	4½	16 00	7⅛	34 00
2	5 40	4⅝	16 75	7¼	35 00
2⅛	5 80	4¾	17 50	7⅜	36 00
2¼	6 20	4⅞	18 25	7½	37 00
2⅜	6 60	5	19 00	7⅝	38 00
2½	7 00	5⅛	19 75	7¾	39 00
2⅝	7 40	5¼	20 50	7⅞	40 00
2¾	7 80	5⅜	21 25	8	41 00
2⅞	8 20	5½	22 00	8⅛	42 00
3	8 60	5⅝	22 75	8¼	43 00
3⅛	8 90	5¾	23 50	8⅜	44 00
3¼	9 20	5⅞	24 25	8½	45 00
3⅜	9 50	6	25 00	8⅝	46 00

RULE FOR ASCERTAINING SIZE OF CLAMP REQUIRED

Put coupling into hose, measure outside diameter of hose where coupling is inserted, deduct ⅛ inch from this measurement, and the result will be the size of clamp required.

If customers will state size and ply of hose, and whether leading, suction, steam, brewers', linen, cotton, or rubber lined, we will send proper size clamps.

SHERMAN HOSE CLAMP

Sizes, inches	½	¾	1	1¼	1½
Hydrant Hose, per dozen	$1 50	1 50	2 00	2 50	3 00
Steam " " "	1 50	2 00	2 50	3 00	3 50

Sizes, inches	2	2¼	2½	3
Hydrant Hose, per dozen	$4 00	5 50	7 00	10 00
Steam " " "	5 50	7 00	8 50	13 00

When additional sizes are ordered, not enumerated above, the price will be the same as nearest size larger, and for spiral wire wound suction hose, give outside diameter, and we will send nearest of the above sizes.

Made to suit different ply hose. In ordering, state for how many ply hose desired.



FIG. 6524

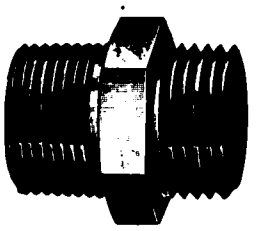


FIG. 6526

BRASS HOSE AND IRON PIPE NIPPLES

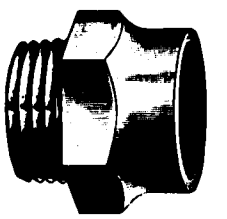


FIG. 6527

Sizes	½	¾	1	1¼	1½	2	2½	3
Male, Fig. 6526.....per doz.	$3 50	3 50	5 00	9 00	10 00	14 00	28 00	40 00
Male and Female, Fig. 6527, " "	3 50	3 50	5 00	9 00	10 00	14 00	28 00	40 00

CALDWELL HOSE STRAP

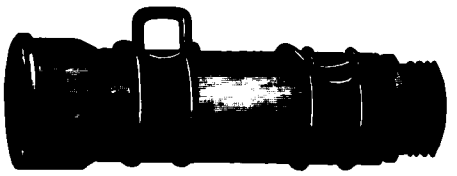


FIG. 6525

Nos.	Hose, Diam.	Inches Long.	Per Dozen.	Nos.	Hose, Diam.	Inches Long.	Per Dozen.
2	½ in.	3⅜	$0 40	20	1½ in.	7⅛	$1 20
4	½ "	3¾	40	22	1¾ "	7½	1 40
6	¾ "	4⅛	60	24	1¾ "	8	1 40
8	¾ "	4¾	60	26	2 "	8½	1 60
10	1 "	5	80	28	2 "	9	1 60
12	1 "	5⅜	80	30	2¼ "	9½	1 80
14	1¼ "	6	1 00	32	2¼ "	10	1 80
16	1¼ "	6⅜	1 00	34	2½ "	10½	2 00
18	1½ "	6¾	1 20	36	2½ "	11	2 00

CALDWELL PLIERS

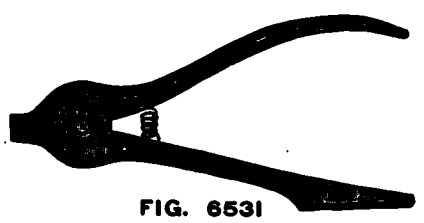


FIG. 6531

FOR ATTACHING STRAPS

No. 1. For ½ inch and 1 inch hose, each $0 50

No. 2. For 1¼ inch to 2½ inch hose, each $0 75

BRASS HOSE SPRINKLER



FIG. 6532

Diameters, inches....	1½	2	2½
Fitting hose pipe, sizes.	¾ & 1	¾ & 1	¾ & 1
Per dozen. $3 50	4 50	6 00	

BRASS HOSE BUSHING

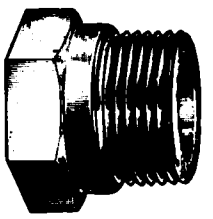


FIG. 6528

BRASS HOSE REDUCER

PRICES, FIG. 6528

Size	1 x ¾
Per dozen	$6 50

PRICES, FIG. 6529

Sizes	1 x ¾	1¼x1	1½x1¼	2x1½	2½x2
Per doz.	$6 50	10 00	12 00	18 00	30 00

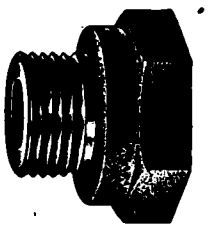


FIG. 6529

BRASS HOSE CAP

Sizes	¾	1	1¼	1½	2	2½
Finished, with Chain, each.	$1 00	1 25	1 75	2 25	3 00	3 50
Rough, without Chain or Swivel, each.	60	75	1 15	1 50	2 00	2 50

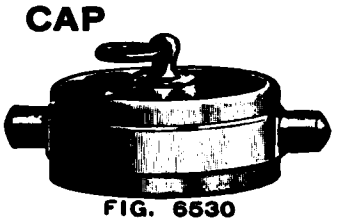


FIG. 6530

REDUCING CONNECTION

Inches.		Inches.		Each.	Inches.		Inches.		Each.
1	Female,	¾	Male,	$0 40	2½	Female,	1	Male,	$2 17
1¼	"	¾	"	47	2½	"	1¼	"	2 33
1½	"	¾	"	67	2½	"	1½	"	2 50
2	"	¾	"	1 33	2	"	2¼	"	2 00
2	"	1	"	1 47	2	"	2½	"	2 17
2	"	1¼	"	1 67	2¼	"	2	"	2 33
2	"	1½	"	1 84	2¼	"	2½	"	2 67
2¼	"	¾	"	1 67	2½	"	2	"	2 33
2¼	"	1	"	1 84	2½	"	2¼	"	2 67
2¼	"	1¼	"	2 00	2½	"	2½	"	3 20
2¼	"	1½	"	2 17	3	"	2½	"	3 67
2½	"	½	"	2 00					

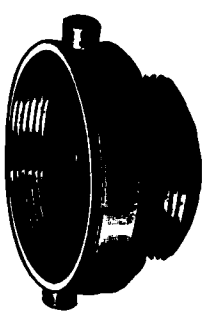


FIG. 6533

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SPANNER AND HYDRANT WRENCH

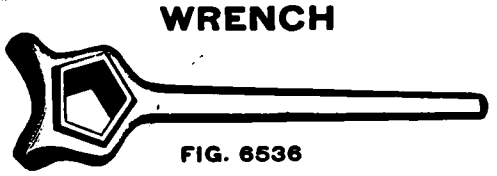


FIG. 6536

Per dozen.....$12 00

COMBINATION SPANNER AND HYDRANT WRENCH



FIG. 6537

Per dozen.....$5 00

SPANNER

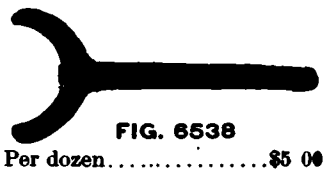


FIG. 6538

Per dozen.....$5 00

RELIANCE SWINGING HOSE REEL NO. 1

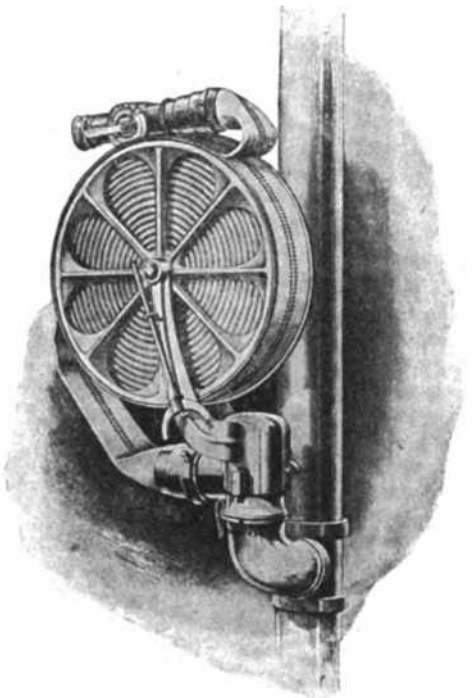


FIG. 6539

DESCRIPTION

The turning of the reel from the wall in either direction turns on the water to the full capacity of the pipe. No globe valve is necessary; the valve on the reel takes its place, and occupies less space from the wall than the usual valve. With a shut off nozzle on the hose, the water is under control at both the nozzle and reel, and not distributed except when desired. All parts in contact with water are made of brass. The reel is readily detachable and can be used independently of its valve, when the length of hose is to be increased.

PRICES

Size of hose....	1½	2	2½
Each.....	$14 00	$17 00	$20 00

RELIANCE SWINGING HOSE REEL NO. 2

WITH WALL PLATE

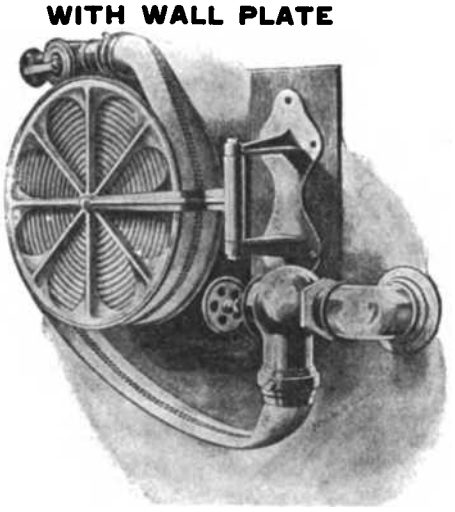


FIG. 6540

WITH PIPE CLAMP

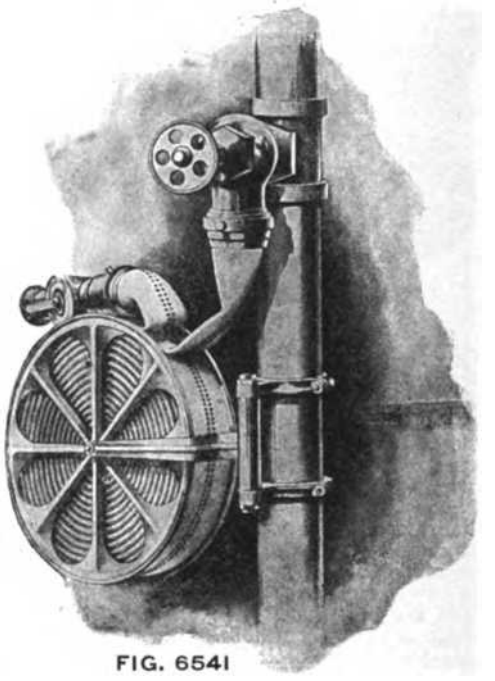


FIG. 6541

DESCRIPTION, FIGS. 6540 AND 6541

This Reel is made with either Wall Plate or Pipe Clamp, and swings in any direction required. After the nozzle is taken down and the hose started, the weight of the hose runs it off the reel. The water can be turned on before the hose is started, which can not be done where racks are used. The only fold required is the one in the center, and then it rests in a hollow at the hub, free from all strain and weight. It takes little space, presents little surface for dust, can be placed without considering the position of the valve, or can be clamped to the pipe. The jaw is cast solid and it revolves on bolt fastened on each side.

PRICES, FIGS. 6540 AND 6541

FOR UNLINED LINEN HOSE

1½, 2, or 2½ inch Hose.	50 Ft.	75 Ft.	100 Ft.	125 Ft.	150 Ft.	200 Ft.
Japanned.....	$4 00	$5 00	$6 00	$7 00	$8 00	$9 00
Aluminum finish.....	4 00	5 00	6 00	7 00	8 00	9 00
Nickel plated.....	9 00	10 00	11 00	12 00	13 00	14 00
Porcelain finish, gold stripe.....	9 50	10 50	11 50	12 50	13 50	15 50
Solid brass.....	12 00	13 00	14 00	15 00	16 00	18 00
Solid brass, nick. plat.	14 00	15 00	16 00	17 00	18 00	20 00

FOR RUBBER LINED HOSE

1½, 2, or 2½ inch Hose.....	50 Ft.	75 Ft.	100 Ft.
Japanned.....	$6 00	$8 00	$9 00
Aluminum finish.....	6 00	8 00	9 00
Nickel plated.....	11 00	13 00	14 00
Porcelain finish, golu stripe	11 50	13 50	15 50
Solid brass.....	14 00	16 00	18 00
Solid brass, nickel plated..	16 00	18 00	20 00

RELIANCE FLOOR OR WALL REEL

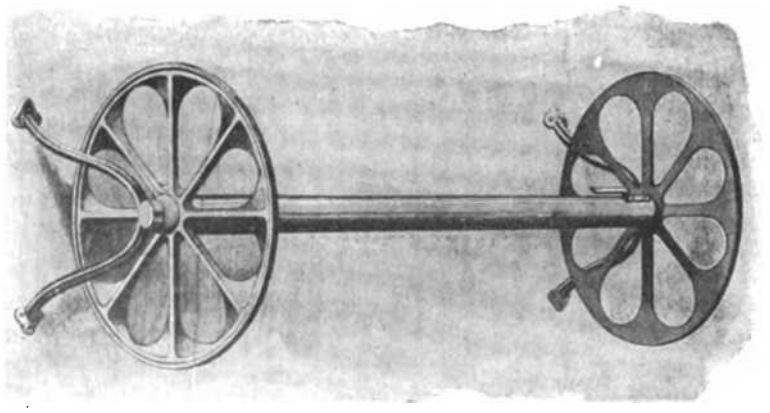


FIG. 6542

PRICES

Diameter of wheel 17 inches. Distance from wall or floor to outside of wheel, 19 inches. Length of shaft, 15 to 40 inches. Capacity, 50 feet to 500 feet cotton hose, or 50 feet to 300 feet rubber hose.

No. 1	100	feet,	each.....	$8 00
" 2	200	"	"	10 00
" 3	300	"	"	12 00

RELIANCE NO. 49

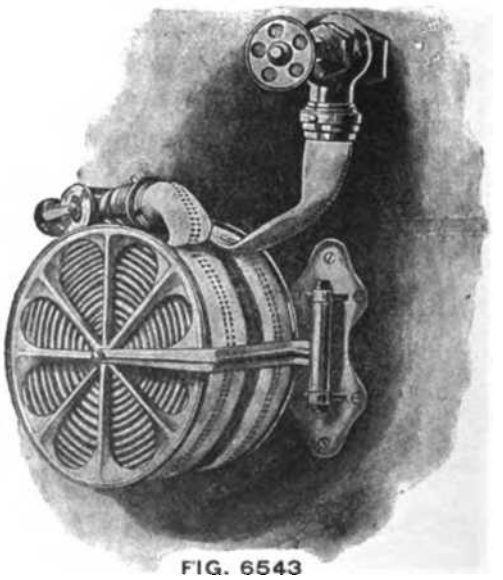


FIG. 6543

FOR RUBBER LINED COTTON HOSE

PRICES

1	For 50	feet,	1½	inch..... $7 00
2	" 50	"	2	" 7 00
3	" 50	"	2½	" 7 00
1	"100	"	1½	" 8 00
2	"100	"	2	" 8 00
3	"100	"	2½	" 8 00

These reels with pipe clamps are 70c. each, in addition to net cost of above.

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RELIANCE SWINGING HOSE RACKS

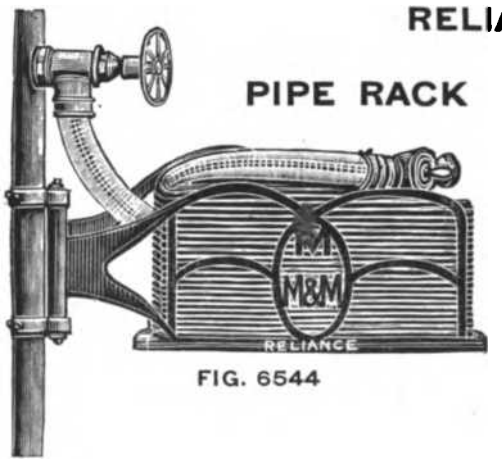


FIG. 6544

PRICES

For Unlined Linen Hose.

Nos.	Sizes of Hose, Inches.	Full Capacity, Feet.	Each.
0	For 1½ or 2	50	$4 00
00	" 2½	50	4 00
1	" 1½ " 2	100	5 00
2	" 2½	100	5 00
3	" 1½ " 2	150	6 00
4	" 2½	150	6 00

For Rubber Lined Linen and Mill Hose.

Nos.	Sizes of Hose, Inches.	Full Capacity, Feet.	Each.
3	For 1½ or 2	50	$6 00
4	" 2½	50	6 00
5	" 1½ " 2	100	7 50
6	" 2½	100	8 00

Japanned racks furnished with pipe clamps when desired at 40 cents per rack additional.

Nos. 5 and 6 will carry heavy hose of almost any make in 50 foot lengths.

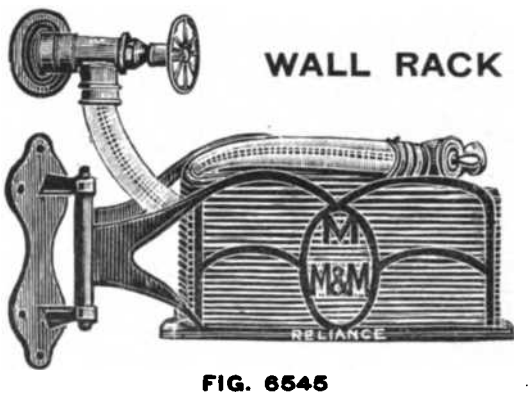


FIG. 6545

RELIANCE HOSE RACK, NO. 2

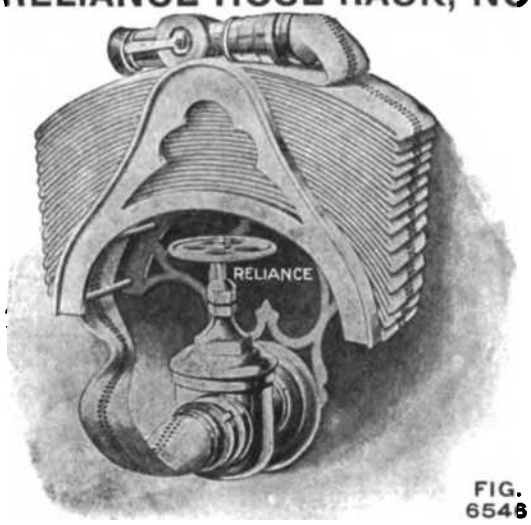


FIG. 6546

PRICES

For Unlined Linen Hose.

1½ Inch, 2 Inch or 2½ Inch Hose.	50 Feet.	75 Feet.	100 Feet.	125 Feet.	150 Feet.	200 Feet.
Japanned	$4 00	$5 00	$6 00	$7 00	$8 00	$9 00
Aluminum finish.	4 00	5 00	6 00	7 00	8 00	9 00
Nickel plated	9 00	10 00	11 00	12 00	13 00	14 00
Porcelain finish, gold stripe	9 50	10 50	11 50	12 50	13 50	15 50
Solid brass	12 00	13 00	14 00	15 00	16 00	18 00
Solid brass, nickel plated	14 00	15 00	16 00	17 00	18 00	20 00

For Rubber Lined Hose.

1½ Inch, 2 Inch or 2½ Inch Hose.	50 Feet.	75 Feet.	100 Feet.
Japanned	$6 00	$8 00	$9 00
Aluminum finish	6 00	8 00	9 00
Nickel plated	11 00	13 00	14 00
Porcelain finish, gold stripe	11 50	13 50	15 50
Solid brass	14 00	16 00	18 00
Solid brass, nickel plated	16 00	18 00	20 00

RELIANCE HOSE RACK, NO. 1

DESCRIPTION, FIG. 6546

This rack is similar in construction to No. 1, Fig. 6547, except that it requires no screws to fasten it in position, but is made secure by the valve. It is only necessary to leave one inch on the pipe. It saves the expense of the usual rosette or collar required to make a complete joint between the valve and wall, and brings the apparatus close together, taking up only about half the space occupied by the valve, which is not accomplished by any other appliance.

DESCRIPTION, FIG. 6547

The simplicity of this rack is shown by the cut. It is fastened to the wall by two screws, and can be placed at either side of the outlet of the valve, which can not be done when the rack is made to swing. It requires but little space, is adapted for linen or rubber lined cotton hose. Made of iron in one piece, or in brass or aluminum.

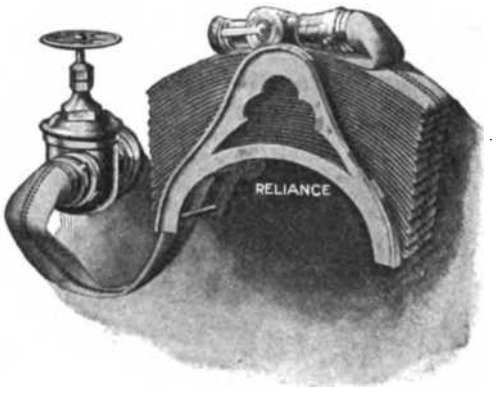


FIG. 6547

PRICES

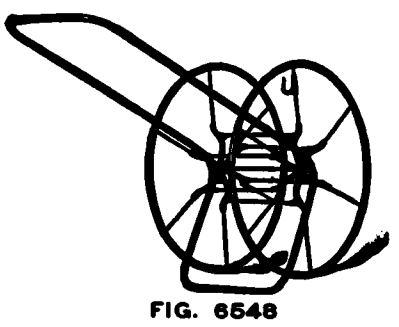
For Unlined Linen Hose.

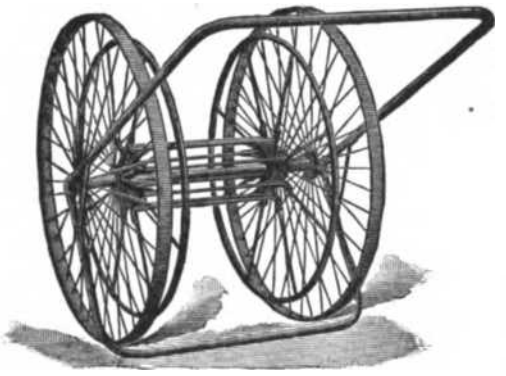
1½ Inch, 2 Inch or 2½ Inch Hose.	50 Feet.	75 Feet.	100 Feet.	125 Feet.	150 Feet.	200 Feet.
Japanned	$2 00	$3 00	$4 00	$5 00	$6 00	$7 00
Aluminum finish	2 00	3 00	4 00	5 00	6 00	7 00
Nickel plated	4 50	5 50	6 50	7 50	8 50	9 50
Porcelain finish, gold stripe	7 50	8 50	9 50	10 50	11 50	12 50
Solid brass	8 00	9 00	10 00	11 50	12 50	13 00
Solid brass, nickel plated	10 50	11 50	12 50	14 00	15 00	16 00

For Rubber Lined Hose.

1½ Inch, 2 Inch or 2½ Inch Hose.	50 Feet.	75 Feet.	100 Feet.
Japanned	$8 00	$12 00	$14 00
Aluminum finish	8 00	12 00	14 00
Nickel plated	13 00	17 00	19 00
Porcelain finish, gold stripe	19 00	23 00	25 00
Solid brass	20 00	25 00	27 00
Solid brass, nickel plated	25 00	30 00	32 00

IRON HOSE REELS


FIG. 6548

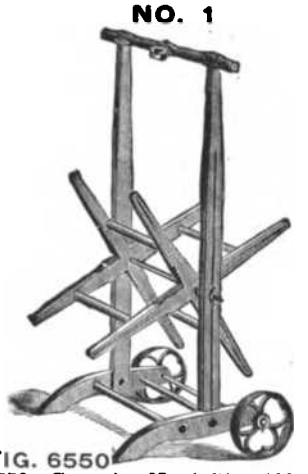

FIG. 6549

PRICES

Nos.	Style.	Height of Wheels, Inches.	Weight, Pounds.	Capacity, ¾ Inch Hose.	Each.
X	Fig. 6548	21	18	100	$5 00
XX	" "	24	22	150	5 50
XXX	" "	30	32	500	10 00
A	" 6549	28	30	200	9 00
B	" "	34	45	500	14 00

WOOD HOSE REELS

NO. 1


FIG. 6550

NO. 2


6551

Fig. 6550—Capacity No. 1, 50 to 100 ft. of ¾ in. rubber hose; each, $1.25.

Fig. 6551—Capacity No. 2, 100 to 150 ft. of ¾ in. rubber hose; each, $3.00.

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NO. 00. TUBULAR STEEL FRAME HOSE CART

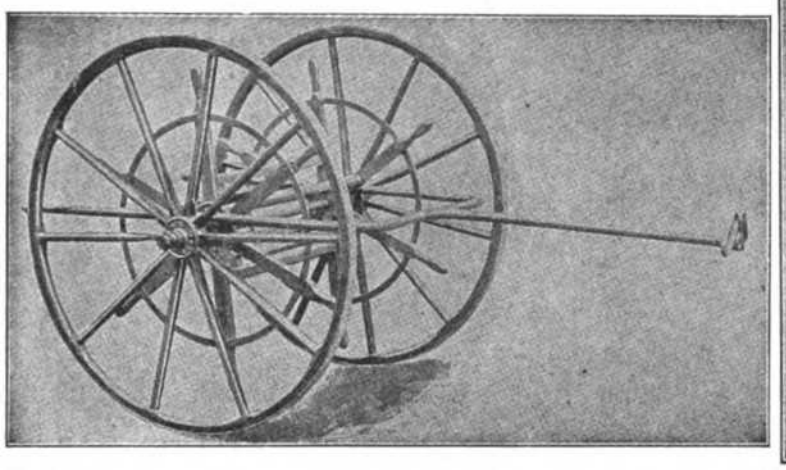


FIG. 6552

DESCRIPTION

This small size cart is made for use in lumber yards, manufacturing plants, warehouses, etc., where a small quantity of hose is stored near hydrant. The cart is well constructed, having tubular frame, slatted hose reel, 40 inch iron tired wheels, and will carry 125 feet 2½ inch rubber hose.

PRICE

Length.	Width.	Height.	Weight.	Price.
6 feet 4 inches.	40 inches.	40 inches.	90 lbs.	$25.00

TUBULAR STEEL FRAME HOSE CART

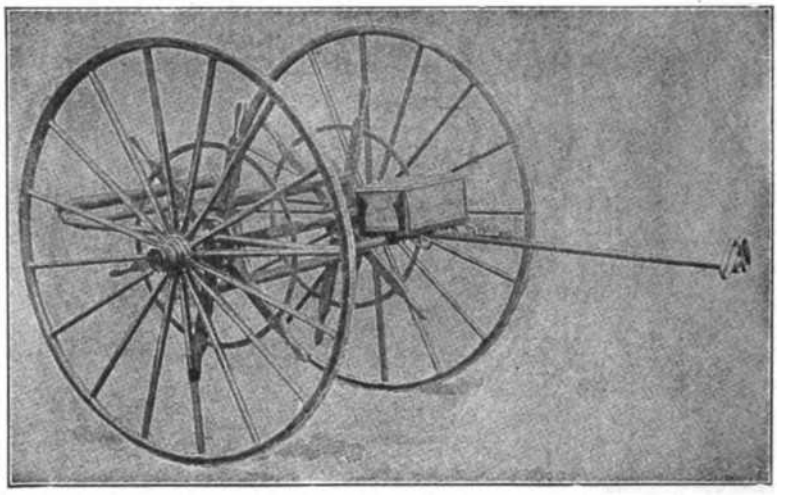


FIG. 6553

DESCRIPTION

These two sizes are about the same style as No. 00, Fig. 6552, and are used for same purposes where carts of larger capacity are desired. They have wrought tubular frames, friction roller at rear, tool box in front, hooks for drag rope, 48 inch iron tired wheels and open hose reel. The No. 1 will carry 200 feet; the No. 2 250 feet of 2½ inch rubber hose.

Nos.	Lengths.	Width.	Height.	Weight, Lbs.	Prices.
1	7 feet.	4 feet.	4 feet.	120	$44 00
2	7 " 11 inches.	4 " 7 inches.	4 " 4 inches.	195	60 00

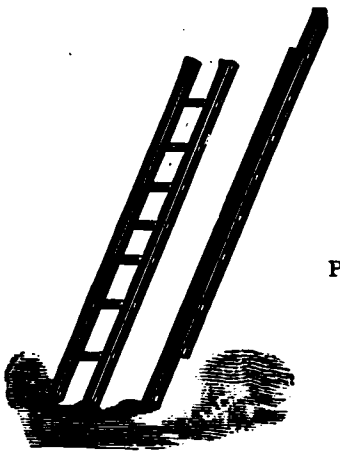


FIG. 6555

FOLDING LADDERS

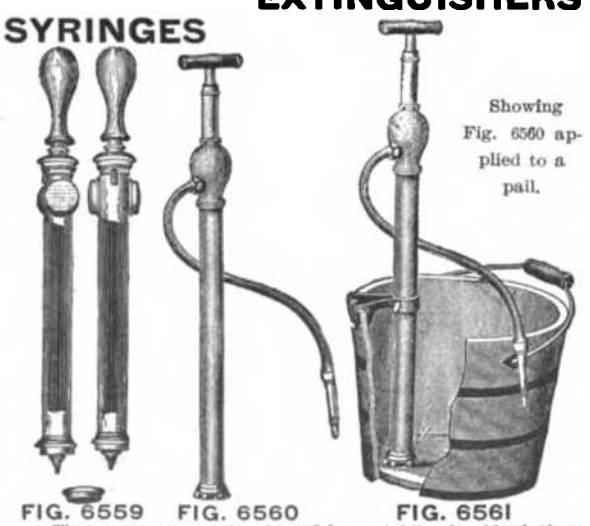
Sizes, 8 to 16 Feet.

PRICE, FIG. 6555

Per foot.....$0 20

FIRE EXTINGUISHERS

SYRINGES



Showing Fig. 6560 applied to a pail.

FIG. 6559 FIG. 6560 FIG. 6561

They are conveniently adapted for sprinkling liquid solutions of any kind on trees and plants to destroy insects, etc., or will throw a strong jet of water and subdue a fire in a chimney or on a roof, where no other protection is available. They are made of brass, are handsome, durable, and do not rust. Price of Fig. 6560 includes three feet discharge hose, with brass discharge pipe and rose sprinkler.

PRICES, FIG. 6559

Brass Syringes.

No. 1	12 inch barrel	.....	$5 00
" 2	16 " "	.....	6 00

PRICES, FIG. 6560

Fire Extinguishers.

No. 1	Medium size, 20 inch barrel	.....	$7 00
" 2	Large size, 24 " "	.....	8 00

LADDERS

UNIVERSAL

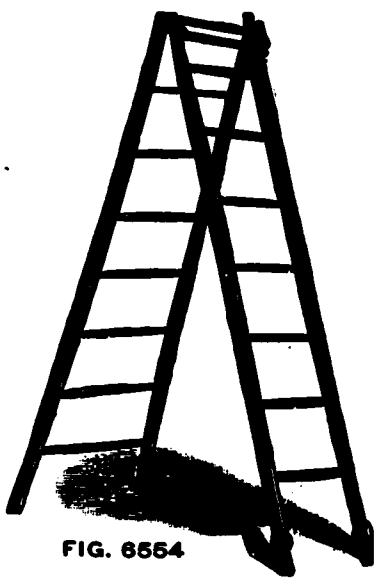


FIG. 6554

Fig. 6557 has automatic hooks, pulleys, and rope, and can be operated from the ground, catching on any rung desired when raising or lowering the upper section. In ordering extension ladders an allowance of about 3 feet should be made for lap. A ladder 22 feet long will reach 19 feet, etc. All these ladders are made of clear Norway pine. Hickory rungs pass two-thirds of the way through sides of the ladder and are secured by large screws. Safety cross bars of wrought iron.

LONG

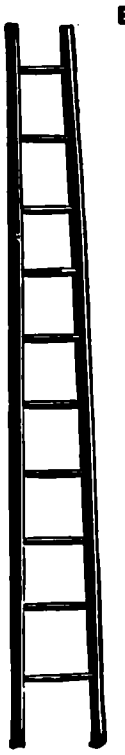


FIG. 6556

PULLEY EXTENSION

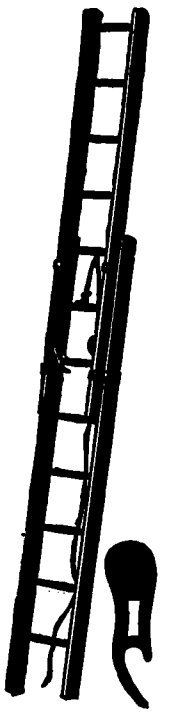


FIG. 6557

EXTENSION



FIG. 6558

PRICES, FIG. 6556

8 feet	$1 60	16 feet	$3 50
9 "	1 80	18 "	4 00
10 "	2 00	20 "	4 50
12 "	2 50	22 "	5 00
14 "	3 00	24 "	6 00

PRICES, FIG. 6557

22 feet	$8 00	36 feet	$14 00
26 "	10 00	42 "	17 00
28 "	10 50	46 "	20 00
32 "	12 00	50 "	23 00

PRICES, FIG. 6558

22 feet	$7 50	36 feet	$12 50
26 "	9 00	42 "	16 00
28 "	9 50	46 "	18 00
32 "	11 00	50 "	21 00

PRICES, FIG. 6554

This ladder can be used as a trestle or an extension. Each side can be used separate. Suitable for painters, fruit growers, and tinners. Hooks, hinges, and cross bar made of malleable iron.

6	feet,	making	10	feet	when	extended	.....	$4 50	10	feet, making	18 feet when extended $7 00
7	"	"	12	"	"	"	.....	5 00	12	" "	22 " " " 8 50
8	"	"	14	"	"	"	.....	5 50	14	" "	26 " " " 10 50
9	"	"	16	"	"	"	.....	6 00	16	" "	30 " " " 12 00

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PATROL FIRE EXTINGUISHER



FIG. 6562

DESCRIPTION AND PRICE, FIG. 6562

TO OPERATE TURN UPSIDE DOWN.

This Chemical Extinguisher operates on the "tip over" principle. Cylinder made of best copper, with ring top and interior parts of brass. All interior parts fully leaded. Acid bottle of commercial size. A new feature of this extinguisher is a large brass plate on the front with full directions for operating, loading and general care. Full three gallons capacity. Complete, with two chemical charges, or one charge and one hanging attachment.

Copper Polished, each..... $15.00.

PRICES, FIG. 6565

Standard.	6 gallon size,	Japanned	$30 00	Pony.	3 gallon size,	Nickel Plated	$30 00
"	6 "	Polished	33 00	Domestic No. 5.	3 "	Copper Polished.	20 00
"	6 "	Nickel Plated.	35 00	" " 5.	3 "	Nickel Plated	23 00
Pony.	3 "	Japanned	25 00	Junior.	1½ "	"	20 00
"	3 "	Copper Polished	27 50				

BABCOCK FIRE EXTINGUISHER

STANDARD. CAPACITY, SIX GALLONS.



FIG. 6565

EXTINGUISHER BRACKETS

For Use in Buildings.



FIG. 6563

DESCRIPTION AND PRICES FIG. 6563

Made of iron, japanned in walnut, ash, oak, cherry or red, for either side wall or corners.

Each (Corner)..... $2 00
" (Side Wall)..... 1 75

NICKEL PLATED FINISH.

Standard, extra..... $1 20
Pony, " 80
Junior, " 60

Wooden Shelf, with Iron Bracket, for holding one No. 5 (Domestic) Babcock, each, 80 cents.

CROWN WATER METER

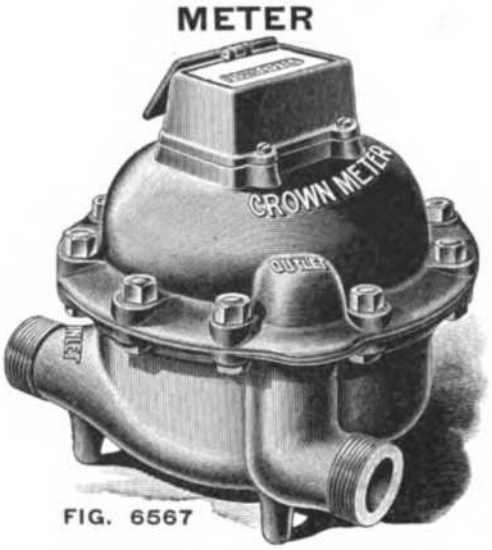


FIG. 6567

HAND GRENADE EXTINGUISHERS



FIG. 6566

PRICES

Capacity, 1 quart, assorted colors. Per dozen, $10.00.

Capacity, 1⅛ pints, assorted colors. Per dozen, $7.50.

Wire Baskets, holding 3 Grenades; each, 35 cents.

Wire Baskets, holding 2 Grenades; each, 30 cents.

DESCRIPTION, FIG. 6567

There are four main parts to the Crown Meter: First. The cover, which includes the intermediate gearing, and the counter or registering mechanism. Second. The base, which contains the inside cylinder. The base has the inlet and outlet spuds attached, and is arranged to be bolted to the cover. Third. Inside cylinder. This consists of three parts: The ring, and the top and bottom cylinder heads. The perfection of this cylinder assists in developing the accuracy of the registration, as this is the part in which the piston revolves. Fourth. The piston. This is practically the only working part. It is made of hard rubber, of about the specific gravity of water. The piston has no bearing whatever, as it practically floats. It is perfectly balanced, and, therefore, frictionless in its operation. Connections are made only for the ⅝ inch, ½ or ¾ inch, ¾ inch and 1 inch meters, and are always sent with these sizes unless we are otherwise instructed. These sizes are made with male threads, while the 1½ inch and 2 inch meters have female threads. All threads are cut to fit standard pipe. The 3, 4 and 6 inch meters are made with flanges. Prices on application.

WORTHINGTON WATER METER

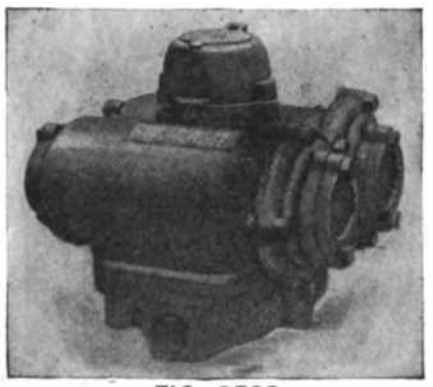


FIG. 6568

DIRECTIONS, FIG. 6568

Connect the supply pipe with the meter at the hole marked "Inlet"; the outlet pipe is on a line with the inlet pipe, on the opposite side of the meter; turn on the water and loosen the brass vent screws on the top of the meter and allow the air to blow through. When water appears at the vent screws tighten them again and leave the meter to itself, noting the reading of the counter.

Sizes of Pipe Opening, Inches.	Greatest Proper Quantity per Minute. Cubic Feet.	Gallons.	Each.	Permanent Box.*	Brass Couplings for Connecting the Meters.	Meter Strainers. Pot Pattern.	Side Pipe Pattern.
⅝	1½ or	11¼	$19 00	$1 00	$0 95	$3 50	.....
¾	3 "	22½	28 00	1 50	1 10	3 50	.....
1	5 "	37½	39 00	2 25	1 50	6 00	.....
1½	6 "	45	45 00	3 75	2 75	6 00	$15 00
2	8 "	60	55 00	6 00	3 50	7 50	17 00
3	23 "	172	130 00	....	2 00 Screw Flanges.	15 00	22 00
4	60 "	450	375 00	....	3 00 Screw Flanges.	25 00	25 00
6	130 "	900	900 00	....	5 00 Screw Flanges.	.....	28 00

* This box has a hinged lid and is made very strong to protect the meter in transportation and while in use. It has suitable openings for the pipe connections. Ordinary rough boxing charged for at cost.

The quantities given in the second column of the above table represent a rate of delivery that can be considerably exceeded with this machine, but which had better be accepted as the maximum at which it is advisable to run any water meter continuously. Whenever, in the effort to make a small machine answer for a large one, this rate is exceeded, greatly increased wear and tear are invariably the consequence.

We can also furnish special meters for beer, hot water and similar liquids, upon receipt of specifications. Prices on application.

WATER METER

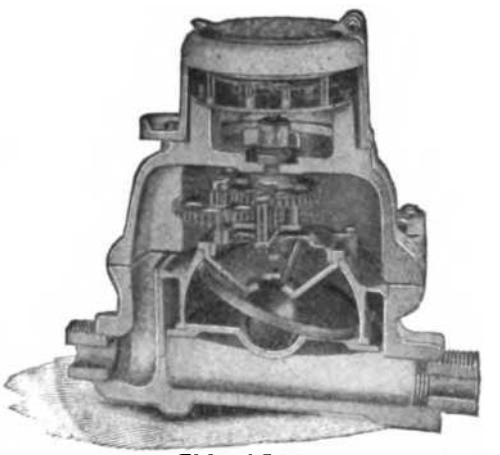


FIG. 6569

DISK METERS.

Sizes.....	⅝ In.	¾ In.	1 In.	1½ In.	2 In.	3 In.	4 In.	6 In.
Meters.....	$11 25	$16 88	$22 50	$43 75	$68 75	$118 75	$250 00	$500 00
Connections.....	63	94	1 25	Flanges or bell and spigot connections no charge.				

ROTARY METERS.

Sizes.....	⅝ In.	¾ In.	1 In.	1½ In.	2 In.	3 In.	4 In.	6 In.
Meters.....	$15 00	$23 75	$32 50	$56 25	$81 25	$156 25	$312 50	$625 00
Connections.....	63	94	1 25	Flanges or bell and spigot connections no charge.				

TORRENT METERS. FOR MEASURING LARGE VOLUMES OF WATER.

Sizes.....	2 Inches.	3 Inches.	4 Inches.	6 Inches.	8 Inches.	10 Inches.	12 Inches.
Meters....	$56 25	$112 50	$218 75	$500 00	$875 00	$1,125 00	$1,500 00

Connections, flanges or bell and spigot connections no charge.

We can furnish a dial extension for use with meters (Fig. 6569) to facilitate reading of meters placed some distance below surface.

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TUERK WATER MOTORS

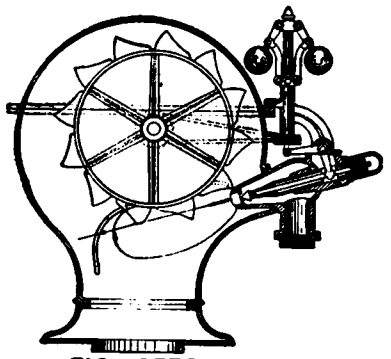


FIG. 6572

PRICES

Pounds Pressure at Motor.	Horse Power. No. 8.	No. 9.	No. 10.	No. 11.	No. 12.	No. 13.	No. 14.	No. 15.
30	.....	⅛	¼	½	1	2	3	5
50	.....	¼	½	1	1½	3	5	8
100	.....	½	1	2	3	6	10	16
150	.....	¾	1½	3	4½	9	15	24
200	.....	1	2	4	6	12	20	32
Each.....	$18 00	30 00	45 00	75 00	120 00	200 00	300 00	400 00

Extra for Governors—No. 12, $35.00; No. 13, $35.00; No. 14, $50.00; No. 15, $50.00.

Supply Pipe for 100 Feet in Length—No. 9, 1 inch; No. 10, 1¼ inches; No. 11, 1½ inches; No. 12, 2 inches; No. 13, 2½ inches; No. 14, 3 inches; No. 15, 4 inches.

Taps in Street Main—No. 9, ⅝ inch; No. 10, ¾ inch; No. 11, 1 inch; No. 12, 1¼ inches; No. 13, 1½ inches; No. 14, 2 inches; No. 15, 2½ inches.

Waste pipe should be large enough to prevent water backing up in the motor.



FIG. 6573

PELTON WATER MOTORS

TYPE OF 6, 12 AND 15 INCH MOTOR

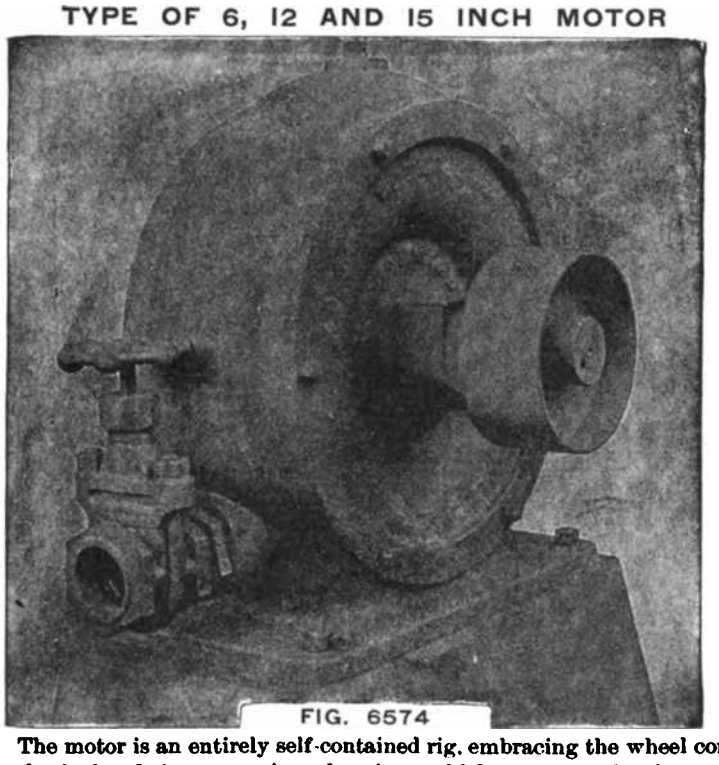


FIG. 6574

The motor is an entirely self-contained rig, embracing the wheel completely inclosed in a cast iron housing, which supports the journals, nozzle and gate. As sent out, the motor is ready for operation, needing no erection other than bolting to a solid foundation and making pipe connections. Each motor is provided with centrifugal disks and pockets covered by patents, which effectually prevent leakage of water along the shaft; all sizes are fitted with automatic ring oiling journal bearings, requiring a minimum of attention and insuring cleanliness. This motor is especially adapted for running from city mains, and where water rates are at all reasonable. Pelton Motors are largely used for running dynamos in isolated electric plants; for this purpose, where the pressure admits, both water motor and dynamo are mounted on a cast iron base plate, and the shafts direct connected by means of a coupling, thus occupying little floor space and eliminating belting. If the power is required for other use during the day, a pulley can be added and temporary belt connection made.

PRICES AND WEIGHTS, FIGS. 6574 TO 6576

6 in.	Motor,	$30 00;	Weight	50 lbs.;	Pulley,	3 in.	Diameter by	2	in. face
12 "	"	60 00;	"	175 "	"	4 "	"	"	4	"
15 "	"	125 00;	"	285 "	"	5 "	"	"	4½	"
18 "	"	175 00;	"	375 "	"	6 "	"	"	5	"
24 "	"	275 00;	"	800 "	"	12 "	"	"	8½	"

The above list covers standard motors for ordinary service up to a head of 250 feet, equivalent to a pressure of 108 pounds; all are provided with overhung pulleys. For heads in excess of this a heavier motor is furnished, usually with a sole plate and outboard bearing where the full power is required. Special quotations should be obtained to cover these conditions. Prices include gate valve with nipple and union, driving pulley and three interchangeable nozzle tips, to give such variations of power as may be desired. Unless otherwise specified, the standard size of driving pulley, as indicated above, will be furnished.

TYPE OF 18 AND 24 INCH MOTOR

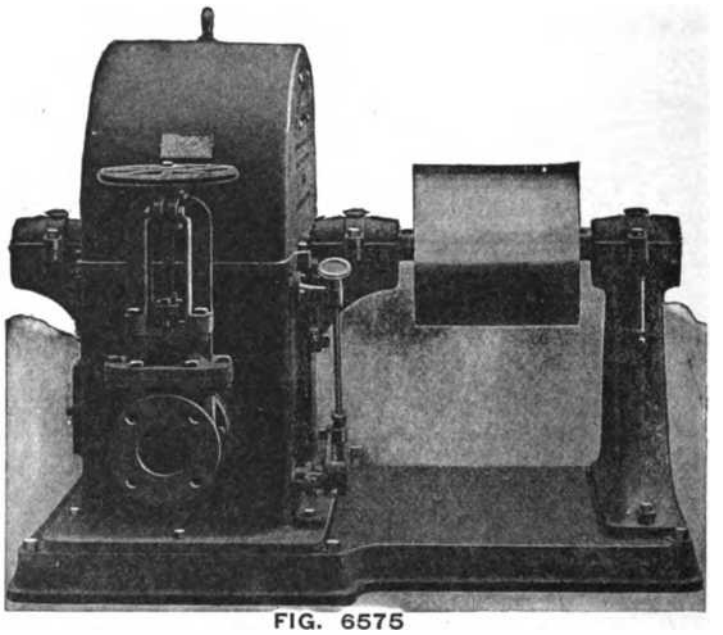


FIG. 6575

18 INCH MOTOR WITH COVER REMOVED

Showing Centrifugal Disks on Shaft, to Prevent Leakage at Bearings.

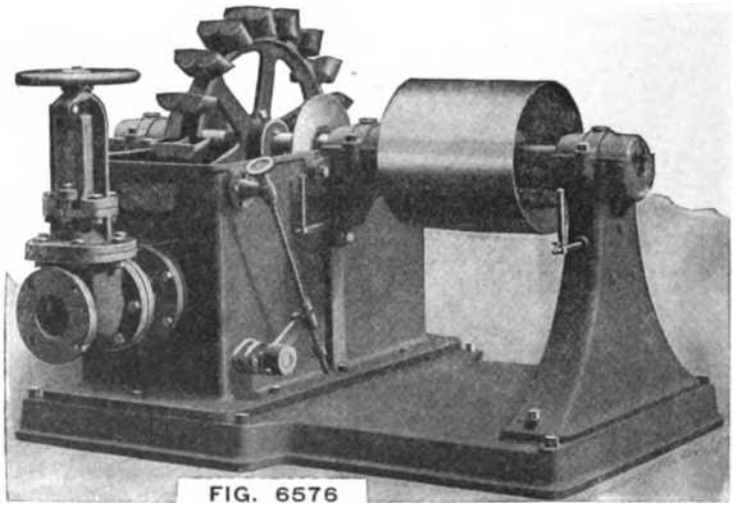


FIG. 6576

They are applicable as power to dynamos for electric lights, telephone generators, passenger and freight elevators, printing presses, wine presses, power pumps, woodworking machinery, general machine tools, exhaust fans or blowers for ventilating mines, as well as public or private buildings, ice cream freezers, churns and various dairy machines, dental lathes, carpenter shops, sugar mills, coffee and spice mills, coffee roasters, meat choppers, coffee hulling machinery, gas machines, tobacco machinery, grain mills, hay cutters, organs, sewing machines, etc.

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PELTON WATER WHEEL—IRON MOUNTED TYPE

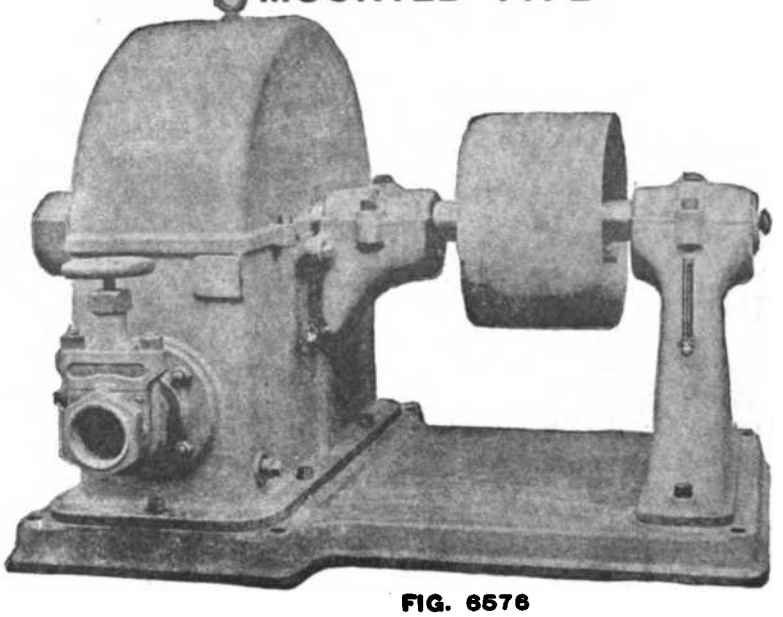


FIG. 6576

POWER AND WEIGHT, STANDARD SIZES

PRICES, FIG. 6576

Head, Feet.	3 Foot Wheel— H. P.	Each	4 Foot Wheel— H. P.	Each.	5 Foot Wheel— H. P.	Each.	6 Foot Wheel— H. P.	Each.
20	1.50	$220	2.64	$285	4.18	$350	6.00	$400
30	5.98	220	10.60	225	16.63	350	23.93	400
40	12.04	230	21.44	295	33.54	370	48.16	425
100	16.84	240	29.98	300	46.85	380	67.36	450
150	31.01	250	55.08	320	86.22	400	124.04	475
200	47.75	265	84.81	350	132.70	425	191.00	500
250	66.74	280	118.54	375	185.47	450	266.96	550
300	87.73	300	155.83	400	243.82	485	350.94	625
350	110.56	320	196.38	425	307.25	550	442.27	700
400	135.08	340	239.94	460	375.40	625	540.35	800
450	161.19	360	286.31	500	447.95	700	644.78	900
500	188.80	390	335.34	540	524.66	775	755.20	1000
550	223.76	425	397.43	600	621.82	....	895.04	....
600	248.16	450	440.77	675	689.63	....	992.65	....
700	312.73	500	555.46	750	869.06	....	1250.92	..
800	382.09	....	678.66	....	1061.81	....	1528.36	....
900	455.94	....	809.82	....	1267.02	....	1823.76	....
1000	534.01	....	948.48	....	1483.97	....	2136.04	....
	Weight, 900 to 1,200 lbs.		Weight, 1,400 to 1,800 lbs.		Weight, 1,800 to 2,400 lbs.		Weight, 2,500 to 3,000 lbs.	

DOUBLE NOZZLE WHEELS

PRICES, FIG. 6576

Head, Feet	3 Foot Wheel— H. P.	Each.	4 Foot Wheel— H. P.	Each.	5 Foot Wheel— H. P.	Each.	6 Foot Wheel— H. P.	Each.
20	3.00	$300	5.28	$375	8.36	$425	12.00	$500
30	5.52	300	9.76	375	15.38	425	22.08	500
40	8.48	310	15.16	380	23.70	435	33.92	510
50	11.96	325	21.28	385	33.26	440	47.86	520
60	15.68	340	27.88	390	43.54	450	62.72	530
70	19.76	360	35.16	400	55.02	460	79.04	550
80	24.08	380	42.88	420	67.08	475	96.32	575
100	33.68	400	59.86	450	93.70	500	134.72	600
150	62.02	440	110.16	500	172.44	575	248.08	700
200	95.50	480	169.62	575	265.40	650	382.00	800
250	133.48	525	237.08	650	370.94	758	533.92	900
300	175.46	550	311.66	690	487.64	800	701.88	960
350	221.12	575	392.76	710	614.50	860	884.54	1025
400	270.16	600	479.88	740	750.80	925	1080.70	1125
450	322.38	625	572.62	775	895.90	1000	1289.56	1225
500	377.60	650	670.68	800	1049.32	1075	1510.40	1350
	Weight, 1,300 to 1,700 lbs.		Weight, 1,700 to 25,000 lbs.		Weight, 2,600 to 3,200 lbs.		Weight, 3,400 to 4,000 lbs.	

NOTE—Prices on all special wheels quoted on application, also on wheels of larger diameter or capacity than above given.

GENERAL DESCRIPTION

The prices above are based on standard wheels, which embrace shaft, babbitted journal boxes, set collars, gate valve, standing nozzle and interchangeable nozzle tips, to give such variations of power as may be desired. Defecting nozzles, cut off hoods, and ring oiling journals are extra, and prices will be given on application. Driving pulleys for wheel shafts, as also framework, rods and bolts, are not included, but furnished when required, at reasonable prices.

The weights of the 3 foot and 4 foot wheels come within the limit for mule packing. The larger sizes of wheels for this requirement can be made in sections not exceeding 250 to 300 pounds. In such case 12 per cent. should be added to list price.

Parties having water powers that they are desirous of utilizing will be furnished with reliable information as to best means of making them available for the purpose intended. Applications of this character should give the fullest particulars as to location and all surrounding conditions.

QUINTEX NOZZLE PELTON WHEEL

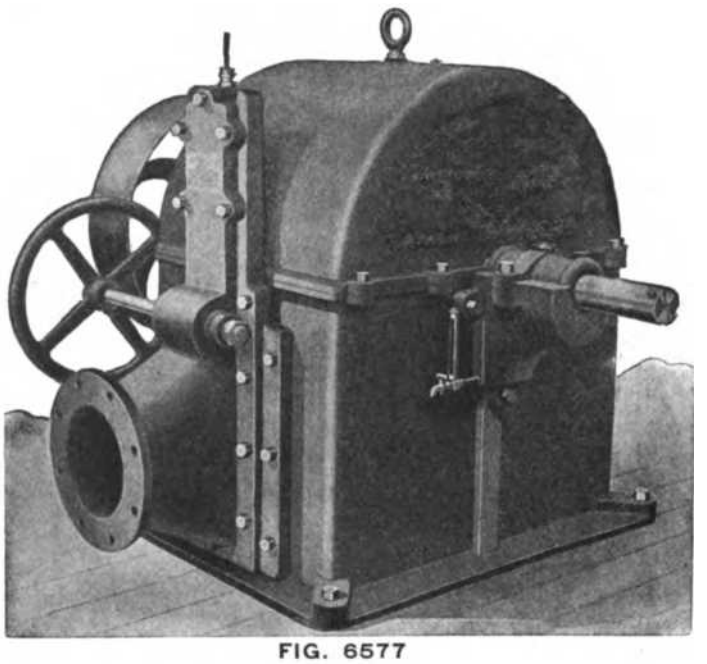


FIG. 6577

DESCRIPTION

The cut illustrates what is known as the Quintex Nozzle Pelton Wheel, which has been designed to meet the demand for a wheel to handle large quantities of water under moderately low heads. This style of nozzle has five rectangular openings, all controlled by a slide gate, by means of which any or all of the openings may be closed, thus affording a wide range of capacity and adaptation to a varying water supply, without loss of efficiency. These wheels, as will be seen from table below, can be operated under any head to which a turbine is applicable, affording the same advantages in these respects as the Standard Pelton Wheel.

The illustration shows a wheel of the iron mounted type, being enclosed in iron housing, making it entirely self-contained. This form of construction is intended more particularly for localities where woodwork is difficult to obtain or climatic conditions are unfavorable to its use. Below will be found a table giving capacity, speed and prices of the various sizes of these wheels under given heads. This type of wheel is more commonly mounted on wood frame or concrete foundations, as may be desired, and the price is based on this setting. Framework is not included, but furnished when wanted, with wheel properly fitted, then taken down and packed for shipment. For full iron cased wheel, as above described, 50 per cent. should be added to prices below.

PRICES, FIG. 6577—FOR MOUNTING ON WOOD FRAME

For Prices of Iron Mounted Type see note above.

Head, Feet.	Sizes Wheels.	24 Inches.	36 Inches.	42 Inches.	48 Inches.	24 Inches.	36 Inches.	42 Inches.	48 Inches.
10	Horse power...	1.61	3.64	6.45	10.00	$225	$325	$450	$750
	Cubic feet	107	241	428	668				
	Revolutions....	121	81	69	61				
15	Horse power ..	2.97	6.68	11.94	18.55	225	325	450	750
	Cubic feet.....	131	295	526	817				
	Revolutions....	148	99	85	74				
20	Horse power...	4.47	10.3	18.27	28.5	225	325	450	750
	Cubic feet.....	151	340	605	944				
	Revolutions....	171	114	96	85				
25	Horse power...	6.37	14.4	25.5	39.7	225	325	480	750
	Cubic feet.....	169	381	677	1052				
	Revolutions....	191	128	109	96				
30	Horse power...	8.38	18.9	33.6	52.3	225	325	480	775
	Cubic feet.....	185	417	742	1154				
	Revolutions....	210	140	119	105				
35	Horse power...	10.5	23.8	42.2	65.7	225	350	480	775
	Cubic feet.....	200	451	800	1246				
	Revolutions....	226	151	129	113				
40	Horse power...	12.9	29.1	51.7	80.4	225	350	480	775
	Cubic feet.....	214	482	857	331				
	Revolutions....	242	161	138	121				
45	Horse power...	15.4	34.7	61.7	96.00	225	350	500	775
	Cubic feet.....	227	511	908	1412				
	Revolutions....	257	171	147	129				
50	Horse power...	18.00	40.7	72.4	112.5	225	350	500	775
	Cubic feet.....	239	538	958	1492				
	Revolutions....	271	180	155	135				
55	Horse power...	20.8	46.9	83.5	129.6	240	350	500	825
	Cubic feet.....	251	565	1005	1562				
	Revolutions....	284	189	162	142				
60	Horse power...	23.7	53.4	94.9	147.8	240	375	500	825
	Cubic feet.....	262	590	1048	1632				
	Revolutions....	296	197	169	148				
65	Horse power...	26.7	60.3	107.00	166.5	240	375	525	825
	Cubic feet.....	273	614	1092	1698				
	Revolutions....	309	206	176	154				
70	Horse power...	29.9	67.3	119.6	186.5	240	375	525	875
	Cubic feet.....	293	637	1132	1764				
	Revolutions....	320	213	183	160				
75	Horse power...	33.2	74.6	132.7	206.5	240	375	525	875
	Cubic feet.....	293	660	1172	1825				
	Revolutions....	332	221	189	166				
80	Horse power...	36.6	82.2	146.4	228.00	250	375	525	875
	Cubic feet.....	303	682	1213	1886				
	Revolutions....	342	228	196	171				
85	Horse power...	40.00	90.2	160.00	249.00	250	400	550	975
	Cubic feet.....	312	702	1248	1943				
	Revolutions....	351	235	202	177				
90	Horse power...	43.5	98.00	174.8	271.8	250	400	550	975
	Cubic feet.....	321	722	1285	1997				
	Revolutions....	363	242	208	182				
95	Horse power...	47.4	106.4	189.5	294.7	250	400	550	975
	Cubic feet.....	330	742	1320	2054				
	Revolutions....	373	249	213	186				
100	Horse power...	51.2	114.9	204.4	318.1	250	400	550	975
	Cubic feet.....	339	762	1354	2107				
	Revolutions....	383	255	219	192				
						Weight, 1000-1400 lbs.	Weight, 1600-2500 lbs.	Weight, 3000-4000 lbs.	Weight, 5000-6000 lbs.

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LEFFEL WATER WHEELS AND CASING

NEW RELIABLE SPECIAL

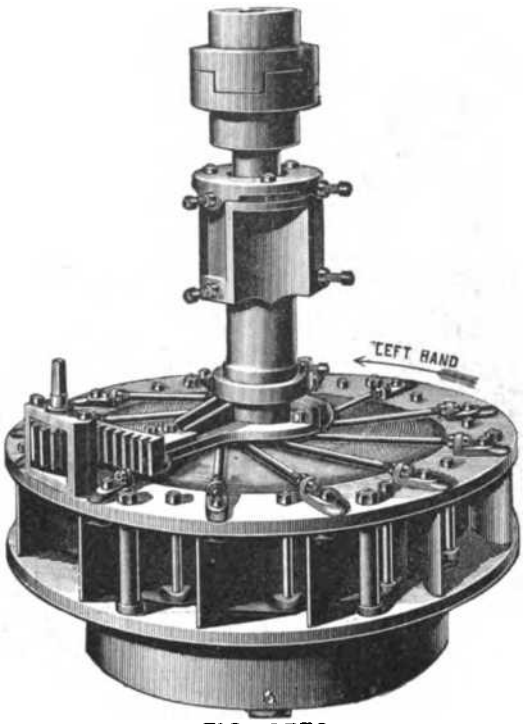


FIG. 6579

The power estimated upon an 80 per cent. of efficiency in the use of water, and the power represented at the wheel shaft. More or less power may be lost or absorbed in the transmitting machinery between the wheel and the work done, and there should always be due allowance made for such loss.

WATER WHEEL GOVERNORS

The irregular and intermittent powers of many kinds of work often require mechanical regulation. These wheels have the greatest uniformity of speed, by applying governors of the best type and highest efficiency. This uniform motion is easily obtained on the Leffel wheel, because of its nicely balanced gate and its high efficiency in the use of water, whether it is run at full open gate or part gate. Electric light and power machinery demands a finer regulation than any other kind of work; and these wheels and governors have proven their entire success, under the exacting requirements of this character of labor. We frequently supply governors, however, for various other kinds of work, and always obtain the most desirable results. Prices and full particulars on application.

IRON FLUME FOR TURBINE FIG. 6582

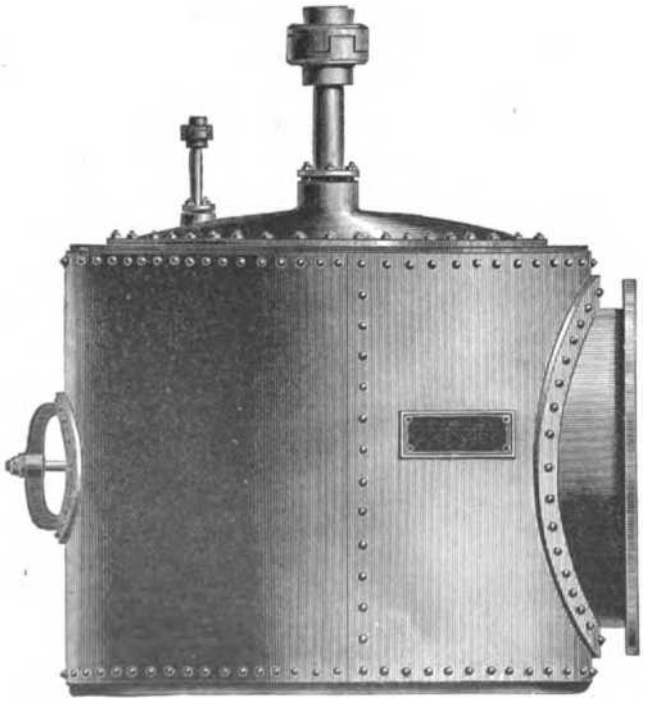


FIG. 6583

GLOBE CASING

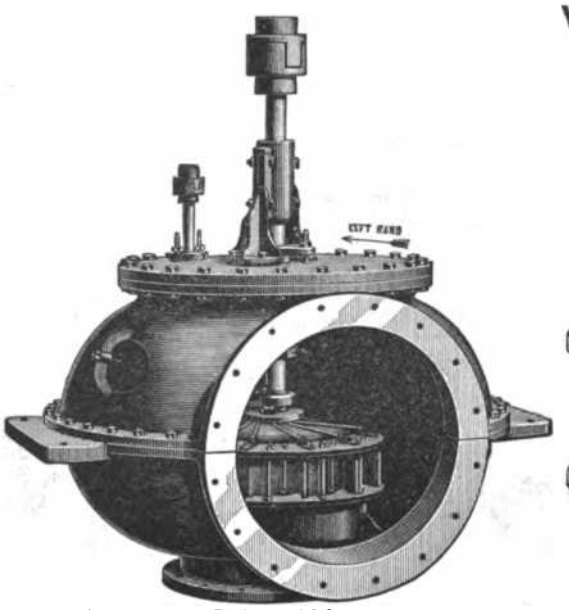


FIG. 6580

The Globe Casing is frequently used for the small sizes of wheels. This form of casing secures the greatest strength, the largest space for water, and occupies the least floor space. Any length of pipe may be attached to this globe. The top cover may be removed, and the wheel lifted from the casing, if necessary. The shaft and gate rod passes through stuffing boxes, preventing any leakage of water. Prices and full particulars on application.

SAMSON TURBINE WATER WHEEL

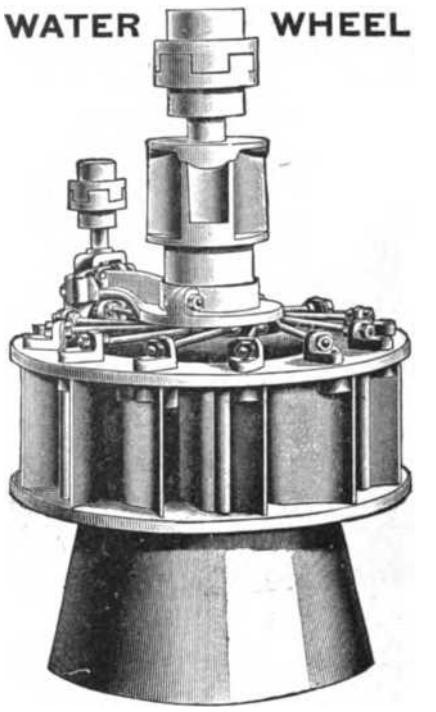


FIG. 6581

The Samson Wheel affords a wonderful amount of power, concentrated within an exceedingly small space, and a very high velocity. The new design affords a remarkably high economy of water and steadiness of motion under variable gateage. These points of high merit have been carefully ascertained at great expense, by scientific and experimental tests, as well as by practice, with a very large number in operation. Prices and full particulars on application.

SUCCESS TURBINE

DESCRIPTION, FIG. 6582

Where low head makes it impossible to use Impulse Wheels we recommend the Success Turbine. The cut shows exactly what is included in Turbine price list, being complete wheel ready for placing in iron, wooden, or masonry flume.

DESCRIPTION, FIG. 6583

The price of iron flumes usually exceeds the cost of building wooden ones, but for many locations iron flumes are preferable on account of their durability and freedom from leakage.

Engraving shown herewith represents iron flume as used for wheels of all sizes, excepting that the cast iron flange on inlet is only used on flumes for wheels 21 inches and smaller. Flumes for larger size wheels have wrought iron inlets with ends punched for connecting additional pipe.

Each flume has heavy cast iron top and bottom and steel sides, and is provided with a movable lid and packing boxes for wheel and gate shafts. A large size man door is attached so that access can be had to the wheel on inside of flume. Prices given do not include draft tube or inlet pipe, prices of which will be quoted on application.

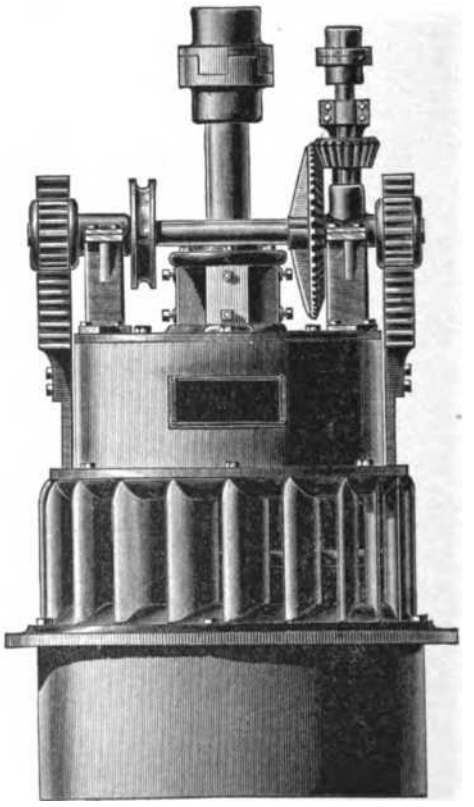


FIG. 6582

PRICES, FIGS. 6582 AND 6583

To be used under head of 30 feet or less. Prices on steel or bronze wheels for higher heads furnished on application.

Diameters of wheel, inches...	9	12	15	18	21	24	27	30	33	36	39	42
Horse power*.....	1.5	2.7	4.3	6.8	8.9	11.7	14.8	17.8	21.7	25.1	29.4	36.2
	34.8	60.7	96.8	141.6	200.3	264.5	335.0	403.6	493.7	566.9	666.3	818.1
Wheels.....	$175	225	275	325	375	450	525	600	700	800	950	1100
Flumes.....	185	210	265	300	325	435	525	575	700	800	875	1000
Weight of flumes, pounds....	1650	2000	2400	2800	3200	4500	5500	6400	7400	8500	10,000	12,000

*Power given in above table is the minimum and maximum power of each wheel under head of 5 feet and 40 feet. Power under intermediary heads can be calculated proportionally.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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WASHER CUTTERS

ADJUSTABLE ARM

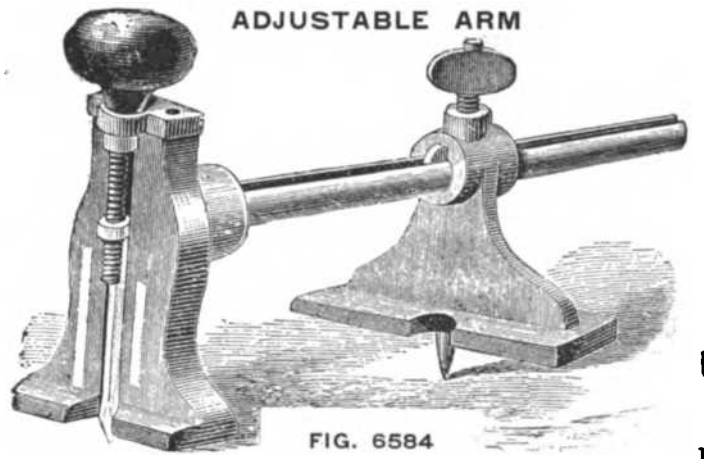


FIG. 6584

Price, each.....$12 00

EAGLE CUTTER

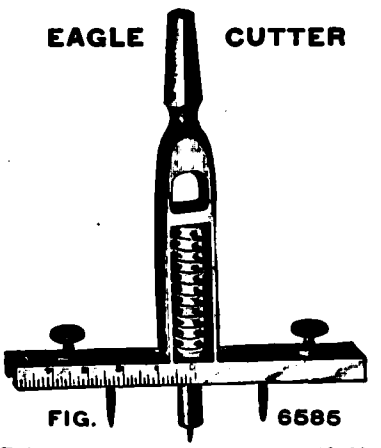


FIG. 6585

Price, per dozen, polished...$12 00
" " nickel plated 18 00
Extra Knives, per dozen pairs 2 00
Extra Knives, per dozen pairs, nickel plated..... 3 00

DOUBLE

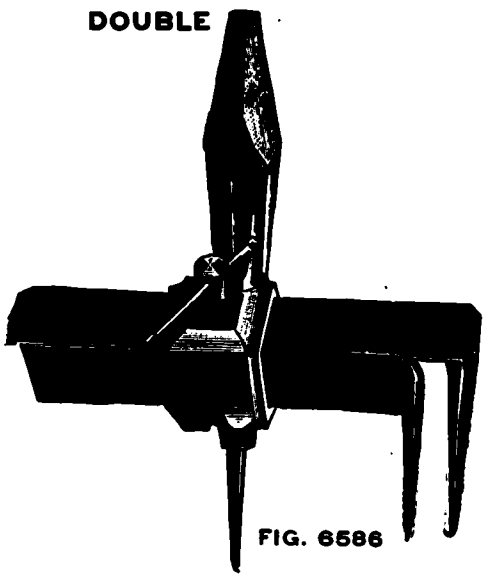


FIG. 6586

The Cutters of this tool are made of the best steel, and fastened with one screw only.

Nos.		Per Dozen.
31	Large, will cut washers to 8 in. diam..	$14 00
31	Usual, " " " " 6 " ..	11 00

Half dozen in a box.

DOUBLE

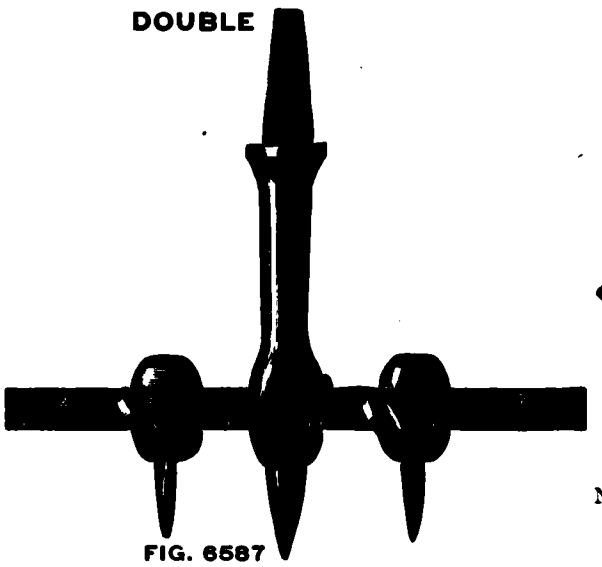


FIG. 6587

Price, per dozen.....$23 00

COOPER'S CUTTER

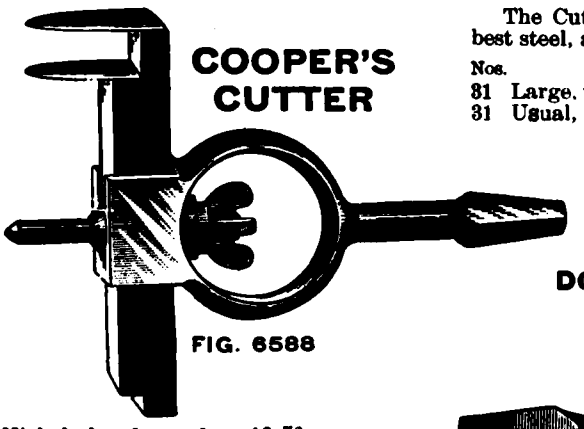


FIG. 6588

Nickel plated, per doz..$8 50

DOUBLE CUTTER

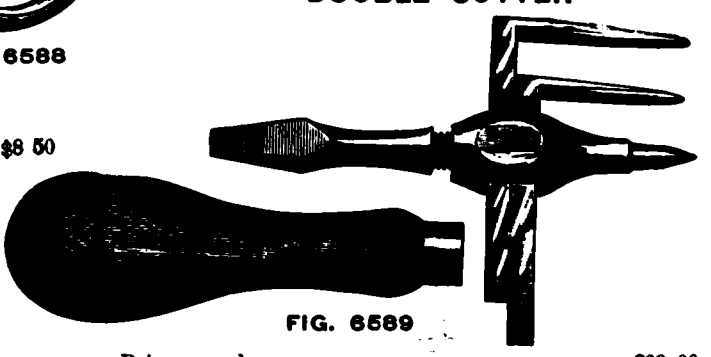


FIG. 6589

Price, per dozen.....$23 00

DOUBLE CUTTER

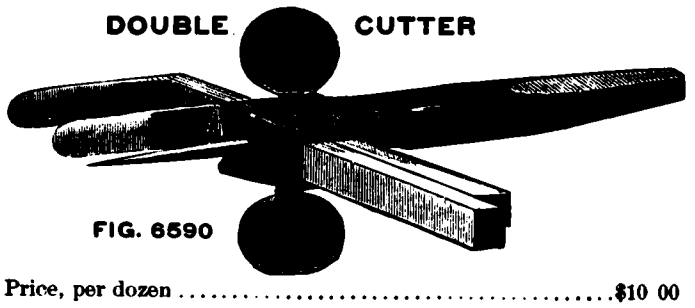


FIG. 6590

Price, per dozen.....$10 00

UNIVERSAL CUTTER

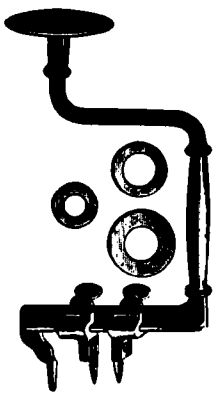


FIG. 6591

It consists of a brace provided with a center point and two sliding cutter heads. It cuts out circles of wood, leather, rubber, etc., up to 8½ inches diameter. The blades are removable, and a single blade can be used to cut out circular holes. The blades are of fine tool steel, and the brace of malleable iron.

DOUBLE CUTTER

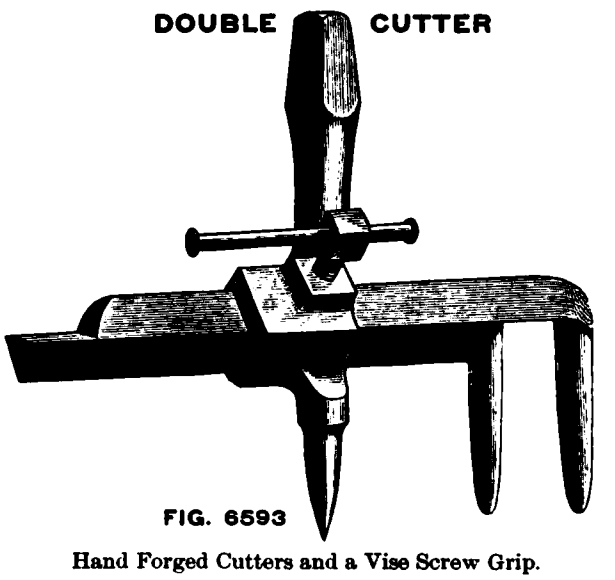


FIG. 6593

Hand Forged Cutters and a Vise Screw Grip.

Price, per dozen.....$14 00

DOUBLE CUTTER

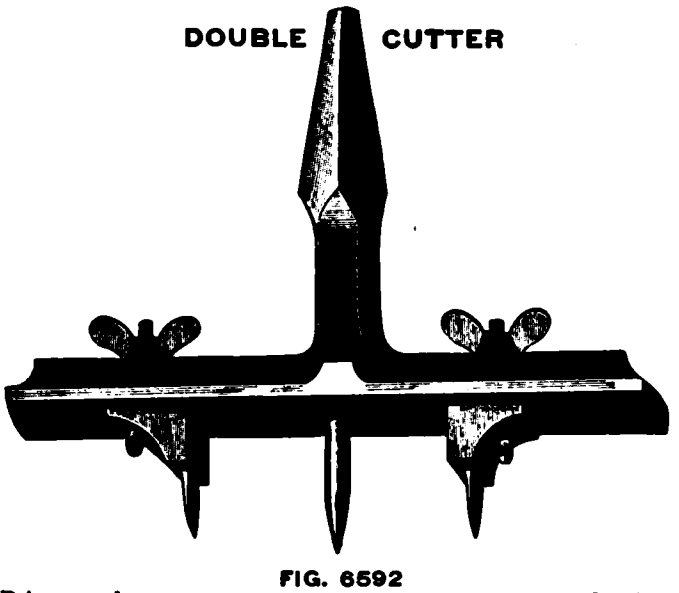


FIG. 6592

Price, per dozen.....$15 00

PRICE, FIG. 6591

Size, inches	10¼ x 4⅞
Weight, pounds	1¼
Each	$1 00

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OAK TANNED LEATHER BELTING

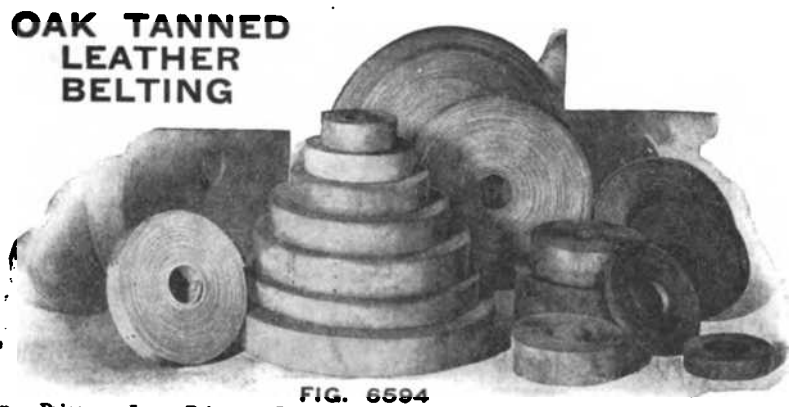


FIG. 6594

In.	Prices.	In.	Prices.	In.	Prices.	In.	Prices.	In.	Prices.
½	$0 08	3	$0 58	9	$1 67	20	$3 70	34	$6 29
⅝	10	3¼	58	10	1 85	21	3 89	36	6 66
¾	12	3½	63	11	2 04	22	4 07	40	7 40
⅞	13	3¾	67	12	2 22	23	4 26	44	8 14
1	14	4	72	13	2 41	24	4 44	48	8 88
1¼	19	4½	82	14	2 59	25	4 63	52	9 62
1½	24	5	91	15	2 78	26	4 81	56	10 36
1¾	29	5½	1 01	16	2 96	27	5 00	60	11 10
2	34	6	1 11	17	3 15	28	5 18	64	11 84
2¼	39	6½	1 20	18	3 33	30	5 55	68	12 58
2½	43	7	1 30	19	3 52	32	5 92	72	13 32
2¾	48	8	1 48						

The prices shown are for running feet of single belting in the width stated: double belting is twice the price of single. Unlisted sizes take the price of the nearest higher listed size. In orders for quarter turn belts, express mention should be made of such use, and in general it is advantageous to state for what purpose the belt is to be used.

COTTON BELTS

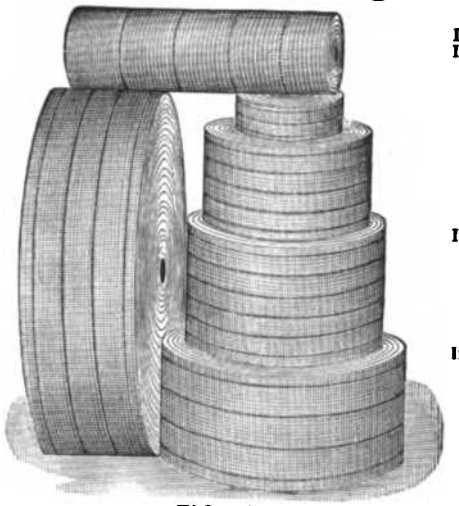


FIG. 6598

PRICES, FIG. 6596

RAW HIDE ROPE.

Diams., Inches.	Per Foot.
¼	$0 18
5/16	21
⅜	24
7/16	27
½	30
9/16	36
¾	46
7/8	60
1	72

SOLID ROUND.

Inches.	
¼	$0 07
5/16	09
⅜	14
7/16	18
½	24

TWIST.

Inches.	
¼	$0 08
5/16	12
⅜	17
7/16	22
½	27
9/16	38
⅝	48
¾	60
⅞	80
1	96

JOINT LEATHER LINK BELTING



FIG. 6597

Per Running Foot.

Width of Belt, Inches per Ft.	Factory Sizes, 7/16 In.	Factory Sizes, 9/16 In.	Dynamo Sizes, 11/16 In.	For Extra Heavy Work, ⅞ In. Thick.	For Extra Heavy Work, 1 In. Thick.
1	$0 20	$0 20	$0 25	$0 30	$0 35
1½	30	30	38	45	52
2	40	40	50	60	70
2½	50	50	63	75	87
3	60	60	75	90	1 05
3½	70	70	88	1 05	1 22
4	80	80	1 00	1 20	1 40
4½		90	1 13	1 35	1 57
5		1 00	1 25	1 50	1 75
5½		1 10	1 38	1 65	1 92
6		1 20	1 50	1 80	2 10
7		1 40	1 75	2 10	2 45
8		1 60	2 00	2 40	2 80
9			2 25	2 70	3 15
10			2 50	3 00	3 50
11			2 75	3 30	3 85
12			3 00	3 60	4 20
13			3 25	3 90	4 55
14			3 50	4 20	4 90
15			3 75	4 50	5 25
16			4 00	4 80	5 60
18			4 50	5 40	6 30
20			5 01	6 00	7 00
22			5 50	6 60	7 70
24			6 00	7 20	8 40
26			6 50	7 80	9 10
30			7 50	9 00	10 50
36			9 00	10 80	12 60

Wider sizes should be made of thicker links.

Wider sizes should be made of thicker links.

Can be made absolutely waterproof without extra charge

ROUND BELTING

WIRE SCREWED SOLID ROUND

This solid round leather belt is made from several pieces of leather cemented together, and then fastened with copper wire screws, which are forced into the leather, which makes the belt firm and solid.

PRICES, FIG. 6595

7/16	in.	diam.,	per	foot	$0 23	1¼	in.	diam.,	per	foot	$1 00
½	"	"	"	"	25	1½	"	"	"	"	1 35
⅝	"	"	"	"	36	1¾	"	"	"	"	1 75
¾	"	"	"	"	46	2	"	"	"	"	2 15
⅞	"	"	"	"	60	2¼	"	"	"	"	2 55
1	"	"	"	"	72	2½	"	"	"	"	2 95
1⅛	"	"	"	"	85						



FIG. 6595

TWIST LEATHER BELTING

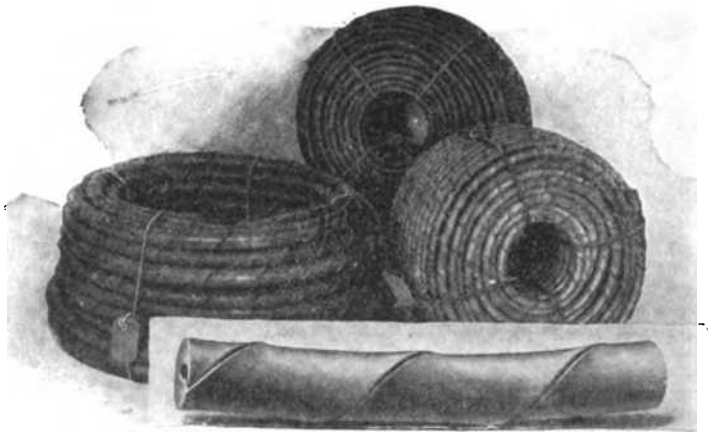


FIG. 6596

COTTON LEATHER BELTING

PRICES, SINGLE COTTON LEATHER BELTING

Inches.		Inches.		Inches.		Inches.		Inches.		Inches.	
1	$0 14	3	$0 53	7	$1 30	13	$2 41	19	$3 52	25	$4 63
1¼	19	3½	63	8	1 48	14	2 59	20	3 70	26	4 81
1½	24	4	72	9	1 67	15	2 78	21	3 89	28	5 18
1¾	29	4½	82	10	1 85	16	2 96	22	4 07		
2	34	5	91	11	2 04	17	3 15	23	4 26		
2½	43	6	1 11	12	2 22	18	3 33	24	4 44		

Intermediate widths at proportionate prices. Double and Special Dynamo belting twice the above prices.

PRICES OF SOLID ROUND BELTING

Inch.		Inch.		Inch.		Inch.	
5/16	$0 14	7/16	$0 23	⅝	$0 36	⅞	$0 60
⅜	20	½	25	¾	46	1	72

PRICES OF TWISTED ROUND BELTING

Inch.		Inch.		Inch.		Inch.		Inch.	
⅜	$0 06	¼	$0 14	⅝	$0 22	⅝	$0 36	⅞	$0 60
5/16	10	5/16	18	½	30	¾	40	1	72

PRICES OF WATCH TWIST BELTING

Inch.		Inch.		Inch.		Inch.		Inch.		Inch.	
5/32	$0 04	⅛	$0 06	5/32	$0 08	5/16	$0 10	7/32	$0 12	¼	$0 14

LIST PRICES ON COTTON BELTING

TWO PLY

In.		In.		In.		In.		In.		In.		In.		In.	
1	$0 04	1½	$0 05	2	$0 06	2½	$0 06½	3	$0 07	3½	$0 08	4	$0 09	5	$0 13	6	$0 17

THREE PLY

In.		In.		In.		In.		In.		In.		In.		In.	
1½	$0 06	3½	$0 14	5½	$0 22	8	$0 31	14	$0 60	4	$0 21	7	$0 34	12	$0 60	18	$1 00
2	08	4	15	6	28	9	35	16	72	4½	24	8	38	14	75	20	1 15
2½	10	4½	17	6½	26	10	39	18	82	5	26	9	44	16	90	22	1 35
3	12	5	19	7	27	12	48	20	90	6	30	10	50				

FIVE PLY

In.		In.		In.		In.		In.		In.		In.	
4	$0 34	6	$0 42	9	$0 56	14	$0 94	20	$1 44	6	$0 46	9	$0 66
4½	36	7	45	10	63	16	1 12	22	1 62	7	51	10	75
5	38	8	50	12	75	18	1 28	24	1 80	8	57	12	90
5½	40												

SIX PLY

In.		In.		In.		In.	
6	$0 46	9	$0 66	14	$1 12	20	$1 72
7	51	10	75	16	1 35	22	1 94
8	57	12	90	18	1 50	24	2 16

Prices per foot. Any width to order.

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CANVAS BELTS

Inches.	4 Ply, per Foot.	6 Ply, per Foot.	8 Ply, per Foot.	Inches.	4 Ply, per Foot.	6 Ply, per Foot.	8 Ply, per Foot.	10 Ply, per Foot.
1	$0 09	....	....	10	$0 90	$1 20	$1 50	$2 00
1¼	11	....	....	11	99	1 32	1 65	2 20
1½	14	....	....	12	1 08	1 44	1 80	2 40
1¾	16	....	....	14	1 26	1 68	2 10	2 80
2	18	....	....	15	1 35	1 80	2 25	3 00
2¼	20	....	....	16	1 44	1 92	2 40	3 20
2½	23	....	....	18	....	2 16	2 70	3 60
3	27	$0 36	....	20	....	2 40	3 00	4 00
3½	32	42	....	22	....	2 64	3 30	4 40
4	36	48	...	24	....	2 88	3 60	4 80
4½	41	54	....	26	....	....	3 90	5 20
5	45	60	....	28	....	....	4 20	5 60
5½	50	66	....	30	...	....	4 50	6 00
6	54	72	$0 90	32	....	....	4 80	6 40
7	63	84	1 05	34	....	....	5 10	6 80
8	72	96	1 20	36	....	....	5 40	7 20
9	81	1 08	1 35					

Three feet extra charged for splice on endless belts

IMPROVED STITCHED

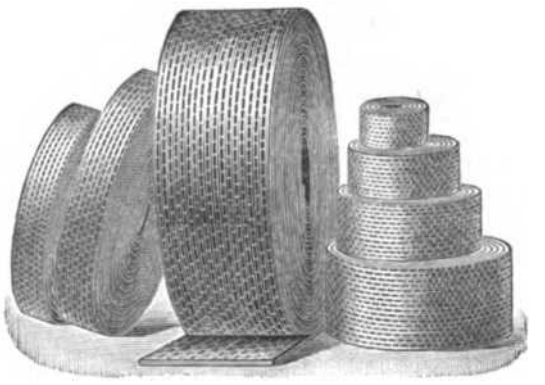


FIG. 6599

LEVIATHAN BELTING

Belts made any width, from 1 to 100 inches. Endless belts, 3 feet extra. Stock sizes marked *.



FIG. 6600

This belting is made of specially constructed extra heavy duck, stitched and saturated with a preparation that renders it compact and waterproof and produces an elastic surface, which, besides improving its driving power, protects the canvas. There are no joints or cemented parts to peel or separate, and no rubber to wear off and weaken it. Oil will not injure it.

4 Ply, Equal to Single Leather. Inches.	per Ft.	6 Ply, Equal to Light Double Leath'r. Inches.	per Ft.	8 Ply, Equal to Heavy Double Leath'r. Inches.	per Ft.	10 Ply. Inches.	per Ft.
* 1¼	$0 11	* 2	$0 25	* 4	$0 57	8	$1 47½
* 1½	13	* 2½	28½	* 5	71	10	1 84½
* 1¾	15	* 3	34	* 6	85	11	2 03
* 2	17	* 3½	40	* 7	99½	12	2 21
* 2¼	19½	* 4	45½	* 8	1 13½	14	2 58
* 2½	21½	* 4½	51	* 9	1 27½	15	2 76½
* 2¾	23½	* 5	57	*10	1 42	16	2 95
* 3	25½	* 6	68	*11	1 56	17	3 13½
* 3½	30	* 7	79½	*12	1 70	18	3 31½
* 4	34	* 8	91	*13	1 84½	20	3 68½
* 4½	38½	* 9	1 02	*14	1 98½	22	4 05½
* 5	42½	*10	1 13½	*15	2 12½	24	4 42
* 5½	47	*11	1 25	*16	2 27	26	4 79½
* 6	51	*12	1 36	17	2 41	28	5 16
* 7	59½	*13	1 47½	*18	2 55	30	5 52½
* 8	68	*14	1 59	19	2 69½	32	5 89½
* 9	76½	*15	1 70	*20	2 83½	34	6 26½
*10	85	*16	1 81½	*22	3 12	36	6 63
*11	93½	*17	1 92½	*24	3 40	40	7 37
*12	1 02	*18	2 04	26	3 68½	42	7 73½
*13	1 10½	*20	2 27	30	4 25	44	8 10½
*14	1 19	*24	2 72	36	5 10	48	8 84

RAWHIDE BELTING

PRICES, PER RUNNING FOOT



FIG. 6602

½	in.	$0 08	¾	in.	$0 67	15	in.	$2 78	32	in.	$5 92
⅝	"	10	4	"	72	16	"	2 96	34	"	6 29
¾	"	12	4½	"	82	17	"	3 15	36	"	6 66
⅞	"	13	5	"	91	18	"	3 33	40	"	7 40
1	"	14	5½	"	1 01	19	"	3 52	44	"	8 14
1¼	"	19	6	"	1 11	20	"	3 70	48	"	8 88
1½	"	24	6½	"	1 20	21	"	3 89	52	"	9 62
1¾	"	29	7	"	1 30	22	"	4 07	56	"	10 36
2	"	34	8	"	1 48	23	"	4 26	60	"	11 10
2¼	"	39	9	"	1 67	24	"	4 44	64	"	11 84
2½	"	43	10	"	1 85	25	"	4 63	68	"	12 58
2¾	"	48	11	"	2 04	26	"	4 81	72	"	13 32
3	"	53	12	"	2 22	27	"	5 00	.....		.....
3¼	"	58	13	"	2 41	28	"	5 18	.....		.....
3½	"	63	14	"	2 59	30	"	5 55	.....		.....

Double Belting. Double List.

GIANT RUBBER BELTING

Seamless and Stitched.



FIG. 6603

The plies are strongly stitched and frictioned together, and can not separate. It runs perfectly true on the pulleys. Either side can be run next to the pulley, both being perfectly smooth. The cover, being seamless, can not break or crack. Prices same as regular rubber belting above.

ENDLESS SILK SEWED STRAPPING BELT

These belts are 4 ply and made from the best quality of duck, sewed with silk, lapped seams. They run very smoothly and cut quickly.



FIG. 6604

PRICES, PER RUNNING FOOT

4 ply, 1	inch wide.	$0 10	4 ply, 3	in. wide.	$0 20		
4 " 1½	" .	15	4 " 3½	" .	25		
4 " 2	" .	15	4 " 4	" .	25		
4 " 2½	" .	20					

When wanted in 3 ply the prices are the same. In ordering belts, give complete length over both pulleys and allow from 4 to 6 inches for stretching.

RUBBER BELTING

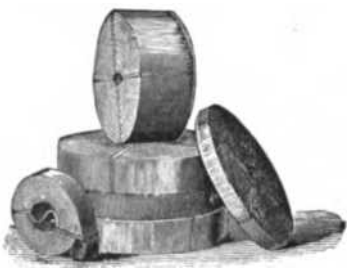


FIG. 6601

Regular List. All Brands.

Inches.	2 Ply.	3 Ply.	4 Ply.	5 Ply.	6 Ply.	7 Ply.	8 Ply.
1	$0 07	$0 09	$0 11	....	....	....	....
1¼	09	11	13	....	....	....	....
1½	11	13	15	$0 19	...	....	....
1¾	13	15	17	21	....	....	....
2	15	17	21	26	$0 31	....	....
2½	18	22	26	32	39	...	....
3	22	26	31	38	46	....	....
3½	26	30	37	46	55	....	....
4	30	34	42	52	63	$0 73	....
4½	33	39	47	58	70	82	....
5	36	43	52	65	78	91	....
6	43	52	62	77	93	1 08	$1 24
7	51	60	73	91	1 09	1 27	1 46
8	59	70	84	1 05	1 26	1 47	1 68
9	67	80	95	1 18	1 42	1 66	1 90
10	75	90	1 07	1 33	1 60	1 87	2 14
11	83	1 00	1 18	1 47	1 77	2 06	2 36
12	91	1 08	1 30	1 62	1 95	2 27	2 60
13	1 00	1 18	1 42	1 77	2 13	2 48	2 84
14	1 08	1 28	1 54	1 92	2 31	2 69	3 08
15	1 16	1 38	1 66	2 07	2 49	2 90	3 32
16	1 25	1 50	1 78	2 22	2 67	3 11	3 56
18	1 41	1 70	2 02	2 52	3 03	3 53	4 04
20	1 58	1 90	2 26	2 82	3 39	3 95	4 52
22	1 76	2 12	2 52	3 15	3 78	4 41	5 04
24	1 96	2 36	2 80	3 50	4 20	4 90	5 60
26	2 16	2 60	3 08	3 85	4 62	5 39	6 16
28	2 36	2 84	3 36	4 20	5 04	5 88	6 72
30	...	....	3 64	4 55	5 46	6 37	7 28
32	....	....	3 92	4 90	5 88	6 86	7 84
34	....	...	4 20	5 25	6 30	7 35	8 40
36	...	....	4 48	5 60	6 72	7 84	8 96
38	....	....	4 76	5 95	7 14	8 33	9 52
40	....	....	5 04	6 30	7 56	8 82	10 08
42	....	....	5 32	6 65	7 98	9 31	10 64
44	....	....	5 60	7 00	8 40	9 80	11 20
46	....	...	5 88	7 35	8 82	10 29	11 76
48	....	....	6 16	7 70	9 24	10 78	12 32
50	....	....	6 44	8 05	9 66	11 27	12 88
52	....	....	6 72	8 40	10 08	11 76	13 44
54	....	....	7 00	8 75	10 50	12 25	14 00
56	....	....	7 28	9 10	10 92	12 74	14 56
58	....	....	7 56	9 45	11 34	13 23	15 12
60	....	....	7 84	9 80	11 76	13 72	15 68

Endless belts 3 feet extra.

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TIPPED LACING



FIG. 6605

Lengths of Lace.	Width of Lace.	Price, per Gross.	Will Lace the Below Widths of Belts.	No. of Holes in Belt, Laced D'ble.
12 in.	¼ in.	$1 10	1 in.	2
15 "	¼ "	1 50	1¼ and 1½ "	2
18 "	¼ "	1 75	1¾ "	2
20 "	¼ "	2 00	2 and 2¼ "	2
2 ft.	5/16 "	2 50	2½ "	3
2½ "	5/16 "	4 00	2¾ "	3
3 "	5/16 "	5 50	3 and 3½ "	4
3½ "	5/16 "	7 00	4 and 4½ "	5
4 "	⅜ "	9 00	5 and 5½ "	5
4½ "	⅜ "	11 50	6 "	6
5 "	7/16 "	14 00	7 and 8 "	6
5½ "	7/16 "	16 50	9 and 10 "	7
6 "	½ "	20 00	For Main Belts.	
6 "	¾ "	25 00	"	
6½ "	⅝ "	25 00	"	
7 "	¾ "	33 00	"	

15, 18, 20 and 24 inch Strings are without tips, unless otherwise ordered.

TRACTION BELT DRESSING
AND LEATHER PRESERVATIVE



FIG. 6607

PRICES, FIG. 6607

Trade Nos.		Per Lb.
665 —	10 lb. Tin Pails (6 in case)	$0 30
666 —	25 " " (1 ")	25
667 —	50 " Kegs	22
668 —	100 " "	20
669	200 " ½ Barrels / 350 to 400 lb. Barrels	18

LEATHER BELT CEMENT

Electric, 1 pound Cans, 70 cents per pound.

CRESCENT BELT COUPLINGS



FIG. 6610

PRICES, FIG. 6610

Sizes, Outside Diams.	Per Doz.	Sizes, Outside Diams.	Per Doz.
¼	$2 00	⅝	$6 00
5/16	2 50	¾	9 00
⅜	3 00	⅞	13 00
7/16	3 50	1	18 00
½	4 00		

LACE LEATHER CUTTER



FIG. 6611

No. 1. Cuts 3/16 to ¾ inch wide. Each, 60 cents.

RAWHIDE LACING



FIG. 6606

¼ inch	$1 00 per 100 feet
⅜ "	1 50 " " "
½ "	2 00 " " "
⅝ "	2 75 " " "
¾ "	3 25 " " "

LACE LEATHER

Tanned Lace Leather. Price per square foot	$0 25
Rawhide Lace Leather. " " " "	30

SOLID BELT DRESSING
PREVENTS SLIPPING, INCREASES POWER



FIG. 6608

Made especially for those who prefer a solid dressing to the soft or paste dressing. Is put up in one pound bars in paper boxes. Twenty-five one pound bars in a case.

Price per case, $6.00.

BELT OIL

Neat's Foot. Price per gallon ..... $....

MORAN'S STEEL BELT COUPLINGS
FOR ROUND BANDS OF EVERY DESCRIPTION



FIG. 6609

Sizes, Outside Diams.	Per Dozen.	Sizes, Outside Diams.	Per Dozen.
⅛	$3 00	½	$4 00
5/32	3 00	9/16	5 00
3/16	2 50	⅝	6 00
7/32	2 50	11/16	7 50
¼	2 00	¾	9 00
9/32	2 50	⅞	13 00
5/16	2 50	1	18 00
11/32	3 00	1⅛	22 00
⅜	3 00	1¼	26 00
7/16	3 50		

FOUR IN ONE BELT TOOL

DESCRIPTION AND PRICE

FIG. 6612

With this tool you can punch holes in any size or thickness of belting without a hammer or block, simply turning the tool. This is of the greatest convenience to use on overhead belts. It will punch almost any size hole. It is a lace cutter, adjustable to cut any size string, while the awl will enable one to unlace a belt easily and quickly. This tool is 5 inches long and weighs 5½ ounces. An extra punch is furnished with each tool.

Each, $1.00.



FIG. 6612

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ADJUSTABLE BELT PLANE



FIG. 6613

This tool is used by belt makers for chamfering down the laps of a belt before fastening them together. It is equally well adapted to use in repairing belts in all manufacturing establishments.

No. 11. 2⅜ in. cutter; each... $3 00

ARCH HANDLE PUNCH

PRICES, FIG. 6614

ROUND PUNCHES. Sizes Hole, Inches.	Each.	ARCH HANDLE. Sizes Hole, Inches.	Each.
½	$1 75	2	$5 00
⅝	1 90	2⅛	5 25
¾ and ⅞	2 25	2¼	5 50
1 " 1⅛	2 50	2⅜	5 50
1¼	2 75	2½ and 2⅝	6 00
1⅜	3 00	2¾	7 00
1½	3 25	2⅞	7 50
1⅝	3 75	3	8 00
1¾ and 1⅞	4 50		

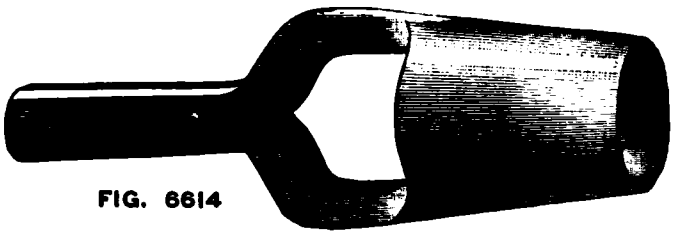


FIG. 6614

LARGE DRIVE PUNCH

PRICES, FIG. 6615

ROUND PUNCHES—LARGE.

Sizes Hole, Inches.	Each.	Sizes. Hole, Inches.	Each.
⅝	$1 15	1⅜	2 25
¾	1 25	1½	2 50
⅞	1 35	1⅝	3 00
1	1 50	1¾	3 50
1⅛	1 75	1⅞	4 00
1¼	2 00	2	4 25

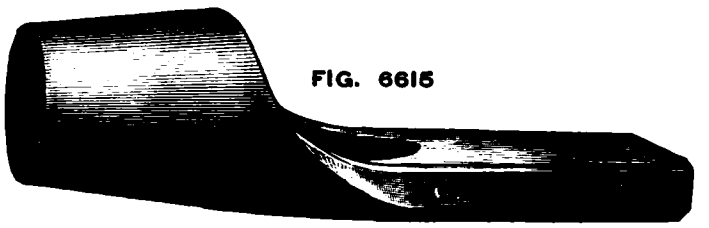


FIG. 6615

ROUND DRIVE PUNCH



FIG. 6617

PRICES

	Per Dozen.
No. 00, 0	$4 00
" 1, 2, 3, 4, 5	2 00
" 6, 7, 8, 9	2 25
" 10, 11, 12	2 50
" 13, 14, 15, 16	6 00

ROUND SOCKET PUNCH

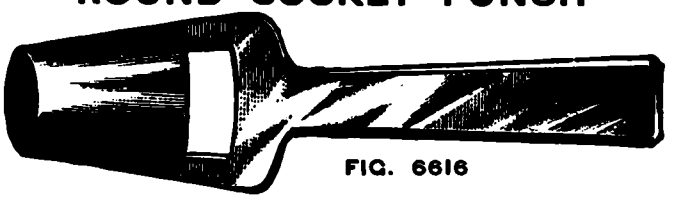


FIG. 6616

PRICES

Inches.	Per Dozen.	Inches.	Each.
7/16 and ½	$10 00	1⅝	$2 75
9/16 " ⅝	11 00	1¾	3 50
11/16 " ¾	12 00	1⅞	3 75
13/16 " ⅞	13 00	2	4 00
15/16 " 1	14 00	2⅛	4 25
1⅛ " 1¼	25 00	2¼	4 75
1⅜ " 1½	32 00	2⅜	5 25
.....	....	2½	6 00
.....	....	2¾	7 50
.....	....	3	9 00

OVAL DRIVE PUNCH



FIG. 6618

PRICES

	Per Dozen.
Nos. 1, 2, 3, 4, 5	$4 00
" 6, 7, 8, 9	4 50
" 10, 11, 12	5 00
" 13, 14, 15, 16	12 00

REVOLVING BELT PUNCH

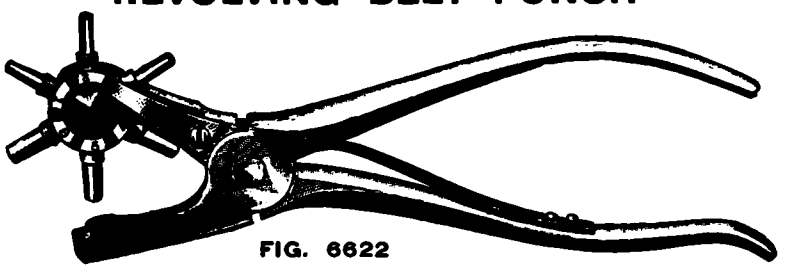


FIG. 6622

PRICES

Nos.	All Steel.	Per Dozen.
341	Extra finish, 6 screw tubes, 2, 4, 6, 8, 9, 10	$24 00
342	" 6 drive " 2, 4, 6, 8, 9, 10	20 00
351	" 4 screw, " 4, 6, 8, 10	22 00
352	" 4 drive, " 4, 6, 8, 10	19 00
344	Regular finish, 6 drive tubes	14 00
354	" 4 "	12 00

SPRING BELT PUNCH

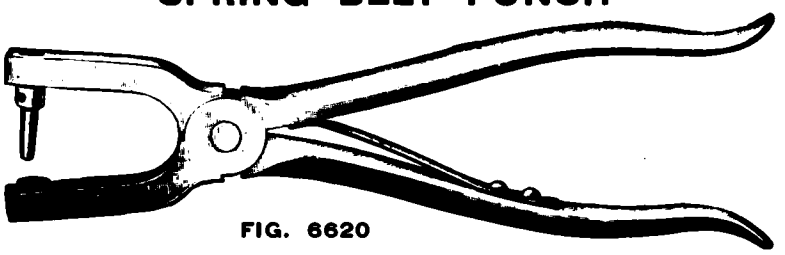


FIG. 6620

PRICES

		Per Dozen.
No. 225	All steel, extra finish, with screw tubes	$11 00
" 226	" " " " drive "	10 00
" 228	" regular finish	5 00

Punches are packed 1 dozen in a box with Nos. 4, 6, 8, 10, tubes assorted.

On special orders we furnish them with any size tubes desired from Nos. 1 to 10, inclusive.

TUBES FOR SPRING PUNCHES



No. 251	Drive, Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, per dozen	$2 00
" 252	Screw, " " " " " " " "	3 00

TUBES FOR REVOLVING PUNCHES



No. 371	Drive, Nos. 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, per dozen	$2 00
" 372	Screw, " " " " " " " "	3 00

EYELET SETS

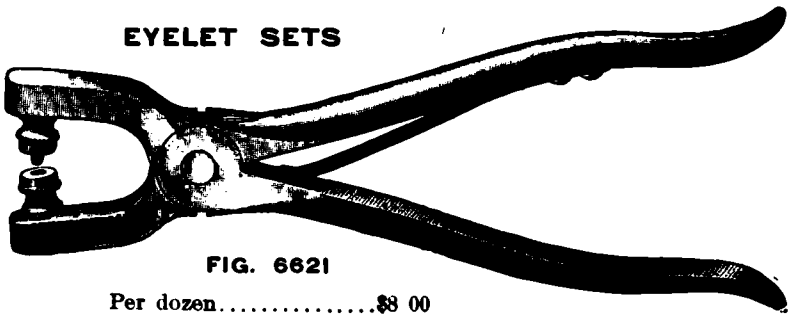


FIG. 6621

Per dozen.....$8 00

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HOLLOW HANDLE BELT PUNCH



Fig. 2

FIG. 6623
Price, per dozen, $40.00.

BELT PUNCH

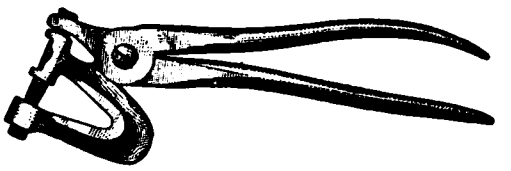


FIG. 6624
Price, each, $8.50

BERNARD SPRING BELT PUNCH



FIG. 6625

PRICES

With screw in tube and adjustable gauge. Open throat, parallel jaws, full nickel plated.

Sizes, inches	7
Per dozen	$12 00
Extra tubes, per dozen	3 00
" gauges, " "	1 50
" springs, " "	0 60
" thumb screws, per dozen	0 50

BERNARD BELT PUNCH PLIERS

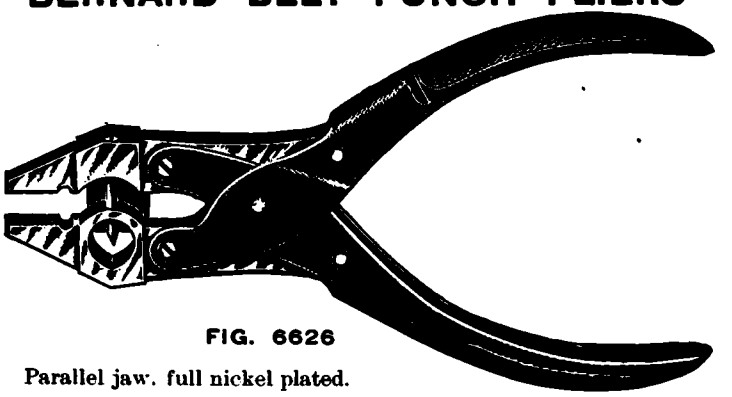


FIG. 6626

Parallel jaw, full nickel plated.

For cutting and piercing round leather belting ¼ and ⅜ inches diameter.

PRICES

Sizes, inches	5	6
Per dozen	$12 00	$14 00
Extra jaws, per dozen	3 25	3 75
" knives, " "	1 50	1 75
" handles, per dozen pairs	4 00	5 00

COMBINATION BELT PUNCH, CUTTER AND PLIERS

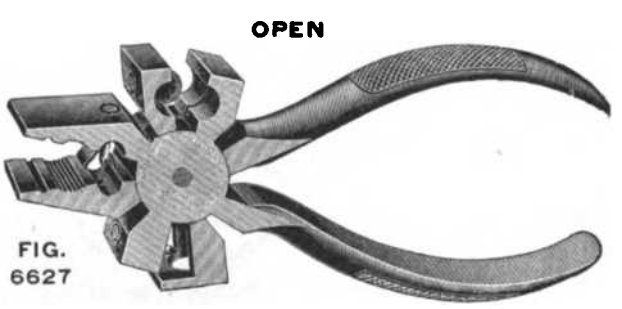


FIG. 6627

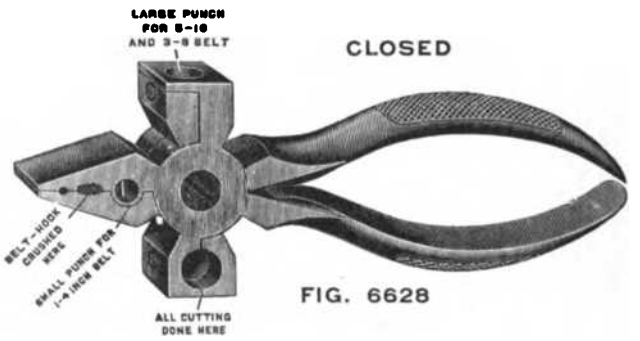


FIG. 6628

Specially designed for factory use only. It will successfully cut and punch ¼, 5/16 and ⅜ inch full round belting. Drop forged of bar steel and hardened. The hole in the belt is pierced lengthwise, no stock being removed. It is provided with one small punch for ¼ and one large for 5/16 and ⅜ inch belting. The cutting knife and punches are held securely in position by lock nuts. Price, $2.50 each.

BELT AWL



FIG. 6629

With eye in the end to carry lacing through the hole. Per dozen, $2.00

BELT BORERS

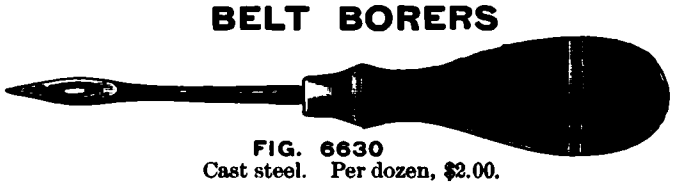


FIG. 6630
Cast steel. Per dozen, $2.00.

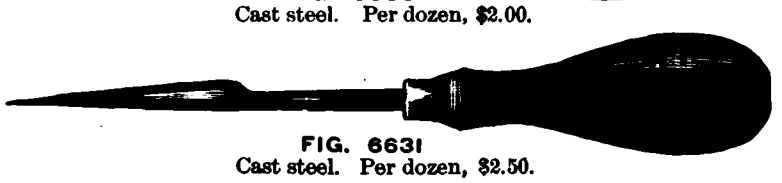


FIG. 6631
Cast steel. Per dozen, $2.50.

PATENT BELT AWL



FIG. 6632

DIRECTIONS FOR USING

For single leather belts use no belt punch; the awl will make the holes required. It will do the same in double leather and rubber with a little force behind it, but to use a small belt punch, in all but single leather belts, is not objectionable. Push the awl through the belt from either side, as required, until first or second hole—whichever the size of lace used may require—of awl is visible on the opposite side of the belt. Put end of lace through the hole in the awl, pull awl back, and lacing will come with it every time. Turning or twisting awl to the right, it will cut hole, but turned to the left, it only swells it without cutting.

Price, per dozen, $6.00.

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COPPER RIVETS AND BURS

COPPER BURS

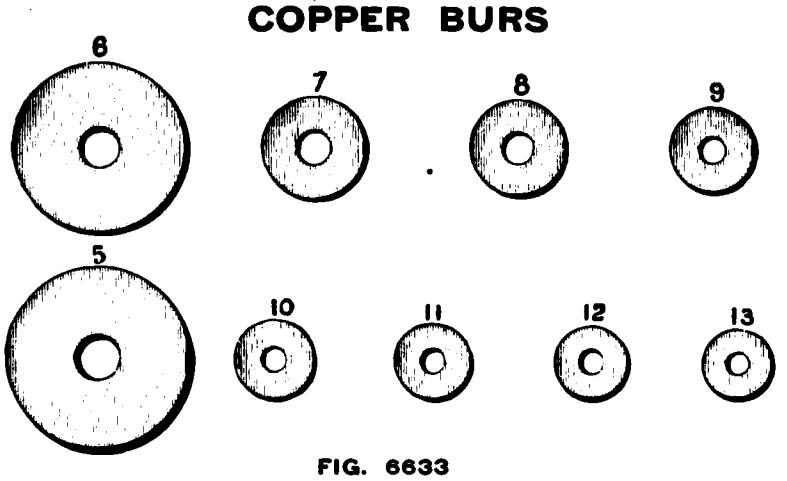


FIG. 6633

BELT RIVETS

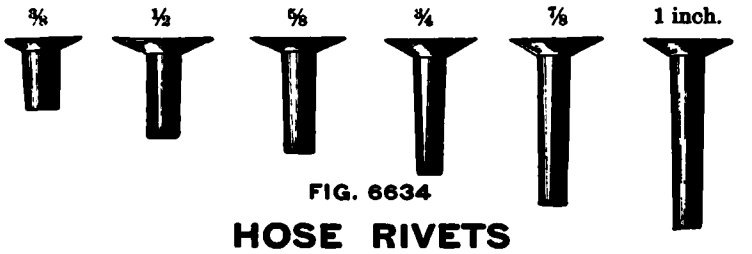


FIG. 6634

HOSE RIVETS

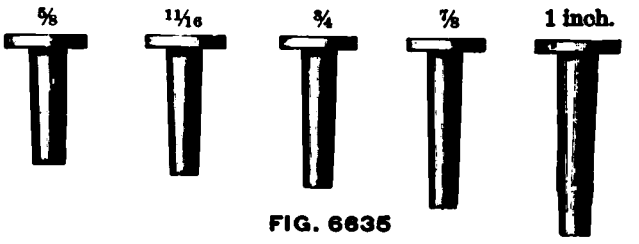


FIG. 6635

COPPER RIVETS AND BURS

Made from Best Selected Lake Superior Copper and with Extra Large Heads.

We can furnish them packed as follows: Belt rivets and burs, mixed, equal quantities of each, in 1 pound paper boxes, all numbers and lengths from No. 5 to 15 inclusive.

Belt rivets and burs, mixed, equal quantities of each, assorted lengths, from 3/8 to 3/4 inch, Nos. 7, 8, 9, 10 and 12, in 1 pound, 1/2 pound or 1/4 pound paper boxes.

1/2 pound boxes assorted are put up in 5 pound cartons.

1/4 pound boxes assorted are put up in 3 pound cartons.

Belt rivets only—no burs, in 1 pound paper boxes, all numbers and lengths from No. 5 to 15.

Rivets and burs can be furnished in bulk if desired.

PRICES, BELT AND HOSE COPPER RIVETS AND BURS

Numbers		3 to 7, incl.	8	9	10	11	12	13	14	15
In bulk	cts. lb.	49	50	52	54	56	58	60	65	70
Uniform lengths	"	49	50	52	54	56	58	60	65	70
Packed in 1 lb. or 4 lb. boxes.										
Uniform lengths	"	52	53	55	57	59	61	63	68	73
Packed in 1/2 lb. or 3/4 lb. boxes.										
Uniform lengths	"	55	56	58	60	62	64	66	71	76
Packed in 1/4 lb. boxes.										
Assorted lengths, 3/8 to 3/4 inch,	"	52	53	55	57	59	61	63	68	73
Packed in 1 lb. boxes										
Assorted lengths, 3/8 to 3/4 inch,	"	55	56	58	60	62	64	66	71	76
Packed in 1/2 or 3/4 lb. boxes.										
Assorted lengths, 3/8 to 3/4 inch,	"	57	58	60	62	64	66	68	73	78
Packed in 1/4 lb. boxes.										

Tinning rivets or burs, additional, 4 cents per pound.

POINTED BELT HOOKS



FIG. 6636

PRICES

No. 16, per M	$2 00	No. 9, per M	$4 00	No. 2, per M	$20 00
" 15, "	2 00	" 8, "	5 00	" 1, "	30 00
" 14, "	2 40	" 7, "	6 00	2½ inch, "	50 00
" 13, "	2 60	" 6, "	8 50	3 " "	60 00
" 12, "	2 80	" 5, "	11 00	3½ " "	70 00
" 11, "	3 00	" 4, "	14 00	4 " "	80 00
" 10, "	3 50	" 3, "	16 00		

RIVET SET AND HEADER

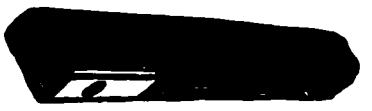


FIG. 6637

PRICES

Nos.	Sizes of Holes.	For Iron Rivets, Ounces.	For Copper Rivets, Number.	Per Dozen
00	5/16 inch.	14	..	$9 00
0	9/32 "	10 and 12	5	9 00
1	17/64 "	8	6	7 50
2	3 ga.	6	7	7 50
3	9 "	4 and 5	8	6 00
4	15 "	2½ " 3	9	6 00
5	21 "	2	10 and 11	4 50
6	27 "	1½	12	4 50
7	33 "	1¼	13	3 75
8	39 "	12	14	3 75

JONES' BEVEL POINTED BELT HOOK



FIG. 6638

PRICES

	Per Thousand.
No. 10	$3 50
" 9	4 00
" 8	5 00
" 7	6 00
" 6	8 50
" 5	11 00
" 4	14 00
" 3	16 00
" 2	20 00
" 1	30 00
2½ inches	50 00
3 "	60 00

JEWELL STEEL BELT HOOK

For Leather, Canvas and Rubber Belts.

The Jewell Steel Hook is made of the highest grade of malleable steel, and so constructed as to secure the greatest possible holding surface on the width of the belt. The peculiar form of the teeth covered by patents, prevents its cutting the fiber of the belt to injure it. It is adapted to use in any belt, but more particularly for use on single leather belts, especially when used over small pulleys, at high speeds.

For Single Leather Belts.

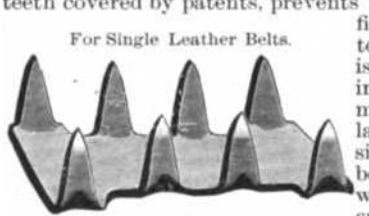
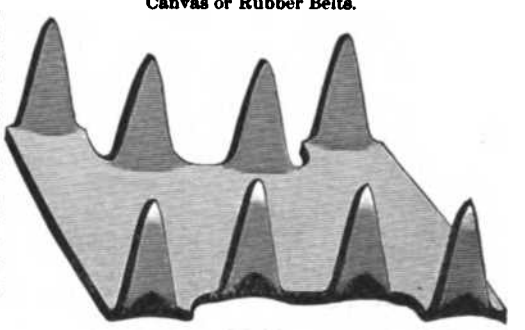


FIG. 6639

For Double Leather Belts and 3 Ply Canvas or Rubber Belts.



6640

For Single Leather and 3 Ply Canvas or Rubber Belts.

	Per 100.
No. 30, for 1 inch belts	$1 50
" 31, " 1½ and 3 inch belts	2 00
" 32, " 2, 4, 6 " "	2 50
" 33, " 2½, 5 " "	3 00

For Old Single Leather Belts, Made Extra Wide.

	Per 100.
No. 34, for 2, 4, 6 inch belts	$3 50
" 35, " 2½, 5, "	4 50
" 36, " 3, 6, 9 "	5 50

For Double Leather and 4 Ply Canvas or Rubber Belts.

	Per 100.
No. 37, for 2, 4, 6 inch belts	$5 00
" 38 " 2½, 5 "	6 50
" 39 " 3, 6, 9 "	7 50

For 5, 6, 8 Ply Canvas or Rubber Belts.

	Per 100.
No. 40, for 2, 4, 6 inch belts	$8 50
" 41, " 2½, 5, 10 "	9 00
" 42, " 3, 6, 9 "	10 00

Single leather hooks are packed 100 in a box; all others, 50 in a box.

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POTTER'S PATENT BELT HOOK

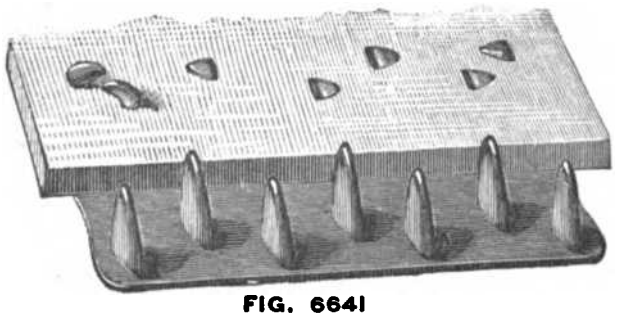


FIG. 6641

PRICES

Nos.		Per 100.
	Single Leather.	
1	For 1 inch belts	$1 50
2	" 1½ " "	2 00
3	" 2 " "	2 50
4	" 2½ " "	3 00
5	" 3 " "	3 50
6	" 3½ " "	4 50
7	" 4 " "	5 50
	Double Leather.	
8	For 2 inch belts	5 00
9	" 2½ " "	6 50
10	" 3 " "	7 50
11	" 3½ " "	8 50
12	" 4 " "	9 50
	Old Single Leather.	
28	For 3 inch extra wide	6 00
29	" 4 " " "	8 00
	3 Ply Rubber.	
26	For 2 inch belts	4 00
17	" 2½ " "	5 00
	3 Ply Rubber,	
20	For 3 inch belts	$7 00
21	" 4 " "	8 00
	4 Ply Rubber.	
13	For 2 inch belts	5 00
14	" 2½ " "	6 50
15	" 3 " "	7 50
16	" 4 " "	9 50
	4 Ply Old Belts.	
27	For 2 inch extra wide	8 00
18	" 3 " " "	10 00
19	" 4 " " "	12 00
	5 and 6 Ply Rubber.	
22	For 3 inch belts	10 00
23	" 4 " "	12 00
	6, 7 and 8 Ply Old Belts.	
24	For 3 inch belts	12 00
25	" 4 " "	15 00

SMITH'S PATENT BELT FASTENERS

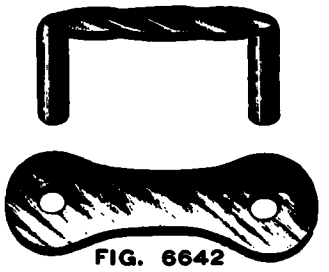


FIG. 6642

No. 1.

With rivets ½ inch long. For double leather or heavy rubber belts.

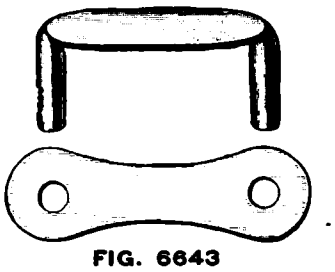


FIG. 6643

No. 2.

With rivets ½ inch long. For woven cotton belts only.

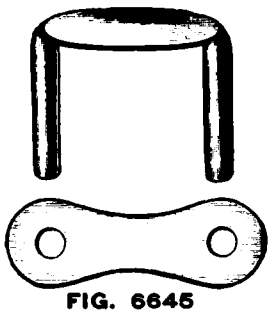


FIG. 6645

No. 3.

With rivets ¾ inch long. For very thick belts.

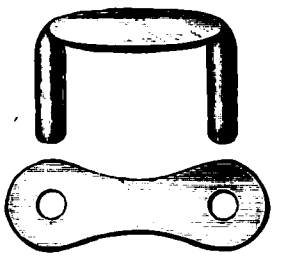


FIG. 6646

No. 3.

With rivets ½ inch long. For thick belts.

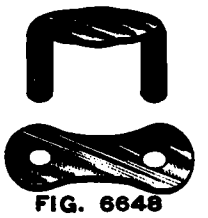


FIG. 6648

No. 4.

With rivets ¼ inch long. For single leather belts.

All of above packed 100 in each box.

PRICES, FIGS. 6642 TO 6648

Nos.	4	3	2	1
Per box	$1 25	$1 50	$1 75	$2 00

BUFFALO BELT FASTENERS



FIG. 6650

PRICES

Nos.	No. in a Box.	Per Thousand.	Nos.	No. in a Box.	Per Thousand.
15	1,000	$1 50	8	500	$3 50
13	1,000	2 00	7	250	4 00
10	1,000	2 50	6	250	5 00

COMBINATION PUNCH

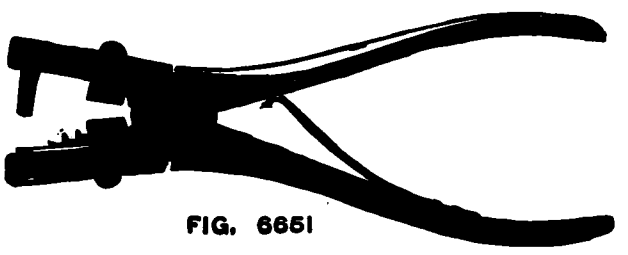


FIG. 6651

PRICE

Each.....$1 25

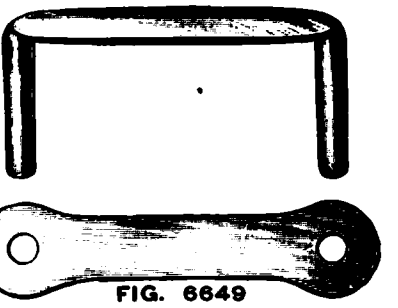


FIG. 6649

No. 00.

With rivets ¾ inch long. For stitched canvas and widest heavy rubber belts.

PRICE

Per box of 50.....$1 25

REAMER



FIG. 6652

PRICE

Each.....$0 35

RUBBER AND LEATHER CUTTER

For Use With Studs, Fig. 6654.

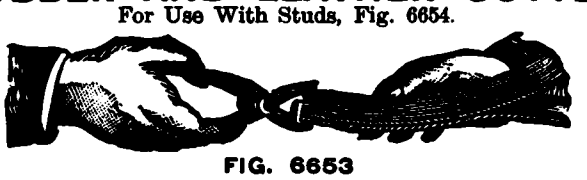


FIG. 6653

PRICES

Large Cutters for Rubber Belts.....each. $1 25
Small " " Leather " ..... " 90

AWL AND PLIERS COMBINED

For Use With Studs, Fig. 6654.

The awl at one end of this tool is to spread the slit, and pliers at the other end are convenient for inserting the stud.

PRICE

Awl and Pliers Combined, each.....$0 40

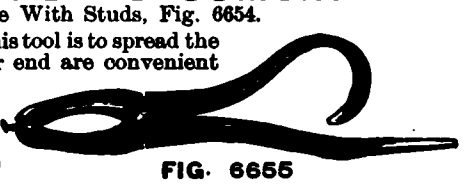


FIG. 6655

BLAKE'S IMPROVED BELT STUDS

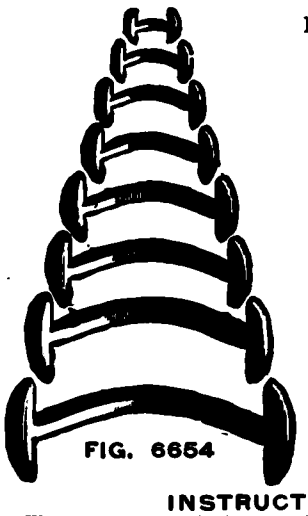


FIG. 6654

PRICES

No.	6	Per box of 100					$0 60
"	5	"	"	"	"		70
"	4	"	"	"	"		80
"	3	"	"	"	"		90
"	2	"	"	"	"		1 25
"	1	"	"	"	"		1 65
"	0	"	"	"	"		2 00
"	00	"	"	"	"		2 50

INSTRUCTIONS FOR ORDERING

They are put up in boxes of 100 each; directions on the box. No. 00 for the heaviest double leather or 5 and 6 ply rubber belt. No. 6 for the thinnest sewing machine belt, which needs to run very smoothly. Intermediate sizes in proportion.

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THATCHER BELT FASTENERS

FOR SINGLE LEATHER

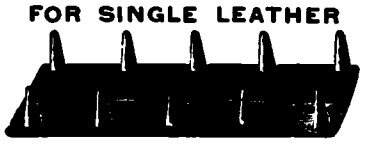


FIG. 6656

The cut to the left shows a single leather fastener, which consists of a plate one inch wide, having one row of sharpened teeth on each side, which readily enter the material without cutting same, so that practically the material is unimpaired.

For single leather, the sizes are from one to four inches. For belts wider than four inches, use two or more. See price list.

FOR DOUBLE LEATHER AND 3 OR 4 PLY RUBBER

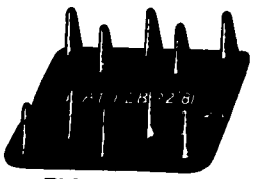


FIG. 6657

SINGLE LEATHER

Nos.	For Belts, Inches.	Per 100.	Nos.	For Belts, Inches.	Per 100.
1	1	$1 50	5	3	$3 50
2	1½	2 00	6	3½	4 50
3	2	2 50	7	4	5 50
4	2½	3 00			

EXTRA WIDE FOR OLD SINGLE LEATHER BELTS

Nos.	For Belts, Inches.	Per 100.	Nos.	For Belts, Inches.	Per 100.
31	2	$3 50	34	3½	$6 50
32	2½	4 50	35	4	7 50
33	3	5 50			

DOUBLE LEATHER OR 3 AND 4 PLY RUBBER

Nos.	For Belts, Inches.	Per 100.	Nos.	For Belts, Inches.	Per 100.
8	2	$5 00	11	3½	$8 50
9	2½	6 50	12	4	9 50
10	3	7 50			

5 AND 6 PLY RUBBER

Nos.	For Belts, Inches.	Teeth.	Per 100.
13	2	..	$9 00
14	3	14	10 00
014	3	18	10 00
15	4	18	12 00
015	4	26	12 00

EXTRA WIDE OR OLD BELTS

No. 16, for 3 inch belts.....$13 00
" 17, " 4 " 22 teeth..... 16 00
" 21, for 4 inch belts, 18 teeth, but heavier than No. 17..... 16 50
" 22, for 2, 2½ or 3 inch belts, also as a filler in..... 12 00

FOR 4 PLY OR OLD RUBBER BELTS

Nos.	For Belts, Inches.	Per 100.	No.	For Belts, Inches.	Per 100.
18	2	$8 00	20	4	$12 00
19	3	10 00			

EXTRA WIDE AND HEAVY, FOR THE LARGEST, HEAVIEST BELTS

No. 23, for 8 ply belts and heavier rubber, per 100.....$24 00

FOR EXTRA WIDE OR OLD BELTS

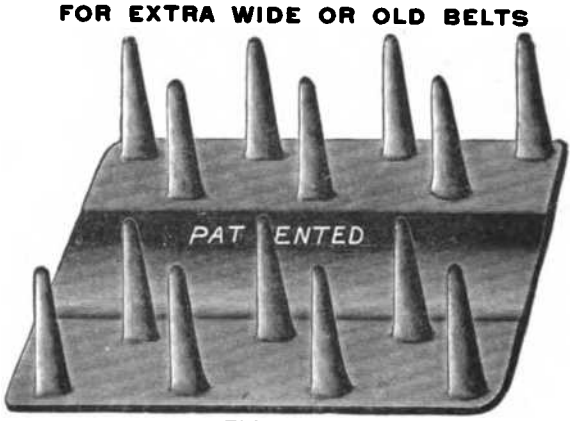


FIG. 6658

Nos. 1 to 7, and 31 to 35, packed 100 in each box. Nos. 8 to 23 packed 50 in each box. Please order by number. Two or more hooks used on wider belts. In ordering, please state width and ply of belts.

WILSON BELT HOOKS

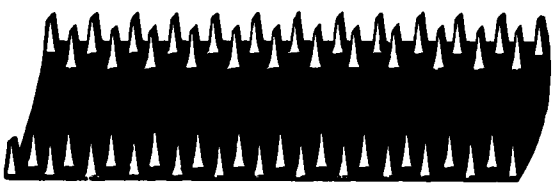


FIG. 6659

SINGLE LEATHER

100 in a package.

Nos.	For Belts, Inches.	Per 100.
1	1	$1 00
2	1¼	1 25
3	1½	1 50
4	1¾	1 75
5	2	2 25
6	2¼	2 50
7	2½	3 00

50 in a package.

Nos.	For Belts, Inches.	Per 100.
8	2¾	$3 25
9	3	3 50
10	3¼	4 00
11	3½	4 50
12	4	5 00

DOUBLE LEATHER

100 in a package.

Nos.	For Belts, Inches.	Per 100.
13	1½	$2 50
13½	1¾	3 00
14	2	3 50
15	2¼	3 75
16	2½	4 00

DOUBLE LEATHER

50 in a package.

Nos.	For Belts, Inches.	Per 100.
17	3	$5 25
17½	3¼	5 75
18	3½	6 25
A	4	7 25
F	4½	8 25

4 PLY RUBBER AND SINGLE LEATHER MAIN BELTS

50 in a package.

Nos.	For Belts, Inches.	Per 100.
19	2	$8 00
20	2½	9 00
21	3	10 00
B	4	12 00

5 PLY RUBBER AND DOUBLE LEATHER MAIN BELTS

50 in a package.

Nos.	For Belts, Inches.	Per 100.
22	2	$8 00
23	2½	9 00
24	3	10 00
C	4	12 00

6 PLY RUBBER

50 in a package.

Nos.	For Belts, Inches.	Per 100.
25	2½	$10 00
26	3	12 00

EXTRA HEAVY HOOKS

3 rows of teeth for 6 ply rubber main belts; teeth, ⅜ inch long.

50 in a package.

Nos.	For Belts, Inches.	Per 100.
27	2	$10 00
28	3	15 00

3 rows of teeth for double leather main belts; teeth, 7/16 inch long.

Nos.	For Belts, Inches.	Per 100.
29	2	$10 00
30	3	15 00

3 rows of teeth for belts ½ inch thick; teeth, ½ inch long.

No.	For Belts, Inches.	Per 100.
E	3	$18 00

COMBINATION CLINCH AND DRIVE BELT HOOKS

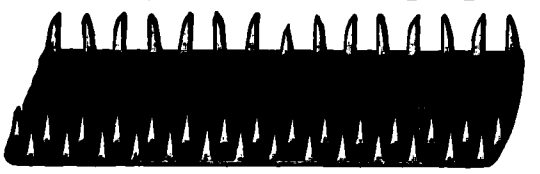


FIG. 6660

SINGLE LEATHER

100 in a package.

Nos.	For Belts, Inches.	Per 100.
99	½	$0 60
100	¾	80
101	1	1 00
102	1¼	1 25
103	1½	1 50
104	1¾	1 75
105	2	2 00
106	2¼	2 25
107	2½	2 75
108	2¾	3 00
109	3	3 25
110	3¼	3 50
111	3½	4 00
112	4	4 50

DOUBLE LEATHER

100 in a package.

Nos.	For Belts, Inches.	Per 100.
113	1	$2 00
114	1½	2 50
115	2	3 50
116	2¼	3 75
117	2½	4 00

DOUBLE LEATHER

50 in a package.

Nos.	For Belts, Inches.	Per 100.
118	3	$5 25
119	3½	6 25
120	4	7 25

4 PLY RUBBER AND SINGLE LEATHER MAIN BELTS

50 in a package.

Nos.	For Belts, Inches.	Per 100.
128	2	$8 00
129	2½	9 00
130	3	10 00
131	4	12 00

5 PLY RUBBER AND DOUBLE LEATHER MAIN BELTS

50 in a package.

Nos.	For Belts, Inches.	Per 100.
132	2	$8 00
133	2½	9 00
134	3	10 00
135	4	12 00

6 PLY RUBBER EXTRA WIDE

50 in a package.

Nos.	For Belts, Inches.	Per 100.
138	3	$12 00
139	4	15 00

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CLINCHING BELT HOOKS



FIG. 6661

SINGLE LEATHER
For belts 5/16 inch thick and under

Nos.	100 in a Package.	Per 100.
31	For ½ inch belts	$0 50
31½	" ¾ "	65
32	" 1 "	75
33	" 1¼ "	90
34	" 1½ "	1 15
35	" 1¾ "	1 35
36	" 2 "	1 50
37	" 2¼ "	1 75
38	" 2½ "	2 00
39	" 2¾ "	2 25
40	" 3 "	2 50
41	" 3¼ "	2 75
42	" 3½ "	3 00
43	" 4 "	4 00

HEAVY SINGLE LEATHER, LIGHT DOUBLE LEATHER, 3 PLY RUBBER AND 4 PLY COTTON

Nos.	100 in a Package.	Per 100.
45	For 1½ inch belts	$2 00
45½	" 1¾ "	2 25
46	" 2 "	2 50
47	" 2¼ "	3 00
48	" 2½ "	3 25
49	" 3 "	4 25
49½	" 3¼ "	4 75
50	" 3½ "	5 25
51	" 4 "	6 00

MEDIUM DOUBLE LEATHER

Nos.	100 in a Package.	Per 100.
53	For 1½ inch belts	$2 50
54	" 2 "	2 75
55	" 2¼ "	3 25
56	" 2½ "	3 50
Nos.	50 in a Package	Per 100.
57	For 3 inch belts	$4 50
58	" 3½ "	5 50
59	" 4 "	6 50

4 AND 5 PLY RUBBER AND 6 PLY COTTON

Nos.	50 in a Package.	Per 100.
60	For 2 inch belts	$3 50
61	" 2½ "	5 00
62	" 3 "	6 00
63	" 4 "	7 00

6 PLY RUBBER

Nos.	50 in a Package.	Per 100.
68	For 2 inch belts	$5 00
69	" 2½ "	6 00
70	" 3 "	8 00
70½	" 3½ "	9 00
71	" 4 "	10 00

6 PLY RUBBER, EXTRA HEAVY BACKS

Nos.	50 in a Package.	Per 100.
72	For 2 inch belts	$6 00
74	" 3 "	10 00
74½	" 3½ "	11 00
75	" 4 "	12 00

4 AND 5 PLY RUBBER, EXTRA WIDE

Nos.	50 in a Package.	Per 100.
76	For 2 inch belts	$8 00
77	" 3 "	10 00
78	" 4 "	12 00

6 PLY RUBBER EXTRA WIDE

Nos.	50 in a Package.	Per 100.
79	For 3 inch belts	$10 00
80	" 4 "	12 00

8 PLY RUBBER AND 8 AND 10 PLY COTTON

Nos.	50 in a Package.	Per 100.
88	For 3 inch belts	$10 00
90	" 4 "	12 00

ALL MAIN BELTS 1/2 INCH THICK

Nos.	50 in a Package.	Per 100.
92	For 3 inch belts	$12 00
93	" 4 "	15 00

ALL MAIN BELTS 3/4 INCH THICK, AND 10 AND 12 PLY COTTON, EXTRA HEAVY BACKS

Nos	50 in a Package.	Per 100.
97	For 3 inch belts	$15 00
98	" 4 "	18 00

ACME STEEL BELT HOOKS

Size of No. 170 Belt Hook.



FIG. 6662

FOR SINGLE LEATHER BELTS

Nos.	100 in a Box.	Per 100 Hks.
161	For ½ inch to 4 inch belts	$1 00
162	" 1 " " " "	1 50
163	" 1¼ " " " "	1 75
164	" 1½ " " " "	2 00
165	" 1¾ " " " "	2 25
166	" 2 " " " "	2 50
167	" 2¼ " " " "	2 75
168	" 2½ " " " "	3 00
169	" 2¾ " " " "	3 50
170	" 3 " " " "	4 00

FOR EXTRA HEAVY SINGLE LEATHER AND 3 PLY RUBBER BELTS

Nos.	100 in a Box.	Per 100 Hooks.
191	For 1 inch belts	$2 25
192	" 1½ " "	2 25
193	" 2 " "	2 75
194	" 2¼ " "	4 00
195	" 2½ " "	4 50
Nos.	50 in a Box.	Per 100 Hooks.
196	For 3 inch belts	$5 50
197	" 3½ "	6 50
198	" 4 "	7 00

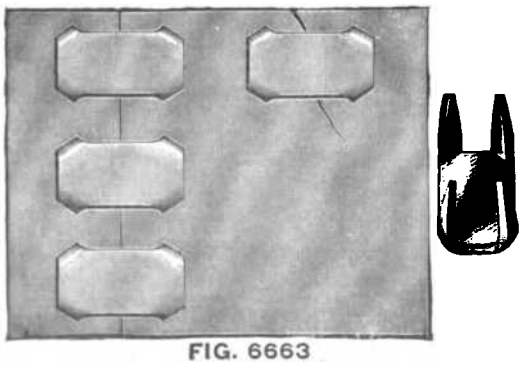


FIG. 6663

FOR DOUBLE LEATHER BELTS

Nos.	100 in a Box.	Per 100 Hooks.
201	For 1 inch belts	$2 75
202	" 1½ " "	3 25
203	" 2 " "	3 50
204	" 2¼ " "	4 00
205	" 2½ " "	4 50
Nos.	50 in a Box.	Per 100 Hooks.
206	For 3 inch belts	$5 50
207	" 3½ " "	6 50
208	" 4 " "	7 00

ASSORTED PACKAGES

	100 Inches in a Box.	Per 100 Inches.
No. 183,	for ordinary single leather belting, 100 inches assorted lengths	$1 50
No. 184,	for extra heavy and wide single leather and 3 ply rubber, 100 inches assorted lengths	2 00
No. 185,	for double leather belts, 100 inches assorted lengths	2 50
No. 186,	for 4 ply rubber and cotton belts, 5/16 thick, 100 inches assorted lengths	2 20
No. 187,	for 5 ply rubber and cotton belts, ⅜ thick, 100 inches assorted lengths	2 75
No. 188,	for 5 and 6 ply rubber and cotton belts, extra wide backs, 100 inches assorted lengths	3 30

The following sizes can be used side by side, for belts of any width as shown below.

	100 in a Box.	Per 100 Hooks.
No. 161,	for all widths of single leather belts running over small pulleys	$1 00
No. 191,	for all widths of heavy single leather and 3 ply rubber belts	2 25
No. 201,	for all widths of double leather and 4 ply rubber belts	2 75
	50 in a Box.	Per 100 Hooks.
Nos. 209 and 210,	for heavy double leather and 5 and 6 ply rubber.	
	Use No. 209 for Belts 6, 8 and 10 inches, etc.	$4 75
	Use No. 210 for Belts 5, 10 and 15 inches, etc.	5 50
No. 221,	for extra heavy double leather or rubber belting	8 00

FOR DOUBLE LEATHER BELTS WIDE BACKS

Nos.	50 in a Box.	Per 100 Hooks.
209	For 2 inch belts	$5 00
210	" 2½ "	6 50
211	" 3 "	7 50
212	" 4 "	9 50

FOR 4 PLY RUBBER OR CANVAS BELTS

Nos.	50 in a Box.	Per 100 Hooks.
213	For 2 inch belts	$5 00
214	" 2½ "	6 50
215	" 3 "	7 50
216	" 4 "	9 50

SPECIAL NARROW HOOKS FOR 4 PLY RUBBER AND WOVEN BELTS

Running Over Small Pulleys.

Nos.	100 in a Package.	Per 100.
45 L	For 1½ inch belts	$2 00
46 "	" 2 " "	2 50
48 "	" 2½ " "	3 25
49 "	" 3 " "	4 25
50 "	" 3½ " "	5 25
51 "	" 4 " "	6 00

ANVIL FOR APPLYING BELT HOOKS ON OVERHEAD BELTS

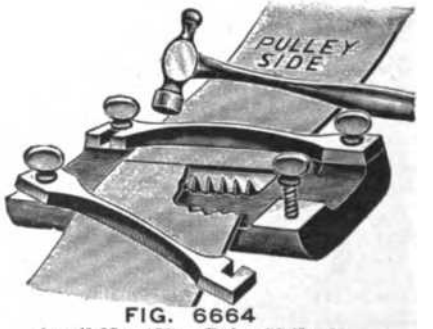


FIG. 6664
Anvil No. 175. Price 50 Cents.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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STEEL BELT LACING

FOR LEATHER BELTS

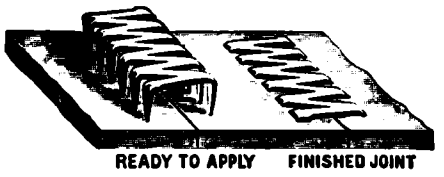


FIG. 6665

Nos.		Prices per 100 In.
00	For split leather and extra light belts, from 1/16 in. to 1/8 in thick. Packed 100 in. in a box, assorted lengths	$1 00
0	For split leather and light belts from 1/8 in. to 3/16 in. thick. Packed 100 in. in a box, lengths assorted	1 00
1	For ordinary single leather belts from 3/16 in. to 1/4 in. thick. Packed 100 in. in a box, assorted or regular lengths from 1 in. to 3 in	1 50
2	For extra heavy and wide single leather belts from 1/4 in. to 5/16 in. thick. Packed 100 in. in a box, assorted lengths only	2 00
3	For double leather belts from 5/16 in. to 3/8 in. thick. Packed 100 in. in a box, assorted lengths only	2 50
4	For heavy double leather belts, from 3/8 in. to 7/16 in. thick. Packed 100 in. in a box, assorted lengths only	3 00
5	For extra heavy double leather belts, from 7/16 in. to 9/16 in. thick. Packed 100 in. in a box, assorted lengths only	3 50

FOR RUBBER, COTTON AND WOVEN BELTS



FIG. 6666

Nos.		Prices per 100 In.
100	For lightest rubber and cotton belts, from 1/16 in. to 1/8 in. thick. Packed 100 in. in a box, assorted lengths	$1 10
10	For 2 ply rubber and cotton belts, from 1/8 in. to 3/16 in. thick. Packed 100 in. in a box, assorted lengths	1 10
11	For 3 ply rubber and cotton belts, from 3/16 in. to 1/4 in. thick. Packed 100 in. in a box, assorted or regular lengths, from 1 to 3 in	1 65
12	For 4 ply rubber and cotton belts, from 1/4 in. to 5/16 in. thick. Packed 100 in. in a box, assorted lengths only	2 20
13	For 5 ply rubber and cotton belts, from 5/16 in. to 3/8 in. thick. Packed 100 in. in a box, assorted lengths only	2 75
14	For 6 ply rubber and cotton belts, from 3/8 in. to 7/16 in. thick. Packed 100 in. in a box, assorted lengths only	3 30
15	For 7 and 8 ply rubber and cotton belts, from 7/16 in. to 9/16 in. thick. Packed 100 in. in a box, assorted lengths only.	3 85

FOR LEATHER, RUBBER, COTTON AND WOVEN BELTS



FIG. 6667

Nos.		Prices per 100 In.
111	For general use on ordinary single leather and rubber or cotton belts, from 3/16 in. to 1/4 in. thick. Packed 100 in. in a box, assorted or regular lengths, from 1 to 3 in	$1 65
113	For general use on double heavy leather belts and 5 ply rubber or cotton belts, from 5/16 in. to 3/8 in. thick. Packed 100 in. in a box, assorted lengths only	2 75
115	For general use on extra heavy double leather belts and 7 or 8 ply rubber and cotton belts. Packed 100 in. in a box, assorted lengths only	3 85

METALLIC LACING

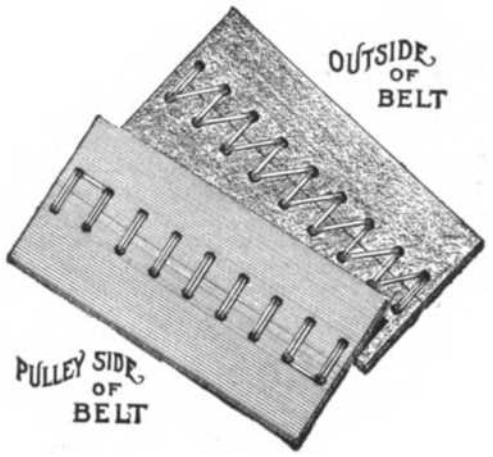


FIG. 6668

Each size is packed in boxes containing 50 feet, as follows:

No. 0 For belts from 1 inch to 2½ inches.
" 1 For single belts 5 inches and under.
" 2 For all single belts wider than 5 inches, also for all double belts under 8 inches.
" 3 For all double belts above 8 inches in width.

Price per 100 feet $2 00

Tools for lacing (imported), consisting of punch, pliers and cutter, will be furnished at $1.50 a set.

PRICES OF SUPPLIES, FIG. 6669

Coil lacing, per box (containing 1000 in.)	$1 00
" " brass, per box, " 1000 "	2 00
Spiral needles, per dozen	35
Rawhide pins, per bundle (containing 1000 in.)	2 00
Steel pins (containing 1000 in.)	50
Coupling twine, per ball	20
Cutting pliers, per pair	1 50

PEERLESS BELT LACER

The machine consists of three corrugated rolls operated by a crank; a spiral needle is inserted between the rolls, and by revolving the crank it is carried through the ends of the belt, making small perforations therein, into which the coiled wire lacing is afterwards inserted in the same way as the needle. The coils are then flattened and forced well into the belt, and the ends coupled together by means of rawhide pins, twine or other suitable material.

The rolls and gears are made of the best steel, and hardened, and the workmanship is of the very best in every respect. All parts are interchangeable and can be replaced without the necessity of sending the machine back to us or to a machine shop.

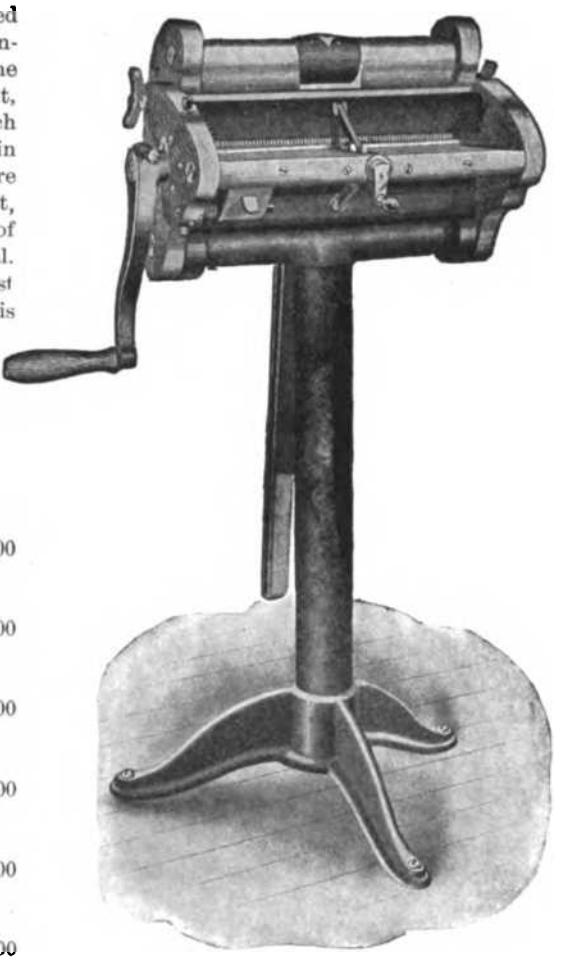


FIG. 6669

PRICES, FIG. 6669

4 inch (portable), for lacing single or double belts up to 4 inches wide with 4000 inches coil lacing	$85 00
6 inch (on stand), for lacing single or double belts up to 6 inches wide, with 6000 inches coil lacing	95 00
8 inch (on stand), for lacing single or double belts up to 8 inches wide, with 6000 inches coil lacing	105 00
12 inch (on stand), for lacing single or double belts up to 12 inches wide, with 6000 inches coil lacing	115 00
18 inch (on stand), for lacing single or double belts up to 18 inches wide, with 8000 inches coil lacing	140 00
24 inch, for lacing single or double belts up to 24 inches wide, with 8000 inches of coil lacing	165 00
Power attachment extra	20 00

With each machine is furnished, in addition to the coil lacing, 2 dozen spiral needles, 500 inches rawhide pins, 1 ball twine, 1 pair cutting pliers, 1 file and handle, 1 threader and 1 needle holder.

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THE DAVIS BELT FASTENER

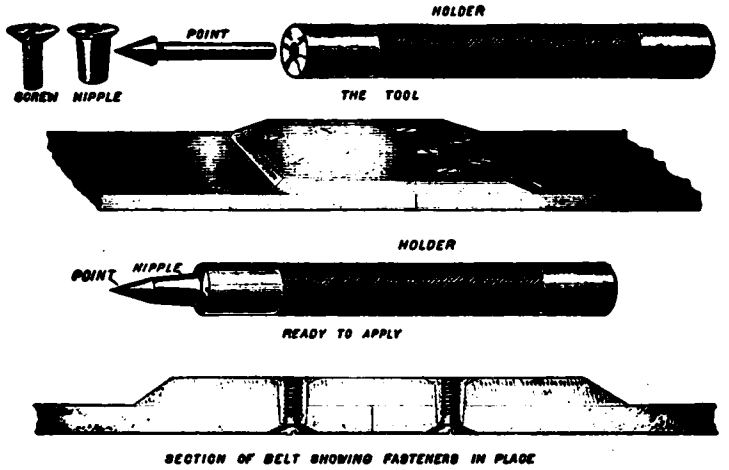


FIG. 6670

This tool is applicable to belts, as shown by the accompanying cuts. It can also be applied to belts, scarfed and lapped. The fastener is made in three sizes, viz.: ¼ inch, ⅜ inch and ½ inch. The holder and point shown in cut are used for inserting the fasteners in cotton or camel's hair belting without cutting the fiber.

For leather or rubber belts the regular belt punch should first be used and then the fasteners inserted with or without the aid of the holder and point, by driving.

PRICES

¼ inch, per 100	$2 40
⅜ inch, "	2 40
½ inch, "	2 50
Holders, each	75

IRON SCREW BELT CLAMP

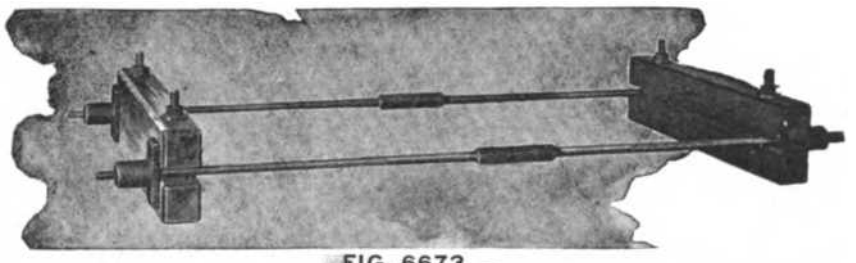


FIG. 6673

This clamp has corrugated and beveled jaws, which insure strong grip to belting. The frame is made of rock maple, and the screws of the best wrought iron with square head and rapid pitch.

PRICES

For 6 to 14 inch belts	each,	$8 00
" 14 " 18 " "	"	10 00
" 18 " 24 " "	"	14 00
" 24 " 30 " "	"	18 00
" 36 " "	"	22 00

Larger sizes on application.

FARLEY'S BELT TIGHTENER

DESCRIPTION FIG. 6676

A strong, powerful, quick acting device for drawing belts together for the purpose of lacing them. It can be put into place in an instant; two or three throws of the levers at most, and you are ready for the lacing. Made in one size only, to take belt up to and including 10 inches in width. Each.....$7 50

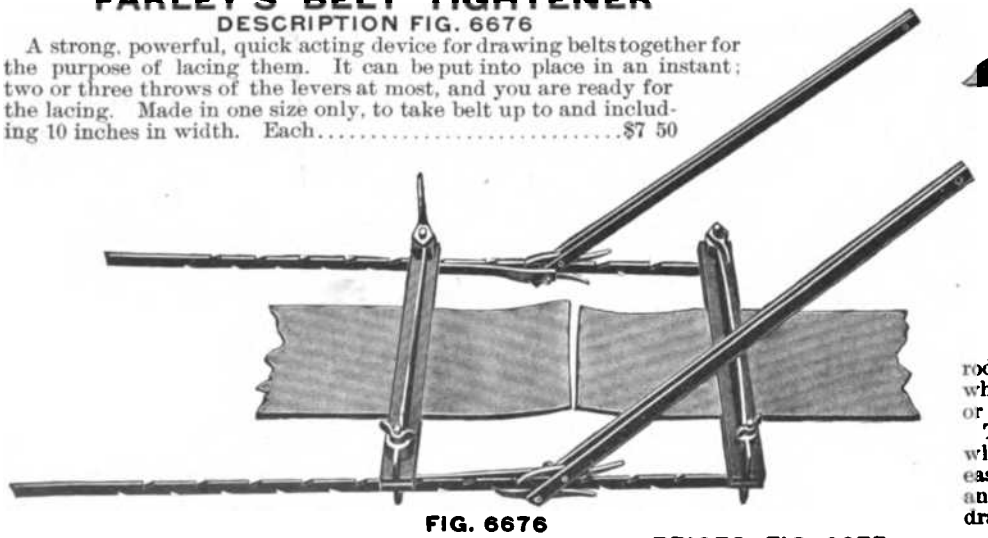


FIG. 6676

GARDNER'S BELT CLAMP

PRICES

	Each.
8 inch	$14 00
12 "	18 00
16 "	22 00
20 "	26 00
24 "	30 00
28 "	34 00
32 "	38 00
36 "	44 00

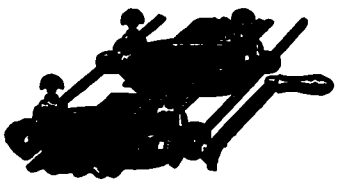


FIG. 6671

WOOD BELT CLAMP



FIG. 6672

PRICES

No.		Each.
62½	For 6 to 12 inch belts	$2 00
63	" 12 " 18 " "	3 00
64	" 18 " 24 " "	4 00
65	" 24 " 36 " "	5 00

PORTER BELT TIGHTENER

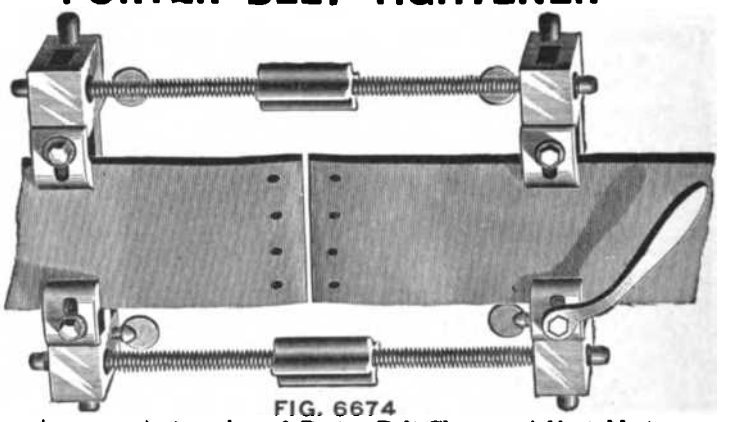


FIG. 6674

The cut represents top view of Porter Belt Clamp. Adjustable to any size belt from 2 to 20 inches.

PRICES

26 inch screw.....each, $12 00 60 inch screw.....each, $15 00

The 60 inch screw does not enlarge the capacity of the clamp, but is useful in taking up cotton belts that have to be lapped and sewed, or for belts where it is desirable to grasp the belt at a considerable distance from the two ends.

WESTON WOOD JAW CLAMP

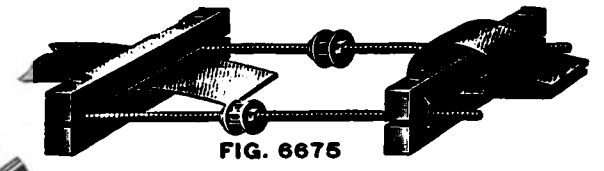


FIG. 6675

DESCRIPTION

The jaws are made of hard wood, much lighter than an iron jaw, and easy to handle. The jaws are graduated, making it easy to place the belt in middle of jaw every time. Jaws are faced with composition, preventing slip of the belt.

The rods are made with right and left hand threads, which work twice as fast as a single thread. The rods are made with the ratchet nut for operating them, which permits the use of a ratchet wrench, fork wrench or monkey wrench, as desired.

The jaws and rods are independent of each other, which makes the adjustment of clamps on belt a very easy matter, the jaws being first fastened to ends of belt and the rods then put in, when the belt is ready to be drawn together for lacing.

PRICES, FIG. 6675

For 8 inch belt	each,	$9 25	For 24 inch belt	each,	$16 00
" 10 " "	"	10 00	" 26 " "	"	17 25
" 12 " "	"	11 50	" 30 " "	"	19 00
" 14 " "	"	12 50	" 36 " "	"	24 00
" 16 " "	"	13 25	" 44 " "	"	30 00
" 18 " "	"	14 00	" 55 " "	"	37 00
" 20 " "	"	14 75	" 65 " "	"	40 50

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PLANISHED STEEL SHAFTING

MADE TO BROWN & SHARPE GAUGE, U. S. STANDARD

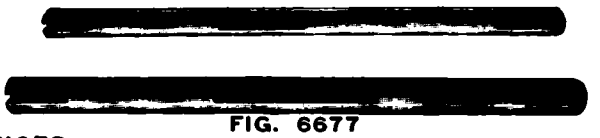


FIG. 6677

PRICES

Diams., Inches.	Weight Per Ft.	Per Pound.	Diams., Inches.	Weight Per Ft.	Per Pound.
3/16	.095	$0 10	2 3/8	15.07	$0 05
1/4	.167	10	2 7/16	15.89	5
5/16	.260	8½	2½	16.70	5
3/8	.375	7	2 9/16	17.55	5
7/16	.511	7	2 5/8	18.41	5
½	.667	7	2 11/16	19.31	5
9/16	.845	6	2¾	20.21	5
5/8	1.05	6	2 13/16	21.15	5
11/16	1.26	6	2 7/8	22.09	5
¾	1.50	5½	2 15/16	23.06	5
13/16	1.77	5½	3	24.05	5
7/8	2.05	5½	3 1/16	25.07	5¼
15/16	2.35	5½	3 1/8	26.09	5¼
1	2.68	5½	3 3/16	27.16	5¼
1 1/16	3.02	5½	3¼	28.22	5¼
1 1/8	3.38	5½	3 5/16	29.32	5¼
1 3/16	3.77	5½	3 3/8	30.43	5¼
1¼	4.17	5½	3 7/16	31.58	5¼
1 5/16	4.61	5½	3½	32.73	5½
1 3/8	5.05	5½	3 9/16	34.00	5½
1 7/16	5.52	5½	3 5/8	35.20	5½
1½	6.01	5	3 11/16	36.40	5½
1 9/16	6.52	5	3¾	37.57	5½
1 5/8	7.06	5	3 13/16	38.66	5½
1 11/16	7.61	5	3 7/8	39.85	5½
1¾	8.18	5	3 15/16	41.04	5½
1 13/16	8.78	5	4	42.75	6
1 7/8	9.39	5	4 1/16	46.65	6
1 15/16	10.08	5	4¼	48.26	6
2	10.69	5	4 7/16	52.62	6
2 1/16	11.35	5	4½	54.11	6½
2 1/8	12.07	5	4 5/8	60.83	6½
2 3/16	12.80	5	4 15/16	65.50	6½
2¼	13.52	5	5	67.45	7
2 5/16	14.35	5			

The above prices are for shafts 1 foot to 24 feet long, inclusive.

PRICES FOR KEY SEATING

Standard Sizes.

Width ¼ and depth 1/8 the diameter of shaft.

Key Seating Shafts Full Length.

Diameters, Inches.	Per Foot.	Diameters, Inches.	Per Foot.
Under 1½	$0 20	3 1/8 to 3½	$0 50
1½ to 2	23	3 5/8 " 4	67
2 1/8 " 2½	33	4¼ " 4½	90
2 5/8 " 3	40		

Key Seating For Couplings.

Diameters, Inches.	Per End.	Diameters, Inches.	Per End.
1¼ to 1½	$0 37	3 1/16 to 3½	$1 17
1 9/16 " 2	43	3 5/8 " 4	1 40
2 1/16 " 2½	50	4¼ " 4½	1 67
2 5/16 " 3	83		

Key Seating For Pulleys.

Diameters of Shaft, Inches.	For First Foot or Less.	Per Foot After First Foot.
Under 1 7/16	$0 75	$0 20
1½ to 2	95	25
2 1/16 " 2 5/8	1 20	33
2 11/16 " 3	1 45	40
3 1/16 " 3½	1 70	50
3 5/16 " 4	1 95	65
4 1/16 " 4½	2 25	85
4 5/16 " 5	2 50	1 20

PLANISHED SHAFTING, SHAPES, ETC.

Extras on round shafting for pump and piston rods, cutting short or long lengths boxing, etc., to be added to net prices as per list. All orders under 2,000 pounds will be boxed, unless ordered not boxed. Pump and piston rods ½ cent per pound. Boxing extra.

CUTTING TO LENGTHS

	Per Pound
6 inch to 11¾ inches, inclusive,	$0 ½
8 " " 5¾ " "	1
Under 3 inches, prices quoted on request	
Over 24 feet and not over 30 feet	½
" 30 " " " " 35 "	1
" 35 " " " " 40 "	1½
" 40 " " " " 45 "	2
" 45 "	2½

COLD FINISHED STEEL HEXAGONS

Sizes, Inches.	Weights Per Foot.	Prices, Per Pound.	Sizes, Inches.	Weights Per Foot.	Prices, Per Pound.
¼	.196	$0 10	1 1/16	3.33	$0 07
5/16	.29	10	1⅛	3.73	7
3/8	.43	8	1 3/16	4.15	7
7/16	.56	8	1¼	4.60	7
½	.73	8	1 5/16	5.07	7
9/16	.98	7½	1⅜	5.57	7
5/8	1.15	7½	1 7/16	6.07	7
11/16	1.40	7½	1½	6.62	7
¾	1.66	7½	1 9/16	7.17	7
13/16	1.91	7½	1⅝	7.76	7
⅞	2.25	7	1 11/16	8.37	7
15/16	2.58	7	1¾	9.00	7
1	2.94	7	1⅞	10.32	7

Above prices for bars 2 feet to 24 feet inclusive. Boxing extra. Prices quoted on application for shorter or longer lengths.

COLD FINISHED STEEL FLATS

For Elevator Slides, Engine Guides, Keys, etc.

Thickness, Inches.	Width, Inches. 5/16 to ½	9/16 to 25/32	¾ to 1	1 1/16 to 1 1/2	1 9/16 to 1¾	1 13/16 to 2	2 1/16 to 2 1/4	2 5/16 to 2 1/2	2 9/16 to 2¾	2 13/16 to 3
¼ and 5/16	14	14	10	10	8	8	..	..	..	..
3/8 " 7/16	14	14	10	10	8	8	..	..	..	..
½ " 9/16	..	10	8	8	8	8	8	8	8	8
5/8 " 11/16	..	10	8	8	8	8	8	8	8	8
¾ to 15/16	..	..	8	8	8	8	8	8	8	8
1 " 1 1/16	..	..	..	8	8	8	8	8	8	8
1½ " 1 11/16	..	..	..	..	8	8	8	8	8	8
1¾ " 1 15/16	..	..	..	..	..	8	8	8	8	8
2 " 2 1/16	..	..	..	..	..	..	8	8	8	8
2¼ " 2 5/16	..	..	..	..	..	..	..	8	8	8
2½ " 2 11/16	..	..	..	..	..	..	..	..	8	8
2¾ " 2 15/16	..	..	..	..	..	..	..	..	..	8

Prices in cents per pound.

Above prices for lengths 2 feet to 24 feet inclusive. Boxing extra.

Extras for Cutting Lengths, Flats and Squares.

12 2 1/16 inches to 23¾ inches long, ⅛ cent per pound net.
6 " " 11¾ " " 1 " " " "
3 " " 5¾ " " 2 " " " "

Prices quoted on request for shorter than 3 inches or longer than 24 feet.

COLD FINISHED STEEL SQUARES

For Square Shafts, Keys, Splines, etc.

Squares, Inches.	Weights per Foot.	Prices per Pound.	Squares, Inches.	Weights per Foot.	Prices per Pound.
¼	.213	$0 12	1 5/16	8.26	$0 06
5/16	.332	12	1⅜	8.98	8
3/8	.479	12	1 11/16	9.63	8
7/16	.652	12	1¾	10.41	8
½	.850	10	1 13/16	11.11	8
9/16	1.06	10	1⅞	11.90	8
5/8	1.34	10	1 15/16	12.70	8
11/16	1.61	10	2	13.60	8
¾	1.92	8	2 1/16	14.39	8
13/16	2.25	8	2⅛	15.26	8
⅞	2.60	8	2 3/16	16.18	8
15/16	2.99	8	2¼	17.25	8
1	3.40	8	2 5/16	18.09	8
1 1/16	3.85	8	2⅜	19.07	8
1⅛	4.30	8	2 7/16	20.09	8
1 3/16	4.78	8	2½	21.26	8
1¼	5.31	8	2 5/8	23.59	8
1 5/16	5.84	8	2¾	25.72	8
1⅜	6.43	8	2 15/16	29.18	8
1 7/16	6.99	8	3	30.61	8
1½	7.66	8			

Above prices are for bars 2 feet to 24 feet inclusive. Boxing extra.

See extras for Flats above for longer or shorter bars.

No. 1 PORTABLE SHAFT STRAIGHTENER

FOR 24 INCH LATHE

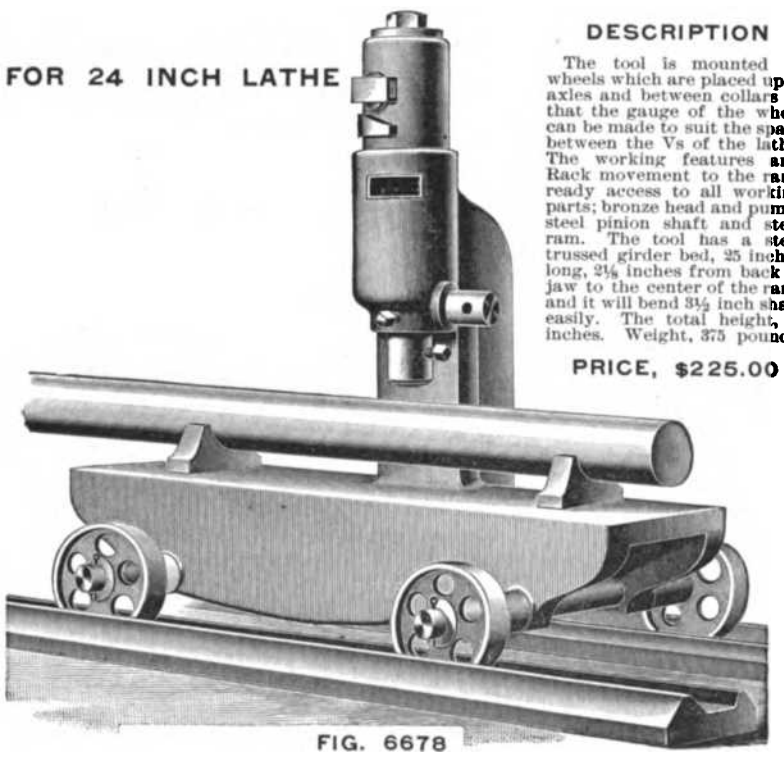


FIG. 6678

DESCRIPTION

The tool is mounted on wheels which are placed upon axles and between collars so that the gauge of the wheel can be made to suit the space between the Vs of the lathe. The working features are: Rack movement to the ram; ready access to all working parts; bronze head and pump; steel pinion shaft and steel ram. The tool has a steel trussed girder bed, 25 inches long, 2⅛ inches from back of jaw to the center of the ram, and it will bend 3½ inch shaft easily. The total height, 33 inches. Weight, 375 pounds.

PRICE, $225.00

HYDROSTATIC LEVEL

DESCRIPTION

When leveling two points a gauge is placed on each, the stop cocks are opened, and when the water comes to rest, closed again, thus confining it to the exact height indicated. The instrument may then be picked up and carried to the light if necessary, and the exact position of the water located on the scales.

To prevent freezing add about 10 per cent. of glycerine with the water before filling the level.

PRICES

No. 1 is suitable for leveling on machinery, shafting, etc., and shows a variation from a level line of 3½ inches and can be used with 25 feet of hose. Price $10.00, including 12 feet of tube, one coupling and case. Extra rubber tubing, put up on spiral brass wire, 12 cents per foot.

No. 2 is same as above except larger, showing a variation of 6 inches, and can be used with 50 feet of hose. Price $15.00, including 25 feet of tube, one coupling and case. Extra rubber tubing, 15 cents per foot.

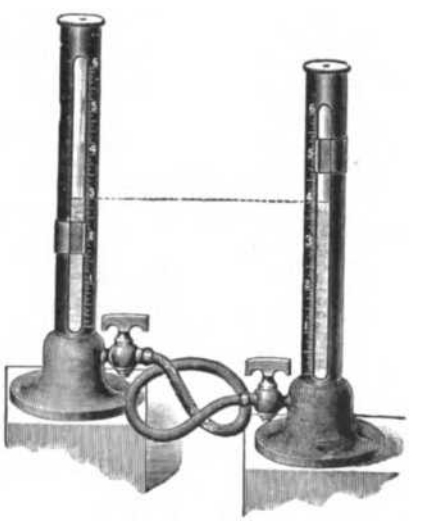


FIG. 6679

These levels are each put up in a handsome hardwood box, which is included in the prices given above.

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BALANCING WAYS

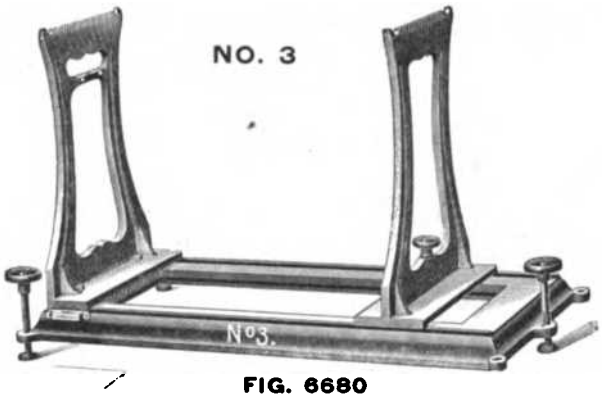


FIG. 6680

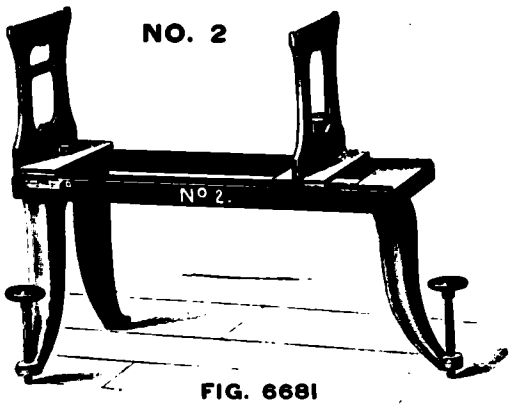


FIG. 6681

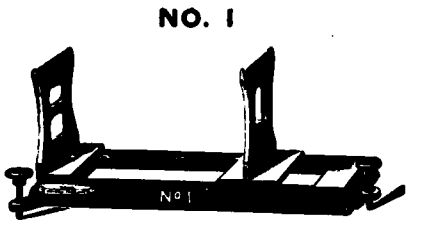


FIG. 6682

This tool consists of a frame or bed, with two planed ways, on which are mounted two standards. One of these standards is fixed, and the other is movable, the same as the tail block of a lathe. The top edges of the standards are chilled and ground true and form the ways on which the work is rested while being tested for balance.

The frame is supported by three legs or feet, consequently always stands firmly. One leg or foot is fixed, and a little longer than the other two, which are adjustable by means of the screws shown. A spirit level is secured to the fixed standard, and also one on the bed, so that both lateral and cross levels can be accurately determined. The way is used in balancing all kinds of work, such as cutter heads, pulleys, armatures, etc.

No 3. Rests on the floor and intended for large work, though the standards will come sufficiently close together to accommodate the smallest work. Length of bed, 42 inches. Length between standards, 37 inches. Height of standards, 24½ inches. Weight, 315 pounds. Price.....$50 00

No. 2. Adapted to stand on the floor, and intended for general shop use and medium sized work. Length of bed, 32 inches. Length between standards, 27½ inches. Height of standards, 12½ inches. Weight, 150 pounds. Price.....$30 00

No. 1. Intended to set on the bench, and for light work, such as shaper heads, small pulleys, armatures, etc. Length of bed, 24 inches. Length between standards, 21 inches. Height of standards, 9½ inches. Weight, 75 pounds. Price.....$20 00

Standards of special height made to order.

COLLAR

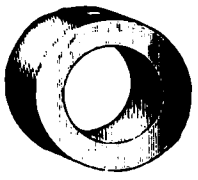


FIG. 6683

Wrought Iron, with Steel Set Screws, or Loose.

SPLIT COLLAR

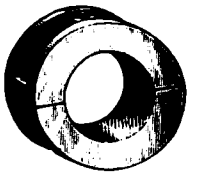


FIG. 6684

Cast Iron, with Bolts and Set Screws.

PRICES, FIG. 6683

Sizes, inches..	15/16	1 3/16	1 5/16	1 7/16	1 11/16	1 15/16	2 3/16	2 7/16
Each.....	$0 60	0 80	0 90	1 00	1 25	1 60	1 90	2 40
Sizes, inches..	2 1/16	2 5/16	3 1/16	3 5/16	4 7/16	4 15/16	5 3/8	5 7/8
Each.....	$2 70	3 00	3 50	4 60	5 60	7 00	7 60	9 20

PRICES, FIG. 6684

Sizes, inches..	15/16	1 3/16	1 5/16	1 7/16	1 11/16	1 15/16	2 3/16	2 7/16
Each.....	$0 80	0 90	1 00	1 25	1 60	1 90	2 40	2 70
Sizes, inches..	2 1/16	2 5/16	3 1/16	3 5/16	4 7/16	4 15/16	5 3/8	5 7/8
Each.....	$3 00	3 50	4 60	5 60	7 00	7 60	9 20	11 00

SAFETY COLLAR



FIG. 6685

SPLIT SAFETY COLLAR



FIG. 6686

Safety Collars, with Set Screws.

PRICES, FIG. 6685

Diams. of bore, inches..	1	1 3/16	1 1/4	1 7/16	1 1/2	1 11/16	1 15/16
Each.....	$0 70	0 80	0 90	1 00	1 10	1 20	1 40
Diams. of bore, inches..	2 3/16	2 7/16	2 11/16	2 15/16	3 3/16	3 7/16	3 11/16
Each.....	$1 60	1 80	2 10	2 40	2 70	3 00	3 30
Diams. of bore, inches..	3 15/16	4 7/16	4 15/16	5 7/16	5 15/16	6 7/16	6 15/16
Each.....	$3 60	4 70	5 90	7 20	8 60	10 10	11 70
Diams. of bore, in.	7 3/16	7 7/16	7 11/16	7 15/16	8 1/2	9	9 1/2	10
Each.....	$12 75	13 80	14 85	15 90	18 43	20 70	23 12	25 75

For prices Fig. 6686 add 50 per cent. to above list on Standard Safety Collars.

INTERNAL CLAMP COUPLING

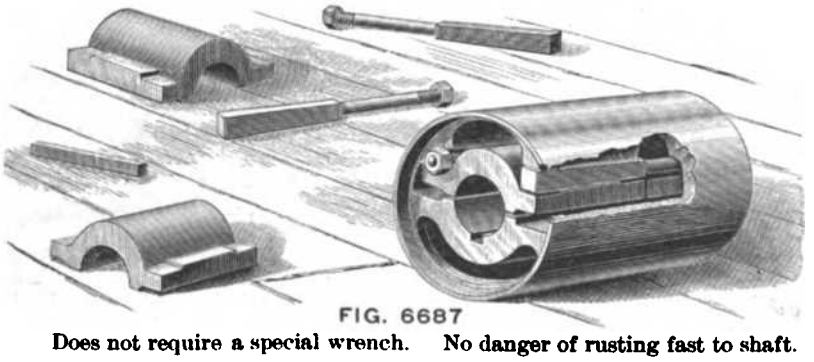


FIG. 6687

Does not require a special wrench. No danger of rusting fast to shaft.

Diams. of shaft.	15/16	1 3/16	1 5/16	1 7/16	1 11/16	1 15/16	2 3/16	2 7/16	2 11/16	2 15/16	3 7/16	3 15/16	4 7/16	4 15/16	5 3/8	5 7/8
Price for each, complete.....	$4 50	4 75	5 25	5 75	6 75	8 25	10 50	13 00	14 75	17 50	24 50	32 00	41 75	53 25	65 00	76 50
Extra charge for making one end to fit a smaller shaft.....	....	40	50	60	70	80	90	1 00	1 25	1 50	1 75	2 00	2 25	2 50	2 75	3 00

SLEEVE COUPLING

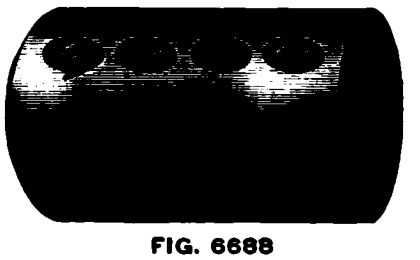


FIG. 6688

PRICES

Diameters of Shaft, Inches.	Each.
3/4	$3 00
1	3 75
1 3/16	4 40
1 7/16	5 00
1 11/16	5 60
1 15/16	6 25

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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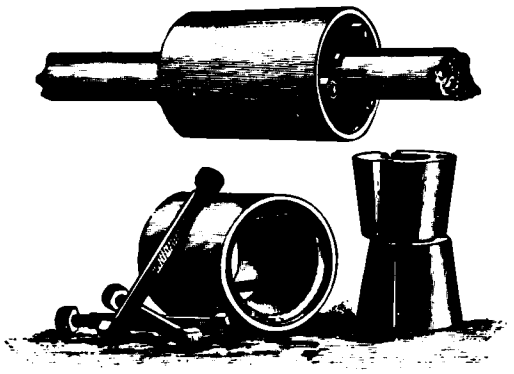


FIG. 6689

DOUBLE CONE COUPLING

Sizes.	Prices	Sizes.	Prices.
$1\frac{11}{16}$	$6 54	$3\frac{11}{16}$	$28 00
$1\frac{15}{16}$	8 36	$3\frac{15}{16}$	32 00
$2\frac{3}{16}$	10 00	$4\frac{3}{16}$	37 00
$2\frac{7}{16}$	12 14	$4\frac{7}{16}$	42 00
$2\frac{11}{16}$	14 80	$4\frac{15}{16}$	53 50
$2\frac{15}{16}$	17 64	$5\frac{7}{16}$	66 00
$3\frac{3}{16}$	20 60	$5\frac{15}{16}$	76 90
$3\frac{7}{16}$	24 10		

Larger sizes at special prices.

COLLINS COMPRESSION COUPLING
KEYSEATED AND FURNISHED WITH KEY



FIG. 6691

Sizes, In.	Prices.	Sizes, In.	Prices.	Sizes, In.	Prices.
1	$4 50	2	$8 25	3	$19 35
$1\frac{1}{8}$	4 60	$2\frac{1}{8}$	9 25	$3\frac{1}{4}$	23 90
$1\frac{1}{4}$	4 75	$2\frac{1}{4}$	10 35	$3\frac{1}{2}$	28 15
$1\frac{3}{8}$	5 10	$2\frac{3}{8}$	11 75	$3\frac{3}{4}$	32 15
$1\frac{1}{2}$	5 50	$2\frac{1}{2}$	13 10	4	37 60
$1\frac{5}{8}$	6 10	$2\frac{5}{8}$	14 50	$4\frac{1}{4}$	43 50
$1\frac{3}{4}$	6 75	$2\frac{3}{4}$	15 85	$4\frac{1}{2}$	49 75
$1\frac{7}{8}$	7 50	$2\frac{7}{8}$	17 60	$4\frac{3}{4}$	56 00
				5	66 00

For reducing couplings add 10 per cent. to the price of the larger size.

COMPRESSION COUPLING
KEYSEATED AND FURNISHED WITH KEY

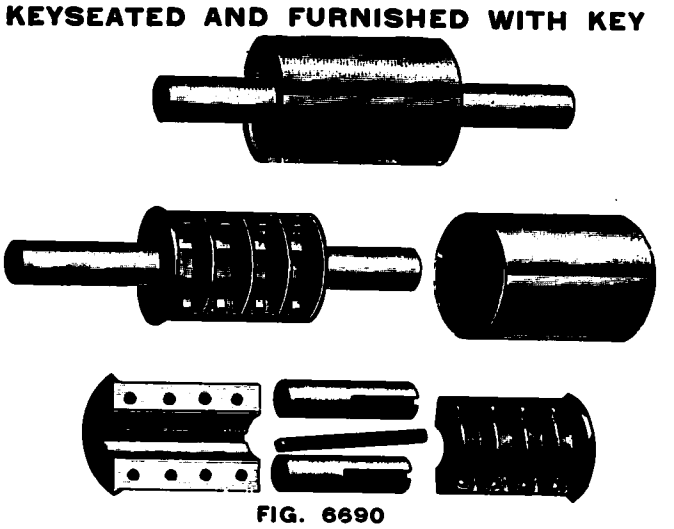


FIG. 6690

These couplings can be very easily and quickly applied to shafts or removed therefrom, and are shipped fitted ready for use.

PRICES

Diams. of Shaft.	Each.	Diams. of Shaft.	Each.
$1\frac{5}{16}$	$5 00	$3\frac{3}{16}$	$20 00
$1\frac{3}{16}$	5 50	$3\frac{7}{16}$	24 00
$1\frac{5}{16}$	5 70	$3\frac{11}{16}$	28 00
$1\frac{7}{16}$	6 00	$3\frac{15}{16}$	32 00
$1\frac{11}{16}$	7 00	$4\frac{7}{16}$	42 00
$1\frac{15}{16}$	8 00	$4\frac{15}{16}$	53 00
$2\frac{3}{16}$	9 00	$5\frac{7}{16}$	65 00
$2\frac{7}{16}$	10 75	$5\frac{15}{16}$	78 00
$2\frac{11}{16}$	13 00	$6\frac{7}{16}$	90 00
$2\frac{15}{16}$	16 50	$6\frac{15}{16}$	112 00

Reduction compression couplings, for connecting shafts of different diameters, same price as plain compression couplings for shafting of the larger size.

FLANGE FACED OR PLATE COUPLING

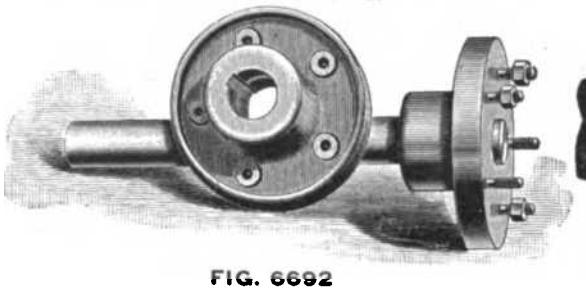


FIG. 6692

Turned all over; keyseated and furnished with keys and bolts.

PRICES

Diams. of Shaft.	Fitted to Shaft, per Pair.	Not Fitted to Shaft, per Pair.
$1\frac{5}{16}$	$7 00	$4 00
$1\frac{7}{16}$	8 00	5 00
$1\frac{11}{16}$	8 50	5 50
$1\frac{15}{16}$	9 00	6 00
$2\frac{3}{16}$	10 50	7 00
$2\frac{7}{16}$	12 50	8 50
$2\frac{11}{16}$	15 25	10 75
$2\frac{15}{16}$	18 25	13 25
$3\frac{3}{16}$	21 75	15 25
$3\frac{7}{16}$	25 25	18 25
$3\frac{11}{16}$	29 25	21 25
$3\frac{15}{16}$	33 25	24 75
$4\frac{7}{16}$	43 25	34 25
$4\frac{15}{16}$	54 75	44 25
$5\frac{7}{16}$	67 00	53 50
$5\frac{15}{16}$	81 00	64 00
$6\frac{7}{16}$	95 50	78 50
$6\frac{15}{16}$	110 00	92 00
$7\frac{7}{16}$	126 00	107 50
$7\frac{15}{16}$	142 00	123 00
$8\frac{7}{16}$	160 00	140 50
$8\frac{15}{16}$	180 00	160 00
$9\frac{7}{16}$	200 00	180 00

REDUCTION FLANGED FACED COUPLINGS

When shafts of different diameters are connected with couplings of this kind, price of the pair will be the same as if both shafts were of the larger diameter.

CRAB CLUTCH COUPLING

Finished all over.

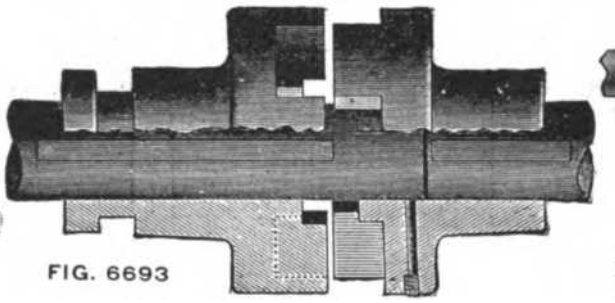


FIG. 6693

PRICES

Diameters of Shaft.	Fitted to Shafts, per Pair.	Not Fitted to Shafts, per Pair.	Diameters of Shaft.	Fitted to Shafts, per Pair.	Not Fitted to Shafts, per Pair.
$1\frac{5}{16}$	$11 00	$8 00	$3\frac{7}{16}$	$37 50	$30 00
$1\frac{3}{16}$	11 50	8 50	$3\frac{15}{16}$	48 75	39 00
$1\frac{5}{16}$	12 50	9 00	$4\frac{7}{16}$	62 70	52 00
$1\frac{7}{16}$	13 50	9 50	$4\frac{15}{16}$	78 30	65 70
$1\frac{11}{16}$	14 25	10 00	$5\frac{7}{16}$	96 60	80 40
$1\frac{15}{16}$	15 00	10 50	$5\frac{15}{16}$	117 60	97 20
$2\frac{3}{16}$	16 50	12 00	$6\frac{7}{16}$	126 60	114 60
$2\frac{7}{16}$	18 75	14 25	7	156 00	132 00
$2\frac{11}{16}$	23 25	18 50	$7\frac{1}{2}$	175 20	151 20
$2\frac{15}{16}$	27 75	22 75	8	194 40	170 40

UNIVERSAL COUPLING

This style of coupling admits, within certain limitations, the running of shafts at different angles. The cut shows a single coupling.

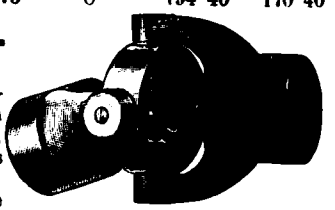


FIG. 6696

PRICES, INCLUDING SET SCREWS OR KEY WAYS

Sizes of Shaft, Inches.	Each.	Sizes of Shaft, Inches.	Each.
$1\frac{7}{16}$	$22 50	$2\frac{11}{16}$	$38 00
$1\frac{15}{16}$	24 00	$2\frac{15}{16}$	41 00
$2\frac{3}{16}$	27 00	$3\frac{7}{16}$	47 50
$2\frac{7}{16}$	30 50	$3\frac{15}{16}$	58 00

JAW CLUTCH COUPLINGS

STRAIGHT.

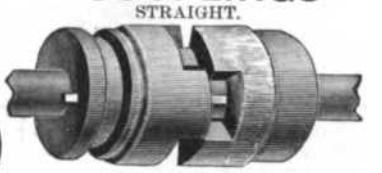


FIG. 6694

SPIRAL.



FIG. 6695

DESCRIPTION

These couplings are used where it is desired to disconnect one part of a line shaft and allow the balance to run. They can be engaged or disengaged when shaft is running at a moderate speed and are usually fitted with wrought iron levers These clutches are made with either straight or spiral jaws. The spiral jaws are either right hand or left hand. The spiral clutch, Fig. 6695, is a right hand clutch.

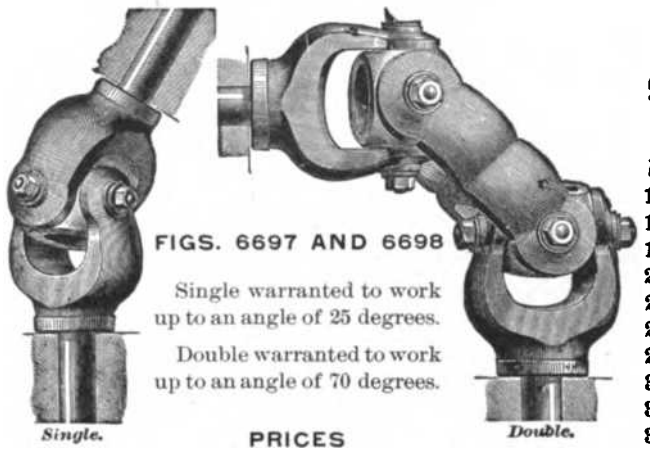
PRICES

Diameters of Shaft.	Fitted to Shaft, per Pair.	Not Fitted to Shaft, per Pair.	Diameters of Shaft.	Fitted to Shaft, per Pair.	Not Fitted to Shaft, per Pair.
$1\frac{5}{16}$	$9 50	$6 50	$2\frac{11}{16}$	$23 25	$18 50
$1\frac{3}{16}$	10 00	7 00	$2\frac{15}{16}$	27 75	22 75
$1\frac{5}{16}$	11 00	7 50	$3\frac{7}{16}$	37 50	30 00
$1\frac{7}{16}$	12 00	8 00	$3\frac{15}{16}$	48 75	39 00
$1\frac{11}{16}$	12 75	8 50	$4\frac{7}{16}$	65 50	52 00
$1\frac{15}{16}$	13 50	9 00	$4\frac{15}{16}$	87 00	70 00
$2\frac{3}{16}$	15 75	11 25	$5\frac{7}{16}$	115 00	95 00
$2\frac{7}{16}$	18 75	14 25	$5\frac{15}{16}$	155 00	130 00

For clutches with planed jaws add 25 per cent. to above list.

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ANGLE COUPLINGS



FIGS. 6697 AND 6698

Single warranted to work up to an angle of 25 degrees.

Double warranted to work up to an angle of 70 degrees.

Single. *Double.*

PRICES

Diameters of Shaft, Inches.	For Single Couplings, Each.	For Double Couplings, Each.
1 7/16 or 1 11/16	$50 00	$90 00
1 15/16 " 2	55 00	100 00
2 3/16 " 2 1/4	60 00	110 00
2 7/16 " 2 1/2	65 00	120 00
2 11/16 " 2 3/4	70 00	125 00
2 15/16 " 3	75 00	135 00
3 7/16 " 3 1/2	100 00	180 00
3 15/16 " 4	135 00	240 00
4 7/16 " 4 1/2	170 00	300 00
4 15/16 " 5	215 00	385 00

When ordering, state speed of shafts and angle they run at.

DOUBLE BRACED BALL AND SOCKET HANGER

PRICES

Diams. of Boxes in Inches.	Length of Boxes in Inches.	*Drop of Hanger in Inches. 10	13	16	20	25	30	36
1 7/16	6	$4 75	$5 25	$5 75	$6 50	.....	.....	.....
1 11/16	7	4 75	5 25	5 75	6 50	.....	.....	.....
1 15/16	8	6 00	6 60	7 25	8 00	$8 90	$9 85	.....
2 3/16	9	7 50	8 20	8 85	9 75	11 00	12 00	.....
2 7/16	10	9 25	10 25	10 75	11 65	13 80	14 70	.....
2 11/16	11	11 30	12 25	13 25	14 55	16 15	17 80	$19 80
2 15/16	12	13 65	14 75	15 85	17 35	19 25	21 15	23 45
3 3/16	13	16 80	17 25	18 50	20 25	22 40	24 50	27 20
3 7/16	14	.....	22 45	24 00	26 10	28 70	31 35	34 50
3 11/16	15	.....	24 50	26 00	28 00	30 75	33 40	36 75
3 15/16	16	.....	27 15	28 75	31 00	33 75	36 60	40 00
4 3/16	17	.....	29 50	32 00	34 50	37 25	40 00	43 50
4 7/16	18	.....	.....	37 00	39 50	42 40	45 35	49 00
4 15/16	20	.....	.....	43 00	46 00	49 00	52 25	56 00

* The drop of a hanger is the vertical distance from the center of box to the foot of the hanger.

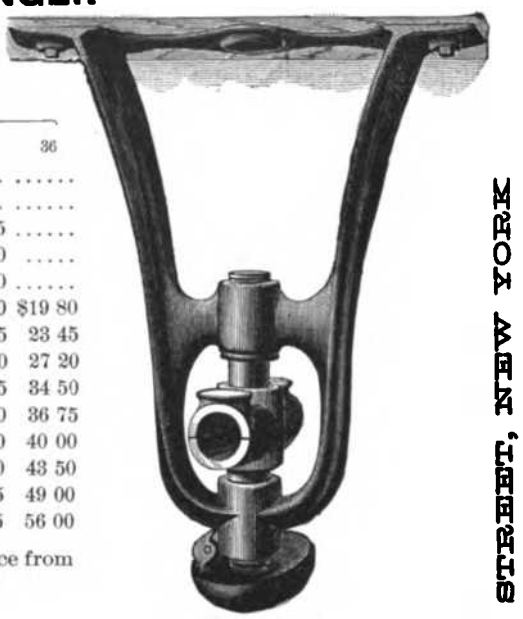


FIG. 6699

ADJUSTABLE DOUBLE BRACED SELF OILING DROP HANGER

BOXES INTERCHANGEABLE

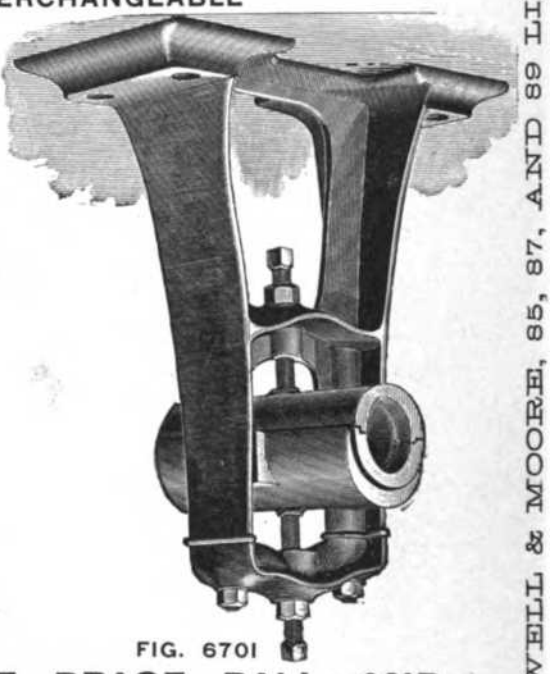


FIG. 6701

PRICES, FIG. 6701

Diams. Shaft	Range of Drop in Inches. 6 to 8	8½ to 10	10½ to 12	12½ to 14	14½ to 16	16½ to 18	18½ to 20	20½ to 22	Length of Bearing, Inches.
1 15/16	$3 20	$3 65	$4 30	$4 90	$5 35	$5 70	$6 00	$6 10	4
2 3/16	3 85	4 30	4 70	5 20	5 60	6 00	6 15	6 25	5
2 7/16	4 15	4 60	5 10	5 60	5 90	6 10	6 30	6 50	5
2 11/16	4 50	4 95	5 35	5 85	6 25	6 40	6 70	6 90	6
3 3/16	5 20	5 60	6 00	6 50	6 90	7 00	7 30	7 50	7

Diameters of Shafting.	Range of Drop in Inches. 7 to 9	10 to 12	13 to 15	16 to 18	19 to 21	22 to 24	25 to 27	28 to 30	Length of Bearing, Inches.
1 15/16	$6 95	$7 60	$8 25	$8 90	$9 55	$10 20	$10 85	$11 70	8
2 3/16	8 45	9 35	10 15	10 80	11 50	12 50	13 40	14 25	9
2 7/16	10 55	11 20	12 00	13 00	14 00	15 10	16 10	17 85	10
2 11/16	13 15	13 80	15 35	16 00	16 90	18 30	20 15	22 75	11
2 15/16	15 60	16 75	18 05	19 25	20 15	21 80	23 40	26 30	12
3 3/16	17 00	19 80	21 20	22 40	23 40	25 35	26 95	29 90	13
3 7/16	.....	25 35	27 30	28 90	30 20	32 50	34 45	37 70	14
3 15/16	.....	31 20	33 15	34 80	36 10	38 35	40 95	42 90	16
4 7/16	.....	42 25	42 90	43 85	45 50	47 45	50 05	53 30	16
4 15/16	.....	46 80	48 75	51 00	53 95	57 85	63 05	68 90	18

These hangers are readily convertible into floor stands, by simply inverting the boxes.

DOUBLE BRACED ADJUSTABLE HANGER

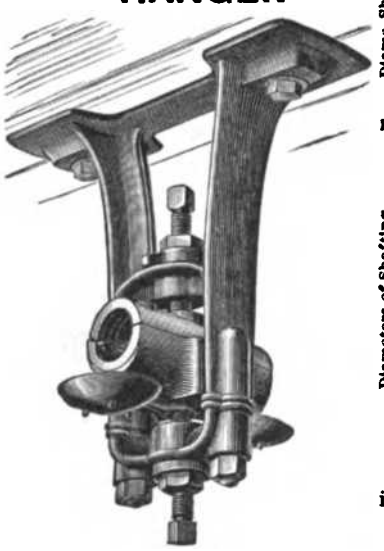


FIG. 6700

PRICES

Patent Self Oilers, Metallic Wick and Babbitted Bearings, Bored and Faced Off.

Diams. of Shaft.	Drop, Inches. 6	7½	9	12	15	18	21	24	27	30	33	36
1 5/16	$2 25	$2 50	$2 75	$3 50	$4 00	.....	.....	.....	.....	.....	.....	.....
1 3/16	3 00	3 25	3 50	4 00	4 25	.....	.....	.....	.....	.....	.....	.....
1 5/16	3 50	3 75	4 00	4 25	4 50	$4 75	$5 00	.....	.....	.....	.....	.....
1 7/16	3 75	4 00	4 25	4 50	4 75	5 00	5 25	.....	.....	.....	.....	.....
1 11/16	....	....	5 00	5 25	5 50	5 75	6 00	.....	.....	.....	.....	.....
1 15/16	....	....	6 00	6 50	7 00	7 50	8 00	$8 50	$9 00	.....	.....	.....
2 3/16	....	....	7 75	8 25	9 00	9 50	10 00	10 50	.....	.....	.....	.....
2 7/16	....	....	9 00	9 75	10 50	11 25	12 00	12 75	13 50	$14 25	$15 00	$15 75
2 11/16	....	....	11 25	12 25	13 25	14 25	15 25	16 25	17 25	18 25	19 25	20 25
2 15/16	....	....	13 50	14 75	16 00	17 25	18 25	19 25	20 25	21 25	22 25	23 25
3 7/16	....	....	19 50	22 00	23 50	25 00	26 50	28 00	29 50	31 00	32 50	34 00
3 15/16	....	....	.....	27 00	28 50	30 50	32 00	33 50	35 00	36 50	38 00	40 00
4 7/16	....	....	.....	34 00	36 00	38 00	40 00	42 00	44 00	46 00	48 00	50 00
4 15/16	....	....	.....	39 00	41 00	43 00	45 00	47 00	49 00	51 00	53 00	55 00
5 3/16	....	....	.....	.....	.....	.....	63 00	66 50	70 00	73 50	77 00	80 50
5 7/16	....	....	.....	.....	.....	.....	70 00	74 00	78 00	82 00	86 00	90 00

DOUBLE BRACE BALL AND SOCKET DROP HANGER

With Special Chain Oiling Bearings.

PRICES

Standard Babbitted Bearings.

Sizes of Shaft.	16 in. Drop.	18 in. Drop.	20 in. Drop.	25 in. Drop.	30 in. Drop.	36 in. Drop.
2 15/16	$19 25	$21 00	$23 00	$27 00	$31 50	$38 70
3 3/16	22 00	24 25	26 50	31 00	36 50	43 50
3 7/16	24 40	26 50	28 75	33 25	38 70	45 90
3 11/16	26 50	28 25	30 50	35 00	40 50	48 50
3 15/16	31 75	34 00	36 50	42 00	46 00	55 00
4 7/16	36 25	38 50	41 00	46 00	51 00	59 50
4 15/16	42 50	44 80	47 25	52 50	57 25	65 75

Double Brace Ball and Socket Chain Oiling Drop Hangers.

Sizes of Shaft.	16 in. Drop.	18 in. Drop.	20 in. Drop.	25 in. Drop.	30 in. Drop.	36 in. Drop.
2 15/16	$21 50	$23 50	$25 50	$30 00	$35 00	$43 00
3 3/16	24 50	27 00	29 50	34 50	40 50	48 50
3 7/16	27 00	29 50	32 00	37 00	43 00	51 00
3 11/16	29 50	31 50	34 00	39 00	45 00	54 00
3 15/16	35 30	37 80	40 50	46 50	51 00	61 00
4 7/16	40 30	42 80	45 50	51 50	56 50	66 00
4 15/16	47 30	49 80	52 50	58 50	63 50	73 00



FIG. 6702

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BALL AND SOCKET DROP HANGERS

With Standard Babbitted Bearings.



FIG. 6703

PRICES, FIG. 6703

Sizes of Shaft, Inches.	8 Inch Drop.	10 Inch Drop.	12 Inch Drop.	16 Inch Drop.	18 Inch Drop.	20 Inch Drop.	25 Inch Drop.	30 Inch Drop.	36 Inch Drop.
1 7/16	$6 75	$7 00	$7 60	.....	.....	.....	.....	.....	.....
1 11/16	7 30	7 50	8 00	$9 30	.....	.....	.....	.....	.....
1 15/16	7 75	8 00	8 80	10 60	$11 65	$12 80	$14 75	$17 70	.....
2 3/16	....	9 20	10 30	12 40	13 65	15 00	17 25	20 70	.....
2 7/16	....	10 75	12 50	14 15	15 50	17 05	19 60	23 50	.....
2 11/16	....	13 00	14 75	15 80	17 40	19 15	22 00	26 40	$31 75
2 15/16	....	15 80	16 75	17 50	19 00	20 75	24 25	28 35	35 00
3 3/16	....	.....	18 75	20 00	22 00	24 00	28 00	33 00	38 25
3 7/16	....	.....	20 50	22 00	24 00	26 00	29 90	34 90	41 30
3 11/16	....	.....	.....	23 85	25 40	27 50	31 50	36 50	43 75
3 15/16	....	.....	.....	28 60	30 75	32 85	37 80	41 50	49 50
4 7/16	....	.....	.....	32 65	34 65	37 00	41 50	46 00	53 60
4 15/16	....	.....	.....	38 25	40 30	42 50	47 25	51 50	59 25

PRICES, FIG. 6704

Sizes of Shaft, Inches.	8 Inch Drop.	10 Inch Drop.	12 Inch Drop.	16 Inch Drop.	18 Inch Drop.	20 Inch Drop.	25 Inch Drop.	30 Inch Drop.	36 Inch Drop.
1 7/16	$8 10	$8 40	$9 10	.....	.....	.....	.....	.....	.....
1 11/16	8 75	9 00	9 60	$11 15	.....	.....	.....	.....	.....
1 15/16	9 30	9 60	10 55	12 70	$14 00	$15 35	$17 70	$21 25	.....
2 3/16	....	11 05	12 35	14 90	16 40	18 00	20 70	24 85	.....
2 7/16	....	12 90	15 00	17 00	18 60	20 45	23 50	28 20	.....
2 11/16	....	15 60	17 70	18 95	20 90	23 00	26 40	31 70	$38 10
2 15/16	....	19 00	20 10	21 00	22 80	24 90	29 10	34 00	42 00
3 3/16	....	.....	22 50	24 00	26 40	28 80	33 60	39 60	45 90
3 7/16	....	.....	24 60	26 40	28 80	31 20	35 90	41 90	49 55
3 11/16	....	.....	.....	28 60	30 50	33 00	37 80	43 80	52 50
3 15/16	....	.....	.....	34 30	36 90	39 40	45 35	49 80	59 40
4 7/16	....	.....	.....	39 30	41 60	44 40	49 80	55 20	64 30
4 15/16	....	.....	.....	45 90	48 35	51 00	56 70	61 80	71 10

BALL AND SOCKET DROP HANGERS

With Special Chain Oiling Bearings.



FIG. 6704

RING OILING ADJUSTABLE BALL AND SOCKET LINE HANGERS

With Babbitted Bearings.

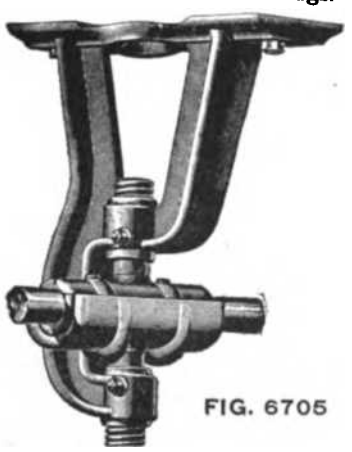


FIG. 6705

PRICE, FIG. 6705

Length of bearings — 5 diameters of shaft. Also length of bearings — 4 diameters of shaft for 2⅞ inches and larger.

Sizes of Shaft, Ins.	8 In. Drop.	9 In. Drop.	10 In. Drop.	12 In. Drop.	13 In. Drop.	15 In. Drop.	18 In. Drop.	21 In. Drop.	24 In. Drop.	27 In. Drop.	30 In. Drop.	33 In. Drop.	36 In. Drop.
1¼	$3 70	$3 75	$3 80	$4 00	$4 10	$4 35	$4 80	$5 30	$5 90	.....	.....	.....	.....
1⅜	4 20	4 35	4 50	4 80	5 05	5 40	5 65	6 20	6 65	.....	.....	.....	.....
1½	4 30	4 45	4 60	4 90	5 05	5 50	5 75	6 30	6 75	.....	.....	.....	.....
1⅝	4 45	4 60	4 75	5 05	5 30	5 65	5 90	6 45	6 90	.....	.....	.....	.....
1¾	5 10	5 30	5 50	5 85	6 15	6 65	7 10	7 55	8 20	$9 00	.....	.....	.....
1⅞	6 45	6 65	6 85	7 30	7 45	7 95	8 65	9 35	10 00	11 85	.....	.....	.....
2	6 60	6 80	7 00	7 45	7 60	8 10	8 80	9 50	10 15	11 00	$13 25	$14 50	$15 75
2⅛	6 80	7 00	7 20	7 65	7 80	8 30	9 00	9 70	10 35	11 20	13 45	14 75	16 00
2¼	7 00	7 20	7 40	7 85	8 00	8 50	9 20	9 90	10 55	11 40	13 65	15 00	16 25
2⅜	8 40	8 80	9 15	9 80	10 15	10 80	11 55	12 30	13 05	13 80	14 55	17 25	19 20
2½	8 60	9 00	9 35	10 00	10 35	11 00	11 75	12 50	13 25	14 00	14 75	17 50	19 60
2⅝	8 85	9 25	9 60	10 25	10 60	11 25	12 00	12 75	13 50	14 25	15 00	17 75	20 00
2¾	9 10	9 50	9 85	10 50	10 85	11 50	12 25	13 00	13 75	14 50	15 25	18 00	20 50
2⅞	12 25	12 90	13 55	14 85	15 50	16 75	18 00	19 25	20 50	21 75	23 00	24 25	25 50
3	12 50	13 15	13 80	15 10	15 75	17 00	18 25	19 50	20 75	22 00	23 25	24 50	26 00
3¼	13 25	13 90	14 55	15 85	16 50	17 75	19 00	20 25	21 50	22 75	24 00	25 25	26 75
3½	.....	.....	18 15	19 50	20 40	22 20	24 90	27 60	30 30	33 00	35 70	38 40	41 00
3¾	.....	.....	19 15	20 50	21 40	23 20	24 90	28 60	31 30	34 00	36 70	39 40	42 00
4	.....	.....	28 90	30 50	32 00	34 30	37 60	40 90	44 20	47 50	50 80	54 10	57 40
4½	.....	.....	38 00	39 00	40 15	42 50	45 00	47 50	50 00	52 50	55 00	57 50	60 00

DOUBLE BRACED PARTING HANGER

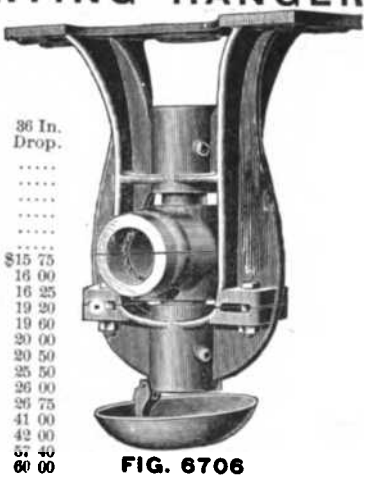


FIG. 6706

These hangers are furnished with either Standard Babbitted Bearings or Chain Oiling Bearings. For prices add 25 per cent. to the list prices of Figs. 6708 and 6704.

IMPROVED BALL AND SOCKET ADJUSTABLE PARTING HANGERS

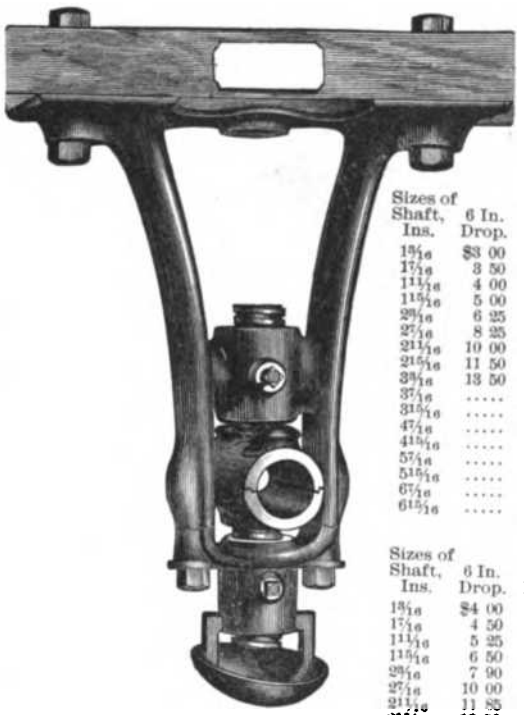


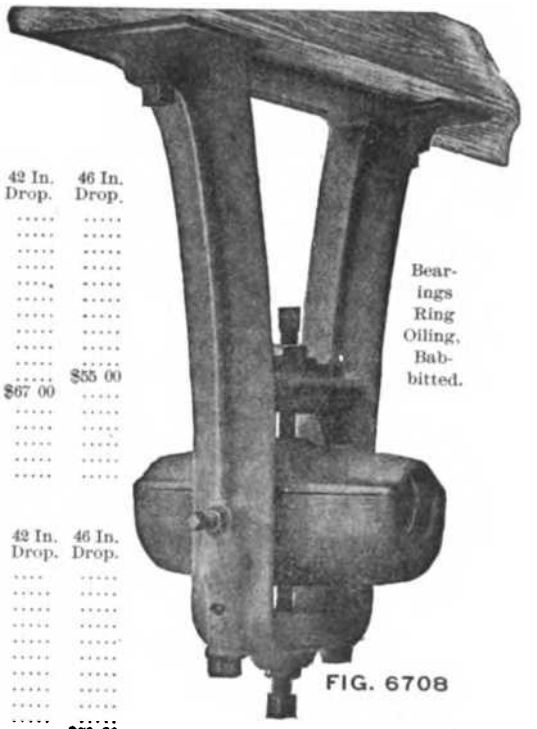
FIG. 6707

PRICES, FIG. 6707

Sizes of Shaft, Ins.	6 In. Drop.	8 In. Drop.	10 In. Drop.	12 In. Drop.	13 In. Drop.	16 In. Drop.	20 In. Drop.	25 In. Drop.	30 In. Drop.	36 In. Drop.	42 In. Drop.	46 In. Drop.
1 3/16	$3 00	$3 25	$3 50	$3 75	$3 90	$4 20	....	....	.....	.....	.....	.....
1 7/16	3 50	3 50	3 75	4 00	4 15	4 50	$5 00	....	.....	.....	.....	.....
1 11/16	4 00	4 00	4 40	4 70	4 95	5 50	6 50	$7 50	.....	.....	.....	.....
1 15/16	5 00	5 00	5 50	6 00	6 25	6 75	8 25	9 75	.....	.....	.....	.....
2 3/16	6 25	6 75	7 25	7 50	8 00	9 50	10 75	$12 00	.....	.....	.....	.....
2 7/16	8 25	8 25	8 50	9 00	9 25	9 75	11 25	12 75	14 75	.....	.....	.....
2 11/16	10 00	10 00	10 50	....	11 25	12 50	14 00	15 50	17 25	.....	.....	.....
2 15/16	11 50	11 50	12 25	....	13 50	15 00	16 50	18 00	19 50	$22 75	.....	.....
3 3/16	13 50	13 75	15 00	....	16 50	19 00	20 50	22 00	23 50	26 50	.....	.....
3 7/16	.....	16 00	17 75	....	20 00	22 25	24 50	26 75	30 00	33 50	.....	.....
3 15/16	.....	21 50	23 25	....	26 00	28 75	31 50	34 50	37 50	40 75	.....	$55 00
4 7/16	.....	34 00	36 00	....	38 75	40 75	43 50	46 25	50 00	55 00	$67 00	.....
4 15/16	.....	.....	50 00	....	55 00	60 00	65 00	70 00	75 00	.....	.....	.....
5 7/16	.....	.....	75 00	....	80 00	85 00	90 00	96 00	107 00	.....	.....	.....
5 15/16	.....	.....	.....	....	88 00	94 50	101 00	107 50	116 00	.....	.....	.....
6 7/16	.....	.....	.....	....	.....	102 00	108 00	116 00	127 00	.....	.....	.....
6 15/16	.....	.....	.....	....	.....	.....	118 00	128 00	140 00	.....	.....	.....

PRICES, FIG. 6708

Sizes of Shaft, Ins.	6 In. Drop.	8 In. Drop.	10 In. Drop.	12 In. Drop.	13 In. Drop.	16 In. Drop.	20 In. Drop.	25 In. Drop.	30 In. Drop.	36 In. Drop.	42 In. Drop.	46 In. Drop.
1 3/16	$4 00	$4 25	$4 50	$4 75	$4 90	$5 20	....	....	.....	.....	.....	.....
1 7/16	4 50	4 50	4 75	5 00	5 15	5 50	$6 00	....	.....	.....	.....	.....
1 11/16	5 25	5 25	5 65	5 95	6 20	6 75	7 75	$8 75	.....	.....	.....	.....
1 15/16	6 50	6 50	7 00	7 50	7 75	8 25	9 75	11 25	.....	.....	.....	.....
2 3/16	7 90	7 90	8 40	8 90	9 15	9 65	11 15	12 40	$13 65	.....	.....	.....
2 7/16	10 00	10 00	10 75	10 75	11 00	11 50	13 00	14 50	16 50	.....	.....	.....
2 11/16	11 85	11 85	12 35	.....	13 10	14 35	15 85	17 35	19 10	.....	.....	.....
2 15/16	13 50	13 50	14 25	.....	15 50	17 00	18 50	20 00	21 50	$24 75	.....	.....
3 3/16	15 75	16 00	17 25	.....	18 75	21 25	22 75	24 25	25 75	28 75	.....	.....
3 7/16	.....	18 50	20 25	.....	22 50	24 75	27 00	29 25	32 50	36 00	.....	.....
3 15/16	.....	25 50	27 25	.....	32 00	34 50	37 60	44 20	50 80	57 40	.....	$70 00
4 7/16	.....	38 50	40 50	.....	43 25	45 25	48 00	50 75	55 00	60 00	$71 50	.....
4 15/16	.....	.....	55 75	.....	60 75	65 75	70 75	75 75	80 75	.....	.....	.....
5 7/16	.....	.....	81 00	.....	86 00	91 00	96 00	102 00	113 00	.....	.....	.....
5 15/16	.....	.....	.....	.....	95 00	101 50	108 00	115 50	123 00	.....	.....	.....
6 7/16	.....	.....	.....	.....	.....	110 25	116 25	124 25	135 25	.....	.....	.....
6 15/16	.....	.....	.....	.....	.....	.....	128 25	138 25	150 25	.....	.....	.....



Bearings Ring Oiling, Babbitted.

FIG. 6708

Vertical and horizontal adjustment. Bearings fitted with scrapers to prevent escape of oil. Where collars are used on these bearings we supply collar end boxes.

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BALL AND SOCKET ADJUSTABLE HANGER FOR VERTICAL SHAFTING, ETC.

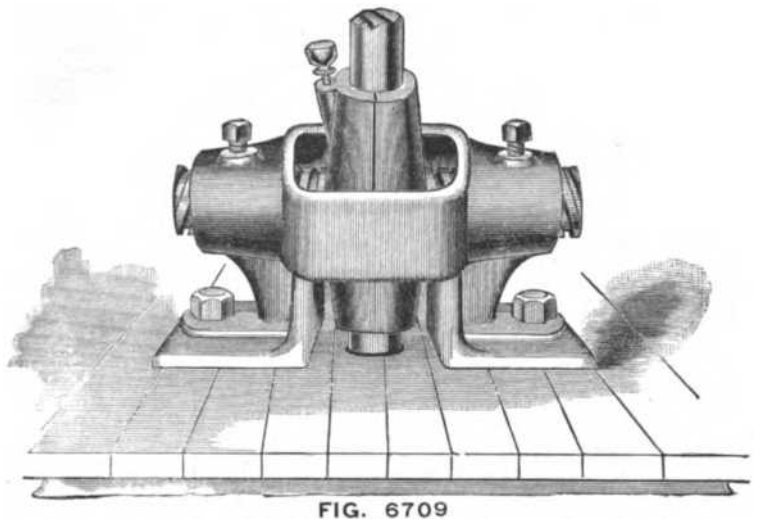


FIG. 6709

PRICES, FIG. 6709

Sizes, Inches.	Each.	Sizes, Inches.	Each.
1 7/16	$3 95	2 15/16	$13 00
1 11/16	5 00	3 3/16	15 00
1 15/16	6 00	3 7/16	20 00
2 3/16	7 00	3 11/16	32 50
2 7/16	9 00	3 15/16	32 50
2 11/16	11 00		

The boxes of these hangers are drilled and tapped to receive either oiler or grease cup. Price for oiler or grease cup is extra.

ADJUSTABLE SWIVEL HANGERS

SHORT DROP

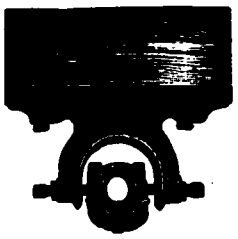


FIG. 6711

LONG DROP

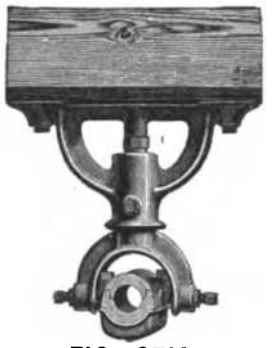


FIG. 6712

PRICES, FIGS. 6711 AND 6712

Diams. of Shaft, Inches.	Drop, Inches.	Each.	Diams. of Shaft, Inches.	Drop, Inches.	Each.	Diams. of Shaft, Inches.	Drop, Inches.	Each.
4	20	$25 00	2½	12	$6 00	1¾	16	$3 60
4	18	22 00	2¼	30	7 50	1¾	14	3 40
3½	30	21 50	2¼	24	6 75	1¾	12	3 20
3½	24	19 50	2¼	20	6 00	1¾	10	3 00
3½	20	18 00	2¼	18	5 60	1½	20	3 75
3½	18	17 00	2¼	16	5 20	1½	18	3 50
3	32	15 50	2¼	14	4 80	1½	16	3 00
3	30	14 50	2¼	12	4 50	1½	14	2 80
3	28	13 50	2	20	6 00	1½	12	2 70
3	24	12 50	2	18	5 50	1½	10	2 60
3	20	10 50	2	16	4 20	1¼	26	4 00
3	18	10 00	2	14	4 00	1¼	20	3 50
3	16	9 50	2	12	3 80	1¼	18	3 00
2½	30	9 50	2	10	3 70	1¼	16	2 85
2½	24	8 00	1¾	30	5 00	1¼	14	2 75
2½	20	7 50	1¾	26	4 50	1¼	12	2 50
2½	18	7 00	1¾	24	4 25	1¼	10	2 40
2½	16	6 60	1¾	20	4 10	1¼	8	2 20
2½	14	6 20	1¾	18	3 80			

PRICES, FIG. 6713

Diameters of Shaft, Inches.	Distance from Center of Shaft to Base, Inches.	Each.	Diameters of Shaft, Incnes.	Distance from Center of Shaft to Base, Inches.	Each.
1 5/16	2⅛	$2 50	3 7/16	8 5/16	$19 00
1 3/16	2¼	3 00	3 15/16	8⅞	28 00
1 5/16	2⅝	3 50	4 7/16	10¼	36 00
1 7/16	2⅝	4 00	4 15/16	10⅞	46 00
1 11/16	3	4 50	5¾	11	56 00
1 15/16	3½	5 50	5⅞	12½	70 00
2 3/16	4	7 00	6⅜	12⅞	95 00
2 7/16	4⅜	8 50	6⅞	13⅞	125 00
2 11/16	4¾	10 50	8	15¼	165 00
2 15/16	5	12 50	9	17¾	230 00

SELF ADJUSTING LOW DROP HANGER

With Self-Oiler. Babbitted Bearings, Bored and Faced Off.

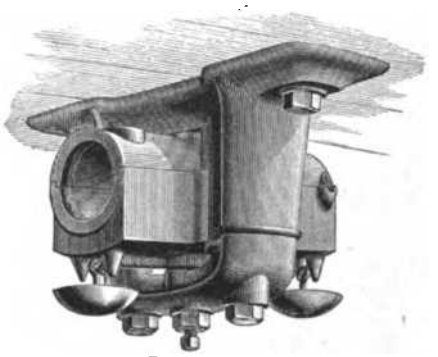


FIG. 6713

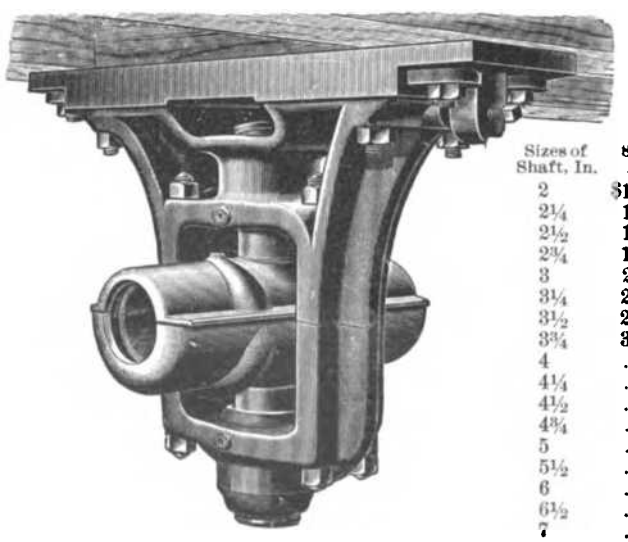


FIG. 6714

RING OILING BALL AND SOCKET HEAD SHAFT HANGERS

With Vertical and Horizontal Adjustment. Bearings Lined with Genuine Babbitt.

PRICES, FIG. 6714

Sizes of Shaft, In.	8 Inch Drop.	10 Inch Drop.	13 Inch Drop.	16 Inch Drop.	19 Inch Drop.	22 Inch Drop.	Shoe 2 In. Thick.	Shoe 3 In. Deep.	Shoe 4 In. Deep.
2	$11 60	$12 05	.....	.....	.....	.....	$5 90	$6 20	$7 10
2¼	12 60	13 05	.....	.....	.....	.....			
2½	16 00	16 70	$17 85	$18 90	$19 95	$21 10	6 90	7 55	8 20
2¾	17 50	18 20	19 30	20 40	21 40	22 50			
3	21 80	22 50	24 10	25 70	27 30	28 90	9 10	10 00	11 00
3¼	23 80	24 50	26 10	27 70	29 30	30 90			
3½	28 25	29 50	31 85	34 20	36 55	38 90	13 00	14 00	15 00
3¾	30 70	32 00	34 30	36 70	39 05	41 40			
4	.....	42 50	45 00	47 50	50 00	52 50	14 25	15 50	16 75
4¼	.....	45 50	48 00	50 50	53 00	55 50			
4½	.....	56 10	58 90	61 70	64 50	67 30	16 00	17 25	18 50
4¾	.....	59 60	62 40	65 20	68 00	70 80			
5	.....	70 00	74 55	79 10	83 05	88 20	18 70	20 00	21 50
5½	.....	85 00	90 00	95 00	100 00	105 00	20 50	24 30	26 00
6	.....	101 00	107 00	113 00	119 00	125 00	22 60	25 75	27 75
6½	.....	131 00	.....	.....	.....	.....	25 00	27 00	29 50
7	.....	.....	168 00	.....	.....	.....	31 00	36 30	42 80

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HEAD SHAFT HANGER

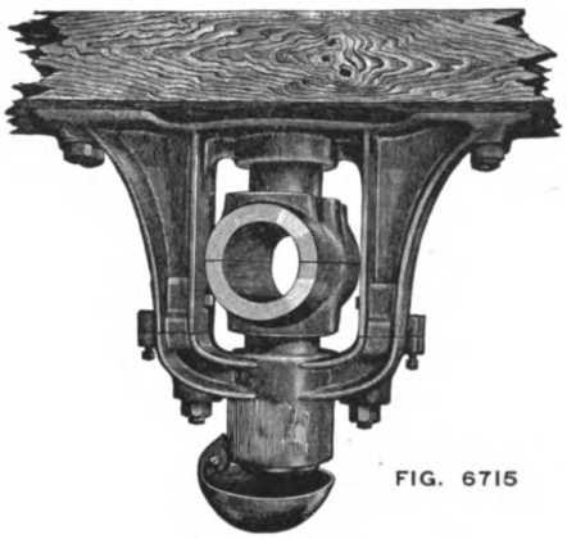


FIG. 6715

Prices quoted on application.

HEAD SHAFT HANGER

With Ball and Socket Ring Oiling Bearing.

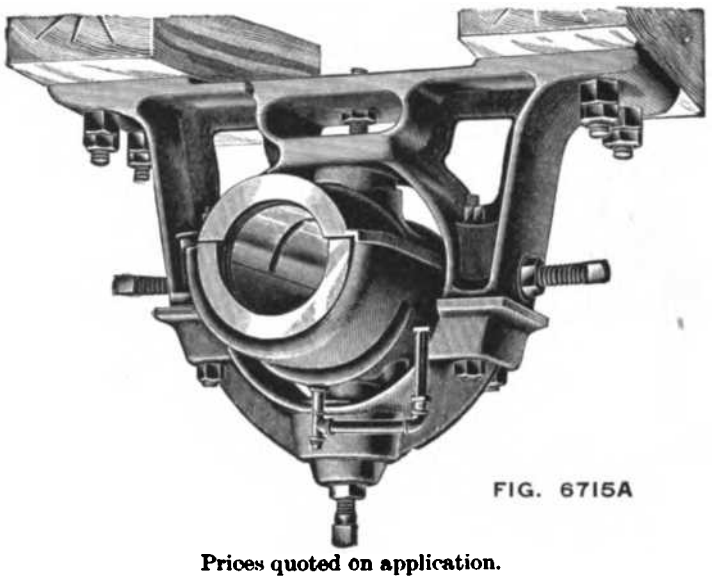


FIG. 6715A

Prices quoted on application.

HANGER GIRDER CLAMP

For Any Size Girder to Suit Hangers.

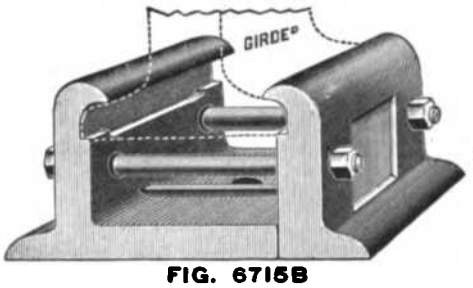


FIG. 6715B

For any size girder up to 4½ inches, and for any hangers to 2 15/16 inches, inclusive.
Per pair..... 85 50

For any size girder above 4½ inches, and for any hangers from 2 15/16 to 3 15/16 inches.
Per pair..... $6 50

HANGER BEAM CLAMPS

Made to Fit All Sizes of I Beams.

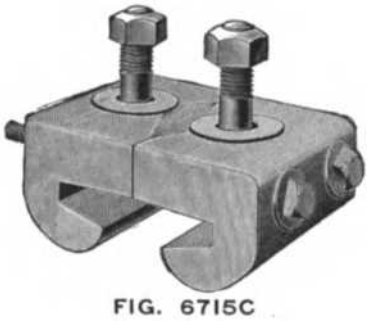


FIG. 6715C



FIG. 6715D

Price, each..... $3 00

I BEAM CLAMP OR FASTENING FOR HANGERS



FIG. 6715E

Prices on application.

BALL AND SOCKET RING OILING BEARING AND FLOOR STAND



FIG. 6715F

This bearing is provided with vertical and lateral adjustment, and can be removed from the stand without disturbing the shaft.

Prices quoted on application.

RING OILING BALL AND SOCKET HEAVY FLOOR STAND

Adjustable in Every Direction.

DESCRIPTION, FIG. 6715G

Length of bearings equals 5 diameters of shaft.

Also length of bearings equals 4 diameters of shaft for shafts 2⅞ inches and larger.

This floor stand is designed for supporting safely and securely heavy head shaft carrying main driving pulleys transmitting the duty of double and triple belts. It is strong, heavy and well proportioned.

Frequently employed as pillow block when great flexibility is necessary.

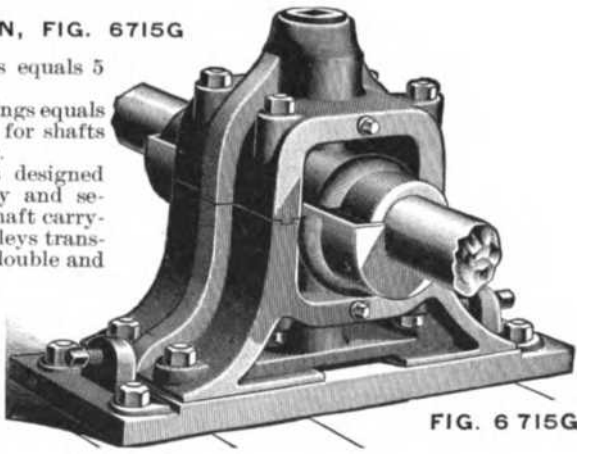


FIG. 6 715G

PRICES

Sizes of Shaft, Inches.	8 Inch Drop.	10 Inch Drop.	13 Inch Drop.	16 Inch Drop.	19 Inch Drop.	22 Inch Drop.	Shoe 2 Inches Thick.	Shoe 3 Inches Deep.	Shoe 4 Inches Deep.
2	$11 60	$12 05	.....	.....	.....	.....	$5 90	$6 20	$7 10
2¼	12 60	13 05	.....	.....	.....	.....			
2½	16 00	16 70	$17 85	$18 90	$19 95	$21 10	6 90	7 55	8 20
2¾	17 50	18 20	19 30	20 40	21 40	22 50			
3	21 80	22 50	24 10	25 70	27 30	28 90	9 10	10 00	11 00
3¼	23 80	24 50	26 10	27 70	29 30	30 90			
3½	28 25	29 50	31 85	34 20	36 55	38 90	13 00	14 00	15 00
3¾	30 70	32 00	34 30	36 70	39 05	41 40			
4	.....	42 50	45 00	47 50	50 00	52 50	14 25	15 50	16 75
4¼	.....	45 50	48 00	50 50	53 00	55 50			
4½	.....	56 10	58 90	61 70	64 50	67 30	16 00	17 25	18 50
4¾	.....	59 60	62 40	65 20	68 00	70 80			
5	.....	70 00	74 55	79 10	83 05	88 20	18 70	20 00	21 50
5½	.....	85 00	90 00	95 00	100 00	105 00	20 50	24 30	26 00
6	.....	101 00	107 00	113 00	119 00	125 00	22 60	25 75	27 75
6½	.....	131 00	.....	.....	.....	.....	25 00	27 00	29 50
7	.....	.....	168 00	.....	.....	.....	31 00	36 30	42 80

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RING OILING BALL AND SOCKET FLOOR STAND

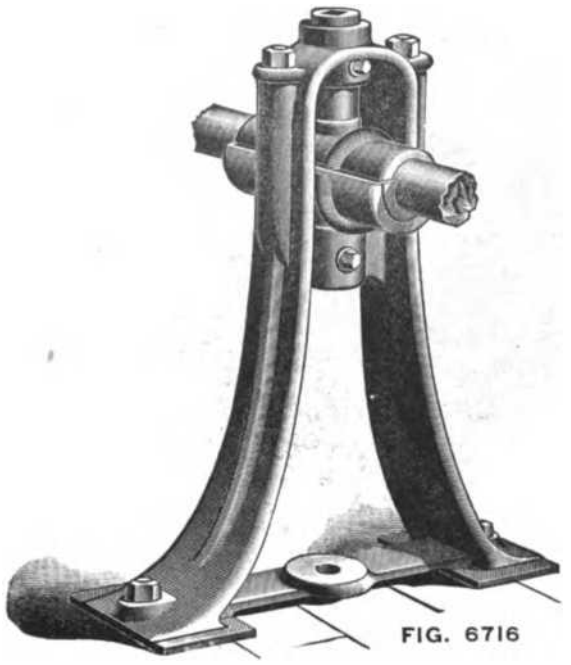


FIG. 6716

Light Pattern, with Babbitted Bearings.

PRICES, FIG. 6716

Length of bearings—5 diameters of shaft. Also length of bearings—4 diameters of shaft for 2⅜ inches and larger.

Sizes of Shaft, Inches.	8 Inch Drop.	9 Inch Drop.	10 Inch Drop.	12 Inch Drop.	13 Inch Drop.	15 Inch Drop.	18 Inch Drop.	21 Inch Drop.	24 Inch Drop.	27 Inch Drop.	30 Inch Drop.	33 Inch Drop.	36 Inch Drop.
1¼	$3 70	$3 75	$3 80	$4 00	$4 10	$4 35	$4 80	$5 30	$5 90	.....	.....	.....	.....
1⅜	4 20	4 35	4 50	4 80	5 05	5 40	5 65	6 20	6 65	.....	.....	.....	.....
1½	4 30	4 45	4 60	4 90	5 05	5 50	5 75	6 30	6 75	.....	.....	.....	.....
1⅝	4 45	4 60	4 75	5 05	5 30	5 65	5 90	6 45	6 90	.....	.....	.....	.....
1¾	5 10	5 30	5 50	5 85	6 15	6 65	7 10	7 55	8 20	$9 00	.....	.....	.....
1⅞	6 45	6 65	6 85	7 30	7 45	7 95	8 65	9 35	10 00	11 85	.....	.....	.....
2	6 60	6 80	7 00	7 45	7 60	8 10	8 80	9 50	10 15	11 00	$13 25	.....	.....
2⅛	6 80	7 00	7 20	7 65	7 80	8 30	9 00	9 70	10 35	11 20	13 45	.....	.....
2¼	7 00	7 20	7 40	7 85	8 00	8 50	9 20	9 90	10 55	11 40	13 65	.....	.....
2⅜	8 40	8 80	9 15	9 80	10 15	10 80	11 55	12 30	13 05	13 80	14 55	.....	.....
2½	8 60	9 00	9 35	10 00	10 35	11 00	11 75	12 50	13 25	14 00	14 75	.....	.....
2⅝	8 85	9 25	9 60	10 25	10 60	11 25	12 00	12 75	13 50	14 25	15 00	.....	.....
2¾	9 10	9 50	9 85	10 50	10 85	11 50	12 25	13 00	13 75	14 50	15 25	.....	.....
2⅞	12 25	12 90	13 55	14 85	15 50	16 75	18 00	19 25	20 50	21 75	23 00	.....	.....
3	12 50	13 15	13 80	15 10	15 75	17 00	18 25	19 50	20 75	22 00	23 25	.....	.....
3¼	13 25	13 90	14 55	15 85	16 50	17 75	19 00	20 25	21 50	22 75	24 00	.....	.....
3½	.....	.....	18 15	19 50	20 40	22 20	24 90	27 60	30 30	33 00	35 70	$38 40	$41 00
3¾	.....	.....	19 15	20 50	21 40	23 20	24 90	28 60	31 30	34 00	36 70	39 40	42 00
4	.....	.....	.....	30 50	32 00	34 30	37 60	40 90	44 20	47 50	50 80	54 10	57 40
4½	.....	.....	.....	39 00	40 15	42 50	45 00	47 50	50 00	52 50	55 00	57 50	60 00

DOUBLE BRACED ADJUSTABLE FLOOR STAND

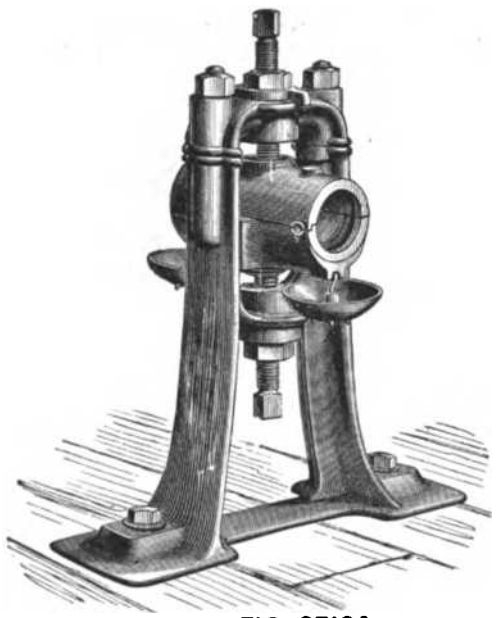


FIG. 6716A

With Self-Oilers (Metallic Wick) and Babbitted Bearings, Bored and Faced Off.

PRICES, FIG. 6716A

Diams. of Shaft, Inches.	6 Inch Drop.	7½ Inch Drop.	9 Inch Drop.	12 Inch Drop.	15 Inch Drop.	18 Inch Drop.	21 Inch Drop.	24 Inch Drop.	27 Inch Drop.	30 Inch Drop.	33 Inch Drop.	36 Inch Drop.
15/16	$2 25	$2 50	$2 75	$3 50	$4 00	.....	.....	.....	.....	.....	.....	.....
1 3/16	3 00	3 25	3 50	4 00	4 25	.....	.....	.....	.....	.....	.....	.....
1 5/16	3 50	3 75	4 00	4 25	4 50	$4 75	$5 00	.....	.....	.....	.....	.....
1 7/16	3 75	4 00	4 25	4 50	4 75	5 00	5 25	.....	.....	.....	.....	.....
1 11/16	....	....	5 00	5 25	5 50	5 75	6 00	.....	.....	.....	.....	.....
1 15/16	....	....	6 00	6 50	7 00	7 50	8 00	$8 50	$9 00	.....	.....	.....
2 3/16	....	....	7 75	8 25	9 00	9 50	10 00	10 50	.....	.....	.....	.....
2 7/16	....	....	9 00	9 75	10 50	11 25	12 00	12 75	13 50	$14 25	$15 00	$15 75
2 11/16	....	....	11 25	12 25	13 25	14 25	15 25	16 25	17 25	18 25	19 25	20 25
2 15/16	....	....	13 50	14 75	16 00	17 25	18 25	19 25	20 25	21 25	22 25	23 25
3 7/16	....	....	19 50	22 00	23 50	25 00	26 50	28 00	29 50	31 00	32 50	34 00
3 15/16	....	....	.....	27 00	28 50	30 50	32 00	33 50	35 00	36 50	38 00	40 00
4 7/16	....	....	.....	34 00	36 00	38 00	40 00	42 00	44 00	46 00	48 00	50 00
4 15/16	....	....	.....	39 00	41 00	43 00	45 00	47 00	49 00	51 00	53 00	55 00
5⅜	....	....	.....	.....	.....	.....	63 00	66 50	70 00	73 50	77 00	80 50
5⅞	....	....	.....	.....	.....	.....	70 00	74 00	78 00	82 00	86 00	90 00

The drop of Floor Stands as stated here is only approximate.

RING OILING BEARING AND FLOOR STAND

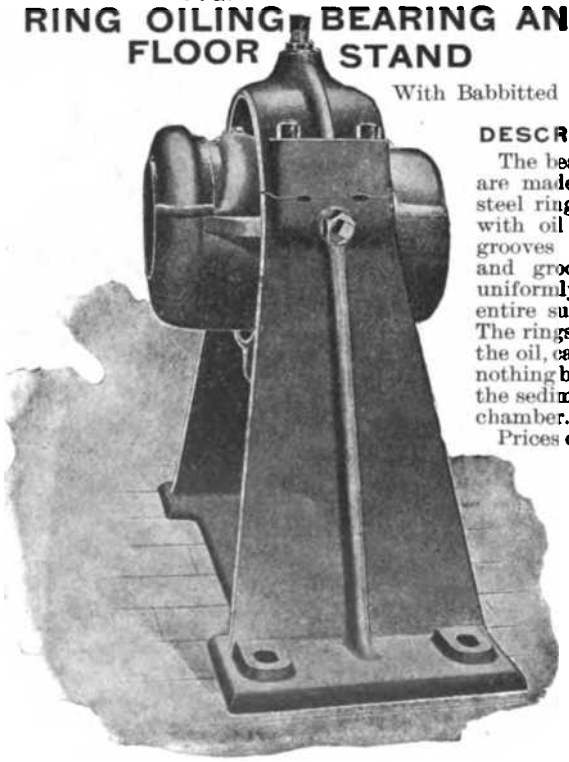


FIG. 6717

With Babbitted Boxes.

DESCRIPTION, FIG. 6717

The bearings in these stands are made with two tempered steel rings, supplying bearing with oil at two points. The grooves are so channeled and grooved that the oil is uniformly distributed over the entire surface of the bearing. The rings move easily through the oil, carrying up to the shaft nothing but the pure oil, leaving the sediments in bottom of oil chamber.

Prices on application.

DESCRIPTION FIG. 6718

Illustration shows 10 7/16 inch Chain Oiling Pillow Blocks on Heavy Floor Stands with planed adjusting wedges and screws. Prices on application.

HEAVY FLOOR STAND

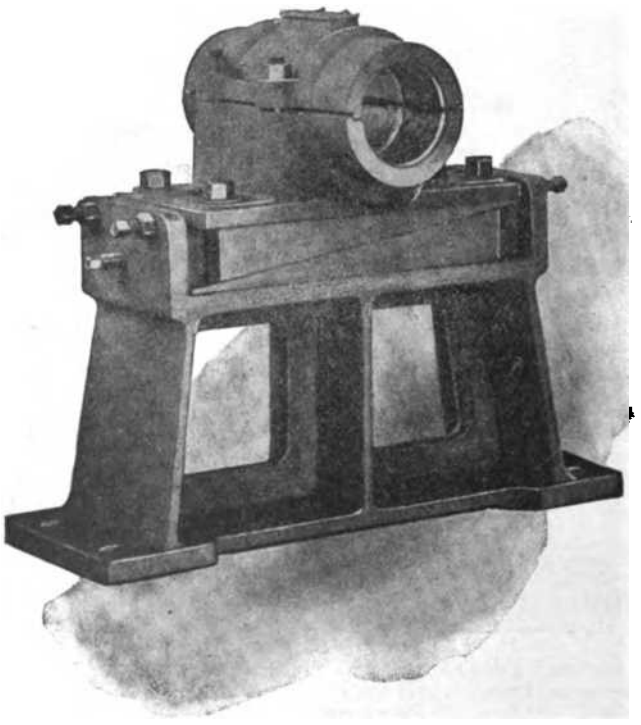


FIG. 6718

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ADJUSTABLE BALL AND SOCKET FLOOR STAND



FIG. 6719

1 5/16	Shaft, adjustable from	6	in. to	8½	in..	$3 00
1 3/16	"	"	6	"	8½	" .. 4 00
1 7/16	"	"	6	"	8½	" .. 5 00
1 7/16	"	"	9	"	13	" .. 6 00

HEAVY FLOOR STAND

USED FOR HANGERS OR PILLOW BLOCKS

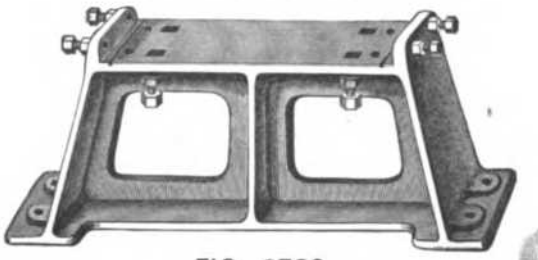


FIG. 6720

Prices on application.

FLOOR STANDS



FIG. 6721

Prices on application.

ADJUSTABLE SELF OILING PEDESTAL

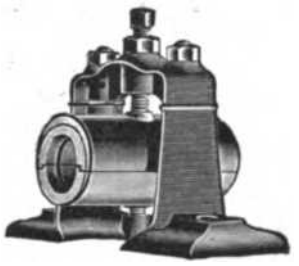


FIG. 6722

These pedestals can be used as short drop hangers by inverting the box.

PRICES

Diameters of Shaft. Inches.	Each.	Length of Bearings, Inches.
1 5/16	$3 90	4
1 3/16	4 20	5
1 5/16	4 50	5
1 7/16	4 80	6
1 11/16	5 90	7
1 15/16	7 40	8
2 3/16	9 30	9
2 7/16	11 30	10
2 11/16	13 80	11
2 15/16	16 90	12
3 3/16	21 10	13
3 7/16	25 30	14
3 11/16	30 60	15
3 15/16	35 80	16
4 3/16	41 70	16
4 7/16	47 60	16
4 15/16	60 50	18
5 7/16	75 50	20

RING OILING BALL AND SOCKET PILLOW BLOCK

WITH BABBITTED BEARINGS

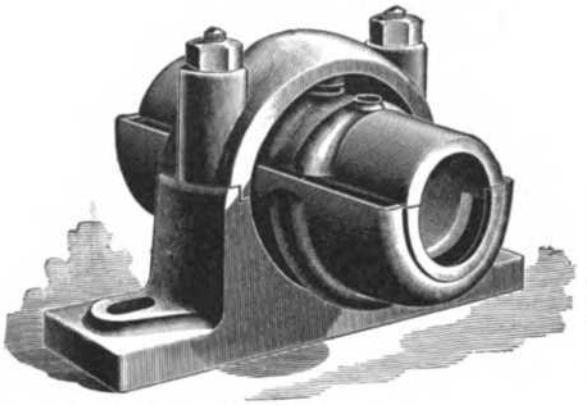


FIG. 6723

Length of bearings — 5 diameters of shaft; also length of bearings — 4 diameters of shaft for 2⅞ inches and larger.

Sizes, Inches.	Each.	From Base of Pillow Block to Center of Shaft, In.	From Bottom of Shoe or Wall Frame to Center of Shaft, In.	Sizes, Inches.	Each.	From Base of Pillow Block to Center of Shaft, In.	From Bottom of Shoe or Wall Frame to Center of Shaft, In.
1¼	$3 60	2 3/16	2 3/16	3½	$15 80	5 15/16	7 3/16
1⅜	3 90	2 5/16	3 5/16	3¾	16 00	5 15/16	7 3/16
1½	4 00	2 5/8	3 5/8	3½	19 00	6 5/8	8 5/8
1⅝	5 15	3 5/16	4 5/16	3¾	24 00	6 15/16	8 11/16
1¾	5 85	3 5/16	4 5/16	4	30 75	7¼	9¼
1⅞	6 30	3¾	4¾	4¼	33 40	8⅛	10⅛
2	6 60	3¾	4¾	4½	37 50	8⅛	10⅛
2⅛	8 00	4 5/16	5 7/16	5	47 70	9	11½
2¼	8 35	4 5/16	5 7/16	5½	63 35	9⅞	12⅛
2⅜	9 30	4⅝	5⅞	6	80 00	10¾	13¾
2½	9 70	4⅝	5⅞	6½	100 00	11⅝	15⅝
2¾	11 35	5 1/16	6 1/16	7	122 35	12½	16
2¾	11 65	5 1/16	6 1/16	7½	154 00	13⅝	17⅝
2⅞	13 25	5½	7	8	177 00	14¼	18¼
3	13 85	5½	7				

RING OILING RIGID PILLOW BLOCK

BABBITTED

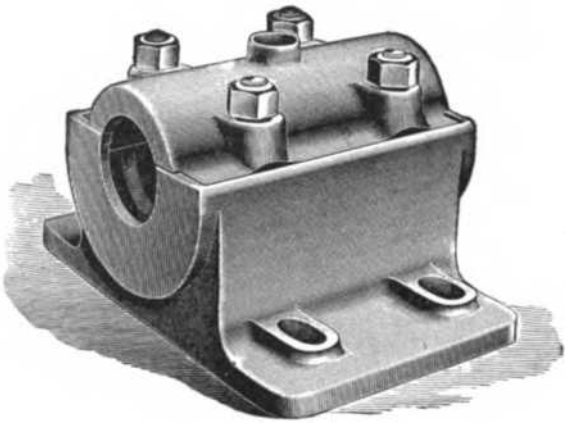


FIG. 6724

Length of Bearings — 3½ diameters of shaft.

Sizes, Inches.	Each.	From Bottom of Pillow Block to Center of Shaft, In.	From Bottom of Shoe or Wall Frame to Center of Shaft, In.	Sizes, Inches.	Each.	From Bottom of Pillow Block to Center of Shaft, In.	From Bottom of Shoe or Wall Frame to Center of Shaft, In.
1¼	$2 70	1⅞	2½	4¼	$28 10	6⅝	8½
1⅜	2 90	2¼	3	4½	31 10	6¾	9
1¾	3 30	2⅝	3½	4¾	35 20	7⅛	9½
3	4 20	3	4	5	40 30	7⅛	10
2¼	5 40	3⅜	4½	5½	48 30	8¼	11
2½	6 50	3¾	5	6	59 00	9	12
2¾	7 85	4⅛	5½	6½	76 70	9¾	13
3	9 10	4½	6	7	95 85	10½	14
3¼	11 50	4⅞	6½	7½	123 65	11¼	15
3½	13 95	5¼	7	8	146 85	12	16
3¾	17 95	5⅝	7½	8½	175 00	12¾	17
4	25 00	6	8	9	205 00	13½	18

RIGID PILLOW BLOCK

BABBITTED

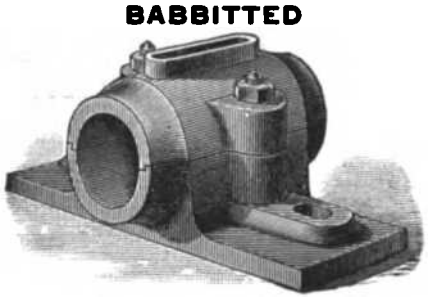


FIG. 6725

Length of bearings — 3 diameters of shaft.

Sizes, Inches.	Each.	From Bottom of Pillow Block to Center of Shaft, Inches.	From Bottom of Shoe or Wall Frame to Center of Shaft, Inches.	Sizes, Inches.	Each.	From Bottom of Pillow Block to Center of Shaft, Inches.	From Bottom of Shoe or Wall Frame to Center of Shaft, Inches.
1¼	$1 70	1¼	1 7/16	3½	$10 20	3½	5¼
1⅜	1 90	1½	2¼	3¾	12 60	3¾	5⅝
1¾	2 25	1¾	2⅝	4	15 70	4	6
2	2 90	2	3	4¼	18 60	4¼	6⅝
2¼	3 55	2¼	3⅜	4½	24 15	4½	6¾
2½	4 45	2½	3¾	5	28 40	5	7½
2¾	5 60	2¾	4⅛	5½	35 35	5½	8¼
3	7 20	3	4½	6	43 00	6	9
3¼	8 60	3¼	4⅞				

BALL AND SOCKET PEDESTAL



FIG. 6726

Diameters of Boxes, Inches.	Length of Boxes, Inches.	Each. Plain Boxes.	Each. Babbitt Boxes.	Diameters of Boxes, Inches.	Length of Boxes, Inches.	Each. Plain Boxes.	Each. Babbitt Boxes.
1 7/16	6	$4 25	$5 50	3 15/16	16	$25 50	$34 00
1 11/16	7	5 00	6 25	4 3/16	17	31 00	40 00
1 15/16	8	6 25	7 75	4 7/16	18	36 00	46 00
2 3/16	9	7 75	10 00	4 15/16	20	46 00	56 50
2 7/16	10	9 25	13 00	5 7/16	22	56 00	70 00
2 11/16	11	11 25	15 75	5 15/16	24	70 00	85 00
2 15/16	12	13 75	19 00	6 7/16	26	90 00	110 00
3 3/16	13	15 00	20 50	6 15/16	28	110 00	135 00
3 7/16	14	20 00	26 25	7 7/16	30	.....	.....
3 11/16	15	22 75	30 00	7 15/16	32	.....	.....

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BALL AND SOCKET PILLOW BLOCK

WITH STANDARD BABBITTED BEARING

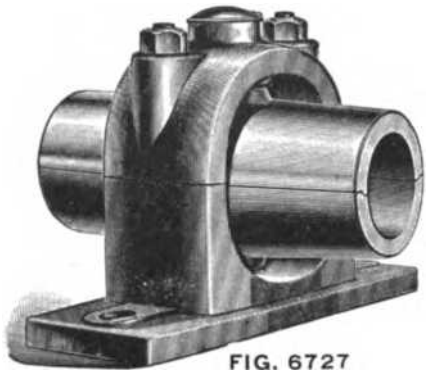


FIG. 6727

PRICES, FIG. 6727

Sizes, Inches.	Each.	Sizes, Inches.	Each.
1 1/16	$4 20	3 1/16	$23 00
1 5/16	5 30	3 5/16	27 50
2 3/16	7 00	4 7/16	32 00
2 7/16	8 75	4 15/16	41 00
2 11/16	10 50	5 7/16	50 00
2 15/16	12 00	5 15/16	59 00
3 3/16	16 00	6 7/16	64 00
3 7/16	20 00	6 15/16	77 00

BALL AND SOCKET PILLOW BLOCK

PRICES, FIG. 6728

Sizes, Inches.	Each.	Sizes, Inches.	Each.
1 1/16	$5 00	3 1/16	$27 60
1 5/16	6 40	3 5/16	33 00
2 3/16	8 40	4 7/16	38 40
2 7/16	10 50	4 15/16	49 20
2 11/16	12 60	5 7/16	60 00
2 15/16	14 40	5 15/16	70 80
3 3/16	19 20	6 7/16	76 80
3 7/16	24 00	6 15/16	92 40

WITH SPECIAL CHAIN OILING BEARING

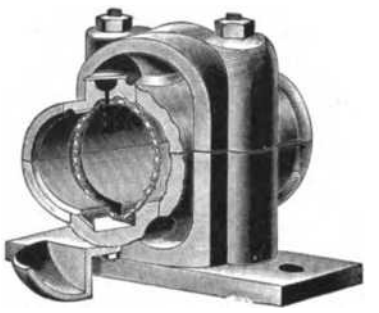


FIG. 6728

RIGID PILLOW BLOCK

WITH STANDARD BABBITTED BEARING

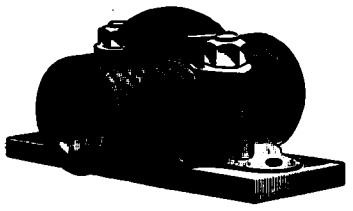


FIG. 6729

PRICES

Sizes, Inches.	Each.	Sizes, Inches.	Each.
1 3/16	$1 60	2 7/16	$4 80
1 7/16	2 10	2 11/16	6 00
1 11/16	2 65	2 15/16	7 50
1 15/16	3 40	3 3/16	9 25
2 3/16	4 00	3 7/16	11 00

RIGID PILLOW BLOCK

WITH SPECIAL CHAIN OILING BEARING

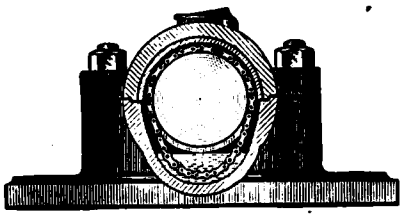


FIG. 6730

PRICES

Sizes, Inches.	Each.	Sizes, Inches.	Each.
1 15/16	$4 10	2 15/16	$9 00
2 3/16	4 85	3 3/16	11 25
2 7/16	5 75	3 7/16	13 25
2 11/16	7 25	....	....

EXTRA HEAVY RIGID PILLOW BLOCKS

STANDARD BABBITTED BEARING



FIG. 6731

Plain Double Ear.

PRICES

Sizes, Inches.	Each.
2 15/16	$12 50
3 7/16	15 00
3 11/16	17 00
3 15/16	19 00
4 7/16	22 00
4 15/16	30 00
5 7/16	34 00
5 15/16 planed bases	54 00
6 7/16 " "	62 50
6 15/16 " "	81 25
7 1/2 " "	95 00

SPECIAL CHAIN OILING BEARING



FIG. 6732

Double Ear.

PRICES

Sizes, Inches.	Each.
2 15/16	$15 00
3 7/16	17 25
3 11/16	19 55
3 15/16	21 85
4 7/16	25 30
4 15/16	34 50
5 7/16	39 50
5 15/16 planed bases	62 10
6 7/16 " "	72 00
6 15/16 " "	95 00
7 1/2 " "	112 00

SELF ADJUSTING PILLOW BLOCK

With Self Oiler. Babbitted Bearing, Bored and Faced Off.

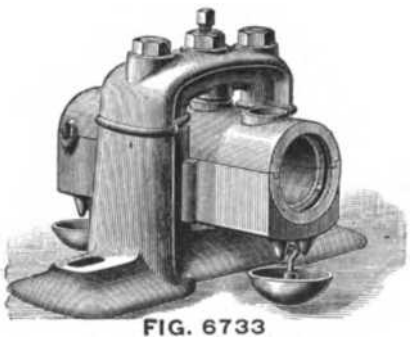


FIG. 6733

PRICES

Diameters of Shaft, Inches.	Distance from Center of Shaft to Base, Inches.	Each.	Diameters of Shaft, Inches.	Distance from Center of Shaft to Base, Inches.	Each.
1 5/16	2 1/2	$2 50	3 7/16	9 1/4	$19 00
1 3/16	2 7/8	3 00	3 15/16	10	28 00
1 5/16	3 1/8	3 50	4 7/16	11 1/2	36 00
1 7/16	3 1/8	4 00	4 15/16	12	46 00
1 11/16	3 7/8	4 50	5 3/8	12 1/2	56 00
1 15/16	4 3/8	5 50	5 7/8	14	70 00
2 3/16	4 3/4	7 00	6 3/8	14 1/2	95 00
2 7/16	5 1/8	8 50	6 7/8	15 1/2	125 00
2 11/16	5 5/8	10 50	8	17	165 00
2 15/16	5 7/8	12 50	9	19 1/2	230 00

JOURNAL BOX OR RIGID PILLOW BLOCK

With Babbitted Bearing, Bored and Faced Off.

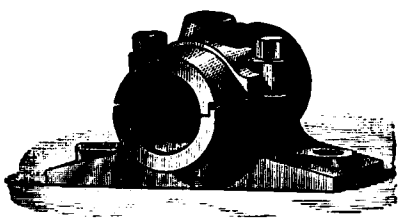


FIG. 6734

PRICES

Diameters of Shaft, Inches.	Each.	Diameters of Shaft, Inches.	Each.
1 5/16	$2 00	2 15/16	$7 50
1 3/16	2 30	3 3/16	9 00
1 5/16	2 60	3 7/16	11 00
1 7/16	3 00	3 11/16	13 50
1 11/16	3 50	3 15/16	15 00
1 15/16	4 00	4 7/16	17 00
2 3/16	4 50	4 15/16	21 00
2 7/16	5 50	5 3/8	26 00
2 11/16	6 50	5 7/8	31 00

RIGID PILLOW BLOCK

PLAIN BEARING

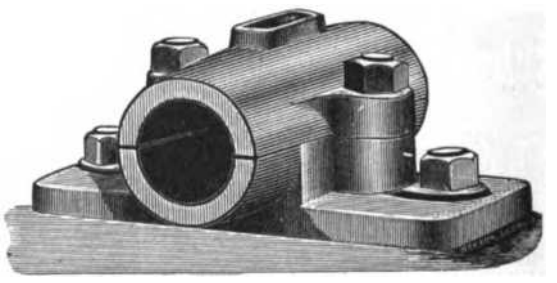


FIG. 6735

PRICES

Diameters of Shaft, Inches.	Each.	Lengths of Bearing, Inches.	Diameters of Shaft, Inches.	Each.	Lengths of Bearing, Inches.
1 5/16	$1 30	3 1/8	3 11/16	$10 10	12 1/4
1 3/16	1 60	4	3 15/16	11 50	18
1 7/16	2 00	4 3/4	4 3/16	13 25	14
1 11/16	2 65	5 3/4	4 7/16	15 00	15
1 15/16	3 35	6 3/8	4 15/16	19 00	18
2 3/16	4 00	7 1/4	5 7/16	23 50	19
2 7/16	4 80	8	5 15/16	28 50	20
2 11/16	5 65	9	6 7/16	34 00	20
2 15/16	6 70	9 3/4	6 15/16	40 00	20 1/4
3 3/16	7 75	10 1/2	7 7/16	47 00	21
3 7/16	8 90	11 1/2	7 15/16	55 00	22

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ADJUSTABLE SWIVEL PILLOW BLOCKS

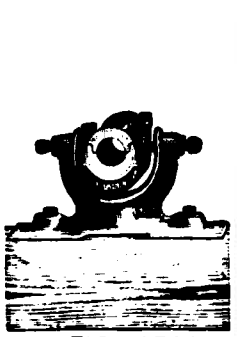


FIG. 6736

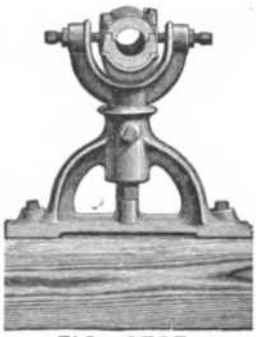


FIG. 6737

PRICES

Diameters of Shaft, Inches.	Height from Floor or Top of Beam to Center of Shaft, Inches.	Each.
4	10	$12 00
3½	9	9 50
3	8	6 50
2½	7	4 50
2¼	6½	3 75
2	6	3 25
1¾	5½	2 75
1½	5	2 25
1¼	4½	2 00

CLAMP BOX

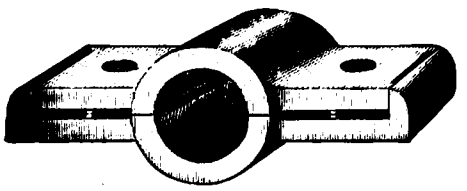


FIG. 6741

HEAVY TRUNNION BOX

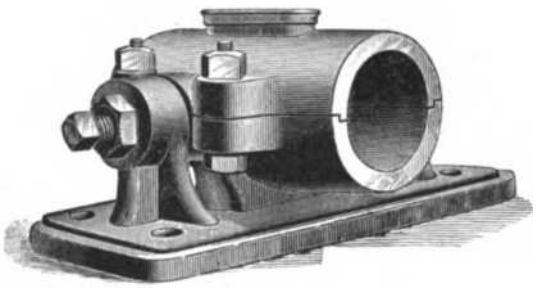


FIG. 6742

SOLID JOURNAL BOX

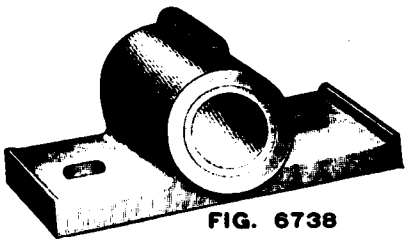


FIG. 6738

PRICES

Sizes, Inches.	Each.	Sizes, Inches.	Each.
1 15/16	$0 95	2 11/16	$4 80
1 3/16	1 10	2 15/16	6 00
1 7/16	1 50	3 3/16	7 20
1 11/16	1 95	3 7/16	8 80
1 15/16	2 40	3 11/16	10 50
2 3/16	3 20	3 15/16	12 00
2 7/16	4 00		

PRICES, FIG. 6741

Diameters of Shaft, Inches.	Each.	Diameters of Shaft, Inches.	Each.
1 15/16	$1 00	2 7/16	$4 50
1 3/16	1 25	2 11/16	5 50
1 7/16	1 75	2 15/16	6 50
1 11/16	2 25	3 3/16	7 50
1 15/16	2 75	3 7/16	8 50
2 3/16	3 50	3 11/16	9 50

DESCRIPTION, FIG. 6742

These bearings are made specially for heavy shaft equipment and are designed on the trunnion principle. They are furnished either with plain or special chain oiling bearings. The trunnion on bottom of bearing is machine finished and fits into babbitted recess in base of frame.

PRICES, FIG. 6742, WITH PLAIN BEARINGS

Sizes, Inches.	Each.	Sizes, Inches.	Each.
4 7/16	$46 50	6 7/16	$84 75
4 15/16	54 00	6 15/16	98 00
5 7/16	63 00	7 7/16	110 00
5 15/16	73 50	7 15/16	120 00

PRICES, FIG. 6742, WITH CHAIN OILING BEARINGS

Sizes. Inches.	Each.	Sizes, Inches.	Each.
4 7/16	$55 75	6 7/16	$102 00
4 15/16	64 75	6 15/16	117 50
5 7/16	76 00	7 7/16	132 00
5 15/16	88 50	7 15/16	144 00

ECCENTRIC BOX

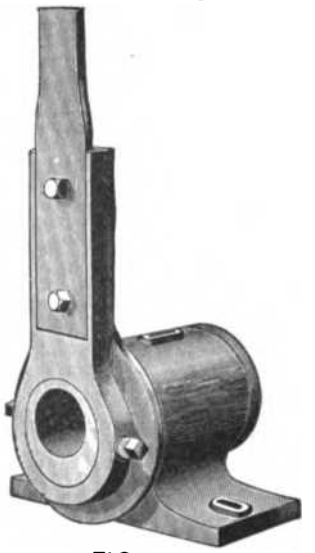


FIG. 6740

PRICES

Sizes, Inches.	Each.	Sizes, Inches.	Each.
1 15/16	$18 00	2 11/16	$27 00
2 7/16	22 00	2 15/16	32 50

STANDS FOR BALL AND SOCKET PILLOW BLOCK

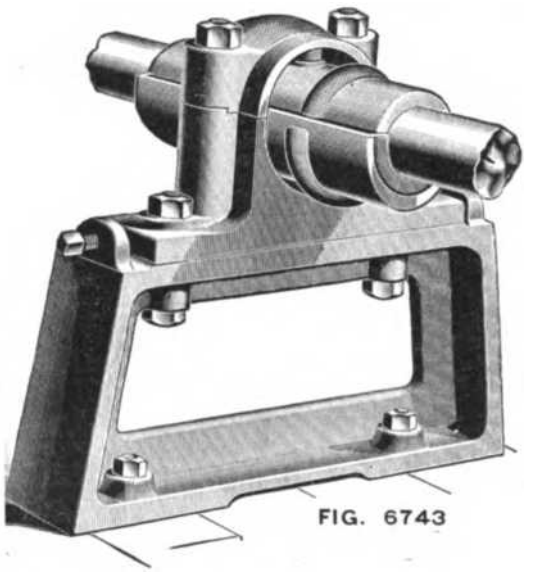


FIG. 6743

DESCRIPTION AND PRICES, FIG. 6743

For shafting, on floors or piers, running at high speed and carrying several large pulleys, as in electric light and power stations, the ball and socket ring oiling pillow blocks on these stands are recommended. They are strong and rigid, and insure that the lines shall run with perfect steadiness and truth under the heaviest and most variable loads.

Sizes of Shaft, Inches.	Height to Center of Shaft. 15 Inches.	18 Inches.	21 Inches.	24 Inches.	27 Inches.	30 Inches.	33 Inches.	36 Inches.	39 Inches.	42 Inches.
3	$6 00	$8 15	$9 85	$11 50	$13 20	$14 95	$16 65	$18 30	$20 00	$21 70
3½	9 20	10 80	12 00	13 60	14 80	16 80	18 40	20 00	21 60	23 20
4	13 20	15 20	17 60	20 00	23 60	26 40	29 20	32 00	34 80	37 60
4½	17 60	19 20	21 90	24 65	28 00	31 20	34 00	36 80	39 60	42 40
5	.....	23 20	26 10	29 10	32 30	35 85	39 20	42 55	45 90	49 60
5½	.....	25 30	30 25	34 95	38 15	41 35	44 70	48 15	51 75	55 35
6	.....	.....	37 00	40 00	46 80	50 40	53 00	59 20	64 00	68 80
6½	.....	.....	.....	49 60	53 70	59 20	64 40	69 60	74 80	80 00
7	.....	.....	.....	62 70	65 75	72 30	77 60	82 90	88 15	93 45
7½	..	.....	.....	.....	.....	80 00	83 60	88 25	92 90	97 50
8	.....	.....	.....	.....	.....	96 50	100 00	105 50	111 30	117 10

BASE PLATE FOR PEDESTAL



FIG. 6744

PRICES

Including Bolts for Securing Pedestal to Base Plate.

Sizes, In.	Each.	Sizes, In.	Each.	Sizes, In.	Each.
1 15/16	$4 50	3 7/16	$9 50	4 15/16	$14 50
2 3/16	4 50	3 11/16	9 50	5 7/16	20 00
2 7/16	5 75	3 15/16	12 00	5 15/16	20 00
2 11/16	5 75	4 3/16	12 00	6 7/16	23 00
2 15/16	7 50	4 7/16	14 50	6 15/16	23 00
3 3/16	7 50				

SOLE PLATE

For Patent Self-Adjusting and Hand Pillow Blocks.

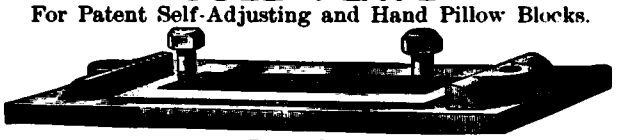


FIG. 6745

PRICES

Including Bolts for Securing Pillow Blocks to Sole Plates, but Without Foundation Bolts.

Sizes, Inches.	Each.	Sizes, Inches.	Each.
1 7/16	$2 30	3 15/16	$9 50
1 11/16 to 1 15/16	2 60	4 7/16	11 50
2 3/16 " 2 7/16	3 50	4 15/16	14 50
2 11/16 " 2 15/16	5 00	5 3/8	17 50
3 7/16	6 25	5 7/8	21 50

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SOLE OR BASE PLATE



FIG. 6746

PRICES

Diameters of Shaft.	Each.	Diameters of Shaft.	Each.	Diameters of Shaft.	Each.	Diameters of Shaft.	Each.
1 5/16	$2 50	2 7/16	$5 00	3 11/16	$9 20	5 15/16	$25 00
1 7/16	3 00	2 11/16	5 50	3 15/16	11 00	6 7/16	27 00
1 11/16	3 50	2 15/16	7 70	4 7/16	14 60	6 15/16	28 50
1 15/16	4 00	3 3/16	8 20	4 15/16	22 00	7 7/16	31 00
2 3/16	4 50	3 7/16	8 70	5 7/16	23 50	7 15/16	33 20

STANDARD BASE PLATE
WITH PLANED ADJUSTING WEDGE

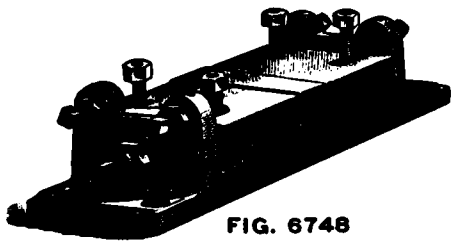


FIG. 6748

By using these Base Plates a lateral adjustment of 1 to 1½ inches and a vertical adjustment of ½ inch may be secured. These plates are planed on top and bottom. The adjusting wedges are cast iron and planed. Bases of pillow blocks are also planed.

PRICES

Sizes of Shaft.	Each.	Sizes of Shaft.	Each.
4 15/16 inches	$72 00	10½ inches	$140 00
5 7/16 to 5 15/16 inches	100 00	12 "	150 00
6 7/16 to 9 7/16 "	110 00		

ADJUSTABLE BASE OR SOLE PLATE
FOR ANY STYLE OF PILLOW BLOCK

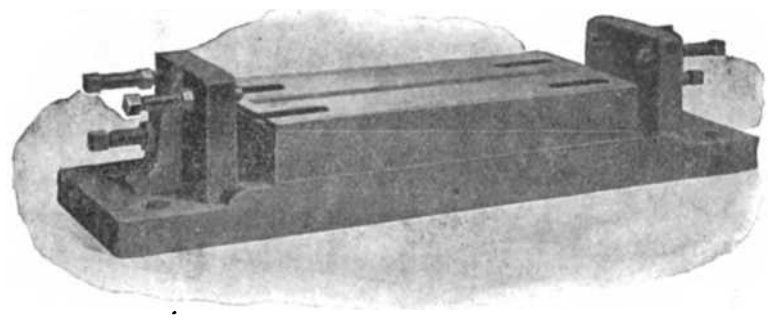


FIG. 6749

PRICES
Including Wedges for Vertical Adjustment.

Sizes.	Each.	Sizes.	Each.	Sizes.	Each.	Sizes.	Each.
1 7/16 inches,	$5 10	3 3/16 inches,	$13 55	5 15/16 inches,	$39 60	9 7/16 inches,	$69 60
1 11/16 "	5 80	3 7/16 "	15 00	6 7/16 "	42 75	9 15/16 "	78 70
1 15/16 "	6 50	3 11/16 "	16 50	6 15/16 "	45 90	10 7/16 "	77 80
2 3/16 "	7 80	3 15/16 "	18 00	7 7/16 "	49 00	10 15/16 "	81 90
2 7/16 "	8 90	4 7/16 "	26 00	7 15/16 "	54 00	11 7/16 "	86 00
2 11/16 "	10 20	4 15/16 "	31 50	8 7/16 "	59 75	11 15/16 "	90 00
2 15/16 "	12 10	5 7/16 "	35 50	8 15/16 "	65 50	12 7/16 "	95 00

WALL PLATE FOR PILLOW BLOCK

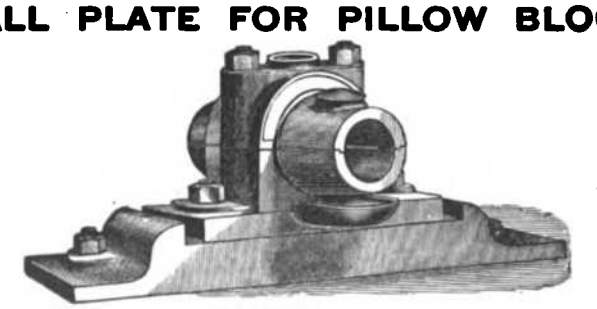


FIG. 6752

PRICES
Planed, Including Bolts For Pillow Blocks.

Diameters of Shaft.	Each.	Diameters of Shaft.	Each.	Diameters of Shaft.	Each.
1 3/16 inches	$2 00	2 15/16 inches	$5 50	4 15/16 inches	$15 00
1 7/16 "	2 30	3 3/16 "	6 50	5 7/16 "	19 00
1 11/16 "	2 40	3 7/16 "	7 50	5 15/16 "	25 00
1 15/16 "	2 60	3 15/16 "	9 50	6 7/16 "	30 00
2 3/16 "	3 25	4 7/16 "	12 00	6 15/16 "	32 00
2 7/16 "	3 50	4 15/16 "	14 50	7 7/16 "	36 00
2 11/16 "	4 50				

SHOE OR BASE PLATE



FIG. 6747

FOR BALL AND SOCKET PILLOW BLOCKS

Nominal Sizes.	Each.	Nominal Sizes.	Each.	Nominal Sizes.	Each.
1¼ inches	$2 40	3 inches	$6 10	5 inches	$15 70
1½ "	2 65	3¼ "	7 00	5½ "	18 55
1¾ "	2 90	3½ "	8 00	6 "	23 35
2 "	3 40	3¾ "	9 35	6½ "	28 30
2¼ "	4 10	4 "	10 20	7 "	34 30
2½ "	4 70	4¼ "	11 90	7½ "	39 60
2¾ "	5 45	4½ "	13 00	8 "	47 85

FOR RING OILING RIGID PILLOW BLOCKS

Nominal Sizes.	Each.	Nominal Sizes.	Each.	Nominal Sizes.	Each.
1¼ inches	$2 50	3 inches	$7 75	5 inches	$23 55
1½ "	3 00	3¼ "	9 20	5½ "	29 45
1¾ "	3 60	3½ "	10 70	6 "	33 35
2 "	4 20	3¾ "	12 40	6½ "	42 00
2¼ "	4 10	4 "	14 20	7 "	50 00
2½ "	5 90	4¼ "	16 00	7½ "	60 00
2¾ "	6 85	4½ "	17 45	8 "	72 00

FOR RIGID PILLOW BLOCKS

Nominal Sizes.	Each.	Nominal Sizes.	Each.	Nominal Sizes.	Each
1¼ inches	$2 40	2¾ inches	$5 65	4¼ inches	$12 30
1½ "	2 65	3 "	6 35	4½ "	14 05
1¾ "	3 00	3¼ "	7 35	5 "	16 00
2 "	3 60	3½ "	8 45	5½ "	20 10
2¼ "	4 15	3¾ "	9 65	6 "	24 15
2½ "	4 95	4 "	10 80		

WALL FRAMES FOR PILLOW BLOCK

PRICES

Nominal Sizes.	Wall Frames, Each.
1½ inches	$3 80
1¾ "	5 70
2 "	7 60
2¼ "	10 00
2½ "	11 90
2¾ "	14 00
3 "	15 80
3¼ "	17 95
3½ "	21 75
3¾ "	24 25
4 "	28 15
4¼ "	31 10
4½ "	34 00
5 "	46 40
5½ "	59 15
6 "	62 50
6½ "	70 00
7 "	78 75

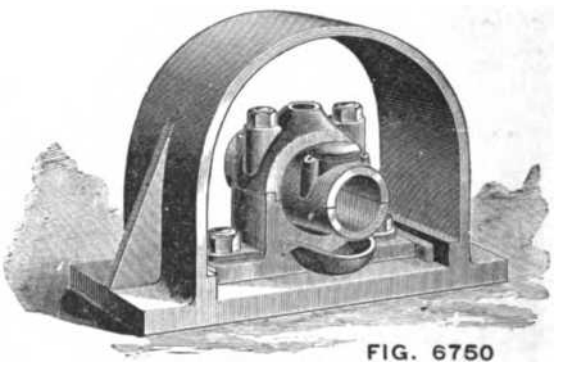


FIG. 6750

WALL FRAME OR BOX

PRICES

Diameters of Shaft.	Each.
1 5/16 inches	$6 50
1 7/16 "	7 00
1 11/16 "	7 50
1 15/16 "	9 00
2 3/16 "	10 50
2 7/16 "	12 00
2 11/16 "	13 50
2 15/16 "	16 00
3 3/16 "	19 00
3 7/16 "	21 50
3 11/16 "	24 00
3 15/16 "	27 50
4 7/16 "	31 50
4 15/16 "	35 50
5 7/16 "	43 50
5 15/16 "	50 00
6 7/16 "	55 00
6 15/16 "	60 00

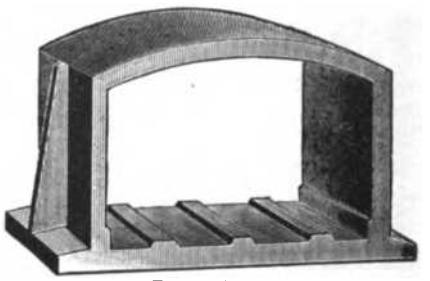


FIG. 6751

WALL BOX FRAME
FOR SELF ADJUSTING OR RIGID PILLOW BLOCKS

PRICES

Sizes.	Wall Frames, Each.
1 7/16 inches	$4 25
1 11/16 "	4 75
1 15/16 "	5 25
2 3/16 "	6 00
2 7/16 "	7 00
2 11/16 "	8 50
2 15/16 "	10 25
3 7/16 "	13 00
3 15/16 "	19 35
4 7/16 "	28 25
4 15/16 "	37 20
5⅝ "	44 00
5⅞ "	50 80

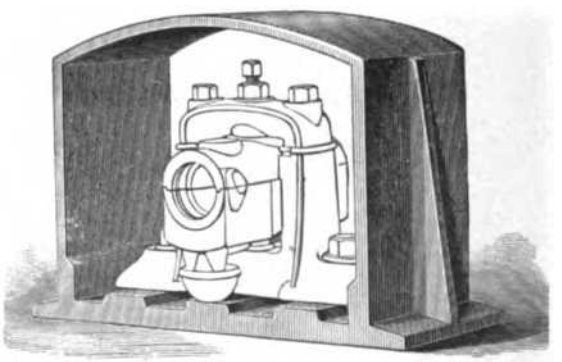


FIG. 6753

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ARCHED WALL BOX
FOR PILLOW BLOCK

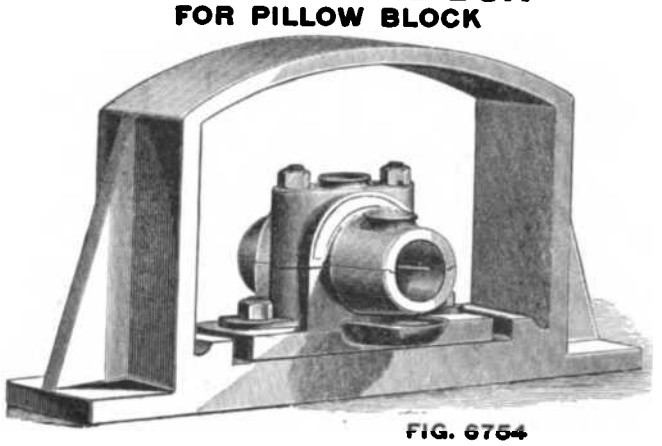


FIG. 6754

PRICES, FIG. 6754

Sizes of Shaft.	Each.
1 7/16 in.	$7 00
1 11/16 "	7 50
1 15/16 "	9 00
2 3/16 "	10 00
2 7/16 "	11 00
2 11/16 "	12 50
2 15/16 "	13 00
3 3/16 "	
3 7/16 "	18 50
3 15/16 "	24 00
4 7/16 "	29 50
4 11/16 "	35 00
4 15/16 "	45 00
5 7/16 "	60 00
5 15/16 "	62 00
6 7/16 "	65 00
6 15/16 "	70 00
7 7/16 "	80 00

Prices do not include Pillow Blocks.

WALL THIMBLE FOR SHAFT

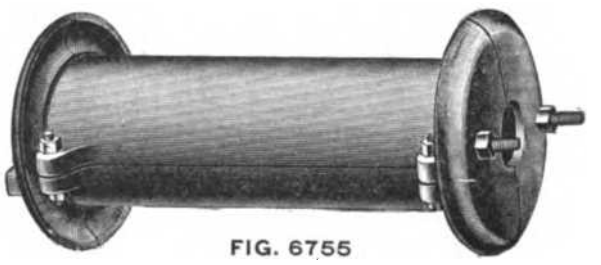


FIG. 6755

PRICES

Diams. of Shaft.	Thickness of Wall.									
	9	13	15	17	19	21	23	25	31	37
1 Inch to 3 Inch.	$4.80	5.60	6.40	7.20	8.00	8.80	9.60	10.40	12.80	15.20
3¼ Inch to 6 Inch.	$9.60	10.20	12.80	14.40	16 00	17.60	19.20	20.80	25.60	32.40

WALL BRACKET
FOR PILLOW BLOCK

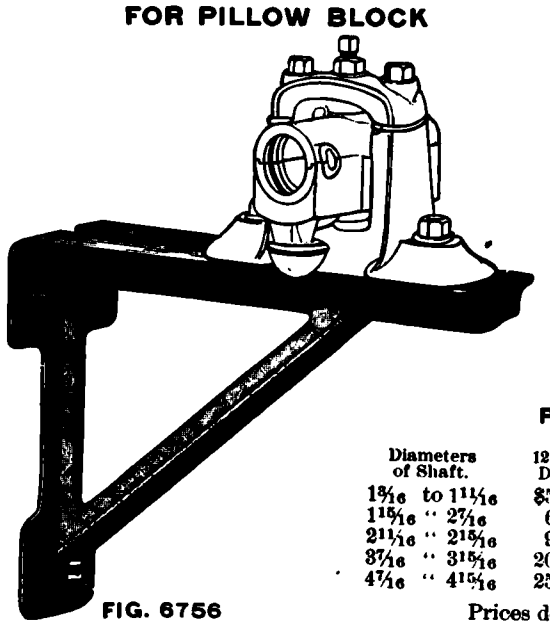


FIG. 6756

PRICES, FIG. 6757
With bolts for securing Pillow Blocks.

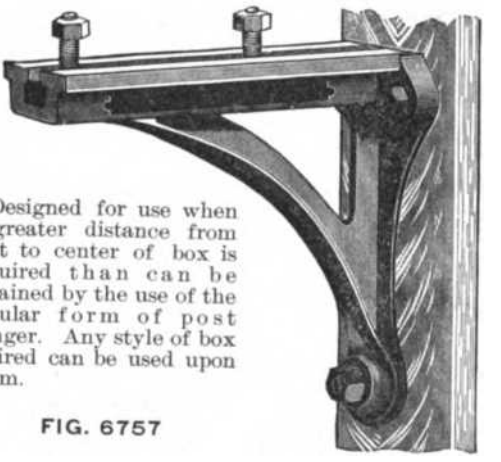
Diams. of Shaft.	Projection to Center of Shaft.	Each.
1 5/16 to 1 11/16	18 inches	$5 50
	24 "	6 00
	30 "	6 50
1 15/16 to 3 3/16	18 "	10 20
	24 "	10 90
	30 "	11 60
3 7/16 to 4 7/16	18 "	18 60
	24 "	19 60
	30 "	20 60
4 15/16 to 5 15/16	18 "	26 60
	24 "	28 00
	30 "	29 50

PRICES, FIG. 6756

Diameters of Shaft.	12 Inch Drop.	18 Inch Drop.	24 Inch Drop.	30 Inch Drop.
1 5/16 to 1 11/16	$5 75	$6 00	$6 50	$7 40
1 15/16 " 2 7/16	6 50	7 00	7 75	8 75
2 11/16 " 2 15/16	9 50	10 75	12 00	15 00
3 7/16 " 3 15/16	20 00	22 00	25 00	27 00
4 7/16 " 4 15/16	25 00	27 00	30 00	33 50

Prices do not include Pillow Blocks

WALL BRACKET



Designed for use when a greater distance from post to center of box is required than can be obtained by the use of the regular form of post hanger. Any style of box desired can be used upon them.

FIG. 6757

RING OILING WALL BRACKET
WITH VERTICAL AND HORIZONTAL ADJUSTMENT

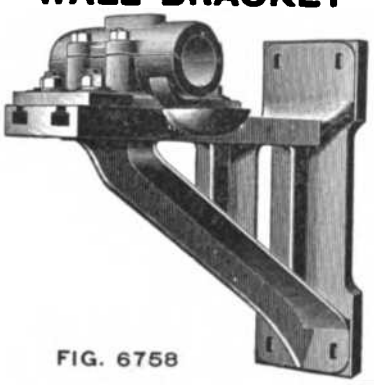


FIG. 6758

PRICES, FIG. 6758

Diameters of Shaft.	Projection to Center of Shaft. 20 Inch.	24 Inch.	30 Inch.	Remarks.
1 15/16 to 2 15/16	$12 00	$12 90	$14 40	For single ear pillow blocks.
3 3/16 " 3 13/16	20 40	22 50	24 00	
2 15/16 " 3 15/16	36 00	38 40	40 50	For double ear pillow blocks.
4 7/16 " 4 13/16	67 50	70 50	73 50	

These brackets are planed on surface where bearing is bolted, and pillow block bases are also planed. They have good vertical adjustment and are of most substantial design.

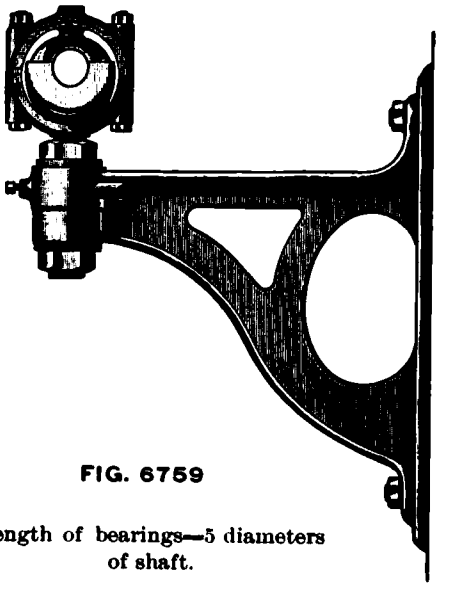


FIG. 6759

ADJUSTABLE BRACKET HANGER
WITH SELF OILER, BABBITTED BEARINGS, BORED AND FACED OFF

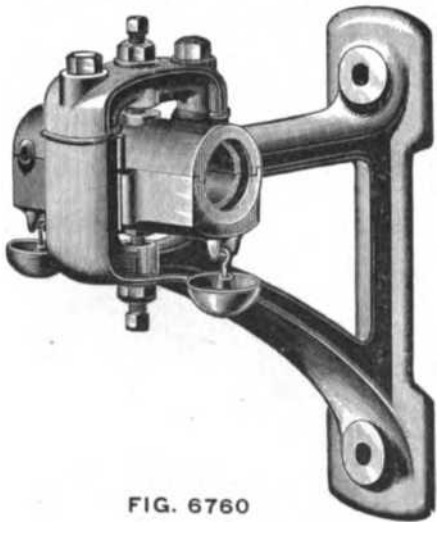


FIG. 6760

PRICES, FIG. 6760

Diams. of Shaft.	9 Inch Drop.	12 Inch Drop.	15 Inch Drop.	18 Inch Drop.
1 7/16	$4 50	$4 90	$5 50	$6 00
1 11/16	5 40	5 85	6 40	7 00
1 15/16	6 50	7 00	7 60	8 25
2 3/16	8 25	8 80	9 50	10 40
2 7/16	9 75	10 35	11 10	12 50
2 11/16	....	13 25	14 10	15 00
2 15/16	....	15 50	16 75	18 00
3 7/16	....	23 40	25 00	26 75

Length of bearings—5 diameters of shaft.

Sizes of Shaft, Inches.	From Wall to Center of Shaft, Inches.	Each.	Sizes of Shaft, Inches.	From Wall to Center of Shaft, Inches.	Each.
1½	13	$11 20	3	14	$24 35
1½	18	12 50	3	24	29 50
2	10	14 75	3	30	32 50
2	12	15 25	3	34	35 50
2	14	15 75	3½	14	34 35
2	18	16 45	3½	24	37 30
2	24	17 30	3½	30	40 35
2½	14	21 85	4	18	49 65
2½	16	22 95	4	24	53 50
2½	18	23 55	4	30	58 70
2½	24	24 40	4½	24	64 00
2½	30	27 50	4½	30	72 70
2½	34	30 00	6	30	143 00

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RING OILING BALL AND SOCKET POST HANGER

With Babbitted Bearings.

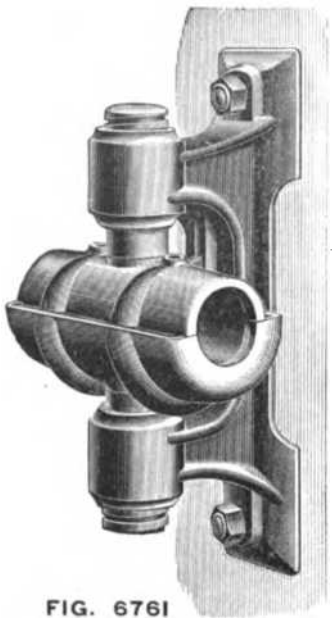


FIG. 6761

Length of bearings=5 diameters of shaft.

Also length of bearings=4 diameters of shaft for 2¾ inches and larger.

PRICES, FIG. 6761

Sizes, Inches.	Each.	From Post to Center of Shaft.	Sizes, Inches.	Each.	From Post to Center of Shaft.
1¼	$3 60	6 in.	3	$14 50	6 in.
1½	4 15		3¼	15 25	
1⅝	4 35		3½	18 25	8 "
1¾	4 80		3¾	19 50	
1⅞	6 30		4	29 90	
2	6 50		4¼	31 50	
2⅛	6 70		4½	38 00	10 "
2¼	6 90		5	54 70	13¼ "
2⅜	9 50		5½	72 50	
2½	9 70		6	87 50	
2⅝	9 95		6½	90 00	
2¾	10 20		7	133 00	
2⅞	14 25				

BALL AND SOCKET POST HANGER

Standard Babbitted Bearings.

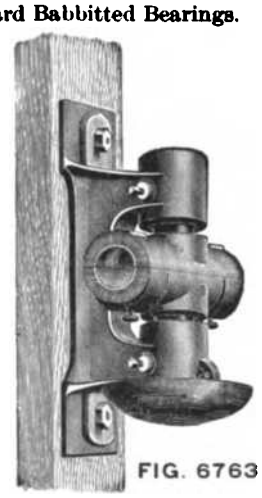


FIG. 6763

PRICES

Sizes of Shaft, Inches.	Each.	Sizes of Shaft, Inches.	Each.
1 15/16	$5 85	3 7/16	$22 00
2 3/16	7 75	3 11/16	25 30
2 7/16	9 60	3 15/16	30 25
2 11/16	11 50	4 7/16	35 20
2 15/16	13 20	4 15/16	45 10
3 3/16	17 60		

Special Chain Oiling Bearings.

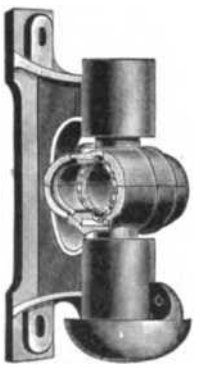


FIG. 6764

PRICES

Sizes of Shaft, Inches.	Each.	Sizes of Shaft, Inches.	Each.
1 15/16	$7 00	3 7/16	$26 40
2 3/16	9 30	3 11/16	30 50
2 7/16	11 50	3 15/16	36 30
2 11/16	13 80	4 7/16	42 25
2 15/16	15 90	4 15/16	54 50
3 3/16	21 10		

ADJUSTABLE SELF OILING POST HANGER

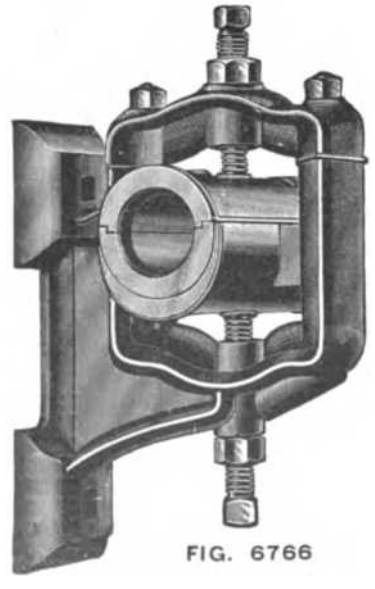


FIG. 6766

PRICES, FIG. 6766

Diameters of Shaft, Inches.	Each.	Lengths of Bearings, Inches.	Distance from Foot to Center, Inches.
1 3/16	$3 80	5	4
1 7/16	4 30	6	4⅝
1 11/16	5 40	7	4⅝
1 15/16	6 40	8	5½
2 3/16	8 10	9	5½
2 7/16	10 20	10	6⅝
2 11/16	12 90	11	6⅝
2 15/16	16 20	12	8⅛
3 3/16	20 70	13	8⅛
3 7/16	26 20	14	9⅝
3 11/16	32 10	15	9⅝
3 15/16	38 00	16	11
4 3/16	44 25	16	11
4 7/16	50 50	16	13¼
4 15/16	64 50	18	13¼
5 7/16	78 50	20	15¼

RIGID POST HANGER

With Standard Babbitted Bearings.

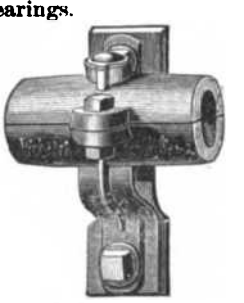


FIG. 6762

PRICES, FIG. 6762

Sizes, Inches.	Each.	Sizes, Inches.	Each.
1 7/16	$2 40	2 11/16	$6 75
1 11/16	3 00	2 15/16	8 50
1 15/16	3 90	3 3/16	10 50
2 3/16	4 50	3 7/16	13 50
2 7/16	5 30		

CHAIN OILING RIGID POST HANGER

This pattern is the same as the Standard Rigid Post Hanger, Fig. 6762, but has special chain oiling device.

PRICES

Sizes, Inches.	Each.	Sizes, Inches.	Each.
1 15/16	$4 70	2 15/16	$10 20
2 3/16	5 40	3 3/16	12 60
2 7/16	6 40	3 7/16	16 20
2 11/16	8 10		

EXTRA HEAVY BALL AND SOCKET BRACKET BOX

With Special Chain Oiling Bearings.

DESCRIPTION

These boxes are especially designed for extra heavy work. The bearings are three and one-half times the diameter of the shaft, and make a very substantial support where heavy shafts are used.

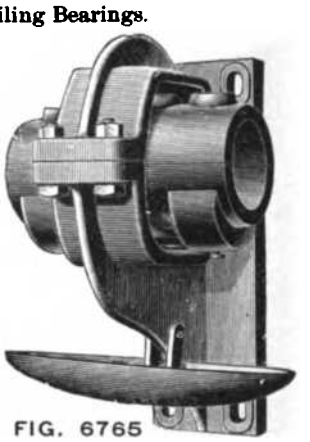


FIG. 6765

PRICES, FIG. 6765

Sizes of Shaft, Inches.	Each.	Sizes of Shaft, Inches.	Each.
2 15/16	$22 00	4 15/16	$43 00
3 7/16	25 00	5 7/16	50 00
3 15/16	30 00	5 15/16	60 00
4 7/16	37 50	6 7/16	75 00

IMPROVED BALL AND SOCKET ADJUSTABLE PARTING POST HANGER

Bearings Ring Oiling, Babbitted.

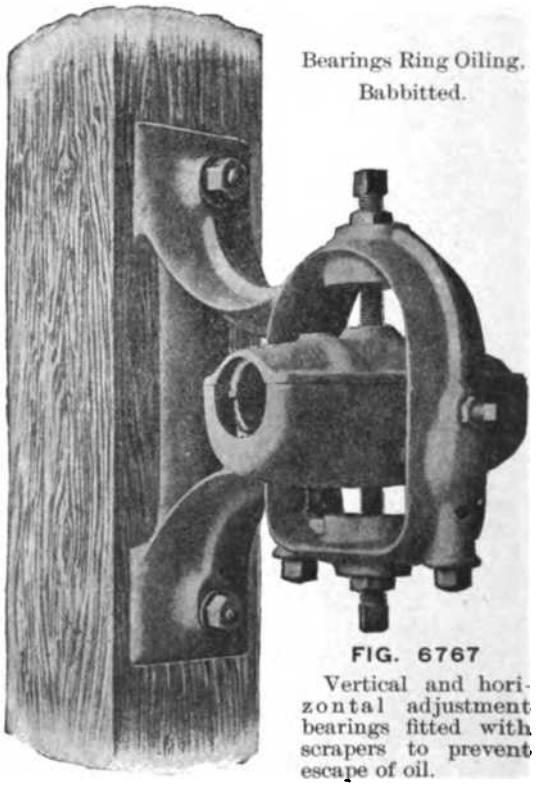


FIG. 6767

Vertical and horizontal adjustment bearings fitted with scrapers to prevent escape of oil.

PRICES FIG. 6767

Sizes.	Each.
1 3/16	$4 50
1 7/16	4 75
1 11/16	5 50
1 15/16	6 50
2 3/16	8 00
2 7/16	10 00
2 11/16	11 50
2 15/16	14 50
3 3/16	16 75
3 7/16	20 75
3 11/16	29 50
3 15/16	30 75
4 7/16	40 75
4 15/16	54 75
5 7/16	72 50
5 15/16	87 50

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ADJUSTABLE POST HANGER

With Self-Oiler. Babbitted Bearings, Bored and Faced Off.

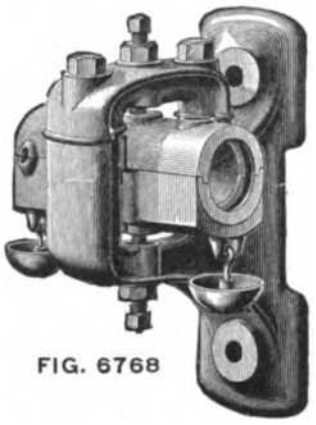


FIG. 6768

PRICES

Diameters of Shaft, Inches.	Each.	Diameters of Shaft, Inches.	Each.
1 15/16	$2 50	2 15/16	$14 50
1 15/16	3 00	3 7/16	21 50
1 15/16	3 50	3 15/16	32 50
1 7/16	4 25	4 7/16	45 00
1 11/16	5 00	4 15/16	55 00
1 15/16	6 00	5 7/16	72 00
2 3/16	7 75	5 7/16	92 00
2 7/16	9 25	6 7/16	110 00
2 11/16	12 50	6 7/16	140 00

ADJUSTABLE SWIVEL POST HANGERS

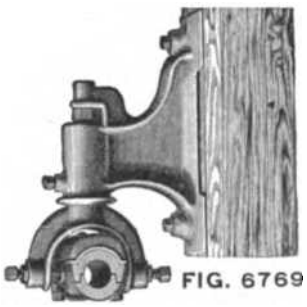


FIG. 6769



FIG. 6770

PRICES

Diameters of Shaft, Inches.	Distance from Post or Wall to Center of Shaft, Inches.	Each.
4	12	$15 00
3 1/2	10 1/2	12 00
3	9	9 00
2 1/2	7 1/2	6 20
2 1/4	7 1/2	4 20
2	7 1/2	4 20
2	17	5 50
1 3/4	6	3 50
1 1/2	6	2 80
1 1/4	6	2 40

BALL AND SOCKET POST HANGER

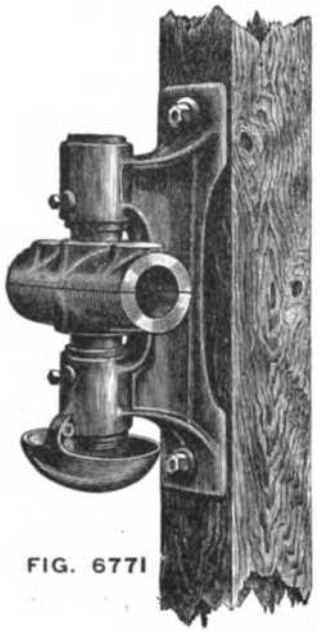


FIG. 6771

PRICES, FIG. 6771

Diameters of boxes, inches..	1 7/16	1 11/16	1 15/16	2 3/16	2 7/16	2 11/16	2 15/16	3 3/16	3 7/16	3 11/16	3 15/16	4 3/16	4 7/16	4 15/16	5 7/16	5 15/16	6 7/16	6 15/16
Lengths of boxes, inches..	6	7	8	9	10	11	12	13	14	15	16	17	18	20	22	24	26	28
Distance from foot to center of box, inches..	6	6	6	6	6	6	6	6	6	6	8	8	8	8	8	8	8	8
Plain boxes	$3 50	4 25	5 25	6 25	8 25	10 25	12 25	15 00	19 00	22 50	25 50	31 00	36 00	46 00	56 00	70 00	90 00	110 00
Babbitt boxes	4 75	5 50	6 75	8 50	12 00	14 75	17 50	20 50	25 25	29 75	34 00	40 00	46 00	56 50	70 00	85 00	110 00	135 00

BALL AND SOCKET ADJUSTABLE HANGER

SPECIAL PATTERN

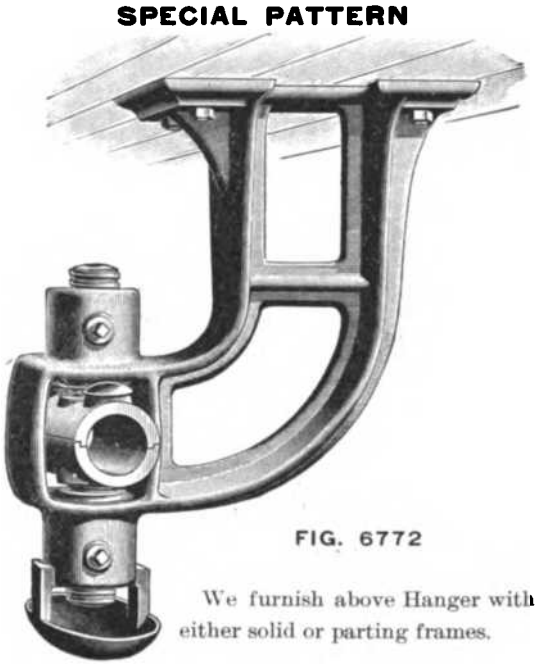


FIG. 6772

We furnish above Hanger with either solid or parting frames.

PRICES ON APPLICATION

ADJUSTABLE STEP BEARING

WITH OIL POT



FIG. 6775

Adjustable in every direction, with tempered steel button shaped step and brass bushing accurately fitted.

PRICES

Sizes.	Each.	Sizes.	Each.	Sizes.	Each.
1 15/16	$6 00	2 3/16	$11 00	3 3/16	$22 80
1 7/16	6 75	2 7/16	13 00	3 7/16	26 20
1 11/16	7 80	2 11/16	16 00	3 11/16	29 90
1 15/16	9 20	2 15/16	20 00	3 15/16	36 00

ADJUSTABLE BEAM HANGER

With Self-Oiler. Babbitted Bearings, Bored and Faced Off.

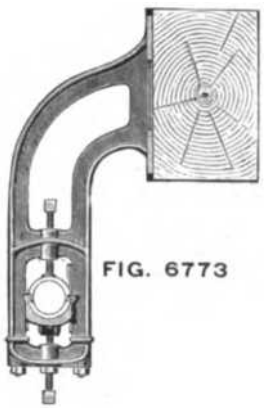


FIG. 6773

PRICES ON APPLICATION

ADJUSTABLE STEP BEARING

FOR VERTICAL SHAFT

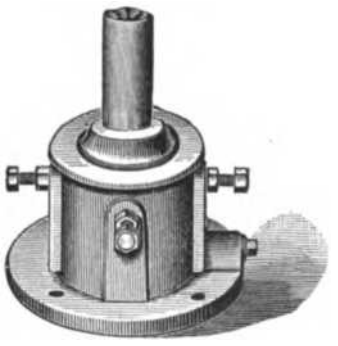


FIG. 6776

So arranged that shaft runs in oil. When ordering, state length of shaft, number and sizes of pulleys you wish step to carry; also speed the shaft is to run at.

PRICES ON APPLICATION

ADJUSTABLE STEP AND BEARING

FOR VERTICAL SHAFTS

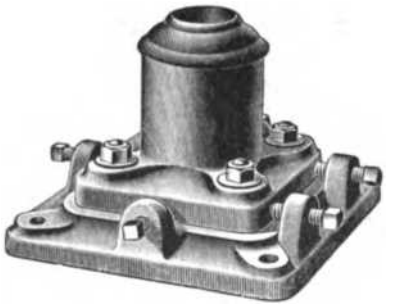


FIG. 6774

PRICES

Step for	1 1/4	inch	shaft	$12 25
"	" 1 1/2	"	"	14 00
"	" 1 3/4	"	"	16 65
"	" 2	"	"	20 15
"	" 2 1/4	"	"	24 50
"	" 2 1/2	"	"	29 75
"	" 2 3/4	"	"	33 25
"	" 3	"	"	36 75
"	" 3 1/4	"	"	40 25
"	" 3 1/2	"	"	43 75

VERTICAL BEARING

For upright shaft, babbitted and provided with grease or oil reservoir at top, and arranged with parting cover to prevent accumulation of dirt or grit.

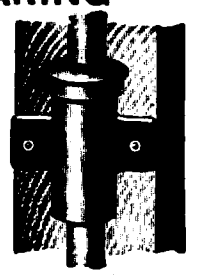


FIG. 6777

PRICES

Sizes.	Each.	Sizes.	Each.
1 7/16	$3 25	2 11/16	$9 00
1 11/16	3 75	2 15/16	11 25
1 15/16	5 00	3 3/16	13 00
2 3/16	6 25	3 7/16	16 00
2 7/16	7 50	3 15/16	22 00

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IAFT RING

VERTICAL SHAFT WALL BEARING



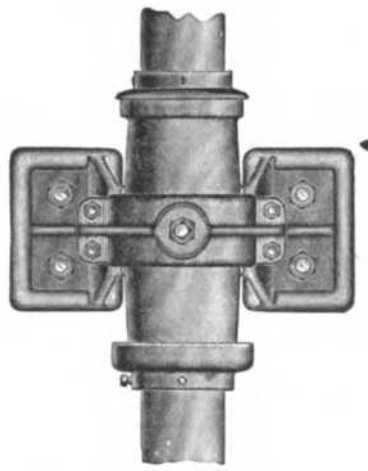


FIG. 6779

es quoted on application.

ARING POST HANGERS

lly.

TYPE B
Adjustable in All Directions.



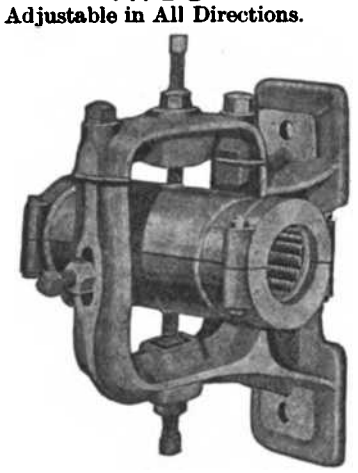


FIG. 6782

PRICES

3, Regular or Self Oiling Bearings.

ıter Shaft o Base, nches.	Shaft Diameters, Inches.	Each.	Center Shaft to Base, Inches.
5	3⅛–3⁵⁄₁₆	$26 50	8
5	3¼–3⁷⁄₁₆–3½	35 00	9½
6	3¾–3¹⁵⁄₁₆–4	49 00	10¾
6	4¼–4⁷⁄₁₆–4½	67 50	13
6¾	4¾–4¹⁵⁄₁₆–5	86 00	....
6¾	5¼–5⁷⁄₁₆–5½	115 00	....
8	5¾–5¹⁵⁄₁₆–6	152 00	....

r to five times diameter. Quotations on

ARING ADJUSTABLE LOW BLOCK

PRICES, FIG. 6783

Shaft Diameters, Inches.	Each.
2¼–2⁷⁄₁₆–2½	$16 00
2⅝–2¹⁵⁄₁₆–2¾	20 00
2⅞–2¹⁵⁄₁₆–3	24 00
3⅛–3⁵⁄₁₆	28 00
3¼–3⁷⁄₁₆–3½	34 00
3¾–3¹⁵⁄₁₆–4	48 00
4¼–4⁷⁄₁₆–4½	60 00
4¾–4¹⁵⁄₁₆–5	80 00
5¼–5⁷⁄₁₆–5½	100 00
5¾–5¹⁵⁄₁₆–6	140 00

783

Length of bearing, four to five times diameter. Quotations on special sizes on application.

also be used as low drop hangers. In ıey give adjustment in all directions.

ROLLER BEARING DOUBLE BRACED DROP HANGERS

TYPE A

TYPE B

TYPE C

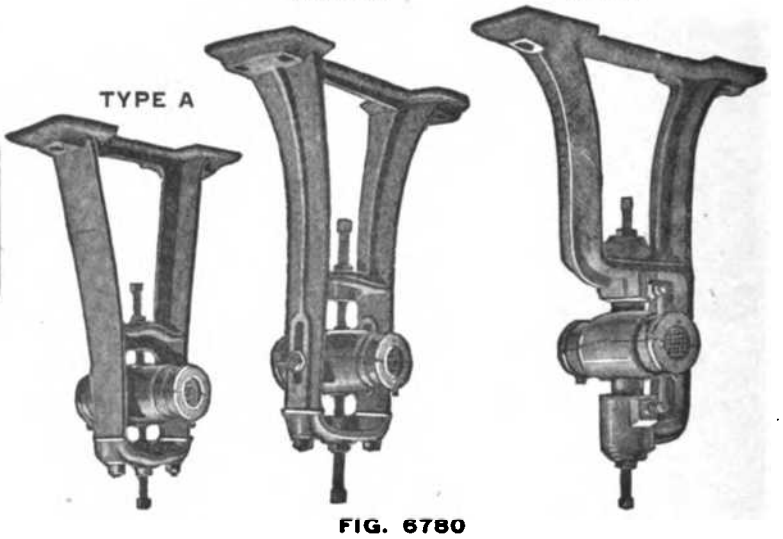


FIG. 6780

Type A. Adjustable vertically and longitudinally by moving complete frame.
Type B. Adjustable in all directions.
Type C. Adjustable vertically; ball and socket.
All frames are provided with regular bearings, or self-oiling bearings with oil reservoirs, as may be desired. Frames are made with special feet for I beams and special supports of every description. Frames A, B and C, regular or self-oiling bearings.

PRICES

Shaft Diameters, Inches.	Range of Drop 6-8	9-11	12-14	15-17	18-20
1⁷⁄₁₆–1½	$8 60	$9 00	$9 40	$9 75	$10 25
1⅝–1¹¹⁄₁₆–1¾	9 40	9 80	10 20	10 60	11 00
1⅞–1¹⁵⁄₁₆–2	11 40	12 00	12 60	13 20	13 70
2⅛–2⅜	13 00	13 60	14 20	14 75	15 35
2¼–2⁷⁄₁₆–2½	16 75	17 75	18 75	19 75	20 75
2⅝–2¹¹⁄₁₆–2¾	19 00	20 00	21 00	22 00	23 00
2⅞–2¹⁵⁄₁₆–3	25 00	26 25	27 50	29 00	30 25
3⅛–3⅜	28 00	29 25	30 50	31 00	33 25
3¼–3⁷⁄₁₆–3½	33 75	35 65	37 55	38 80	40 00
3¾–3¹⁵⁄₁₆–4	.....	50 75	53 00	54 75	56 50
4¼–4⁷⁄₁₆–4½	.....	76 00	78 50	81 00	83 50
4¾–4¹⁵⁄₁₆–5	.....	91 50	94 00	96 50	99 00

Shaft Diameters, Inches.	Range of Drop 21-23	24-26	27-29	30-32	33-35
1⁷⁄₁₆–1½	$10 80	.....	.....	.....	.....
1⅝–1¹¹⁄₁₆–1¾	11 40	.....	.....	.....	.....
1⅞–1¹⁵⁄₁₆–2	14 30	$15 00	$15 75	.....	.....
2⅛–2⅜	16 00	16 75	17 50	.....	.....
2¼–2⁷⁄₁₆–2½	21 75	23 00	24 50	$25 75	$27 00
2⅝–2¹¹⁄₁₆–2¾	24 00	25 25	26 50	27 75	29 00
2⅞–2¹⁵⁄₁₆–3	31 50	32 75	34 25	35 50	36 75
3⅛–3⅜	34 50	35 75	37 25	38 50	39 75
3¼–3⁷⁄₁₆–3½	41 25	42 50	43 75	45 00	46 25
3¾–3¹⁵⁄₁₆–4	58 00	60 00	62 00	64 00	66 00
4¼–4⁷⁄₁₆–4½	86 00	88 50	91 00	93 00	95 00
4¾–4¹⁵⁄₁₆–5	101 50	104 00	107 50	111 00	115 00

Length of bearing, four to five times diameter. Quotations on special sizes on application.

ROLLER BEARING HEAVY JACK SHAFT HANGER

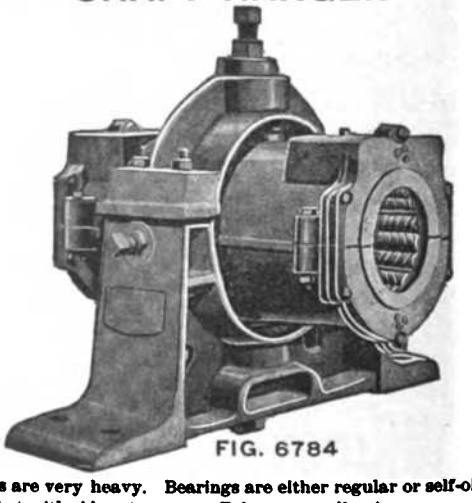


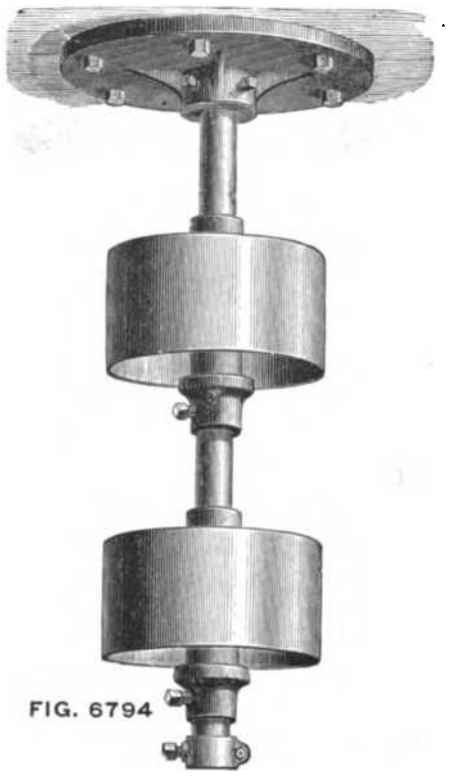
FIG. 6784

These patterns are very heavy. Bearings are either regular or self-oiling. Frames are ball and socket with side set screws. Prices on application.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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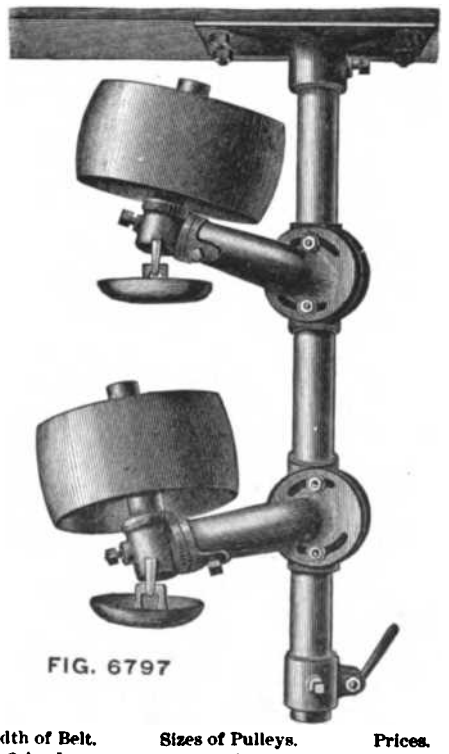
STATIONARY MULE PULLEY STAND


FIG. 6794

Width of Belt.	Sizes of Pulleys.	Prices.
2 inches.	10 x 3 inches.	$22 50
3 "	10 x 4 "	25 00
4 "	12 x 5 "	30 00
5 "	12 x 6 "	32 00
6 "	16 x 7 "	37 50
7 "	16 x 8 "	40 00
8 "	24 x 10 "	45 00
10 "	24 x 12 "	55 00
12 "	30 x 14 "	60 00

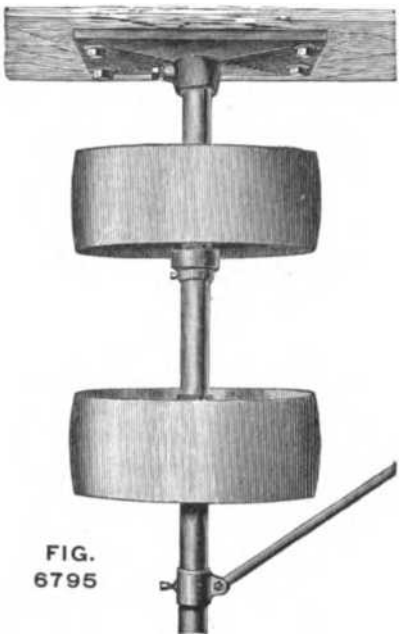
IMPROVED MULE PULLEY STAND

With Universal Adjustment.


FIG. 6797

Width of Belt.	Sizes of Pulleys.	Prices.
2-3 inches.	12 x 4 inches.	$50 00
4 "	12 x 5 "	55 00
5 "	12 x 6 "	60 00
6 } "	12 x 8 "	66 00
7 }		
8-9 "	14 x 10 "	90 00
10 "	16 x 12 "	100 00
12 "	16 x 14 "	125 00

PLAIN STEM MULE STAND

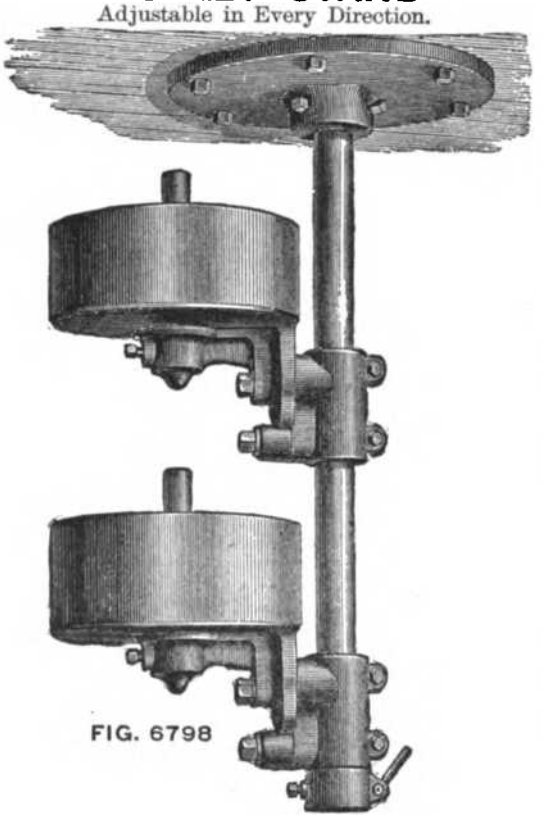

FIG. 6795

Non-adjustable, except vertically. These should be used only where the driving and driven shafts are on the same plane and where the driving and driven pulleys are the same diameter.

Width of Belt, Inches.	Sizes of Pulleys, Inches.	Prices.	Width of Belt, Inches.	Sizes of Pulleys, Inches.	Prices.
2	12 x 4 }	$20 00	7	12 x 8	$26 00
3	12 x 4 }		8	14 x 10 }	40 00
4	12 x 5	22 00	9	14 x 10 }	
5	12 x 6	24 00	10	16 x 12	50 00
6	12 x 8	26 00	12	16 x 14	55 00

ADJUSTABLE MULE PULLEY STAND

Adjustable in Every Direction.

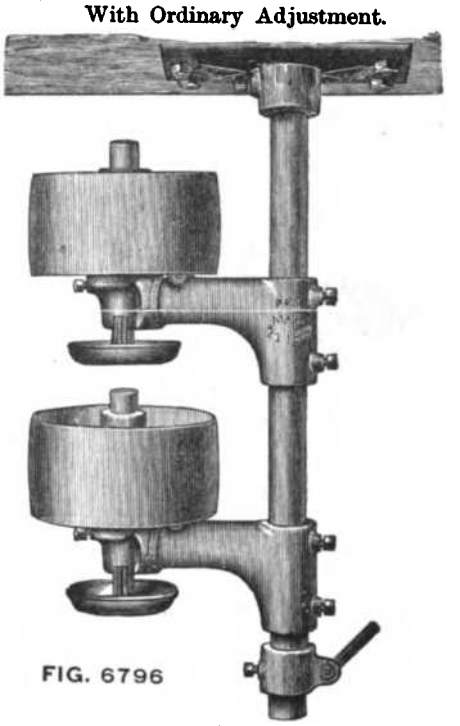

FIG. 6798

With Two Pulleys

Width of Belt.	Sizes of Pulleys.	Prices.
4 inches.	12 x 5 inches.	$60 00
5 "	12 x 6 "	62 00
6 "	12 x 7 "	75 00
7 "	16 x 8 "	78 00
8 "	16 x 9 "	85 00
10 "	24 x 12 "	112 00
12 "	30 x 14 "	160 00

MULE PULLEY STAND

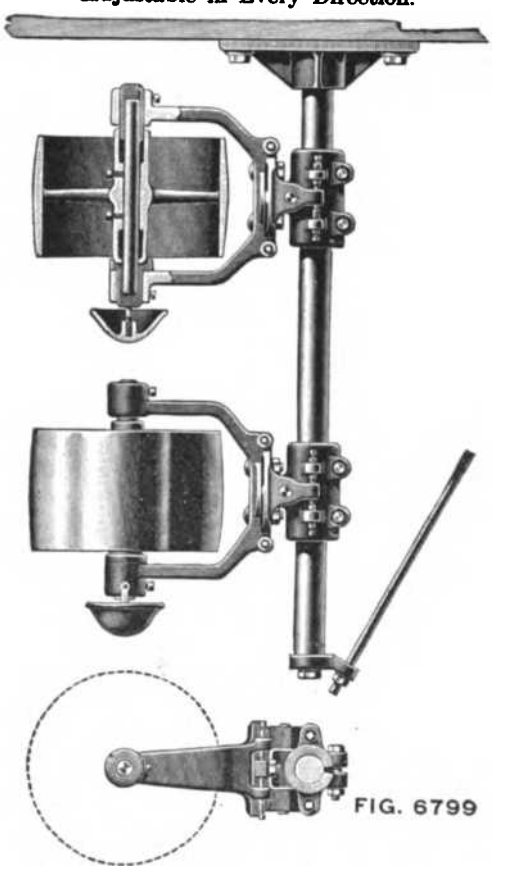
With Ordinary Adjustment.


FIG. 6796

Width of Belt, Inches.	Sizes of Pulleys, Inches.	Prices.	Width of Belt, Inches.	Sizes of Pulleys, Inches.	Prices.
2-3	12 x 4	$45 00	8 }	14 x 10	$80 00
4	12 x 5	50 00	9 }		
5	12 x 6	55 00	10	16 x 12	90 00
6 }	12 x 8	60 00	12	16 x 14	110 00
7 }					

MULE PULLEY STAND

Adjustable in Every Direction.


FIG. 6799

The line shafts may be at any angle with each other, may not be in the same plane, the pulleys may differ much in diameter, and the belt may be crossed. Locate the stand so that its shaft will be about ten times the width of the belt from the line shafts.

Nos.	Width of Belt. Inches.	Single Belt.	Double Belt.
1	3 to 5	$48 00	$60 00
2	6 to 8	63 00	80 00
3	9 to 12	117 00	146 00
4	13 to 15	140 00	175 00
5	16 to 19	227 00	284 00
6	20 to 24	....	452 00

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...TAND
...EARINGS, TO ...OF LOOSE ...S



...itute for loose pul- ...ven pulley of the ...l of the shaft (over- ...on electro-dynamo

...lley stand is a tight ...hich freely revolves ...ead of shifting the ...ose pulley, the belt ... the patent pulley ...able slide operated ... the cut, the belt is ...ent, thus relieving ...achine is idle.
...nds it is essential to ...width of face of the ...ce from the center

.....	$70 00
.....	72 50
.....	75 00
.....	85 00
.....	100 00
.....	125 00

...UIDE PUL- ...ND







ADJUSTABLE GUIDE PULLEY STAND



FIG. 6801

GUIDE PULLEY STAND
WITH UNIVERSAL ADJUSTMENT



FIG. 6802

DESCRIPTION, FIGS. 6801 AND 6802

These pulley stands are used as guides for belts running from a vertical to a horizontal shaft, dispensing with the plain quarter twist belt and thus increasing the driving power and life of a belt.

Prices on application.

ADJUSTABLE GUIDE PULLEY STAND

This pulley stand is used as a guide for belt running from a vertical to a horizontal shaft, dispensing with plain quarter twist belt and thus increasing the driving power and life of the belt.

Prices on application.



FIG. 6803

ADJUSTABLE GUIDE PULLEY FRAME
WITH SELF OILING BEARINGS

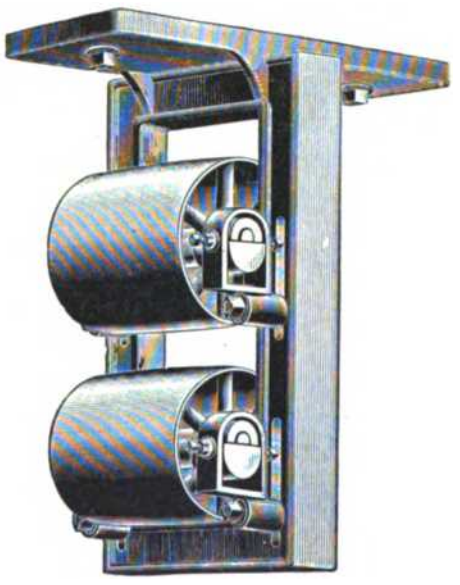


FIG. 6805

PRICES ON APPLICATION

NON-ADJUSTABLE GUIDE PULLEY FRAME



FIG. 6806

PRICES, FIG. 6804

Width of Belt, Inches.	Size of Pulleys, Inches.	Each.	Width of Belt, Inches.	Size of Pulleys, Inches.	Each.
2	8 x 4	$22 00	6	12 x 8	$55 00
3	10 x 4	23 00	7		
4	12 x 5	40 00	8–9	14 x 10	60 00
5	12 x 6	50 00	10	16 x 12	80 00

PRICES

2 inch belt	$20 00
2½ "	22 50
3 "	
3½ "	25 00
4 "	
5 "	30 00
5½ "	

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ADJUSTABLE GUIDE OR GALLOWS PULLEY
WITH BABBITTED BEARINGS

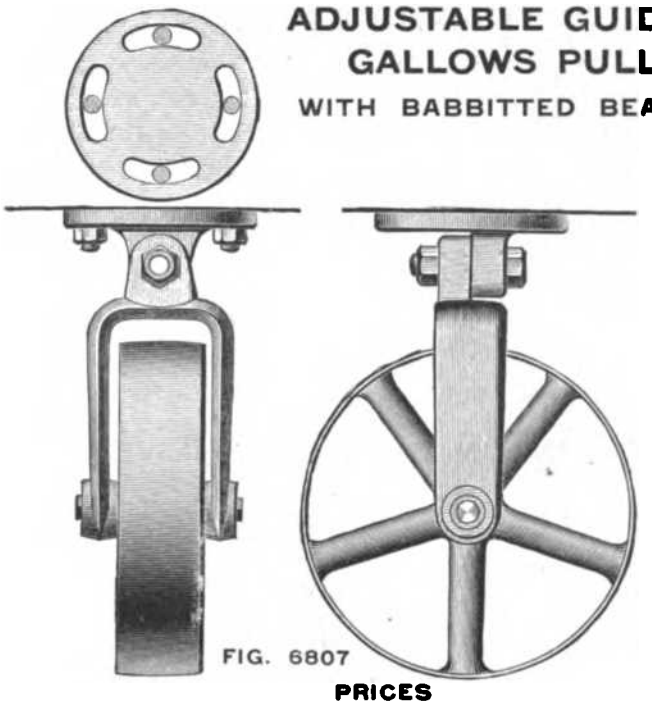


FIG. 6807

PRICES

Width of Belt, Inches.	Sizes of Pulley, Inches.	Each.	Width of Belt, Inches.	Sizes of Pulley, Inches.	Each.
2	8x2	$7 00	5	10x5	$15 00
3	8x3	9 00	6	12x6	18 00
4	10x4	12 00	8	12x8	21 00

Guide pulleys for heavy work furnished with self-oiling bearings.

PRICES ON APPLICATION

ADJUSTABLE GUIDE OR GALLOWS PULLEY
SELF OILING

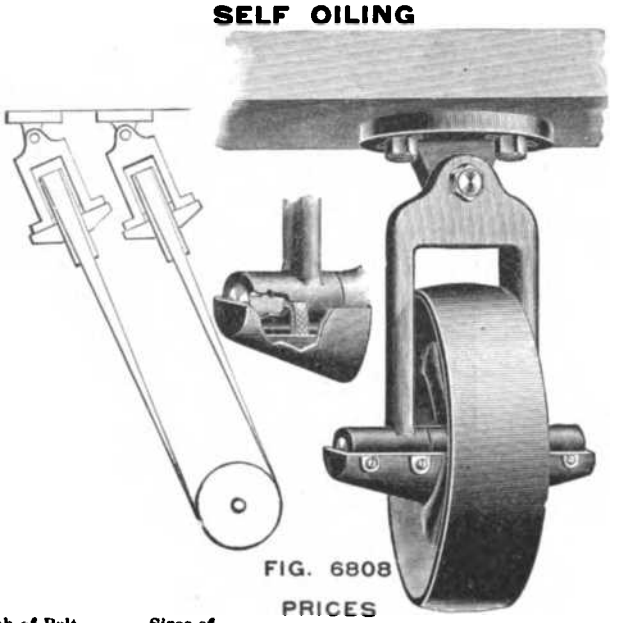


FIG. 6808

PRICES

Width of Belt, Inches.	Sizes of Pulley, Ins.	Each.	Remarks.
1½ to 2	8x2	$8 00	Specially adapted for textile work. Positively no dropping of oil, and absolutely self-lubricating.
3	10x3	9 00	
4	10x4	10 00	
4	15x4	17 00	
5 to 6	12x6	12 00	
8	12x8	15 00	

Other sizes made to order.

GUIDE PULLEY
WITH SELF OILING BEARINGS

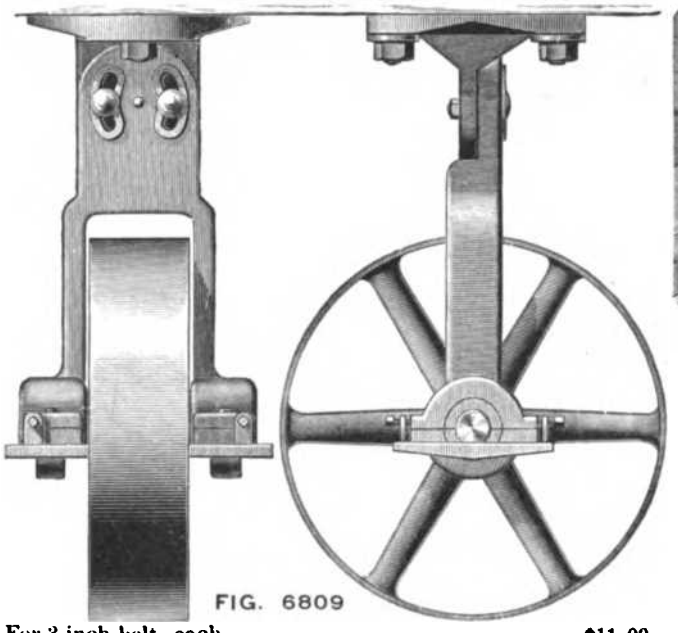


FIG. 6809

For 3 inch belt, each.....$11 00
" 4 " " " 15 00
" 8 " " " 30 00

DOUBLE BRACED BINDER FRAME

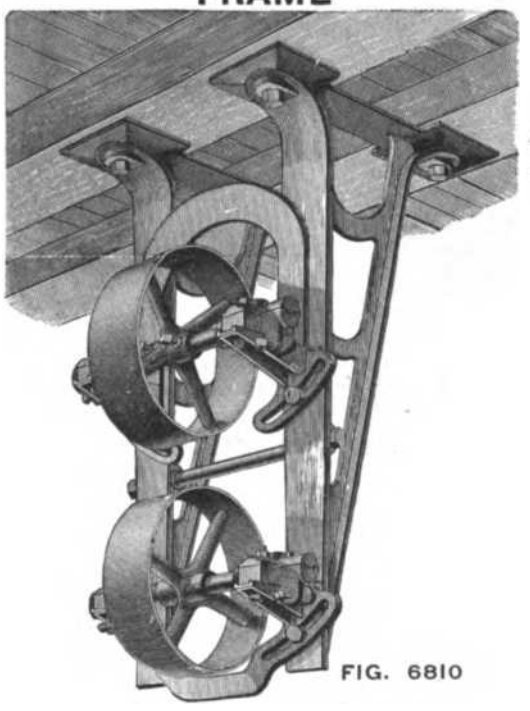


FIG. 6810

ADJUSTABLE BINDER FRAME

Adjustable in Every Direction.

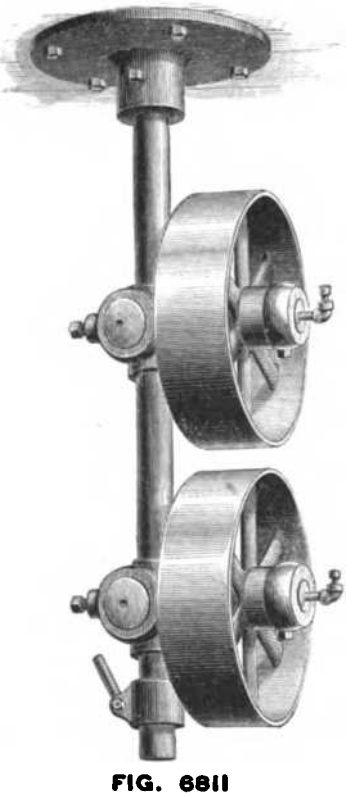


FIG. 6811

PRICES

For Belts, Inches.	Sizes Pulleys, Inches.	Each.
3	8x5	$45 00
4	10x6	50 00
5	12x7	55 00
6	14x8	60 00

Prices for large sizes furnished on application.

BINDER FRAME

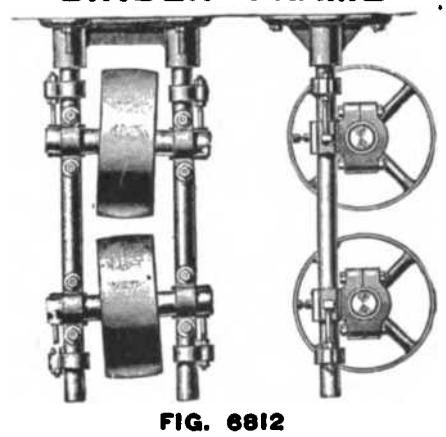


FIG. 6812

DESCRIPTION, FIG. 6810

The present patterns for these Binder Frames give a range of adjustment of 30°. If more is required, please send us a diagram, showing the track of the belt, and we will give a price for whatever is necessary to suit the case.

PRICES

Nos.	For Belts, Inches.	Each.	Nos.	For Belts, Inches.	Each.
3	6 to 8	$135 00	6	16 to 19	$364 00
4	9 " 11	169 00	7	20 " 24	400 00
5	12 " 15	187 00			

PRICES, FIG. 6812

No. 1 2 inch to 3 inch belt, each.....$25 00
" 2 4 " " 5 " " " 43 00

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LE BELT CARRIER

or Heavy Driving.

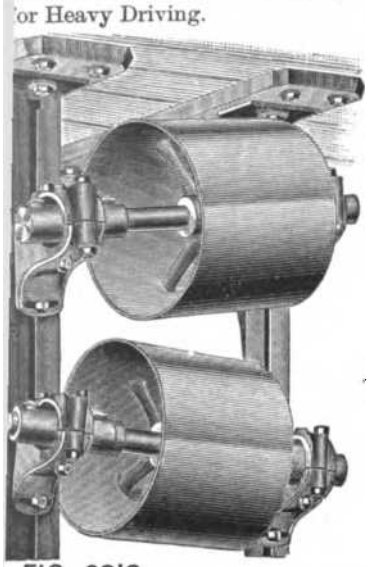


FIG. 6813

are fitted up in a thorough and
The bearings are ball and socket,
ll the required angles. The shafts
nd hardened, and run in hardened

PRICES

	$120 00
	160 00
	180 00
	200 00
	220 00
	250 00

LE BELT CARRIER

or Heavy Driving.

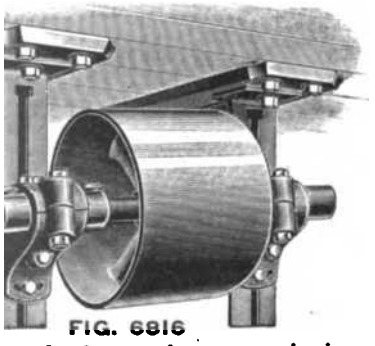


FIG. 6816

used where only one carrier is re-
is has all the adjustments of Carrier
n application.

AME BELT TIGHTENER

With Self-Oiling Bearings.

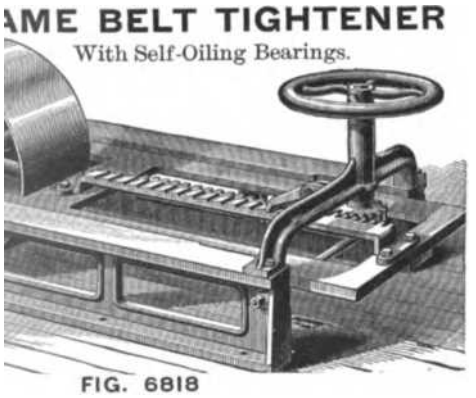


FIG. 6818

PRICES

Lengths of Adjustment, Inches.	Floor Lengths.	Space Width.	Each.
18	6 ft.	2 ft. 6 in.	$60 00
18	6 "	2 " 6 "	80 00
18	6 "	2 " 6 "	100 00
18	6 "	2 " 6 "	110 00
24	8 ft. 10 in.	3 " 9 "	120 00
24	8 " 10 "	3 " 9 "	140 00
24	8 " 10 "	3 " 9 "	160 00
24	8 " 10 "	3 " 9 "	200 00
30	10 " 4 "	4 " 4 "	320 00
30	10 " 4 "	4 " 4 "	360 00
30	10 " 4 "	4 " 4 "	400 00
30	10 " 4 "	4 " 4 "	450 00

BELT TIGHTENER

With Iron Frame.

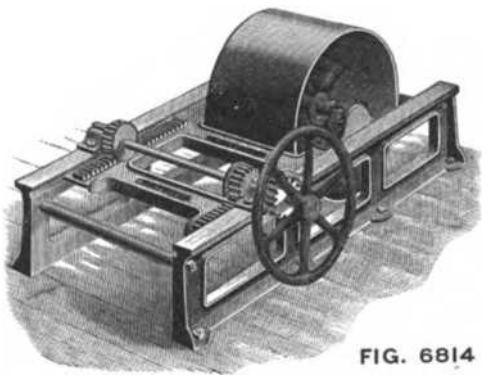


FIG. 6814

PRICES, FIG. 6814

Nos.	Diameters of Pulley, Inches.	Width of Belt. Inches.	Each.
1	14 x 8	8	$80 00
2	16 x 10	10	90 00
3	20 x 12	12	110 00
4	24 x 16	16	140 00
5	28 x 20	20	170 00
6	30 x 26	26	200 00
7	42 x 40	40	350 00

RACK AND PINION BELT TIGHTENER

These belt tighteners are furnished with cast iron guides, have well babbitted bearings, fitted with compression grease cups.

PRICES, FIG. 6815

Nos. of Frame.	Diameters of Pulley, Inches.	Face of Pulley, Inches.	Space Between Guide Posts, Inches.	Length of Adjustment, Inches.	Each.
1	10	6 to 10	23¾	22	$22 00
1	12	8 to 12	23¾	22	27 00
2	14	8 to 14	27¾	30	35 00
2	16	10 to 16	27¾	30	40 00
2	18	12 to 18	27¾	30	45 00
3	20	14 to 20	32⅞	44	60 00
3	24	16 to 20	32⅞	44	68 00
3	30	18 to 20	32⅞	44	75 00
4	30	20 to 24	40¾	60	100 00
4	36	20 to 24	40¾	60	125 00

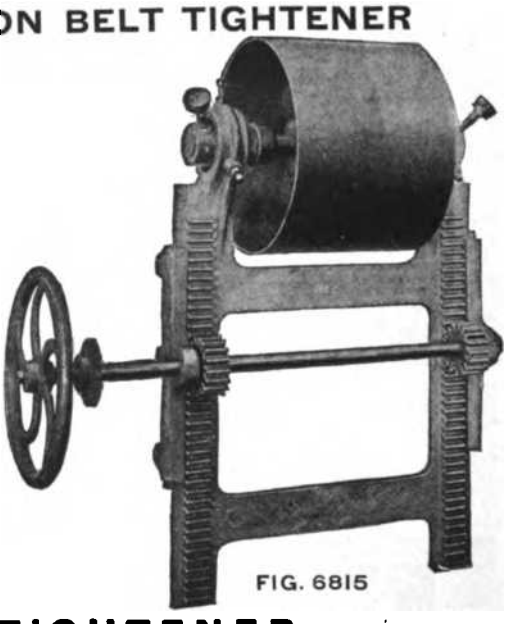


FIG. 6815

SCREW TIGHTENER

Made either Vertical or Horizontal.

DESCRIPTION, FIG. 6817

This tightener is designed especially for heavy work. The frame and bearings are planed, and the parts are all made extra heavy and well fitted.

PRICES

Lengths of Adjustment, Inches.	Width of Belt, Inches.	Sizes of Pulley, Inches.	With Chain Oiling Bearings.	With Ring Oiling Bearings.
24	12	16 x 14	$102 00	$120 00
36	16	20 x 18	114 00	138 00
48	20	30 x 22	140 00	175 00
60	24	36 x 26	190 00	230 00

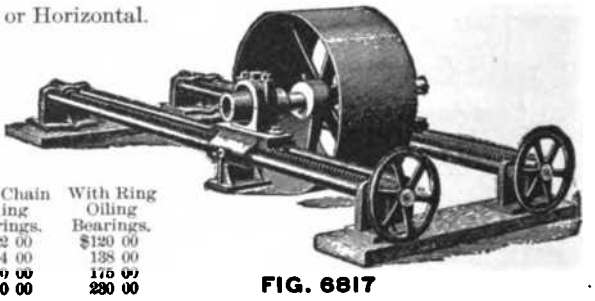


FIG. 6817

BELT TIGHTENER

With Iron Swinging Frame.

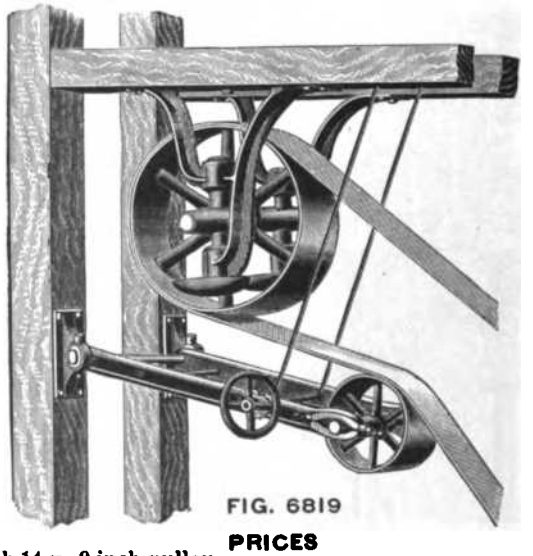


FIG. 6819

PRICES

Complete, with	14 x 9	inch pulley	$30 00
" "	16 x 12	" "	35 00
" "	18 x 16	" "	40 00
" "	20 x 20	" "	50 00

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BELT TIGHTENERS

STYLE C

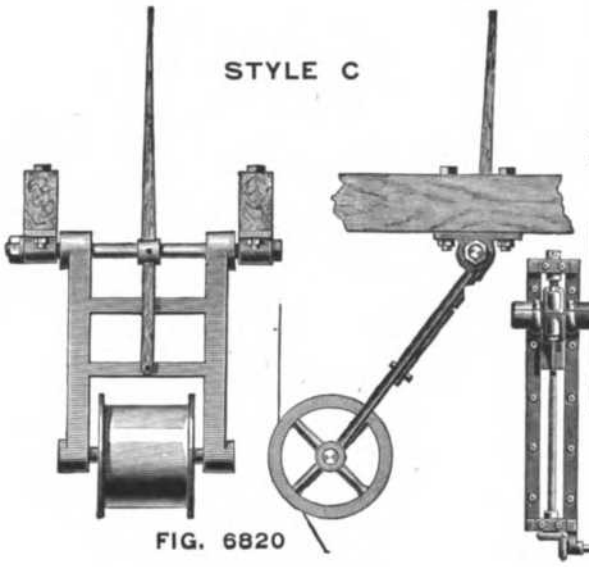


FIG. 6820

STYLE F
WITH RING OILING BEARINGS

This style to be bolted to vertical posts or to horizontal beams.

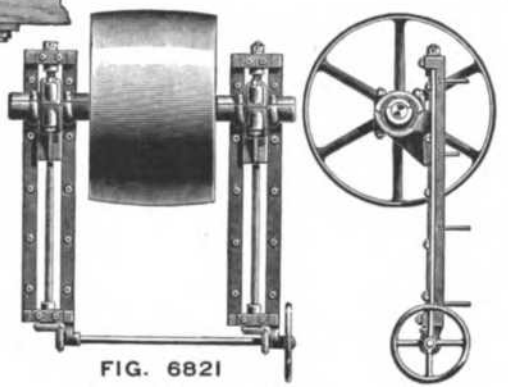


FIG. 6821

STYLE G

Two feet rise. This style suspended from beams.

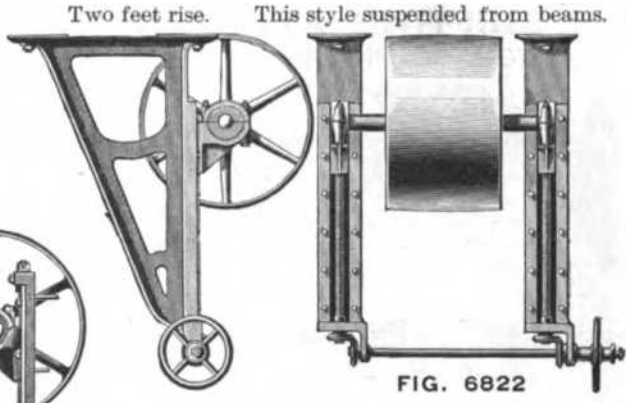


FIG. 6822

We have space to illustrate but a few of the styles of Belt Tighteners we are prepared to furnish. Designs and estimates given to meet all cases.

Prices, Figs. 6820 to 6822, on application.

BELT TIGHTENER

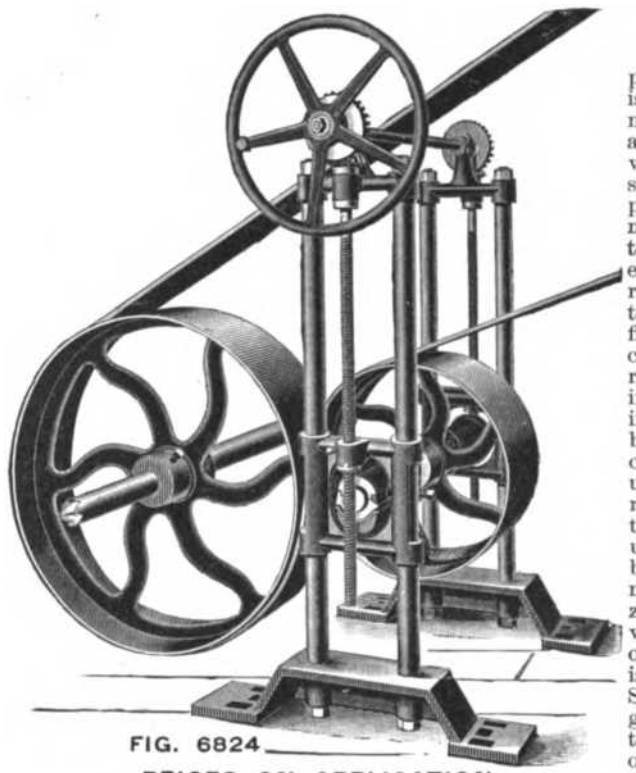


FIG. 6824

PRICES ON APPLICATION

DESCRIPTION
FIG. 6823

In all places where cone pulleys are used, this Shifter is an easy, ready and quick means of changing belts, and will save its cost in a very short time. The cut shows the Belt Shifter as applied to a lathe or other machine, with the rod up to the ceiling. The lower end of the rod is intended to rest in a socket attached to the lathe, or it may run to the floor. Round iron or gas pipe can be used for the upright rod. The prices given do not include the rod. In ordering, please give the width of belt and extreme length of cone pulley and manner of upper fastening. This cut represents what is termed the rod shifter, and can be used in all cases where the belt is perpendicular or nearly so; but for the horizontal or angular cone belts we can furnish a shifter operated with cords which is equally effective. As Shifters of this kind vary greatly with different positions of the belt, prices can only be given when position and sizes are known.

CONE BELT SHIFTER

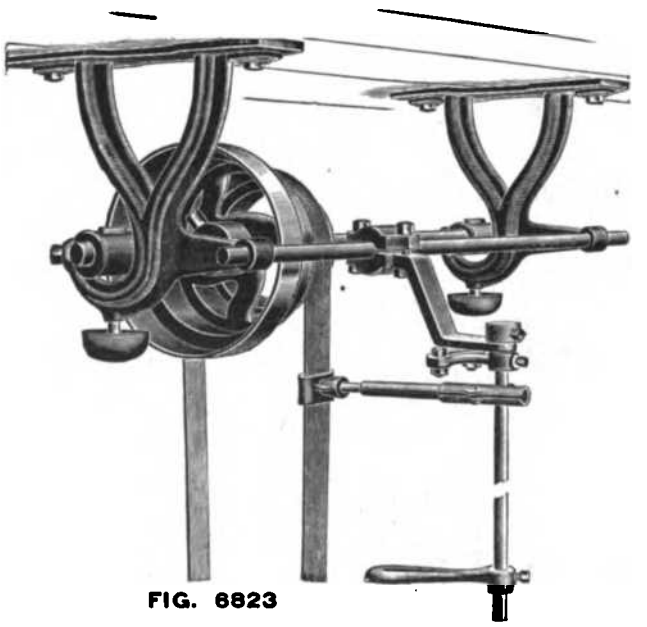


FIG. 6823

PRICES

For 1	to 2½ in.	belt	$3 50
" 2¾	" 4	" "	4 50

The above prices include the shifter guard and slide, upper and lower sockets, two dogs and handle. The dogs are designed to be used on the rod near the lower socket, to act as a check to prevent shipping the belt off the cone pulley.

IDEAL COUNTERSHAFT AND BELT SHIPPER

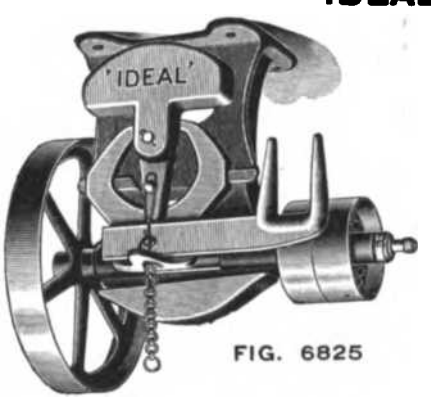


FIG. 6825

Pull the same cord to start and to stop. Suitable to any position or height. Cord can be operated from any convenient place. Operated by gravity; no springs. The principle of the Ideal Counter Shaft is gravity. A weight swinging over a center ships the belt in either direction and locks it in position. No springs are used. It is practically self-oiling. A reservoir in the shaft holds a quantity of oil and supplies all the bearings. One filling lubricates for a long time.

PRICES, FIGS. 6825 AND 6826

Sizes.	Pulleys, Inches.	Belt.	Each.
2	8 and 3	for 1 inch	$6 00
2½	8 " 4	" 1½ "	6 50
3	10 " 5	" 1½ "	8 00
3½	10 " 5	" 2 "	8 50
4	12 " 6	" 2½ "	9 50
5	14 " 7	" 3 "	12 00

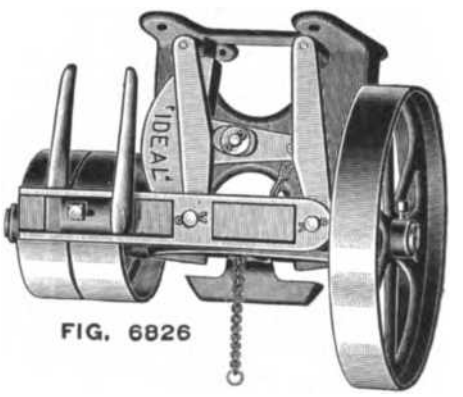


FIG. 6826

DESCRIPTION, FIG. 6825

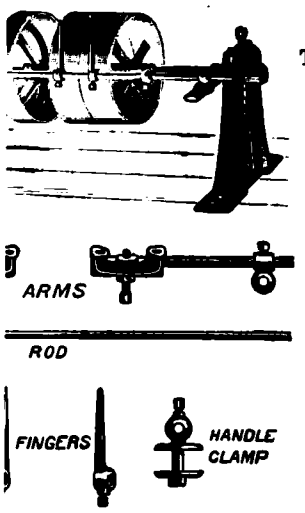
This cut shows one of the smaller size. The weight is shown poised in the center of its motion. It never can remain in that position when in use, but falls to one side and operates the slide in the opposite direction. To the slide is fastened a Shipper that can be changed to four different positions to suit belt in any direction. The weight is operated by a link and chain. A pull on the chain brings the link to rest on the guide, but does not pull the weight quite to the perpendicular; so that its momentum carries it over the center in either direction.

DESCRIPTION, FIG. 6826

In this cut the weight marked "Ideal" is shown on the left. The lever or small end of weight has a pin which bears against one of the levers and forces it over toward the large pulley, conveying with it the Shipper and the other hanging lever until it rests against the hub of the weight, thereby locking the Shipper in that position. A pull of the chain will carry the weight over the center and cause the pin to bear against the other hanging lever and move it and all connected to ship belt to other pulley.

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COUNTERSHAFT
IFTING ATTACHMENTS
R COUNTERSHAFT HANGERS



IG. 6827

PRICES

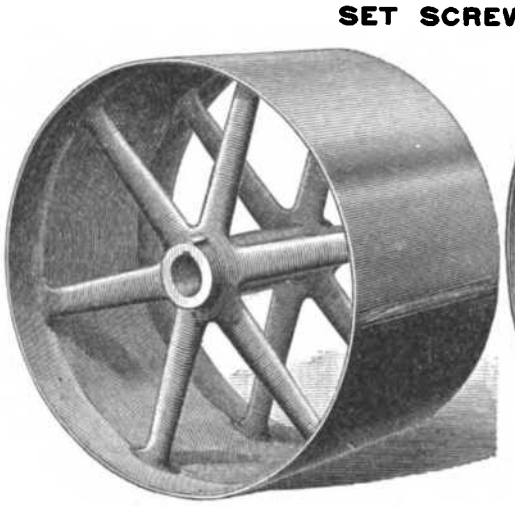
To be added to Price of Hangers.

Sizes Hangers, Inches.	Complete Set, Each.
15/16 to 1 3/16	$5 00
1 5/16 " 1 11/16	6 00
1 15/16 " 2 3/16	7 50
2 7/16 " 2 15/16	9 00

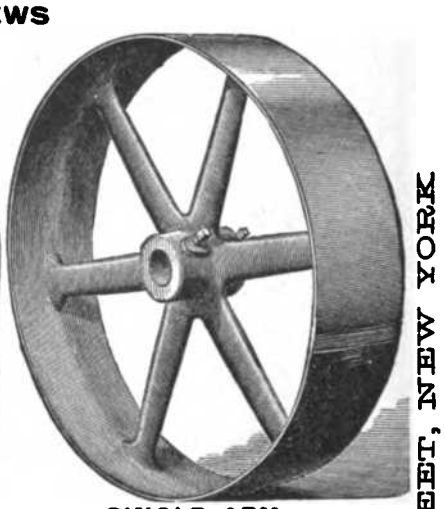
Sizes Hangers, Inches.	Without Arms, Each.
15/16 to 1 3/16	$3 00
1 5/16 " 1 11/16	3 50
1 15/16 " 2 3/16	4 50
2 7/16 " 2 15/16	5 50

Sizes Hangers, Inches.	Per Arm, Each.
15/16 to 1 3/16	$1 00
1 5/16 " 1 11/16	1 25
1 15/16 " 2 3/16	1 50
2 7/16 " 2 15/16	2 00

FINISHED PULLEYS
BORED, TURNED, BALANCED, WITH KEY WAYS OR SET SCREWS



DOUBLE ARM
FIG. 6828



SINGLE ARM
FIG. 6829

PRICES, FIGS. 6828 AND 6829
MACHINE MOLDED CAST IRON AND PATENT STEEL RIM PULLEYS

gle lt.	Double Belt.	Diams.	Face.	Single Belt.	Double Belt.	Diams	Face.	Single Belt.	Double Belt.	Diams.	Face.	Single Belt.	Double Belt.	Diams.	Face.	Single Belt	Double Belt.	Diams.	Face.	Single Belt.	Double Belt.	Double Arm, Double Belt.
40	.....	6½	7	$2 90	$3 95	9	12	....	$7 10	13	11	.....	$8 75	18	6	$5 50	$7 60	21	15	.....	$20 80	.....
55	.....		8	3 15	4 35		13	....	7 70		12	.....	9 40		7	6 05	8 45		16	.....	21 10	.....
70	.....		9	3 45	4 70		14	....	8 30		13	.....	10 10		8	6 60	9 30		17	.....	22 50	.....
85	.....		10	3 75	5 05	9½	3	$2 50	3 25		14	.....	10 85		9	7 15	10 20		18	.....	23 90	.....
00	.....		11	4 05	5 50		4	2 70	3 60	14	3	$3 25	4 20		10	7 75	11 10		19	.....	25 25	.....
45	.....		12	4 35	5 90		5	2 95	3 95		4	3 55	4 70		11	8 40	12 05		20	.....	26 65	.....
60	.....	7	3	2 10	2 75		6	3 30	4 40		5	3 90	5 30		12	9 10	13 05	22	3	$4 90	6 45	.....
75	.....		4	2 25	3 00		7	3 60	4 85		6	4 35	5 95		13	....	14 05		4	5 55	7 40	.....
90	.....		5	2 50	3 35		8	....	5 30		7	4 70	6 55		14	....	15 10		5	6 15	8 45	.....
05	.....		6	2 75	3 70		9	....	5 80		8	5 20	7 20		15	....	16 15		6	6 90	9 60	.....
20	.....		7	3 00	4 05		10	....	6 30		9	5 60	7 90		16	....	17 20		7	7 65	10 80	.....
50	.....		8	3 25	4 45		11	....	6 80		10	6 10	8 60		17	....	18 30		8	8 40	12 00	.....
65	.....		9	3 55	4 85		12	....	7 35		11	....	9 30		18	....	19 40		9	9 15	13 20	.....
80	.....		10	3 85	5 25		13	....	7 95		12	....	10 00	19	3	4 25	5 55		10	9 95	14 50	.....
95	.....		11	4 20	5 70		14	....	8 55		13	....	10 80		4	4 70	6 30		11	10 80	15 75	.....
10	.....		12	4 50	6 10	10	3	2 55	3 35		14	....	11 60		5	5 25	7 15		12	11 70	17 00	.....
25	.....	7½	3	2 20	2 85		4	2 75	3 70	15	3	3 40	4 40		6	5 85	8 10		13	12 85	18 35	.....
40	.....		4	2 35	3 10		5	3 05	4 10		4	3 75	5 00		7	6 45	9 00		14	14 05	19 70	.....
50	.....		5	2 60	3 45		6	3 40	4 55		5	4 15	5 65		8	7 05	9 95		15	.....	21 05	.....
70	.....		6	2 85	3 85		7	3 70	5 00		6	4 60	6 30		9	7 65	10 95		16	.....	22 40	.....
90	.....		7	3 10	4 20		8	....	5 50		7	5 05	6 95		10	8 30	11 95		17	.....	23 90	.....
10	.....		8	3 35	4 60		9	....	6 00		8	5 50	7 65		11	9 00	12 95		18	.....	25 40	.....
30	.....		9	3 70	5 05		10	....	6 55		9	5 95	8 40		12	9 75	14 00		19	.....	26 85	.....
40	.....		10	4 00	5 50		11	....	7 10		10	6 45	9 15		13	....	15 10		20	.....	28 30	$32 55
60	.....		11	4 35	5 95		12	....	7 65		11	6 95	9 90		14	....	16 25		2.	.....	.....	34 40
80	.....		12	4 65	6 35		13	....	8 25		12	....	10 70		15	....	17 35		22	.....	.....	36 25
55	.....	8	3	2 25	2 95		14	....	8 90		13	....	11 50		16	....	18 50		23	.....	.....	38 10
75	.....		4	2 45	3 20	11	3	2 70	3 55		14	....	12 35		17	....	19 70		24	.....	.....	40 00
95	.....		5	2 70	3 55		4	2 95	3 95	16	3	3 60	4 70		18	....	20 90		25	.....	.....	41 90
15	.....		6	2 95	3 95		5	3 25	4 40		4	3 95	5 30	20	3	4 45	5 85		26	.....	.....	43 85
35	.....		7	3 20	4 35		6	3 60	4 90		5	4 40	6 00		4	4 95	6 65	28	3	5 15	6 70	.....
55	.....		8	3 45	4 75		7	3 95	5 40		6	4 90	6 70		5	5 55	7 55		4	5 80	7 75	.....
75	.....		9	3 80	5 20		8	....	5 95		7	5 35	7 45		6	6 20	8 60		5	6 50	8 90	.....
95	.....		10	4 15	5 70		9	....	6 45		8	5 85	8 20		7	6 85	9 60		6	7 25	10 10	.....
15	.....		11	4 50	6 15		10	....	7 05		9	6 30	9 00		8	7 50	10 60		7	8 05	11 40	.....
60	.....		12	4 80	6 60		11	....	7 65		10	6 85	9 90		9	8 15	11 70		8	8 85	12 70	.....
80	.....		13	5 20	7 15		12	....	8 20		11	7 40	10 60		10	8 85	12 80		9	9 65	14 00	.....
00	.....		14	5 60	7 75		13	....	8 85		12	8 00	11 45		11	9 60	13 90		10	10 50	15 35	.....
20	.....	8½	3	2 35	3 05		14	....	9 50		13	....	12 35		12	10 40	15 00		11	11 45	16 65	.....
40	.....		4	2 55	3 35	12	3	2 85	3 75		14	....	13 25		13	11 40	16 20		12	12 40	18 00	.....
60	.....		5	2 80	3 70		4	3 15	4 20		15	....	14 20		14	12 40	17 40		13	13 60	19 40	.....
80	.....		6	3 05	4 10		5	3 50	4 70		16	....	15 15		15	....	18 60		14	14 85	20 85	.....
00	.....		7	3 35	4 50		6	3 85	5 25	17	3	3 80	5 00		16	....	19 80		15	.....	22 30	.....
20	.....		8	3 65	4 95		7	4 20	5 80		4	4 20	5 65		17	....	21 10		16	.....	23 75	.....
40	.....		9	3 95	5 40		8	4 55	6 35		5	4 70	6 40		18	....	22 40		17	.....	25 30	.....
95	$2 55		10	4 30	5 90		9	4 95	6 95		6	5 20	7 15		19	....	23 70		18	.....	26 90	.....
10	2 80		11	4 65	6 40		10	....	7 55		7	5 70	7 90		20	....	25 00		19	....	28 40	.....
30	3 10		12	5 00	6 85		11	....	8 15		8	6 20	8 75	21	3	4 70	6 15		20	.....	29 95	34 45
55	3 45		13	5 35	7 40		12	....	8 75		9	6 75	9 60		4	5 25	7 00		21	.....	.....	36 45
80	3 80		14	5 75	8 05		13	....	9 40		10	7 30	10 45		5	5 85	8 00		22	.....	.....	38 45
05	4 15	9	3	2 40	3 15		14	....	10 10		11	7 90	11 30		6	6 55	9 10		23	.....	.....	40 45
30	4 50		4	2 60	3 45	13	3	3 05	3 95		12	8 50	12 25		7	7 25	10 20		24	.....	.....	42 45
60	4 85		5	2 85	3 80		4	3 35	4 45		13	....	13 20		8	7 95	11 30		25	.....	.....	44 45
90	5 25		6	3 15	4 25		5	3 70	5 00		14	....	14 15		9	8 65	12 45		26	.....	.....	46 45
20	5 65		7	3 45	4 65		6	4 10	5 60		15	....	15 15		10	9 40	13 65	24	3	5 40	7 00	.....
05	2 65		8	....	5 10		7	4 45	6 20		16	....	16 15		11	10 20	15 85		4	6 10	8 15	.....
20	2 90		9	....	5 60		8	4 90	6 80	18	3	4 00	5 25		12	11 05	16 00		5	6 85	9 35	.....
40	3 25		10	....	6 10		9	5 25	7 45		4	4 45	5 95		13	12 10	17 25		6	7 65	10 65	.....
65	3 70		11	....	6 60		10	....	8 10		5	4 95	6 75		14	13 20	18 55		7	8 45	12 00	.....

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PRICES, FIGS. 6828 AND 6829. CONTINUED

Diams.	Face.	Single Belt.	Double Belt.	Double Arm, Double Belt.
24	8	$ 9 30	13 40	.....
	9	10 20	14 80	.....
	10	11 10	16 20	.....
	11	12 10	17 65	.....
	12	13 15	19 00	.....
	13	14 90	20 50	.....
	14	15 70	22 00	.....
	15	.....	23 55	.....
	16	.....	25 10	.....
	17	.....	26 75	.....
	18	.....	28 40	.....
	19	.....	30 05	.....
	20	.....	31 70	36 45
	21	.....	.....	38 55
	22	.....	.....	40 70
	23	.....	.....	42 85
	24	.....	.....	45 00
	25	.....	.....	47 05
	26	.....	.....	49 10
	27	.....	.....	51 35
	28	.....	.....	53 60
	29	.....	.....	55 95
	30	.....	.....	58 35
25	3	5 70	7 40	.....
	4	6 30	8 65	.....
	5	7 25	9 90	.....
	6	8 10	11 25	.....
	7	8 95	12 70	.....
	8	9 90	14 15	.....
	9	10 85	15 60	.....
	10	11 85	17 10	.....
	11	12 90	18 60	.....
	12	14 05	20 05	.....
	13	15 35	21 65	.....
	14	16 65	23 25	.....
	15	.....	24 90	.....
	16	.....	26 60	.....
	17	.....	28 35	.....
	18	.....	30 10	.....
	19	.....	31 85	.....
	20	.....	33 60	38 65
	21	.....	.....	40 85
	22	.....	.....	43 05
	23	.....	.....	45 20
	24	.....	.....	47 40
	25	.....	.....	49 60
	26	.....	.....	51 80
	27	.....	.....	54 35
	28	.....	.....	56 95
	29	.....	.....	59 50
	30	.....	.....	62 10
26	3	6 00	7 80	.....
	4	6 90	9 15	.....
	5	7 65	10 45	.....
	6	8 60	11 90	.....
	7	9 45	13 40	.....
	8	10 55	14 90	.....
	9	11 50	16 40	.....
	10	12 60	18 00	.....
	11	13 75	19 60	.....
	12	15 00	21 10	.....
	13	16 30	22 80	.....
	14	17 65	24 55	.....
	15	.....	26 30	.....
	16	.....	28 10	.....
	17	.....	29 75	.....
	18	.....	31 80	.....
	19	.....	33 65	.....
	20	.....	35 55	40 85
	21	.....	.....	43 10
	22	.....	.....	45 40
	23	.....	.....	47 70
	24	.....	.....	50 00
	25	.....	.....	52 30
	26	.....	.....	54 60
	27	.....	.....	56 90
	28	.....	.....	59 25
	29	.....	.....	61 55
	30	.....	.....	63 85
27	3	6 35	8 25	.....
	4	7 30	9 60	.....
	5	8 15	11 00	.....
	6	9 05	12 50	.....
	7	10 00	14 10	.....
	8	11 10	15 65	.....
	9	12 20	17 25	.....
	10	13 35	18 90	.....
	11	14 60	20 60	.....
	12	15 90	22 20	.....
	13	17 25	24 00	.....
	14	18 60	25 80	.....
	15	.....	27 70	.....
	16	.....	29 60	.....
	17	.....	31 55	.....
	18	.....	33 55	.....
	19	.....	35 50	.....
	20	.....	37 50	43 10
	21	.....	.....	45 50
	22	.....	.....	47 95
	23	.....	.....	50 25
	24	.....	.....	52 55
	25	.....	.....	54 95
	26	.....	.....	57 35
	27	.....	.....	59 70
	28	.....	.....	62 10
	29	.....	.....	64 65
	30	.....	.....	67 20
28	3	6 75	8 70	.....
	4	7 70	10 10	.....
	5	8 50	11 55	.....
	6	9 50	13 15	.....
	7	10 60	14 80	.....
	8	11 70	16 40	.....
	9	12 90	18 05	.....
	10	13 10	19 80	.....
	11	15 45	21 60	.....
	12	16 85	23 30	.....
	13	18 20	25 20	.....
	14	19 55	27 10	.....
	15	.....	29 10	.....
	16	.....	31 10	.....
	17	.....	33 15	.....
	18	.....	35 25	.....
	19	.....	37 35	.....
	20	.....	39 45	45 35
	21	.....	.....	47 80
	22	.....	.....	50 30
	23	.....	.....	52 70
	24	.....	.....	55 10
	25	.....	.....	57 55
	26	.....	.....	60 00
	27	.....	.....	62 50
	28	.....	.....	65 00
	29	.....	.....	67 50
	30	.....	.....	70 05
29	3	7 25	9 15	.....
	4	8 10	10 60	.....
	5	9 00	12 15	.....
	6	10 00	13 85	.....
	7	11 15	15 50	.....
	8	12 35	17 15	.....
	9	13 60	18 85	.....
	10	14 90	20 70	.....
	11	16 30	22 60	.....
	12	17 70	24 40	.....
	13	19 10	26 40	.....
	14	20 55	28 40	.....
	15	.....	30 50	.....
	16	.....	32 60	.....
	17	.....	34 80	.....
	18	.....	37 00	.....
	19	.....	39 20	.....
	20	.....	41 40	47 60
	21	.....	.....	50 10
	22	.....	.....	52 65
	23	.....	.....	55 15
	24	.....	.....	57 70
	25	.....	.....	60 25
	26	.....	.....	62 80
	27	.....	.....	65 30
	28	.....	.....	67 85
	29	.....	.....	70 40
	30	.....	.....	73 00
30	3	7 60	9 60	.....
	4	8 55	11 10	.....
	5	9 45	12 70	.....
	6	10 55	14 55	.....
	7	11 75	16 20	.....
	8	13 00	18 00	.....
	9	14 30	19 80	.....
	10	15 75	21 60	.....
	11	17 15	23 50	.....
	12	18 60	25 50	.....
	13	20 05	27 60	.....
	14	21 55	29 70	.....
	15	.....	32 45	.....
	16	.....	34 20	.....
	17	.....	36 45	.....
	18	.....	38 70	.....
	19	.....	40 95	.....
	20	.....	43 25	49 75
	21	.....	.....	51 35
	22	.....	.....	54 95
	23	.....	.....	57 60
	24	.....	.....	60 25
	25	.....	.....	62 85
	26	.....	.....	65 45
	27	.....	.....	68 05
	28	.....	.....	70 70
	29	.....	.....	73 35
	30	.....	.....	76 00
31	3	8 05	10 00	.....
	4	8 95	11 65	.....
	5	9 85	13 40	.....
	6	11 10	15 30	.....
	7	12 35	17 10	.....
	8	13 70	19 00	.....
	9	15 10	21 50	.....
	10	16 55	22 70	.....
	11	18 05	24 70	.....
	12	19 55	26 75	.....
	13	21 05	28 95	.....
	14	22 60	31 15	.....
	15	.....	33 45	.....
	16	.....	35 80	.....
	17	.....	38 15	.....
	18	.....	40 50	.....
	19	.....	42 90	.....
	20	.....	45 35	52 15
	21	.....	.....	54 75
	22	.....	.....	57 40
	23	.....	.....	60 10
	24	.....	.....	62 80
	25	.....	.....	65 50
	26	.....	.....	68 20
	27	.....	.....	70 90
	28	.....	.....	73 65
	29	.....	.....	76 40
	30	.....	.....	79 20
32	3	8 45	10 45	.....
	4	9 40	12 20	.....
	5	10 45	14 10	.....
	6	11 65	16 05	.....
	7	12 95	17 90	.....
	8	14 40	19 85	.....
	9	15 90	22 20	.....
	10	17 40	23 85	.....
	11	19 00	25 90	.....
	12	20 55	28 00	.....
	13	22 10	30 30	.....
	14	23 70	32 65	.....
	15	.....	35 05	.....
	16	.....	37 45	.....
	17	.....	39 85	.....
	18	.....	42 30	.....
	19	.....	44 70	.....
	20	.....	47 15	54 50
	21	.....	.....	57 15
	22	.....	.....	59 80
	23	.....	.....	62 55
	24	.....	.....	65 35
	25	.....	.....	68 10
	26	.....	.....	70 90
	27	.....	.....	73 75
	28	.....	.....	76 65
	29	.....	.....	79 50
	30	.....	.....	82 40
	32	.....	.....	88 15
33	3	8 90	11 00	.....
	4	9 90	12 80	.....
	5	11 00	14 80	.....
	6	12 25	16 80	.....
	7	13 60	18 80	.....
	8	15 05	20 80	.....
	9	16 70	22 85	.....
	10	18 25	24 95	.....
	11	19 90	27 10	.....
	12	21 50	29 25	.....
	13	23 15	31 65	.....
	14	24 80	34 10	.....
	15	.....	36 55	.....
	16	.....	39 05	.....
	17	.....	41 55	.....
	18	.....	44 10	.....
	19	.....	46 60	.....
	20	.....	49 15	56 95
	21	.....	.....	59 60
	22	.....	.....	62 30
	23	.....	.....	65 10
	24	.....	.....	67 90
	25	.....	.....	70 80
	26	.....	.....	73 70
	27	.....	.....	76 65
	28	.....	.....	79 60
	29	.....	.....	82 00
	30	.....	.....	85 60
34	3	9 90	12 30	.....
	4	10 90	14 10	.....
	5	12 10	16 20	.....
	6	13 50	18 40	.....
	7	15 00	20 60	.....
	8	16 60	22 75	.....
	9	18 25	24 90	.....
	10	19 95	27 20	.....
	11	21 75	29 50	.....
	12	23 50	31 80	.....
	13	25 25	34 40	.....
	14	27 00	37 05	.....
	15	.....	39 70	.....
	16	.....	42 35	.....
	17	.....	45 00	.....
	18	.....	47 70	.....
	19	.....	50 40	.....
	20	.....	53 10	61 80
	21	.....	.....	64 35
	22	.....	.....	66 95
	23	.....	.....	70 05
	24	.....	.....	73 20
	25	.....	.....	76 40
	26	.....	.....	79 60
	27	.....	.....	82 85
	28	.....	.....	86 10
	29	.....	.....	89 40
	30	.....	.....	92 70
	32	.....	.....	99 40
36	3	10 40	12 75	.....
	4	11 40	14 75	.....
	5	12 65	16 95	.....
	6	14 10	19 20	.....
	7	15 70	21 45	.....
	8	17 35	23 10	.....
	9	19 10	26 00	.....
	10	20 85	28 30	.....
	11	22 70	30 70	.....
	12	24 50	33 10	.....
	13	26 30	35 80	.....
	14	28 10	38 55	.....
	15	.....	41 30	.....
	16	.....	44 05	.....
	17	.....	46 80	.....
	18	.....	49 55	.....
	19	.....	52 30	.....
	20	.....	55 05	64 30
	21	.....	58 80	66 35
	22	.....	61 55	69 45
	23	.....	64 30	72 55
	24	.....	67 05	75 70
	25	.....	.....	78 85
	26	.....	.....	82 00
	27	.....	.....	85 20
	28	.....	.....	88 45
	29	.....	.....	91 70
	30	.....	.....	94 95
	32	.....	.....	101 55
38	3	11 95	15 50	.....
	4	13 25	17 95	.....
	5	14 85	20 10	.....
	6	16 80	22 45	.....
	7	18 20	24 80	.....
	8	20 00	27 15	.....
	9	21 80	29 55	.....
	10	23 70	32 00	.....
	11	25 55	34 50	.....
	12	27 40	37 30	.....
	13	29 30	40 10	.....
	14	.....	42 90	.....
	15	.....	45 70	.....
	16	.....	48 60	.....
	17	.....	51 50	.....
	18	.....	54 40	.....
	19	.....	57 30	66 50
	20	.....	60 20	69 30
	21	.....	63 10	72 10
	22	.....	66 00	75 30
	23	.....	68 90	78 55
	24	.....	.....	81 80
	25	.....	.....	85 10
	26	.....	.....	88 40
	27	.....	.....	91 75
	28	.....	.....	95 10
	29	.....	.....	98 50
	30	.....	.....	102 05
	32	.....	.....	109 00
	34	.....	.....	115 95
	36	.....	.....	123 00
40	3	12 55	16 25	.....
	4	13 95	18 65	.....
	5	15 60	21 05	.....
	6	17 95	23 45	.....
	7	20 25	25 90	.....
	8	22 55	28 35	.....
	9	24 85	30 80	.....
	10	27 15	33 35	.....
	11	29 45	35 95	.....
	12	31 75	38 80	.....
	13	34 05	41 65	.....
	14	.....	44 65	.....
	15	.....	47 65	.....
	16	.....	50 70	.....
	17	.....	53 70	.....
	18	.....	56 75	.....
	19	.....	59 80	68 75
	20	.....	62 85	71 75
	21	.....	65 90	74 80
	22	.....	68 95	78 10
	23	.....	72 00	81 45
	24	.....	.....	84 85
	25	.....	.....	88 25
	26	.....	.....	91 70
	27	.....	.....	95 15
	28	.....	.....	98 60
	29	.....	.....	102 05
	30	.....	.....	105 60
	32	.....	.....	112 80
	34	.....	.....	120 00
	36	.....	.....	127 15
42	4	13 10	17 00	.....
	5	14 60	19 40	.....
	6	16 35	21 95	.....
	7	18 10	24 45	.....
	8	19 95	27 00	.....
	9	21 85	29 55	.....
	10	23 75	32 10	.....
	11	25 75	34 65	.....
	12	27 80	37 25	.....
	13	29 85	39 85	.....
	14	31 90	42 45	.....
	15	.....	45 70	.....
	16	.....	49 00	.....
	17	.....	52 25	.....
	18	.....	55 50	.....
	19	.....	58 55	.....
	20	.....	61 60	71 00
	21	.....	64 65	74 20
	22	.....	67 70	77 40
	23	.....	70 75	80 85
	24	.....	73 80	84 35
	25	.....	.....	87 85
	26	.....	.....	91 35
	27	.....	.....	94 90
	28	.....	.....	98 50
	29	.....	.....	102 05
	30	.....	.....	105 60
	32	.....	.....	112 80
	34	.....	.....	120 00
	36	.....	.....	127 15
44	4	13 70	17 75	.....
	5	15 30	20 30	.....
	6	17 10	22 90	.....
	7	18 90	25 50	.....
	8	20 80	28 10	.....
	9	22 75	30 70	.....
	10	24 75	33 30	.....
	11	26 80	36 05	.....
	12	28 80	38 75	.....
	13	30 85	41 75	.....
	14	32 90	44 80	.....
	15	.....	47 85	.....
	16	.....	50 90	.....
	17	.....	54 20	.....
	18	.....	57 50	.....
	19	.....	60 60	.....
	20	.....	63 70	73 25
	21	.....	66 70	76 65
	22	.....	69 70	80 15
	23	.....	72 80	83 70
	24	.....	75 90	87 30
	25	.....	.....	90 90
	26	.....	.....	94 55
	27	.....	.....	97 70
	28	.....	.....	101 90
	29	.....	.....	105 50
	30	.....	.....	109 10
	32	.....	.....	116 60
	34	.....	.....	124 00
	36	.....	.....	131 35
	38	.....	.....	138 80
	40	.....	.....	146 20
46	4	14 30	18 55	.....
	5	15 95	20 80	.....
	6	17 85	23 80	.....
	7	19 95	26 50	.....
	8	22 05	29 20	.....
	9	23 70	31 85	.....
	10	25 70	34 55	.....
	11	27 80	37 40	.....
	12	29 90	40 20	.....
	13	32 00	43 25	.....
	14	34 10	46 35	.....
	15	.....	49 60	.....
	16	.....	52 85	.....
	17	.....	56 15	.....
	18	.....	59 50	.....
	19	.....	62 55	.....
	20	.....	65 65	75 50
	21	.....	68 80	79 15
	22	.....	72 00	82 80
	23	.....	75 20	86 50
	24	.....	78 45	90 20
	25	.....	.....	93 90
	26	.....	.....	97 65
	27	.....	.....	101 40
	28	.....	.....	105 20
	29	.....	.....	108 95
	30	.....	.....	112 75
	32	.....	.....	120 40
	34	.....	.....	127 95
	36	.....	.....	135 45
	38	.....	.....	143 15
	40	.....	.....	150 75
48	4	14 90	19 30	.....
	5	16 70	22 05	.....
	6	18 60	24 80	.....
	7	20 55	27 55	.....
	8	22 55	30 30	.....
	9	24 60	33 05	.....
	10	26 70	35 85	.....
	11	28 85	38 75	.....
	12	31 00	41 60	.....
	13	33 15	44 75	.....
	14	35 30	47 95	.....
	15	.....	51 15	.....
	16	.....	54 40	.....
	17	.....	57 70	.....
	18	.....	61 00	.....
	19	.....	64 30	.....
	20	.....	67 60	77 75
	21	.....	70 95	81 60
	22	.....	74 30	85 45
	23	.....	77 65	89 30
	24	.....	81 00	93 15
	25	.....	.....	97 00
	26	.....	.....	100 85
	27	.....	.....	104 70
	28	.....	.....	108 60
	29	.....	.....	112 50
	30	.....	.....	116 40
	32	.....	.....	124 20
	34	.....	.....	132 00
	36	.....	.....	139 80
	38	.....	.....	147 60
	40	.....	.....	155 40

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PRICES, FIGS. 6828 AND 6829. CONTINUED

Face.	Single Belt.	Double Belt.	Double Arm, Double Belt.	Diams.
4	$15 55	20 15	.....	45
5	17 45	22 95	.....	
6	19 40	25 80	.....	
7	21 40	28 65	.....	
8	23 50	31 50	.....	
9	25 60	34 35	.....	46
10	27 75	37 25	.....	
11	30 00	40 25	.....	
12	32 20	43 25	.....	
13	34 40	46 50	.....	
14	36 60	49 25	.....	
15	.....	53 60	.....	
16	.....	56 45	.....	
17	.....	59 85	.....	
18	.....	63 25	.....	
19	.....	66 65	.....	
20	.....	70 05	80 55	
21	.....	73 45	84 50	
22	.....	76 90	88 45	
23	.....	80 35	92 40	
24	.....	83 80	96 35	
25	.....	.....	100 35	
26	.....	.....	104 35	
27	.....	.....	108 35	
28	.....	.....	112 35	
29	.....	.....	116 40	
30	.....	.....	120 40	
32	.....	.....	128 50	
34	.....	.....	136 50	
36	.....	.....	144 55	
38	.....	.....	152 65	
40	.....	.....	160 75	
4	16 25	21 00	.....	
5	18 20	23 90	.....	
6	20 25	26 85	.....	
7	22 30	29 75	.....	
8	24 45	32 70	.....	
9	26 60	35 65	.....	47
10	28 80	38 65	.....	
11	31 10	41 80	.....	
12	33 40	44 90	.....	
13	35 65	48 25	.....	
14	37 90	51 60	.....	
15	.....	55 05	.....	
16	.....	58 50	.....	
17	.....	62 00	.....	
18	.....	65 50	.....	
19	.....	69 00	.....	
20	.....	72 50	83 45	
21	.....	76 00	87 40	
22	.....	79 50	91 40	
23	.....	73 05	95 50	
24	.....	86 65	99 65	
25	.....	.....	103 75	
26	.....	.....	107 85	
27	.....	.....	110 95	
28	.....	.....	115 10	
29	.....	.....	119 75	
30	.....	.....	124 45	
32	.....	.....	132 80	
34	.....	.....	141 10	
36	.....	.....	149 40	
38	.....	.....	157 80	
40	.....	.....	166 15	
4	16 95	21 90	.....	
5	18 95	24 45	.....	
6	21 05	27 85	.....	
7	23 15	30 85	.....	
8	25 40	33 90	.....	
9	27 60	37 00	.....	48
0	29 85	40 10	.....	
1	32 25	43 35	.....	
2	34 60	46 55	.....	
3	36 90	50 00	.....	
4	39 25	53 45	.....	
5	.....	57 00	.....	
6	.....	60 55	.....	
7	.....	64 15	.....	
8	.....	67 75	.....	
9	.....	71 35	.....	
0	.....	74 95	86 20	
1	.....	78 55	90 25	
2	.....	82 15	94 35	
3	.....	85 80	98 60	
4	.....	89 45	102 85	
5	.....	.....	107 10	
6	.....	.....	111 35	
7	.....	.....	115 60	
3	.....	.....	120 90	
9	.....	.....	124 65	
0	.....	.....	128 45	

Face.	Single Belt.	Double Belt.	Double Arm, Double Belt.	Diams.
32	.....	.....	137 15	48
34	.....	.....	145 80	
36	.....	.....	154 25	
38	.....	.....	162 95	
40	.....	.....	171 65	
4	17 65	22 75	.....	
5	19 70	25 80	.....	
6	21 85	28 90	.....	
7	24 05	32 00	.....	
8	26 35	35 15	.....	
9	28 60	38 35	.....	49
10	30 95	41 55	.....	
11	33 40	44 90	.....	
12	35 80	48 20	.....	
13	38 20	51 75	.....	
14	40 60	55 30	.....	
15	43 15	58 95	.....	
16	.....	62 60	.....	
17	.....	66 30	.....	
18	.....	70 00	.....	
19	.....	73 70	.....	
20	.....	77 40	89 00	
21	.....	81 10	92 25	
22	.....	84 80	97 50	
23	.....	88 55	101 80	
24	.....	92 30	106 15	
25	.....	.....	110 50	
26	.....	.....	114 90	
27	.....	.....	119 30	
28	.....	.....	123 70	
29	.....	.....	128 10	
30	.....	.....	132 50	
32	.....	.....	141 45	
34	.....	.....	150 30	
36	.....	.....	159 15	
38	.....	.....	168 10	
40	.....	.....	177 00	
4	18 30	23 60	.....	
5	20 45	26 75	.....	
6	22 70	29 95	.....	
7	24 95	33 15	.....	
8	27 30	36 40	.....	50
9	29 60	39 70	.....	
10	32 05	43 00	.....	
11	34 50	46 45	.....	
12	37 00	49 85	.....	
13	39 45	53 50	.....	
14	41 95	57 15	.....	
15	.....	59 90	.....	
16	.....	64 65	.....	
17	.....	68 45	.....	
18	.....	72 25	.....	
19	.....	76 05	.....	
20	.....	79 85	91 80	
21	.....	83 65	96 15	
22	.....	87 45	100 53	
23	.....	91 30	104 95	
24	.....	95 15	109 40	
25	.....	.....	113 90	
26	.....	.....	118 40	
27	.....	.....	122 95	
28	.....	.....	127 50	
29	.....	.....	132 00	
30	.....	.....	136 55	
32	.....	.....	145 75	
34	.....	.....	154 90	
36	.....	.....	164 05	
38	.....	.....	173 30	
40	.....	.....	182 55	
4	19 00	24 50	.....	
5	21 20	27 70	.....	
6	23 50	31 00	.....	
7	25 85	34 30	.....	
8	28 25	37 65	.....	
9	30 65	41 05	.....	51
10	33 15	44 45	.....	
11	35 70	48 00	.....	
12	38 20	51 50	.....	
13	40 75	55 25	.....	
14	43 30	59 00	.....	
15	.....	62 85	.....	
16	.....	66 70	.....	
17	.....	70 60	.....	
18	.....	74 50	.....	
19	.....	78 40	.....	
20	.....	82 30	94 65	
21	.....	86 20	99 10	
22	.....	90 10	103 60	
23	.....	94 05	108 15	
24	.....	98 00	112 70	
25	.....	.....	117 30	

Face.	Single Belt.	Double Belt.	Double Arm, Double Belt.	Diams.
26	.....	.....	121 90	51
27	.....	.....	126 55	
28	.....	.....	131 25	
29	.....	.....	135 95	
30	.....	.....	140 65	
32	.....	.....	150 05	
34	.....	.....	159 50	
36	.....	.....	168 95	
38	.....	.....	178 35	
40	.....	.....	187 80	
5	22 00	28 70	.....	
6	24 40	32 15	.....	
7	26 80	35 55	.....	
8	29 25	38 95	.....	
9	31 70	42 45	.....	
10	34 30	45 95	.....	
11	36 90	49 55	.....	52
12	39 50	53 15	.....	
13	42 10	57 00	.....	
14	44 75	60 85	.....	
15	.....	64 80	.....	
16	.....	68 75	.....	
17	.....	72 75	.....	
18	.....	76 80	.....	
19	.....	80 80	.....	
20	.....	84 85	97 55	
21	.....	88 90	102 20	
22	.....	92 90	106 85	
23	.....	96 95	111 50	
24	.....	101 05	116 20	
25	.....	.....	120 95	
26	.....	.....	125 70	
27	.....	.....	130 50	
28	.....	.....	135 35	
29	.....	.....	140 15	
30	.....	.....	145 00	
32	.....	.....	154 75	
34	.....	.....	164 50	
36	.....	.....	174 20	
38	.....	.....	184 05	
40	.....	.....	193 95	
5	22 80	29 75	.....	
6	25 30	33 30	.....	
7	27 75	36 80	.....	
8	30 25	40 30	.....	
9	32 80	43 85	.....	
10	35 45	47 45	.....	
11	38 10	51 15	.....	
12	40 80	54 80	.....	
13	43 50	58 75	.....	53
14	46 20	62 70	.....	
15	49 10	66 75	.....	
16	52 00	70 85	.....	
17	.....	75 00	.....	
18	.....	79 15	.....	
19	.....	83 25	.....	
20	.....	87 40	100 50	
21	.....	91 55	105 50	
22	.....	95 70	110 50	
23	.....	99 90	115 20	
24	.....	104 10	119 90	
25	.....	.....	124 70	
26	.....	.....	129 50	
27	.....	.....	134 45	
28	.....	.....	139 45	
29	.....	.....	144 40	
30	.....	.....	149 40	
32	.....	.....	159 35	
34	.....	.....	169 50	
36	.....	.....	179 50	
38	.....	.....	189 65	
40	.....	.....	199 85	
42	.....	.....	210 05	
44	.....	.....	220 25	
5	23 65	30 85	.....	
6	26 20	34 50	.....	
7	28 70	38 05	.....	
8	31 25	41 65	.....	
9	33 90	45 30	.....	
10	36 60	48 95	.....	
11	39 30	52 75	.....	
12	42 10	56 50	.....	
13	44 90	60 55	.....	54
14	47 70	64 55	.....	
15	50 65	68 75	.....	
16	53 65	72 95	.....	
17	.....	77 20	.....	
18	.....	81 45	.....	
19	.....	85 70	.....	
20	.....	89 95	103 45	
21	.....	94 20	108 35	

Face.	Single Belt.	Double Belt.	Double Arm, Double Belt.	Diams.
22	.....	98 50	113 25	54
23	.....	102 85	118 25	
24	.....	107 20	123 30	
25	.....	111 55	128 30	
26	.....	115 95	133 35	
27	.....	.....	138 40	
28	.....	.....	143 50	
29	.....	.....	148 65	
30	.....	.....	153 80	
32	.....	.....	164 10	
34	.....	.....	174 50	
36	.....	.....	184 80	
38	.....	.....	195 25	
40	.....	.....	206 95	
42	.....	.....	218 65	
44	.....	.....	230 35	
5	24 50	31 85	.....	
6	27 10	35 65	.....	
7	29 65	39 30	.....	
8	32 30	43 00	.....	
9	35 00	46 75	.....	
10	37 75	50 50	.....	
11	40 50	54 35	.....	
12	43 40	58 15	.....	
13	46 30	62 30	.....	55
14	49 20	66 45	.....	
15	52 25	70 75	.....	
16	55 30	75 05	.....	
17	.....	79 40	.....	
18	.....	83 80	.....	
19	.....	88 15	.....	
20	.....	92 50	106 40	
21	.....	96 90	111 45	
22	.....	101 30	116 50	
23	.....	105 80	121 65	
24	.....	110 30	126 85	
25	.....	115 80	132 00	
26	.....	119 30	137 20	
27	.....	.....	142 40	
28	.....	.....	147 65	
29	.....	.....	142 90	
30	.....	.....	158 20	
32	.....	.....	168 80	
34	.....	.....	179 50	
36	.....	.....	190 10	
38	.....	.....	200 90	
40	.....	.....	211 70	
42	.....	.....	222 50	
44	.....	.....	233 30	
5	25 35	32 90	.....	
6	28 00	36 85	.....	
7	30 65	40 55	.....	
8	33 35	44 35	.....	
9	36 10	48 20	.....	
10	38 90	52 05	.....	
11	41 75	55 95	.....	
12	44 70	59 80	.....	56
13	47 70	64 05	.....	
14	50 70	68 35	.....	
15	53 85	72 75	.....	
16	57 00	77 15	.....	
17	.....	81 60	.....	
18	.....	86 10	.....	
19	.....	90 60	.....	
20	.....	95 10	109 35	
21	.....	99 60	114 55	
22	.....	104 15	119 75	
23	.....	108 75	125 05	
24	.....	113 40	130 40	
25	.....	118 00	135 80	
26	.....	122 65	141 20	
27	.....	.....	146 50	
28	.....	.....	151 80	
29	.....	.....	157 20	
30	.....	.....	162 65	
32	.....	.....	173 55	
34	.....	.....	184 50	
36	.....	.....	195 45	
38	.....	.....	206 55	
40	.....	.....	219 70	
42	.....	.....	232 85	
44	.....	.....	246 00	
5	26 20	33 95	.....	
6	28 90	37 90	.....	
7	31 65	41 80	.....	
8	34 40	45 70	.....	
9	37 20	49 65	.....	
10	40 05	53 60	.....	
11	43 00	57 55	.....	57
12	46 00	61 50	.....	
13	49 10	65 85	.....	

Face.	Single Belt.	Double Belt.	Double Arm, Double Belt.	Diams.
14	52 20	70 25	.....	57
15	55 45	74 75	.....	
16	58 70	79 25	.....	
17	.....	83 85	.....	
18	.....	88 50	.....	
19	.....	93 10	.....	
20	.....	97 70	112 35	
21	.....	102 35	117 70	
22	.....	107 00	123 05	
23	.....	111 75	128 50	
24	.....	116 50	133 95	
25	.....	121 75	139 40	
26	.....	126 00	144 90	
27	.....	.....	150 40	
28	.....	.....	155 95	
29	.....	.....	161 50	
30	.....	.....	167 10	
32	.....	.....	178 25	
34	.....	.....	189 40	
36	.....	.....	200 65	
38	.....	.....	211 95	
40	.....	.....	224 35	
42	.....	.....	237 50	
44	.....	.....	250 65	
6	29 85	39 30	.....	
7	32 60	43 15	.....	
8	35 35	47 10	.....	
9	38 20	51 10	.....	
10	41 15	55 10	.....	
11	44 20	59 15	.....	58
12	47 35	63 25	.....	
13	50 55	67 75	.....	
14	53 80	72 30	.....	
15	57 15	76 85	.....	
16	60 50	81 40	.....	
17	.....	86 20	.....	
18	.....	91 00	.....	
19	.....	95 80	.....	
20	.....	100 60	115 50	
21	.....	105 40	121 00	
22	.....	110 20	126 55	
23	.....	115 00	132 15	
24	.....	119 80	137 80	
25	.....	124 70	143 40	
26	.....	129 60	149 05	
27	.....	.....	154 65	
28	.....	.....	160 30	
29	.....	.....	166 05	
30	.....	.....	171 80	
32	.....	.....	183 30	
34	.....	.....	194 80	
36	.....	.....	206 30	
38	.....	.....	217 80	
40	.....	.....	229 30	
42	.....	.....	241 00	
44	.....	.....	253 00	
6	30 85	40 65	.....	
7	33 55	44 50	.....	
8	36 30	48 50	.....	
9	39 25	52 55	.....	
10	42 25	56 60	.....	
11	45 45	60 75	.....	59
12	48 75	65 00	.....	
13	52 05	69 65	.....	
14	55 40	74 35	.....	
15	58 85	79 00	.....	
16	62 30	83 70	.....	
17	.....	88 60	.....	
18	.....	93 50	.....	
19	.....	98 35	.....	
20	.....	103 25	119 75	
21	.....	108 15	124 90	
22	.....	113 10	130 05	
23	.....	118 10	135 80	
24	.....	123 15	141 60	
25	.....	128 15	147 40	
26	.....	133 20	153 20	
27	.....	.....	158 95	
28	.....	.....	164 70	
29	.....	.....	170 60	
30	.....	.....	176 50	
32	.....	.....	188 25	
34	.....	.....	200 00	
36	.....	.....	212 00	
38	.....	.....	224 00	
40	.....	.....	236 00	
42	.....	.....	248 50	
44	.....	.....	261 00	
6	31 80	41 95	.....	
7	34 50	45 85	.....	
8	37 35	49 90	.....	

Face.	Single Belt.	Double Belt.	Double Arm, Double Belt.
9	40 30	54 00	.....
10	43 40	58 10	.....
11	46 70	62 35	.....
12	50 10	66 75	.....
13	53 55	71 55	.....
14	57 00	76 40	.....
15	60 50	81 20	.....
16	64 10	86 05	.....
17	.....	91 00	.....
18	.....	96 00	.....
19	.....	101 00	.....
20	.....	106 05	121 95
21	.....	111 10	127 75
22	.....	116 15	133 60
23	.....	121 30	139 50
24	.....	126 45	145 40
25	.....	132 60	151 35
26	.....	136 80	157 35
27	.....	.....	163 20
28	.....	.....	169 10
29	.....	.....	175 15
30	.....	.....	181 25
32	.....	.....	193 20
34	.....	.....	205 25
36	.....	.....	217 30
38	.....	.....	229 30
40	.....	.....	241 50
42	.....	.....	254 00
44	.....	.....	266 00
6	32 80	43 25	.....
7	35 50	47 20	.....
8	38 35	51 30	.....
9	41 35	55 45	.....
10	44 55	59 65	.....
11	47 95	64 00	.....
12	51 50	68 50	.....
13	55 05	73 45	.....
14	58 60	78 45	.....
15	62 25	83 40	.....
16	65 90	88 35	.....
17	.....	93 40	.....
18	.....	98 50	.....
19	.....	103 65	.....
20	.....	108 85	125 20
21	.....	114 05	131 15
22	.....	119 25	137 15
23	.....	125 50	143 20
24	.....	129 80	149 25
25	.....	135 10	145 35
26	.....	140 40	161 45
27	.....	.....	167 50
28	.....	.....	173 55
29	.....	.....	179 75
30	.....	.....	185 95
32	.....	.....	198 25
34	.....	.....	210 35
36	.....	.....	222 50
38	.....	.....	234 95
40	.....	.....	247 25
42	.....	.....	259 60
44	.....	.....	272 10
6	33 80	44 50	.....
7	36 50	48 60	.....
8	39 35	52 70	.....
9	42 40	56 90	.....
10	45 70	61 20	.....
11	49 20	65 65	.....
12	52 85	70 25	.....
13	56 50	75 35	.....
14	60 20	80 50	.....
15	63 95	85 60	.....
16	67 75	90 75	.....
17	.....	95 85	.....
18	.....	101 00	.....
19	.....	106 30	.....
20	.....	111 65	128 40
21	.....	117 00	134 55
22	.....	122 35	140 70
23	.....	127 70	146 85
24	.....	133 10	153 05
25	.....	138 55	158 80
26	.....	144 00	165 60
27	.....	.....	171 80
28	.....	.....	178 00
29	.....	.....	184 30
30	.....	.....	190 60
32	.....	.....	203 20
34	.....	.....	215 60
36	.....	.....	228 15
38	.....	.....	240 70
40	.....	.....	253 25

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PRICES, FIGS. 6828 AND 6829. CONTINUED

Diams.	Face.	Single Belt.	Double Belt.	Double Arm, Double Belt.
59	42	.....	.....	266 00
	44	.....	.....	278 75
60	6	$34 80	46 00	.....
	7	37 50	50 00	.....
	8	40 35	54 10	.....
	9	43 45	58 35	.....
	10	46 85	62 75	.....
	11	50 45	67 —	.....
	12	54 20	72 00	.....
	13	58 00	77 25	.....
	14	61 80	82 55	.....
	15	65 70	87 55	.....
	16	69 60	92 55	.....
	17	.....	98 00	.....
	18	.....	103 50	.....
	19	.....	108 95	.....
	20	.....	114 45	131 60
	21	.....	119 95	137 90
	22	.....	125 45	144 25
	23	.....	130 95	150 60
	24	.....	136 50	157 00
	25	.....	142 05	163 40
	26	.....	147 65	169 80
	27	.....	.....	176 20
	28	.....	.....	182 60
	29	.....	.....	189 00
	30	.....	.....	195 40
	32	.....	.....	208 20
	34	.....	.....	221 00
	36	.....	.....	233 80
	38	.....	.....	246 60
	40	.....	.....	259 40
	42	.....	.....	272 25
	44	.....	.....	285 25
	46	.....	.....	298 35
	48	.....	.....	311 45
	50	.....	.....	324 55
62	6	36 70	48 30	.....
	7	39 80	52 65	.....
	8	42 85	57 10	.....
	9	45 95	61 65	.....
	10	49 75	66 30	.....
	11	53 55	71 10	.....
	12	57 40	76 00	.....
	13	61 40	81 30	.....
	14	65 40	86 60	.....
	15	69 45	91 95	.....
	16	73 50	97 25	.....
	17	.....	102 95	.....
	18	.....	108 70	.....
	19	.....	114 30	.....
	20	.....	120 35	138 40
	21	.....	126 10	144 50
	22	.....	131 85	150 60
	23	.....	137 60	157 30
	24	.....	143 35	164 00
	25	.....	149 25	170 90
	26	.....	155 15	177 80
	27	.....	.....	184 70
	28	.....	.....	191 60
	29	.....	.....	198 50
	30	.....	.....	205 40
	32	.....	.....	219 20
	34	.....	.....	233 00
	36	.....	.....	246 80
	38	.....	.....	260 60
	40	.....	.....	273 40
	42	.....	.....	287 20
	44	.....	.....	301 00
	46	.....	.....	314 80
	48	.....	.....	328 60
	50	.....	.....	342 40
64	6	38 60	50 60	.....
	7	41 90	55 35	.....
	8	45 35	60 10	.....
	9	48 80	64 95	.....
	10	52 75	69 90	.....
	11	56 65	74 90	.....
	12	60 70	80 00	.....
	13	64 90	85 65	.....
	14	69 10	91 35	.....
	15	73 30	96 85	.....
	16	77 50	102 35	.....
	17	.....	108 10	.....
	18	.....	113 85	.....
	19	.....	120 05	.....
	20	.....	126 25	145 20
	21	.....	132 25	152 10
	22	.....	138 30	159 05
	23	.....	144 60	166 30
	24	.....	150 90	173 55
	25	.....	156 75	180 30
	26	.....	162 65	187 05
	27	.....	.....	194 10
	28	.....	.....	201 15
	29	.....	.....	208 15
	30	.....	.....	215 20
	32	.....	.....	228 25
	34	.....	.....	243 25
	36	.....	.....	257 35
	38	.....	.....	271 30
	40	.....	.....	285 30
	42	.....	.....	299 25
	44	.....	.....	313 20
	46	.....	.....	327 15
	48	.....	.....	341 10
	50	.....	.....	355 05
66	6	40 50	53 00	.....
	7	44 20	58 05	.....
	8	47 95	63 15	.....
	9	51 80	68 30	.....
	10	55 75	73 50	.....
	11	59 80	78 75	.....
	12	64 00	84 00	.....
	13	68 35	89 85	.....
	14	72 70	95 75	.....
	15	77 10	101 65	.....
	16	81 50	107 55	.....
	17	.....	113 50	.....
	18	.....	119 50	.....
	19	.....	125 80	.....
	20	.....	132 15	152 05
	21	.....	138 45	159 25
	22	.....	144 80	166 50
	23	.....	151 15	173 80
	24	.....	157 50	181 10
	25	.....	163 85	188 40
	26	.....	170 20	195 70
	27	.....	176 55	203 05
	28	.....	182 95	210 40
	29	.....	189 30	217 70
	30	.....	195 70	225 05
	32	.....	.....	239 80
	34	.....	.....	254 50
	36	.....	.....	269 20
	38	.....	.....	283 95
	40	.....	.....	298 65
	42	.....	.....	313 35
	44	.....	.....	328 05
	46	.....	.....	342 75
	48	.....	.....	357 45
	50	.....	.....	372 15
68	6	42 80	55 70	.....
	7	46 70	60 95	.....
	8	50 60	66 25	.....
	9	54 60	71 60	.....
	10	58 70	77 10	.....
	11	62 90	82 55	.....
	12	67 30	88 20	.....
	13	71 80	94 20	.....
	14	76 30	100 25	.....
	15	80 90	106 40	.....
	16	85 50	112 55	.....
	17	.....	118 80	.....
	18	.....	125 10	.....
	19	.....	131 70	.....
	20	.....	138 35	159 10
	21	.....	144 95	166 65
	22	.....	151 50	174 25
	23	.....	158 25	182 00
	24	.....	164 90	189 75
	25	.....	171 45	197 25
	26	.....	178 05	204 75
	27	.....	184 70	212 40
	28	.....	191 35	220 05
	29	.....	197 95	227 65
	30	.....	204 60	235 30
	32	.....	.....	250 70
	34	.....	.....	266 00
	36	.....	.....	281 30
	38	.....	.....	296 70
	40	.....	.....	312 00
	42	.....	.....	327 30
	44	.....	.....	342 60
	46	.....	.....	357 90
	48	.....	.....	373 20
	50	.....	.....	388 50
70	6	45 10	58 40	.....
	7	49 20	63 85	.....
	8	53 30	69 25	.....
	9	57 40	75 00	.....
	10	61 70	80 70	.....
	11	66 05	86 40	.....
	12	70 60	92 40	.....
	13	75 30	98 60	.....
	14	80 05	104 85	.....
	15	84 80	111 25	.....
	16	89 60	117 65	.....
	17	94 95	124 20	.....
	18	99 50	130 80	.....
	19	.....	137 60	.....
	20	.....	144 55	166 25
	21	.....	151 35	174 10
	22	.....	158 25	182 00
	23	.....	165 35	190 00
	24	.....	172 50	198 00
	25	.....	179 20	205 90
	26	.....	185 95	213 85
	27	.....	192 85	221 75
	28	.....	199 75	229 70
	29	.....	206 65	237 65
	30	.....	213 60	245 65
	32	.....	.....	261 60
	34	.....	.....	277 50
	36	.....	.....	293 40
	38	.....	.....	309 45
	40	.....	.....	325 35
	42	.....	.....	341 25
	44	.....	.....	357 15
	46	.....	.....	373 05
	48	.....	.....	388 95
	50	.....	.....	394 85
72	6	47 50	61 00	.....
	7	51 75	66 75	.....
	8	56 00	72 55	.....
	9	60 30	78 40	.....
	10	64 70	84 30	.....
	11	69 25	90 30	.....
	12	74 00	96 50	.....
	13	78 85	102 95	.....
	14	83 75	109 45	.....
	15	88 70	116 10	.....
	16	93 70	122 75	.....
	17	98 85	129 60	.....
	18	104 00	136 50	.....
	19	.....	143 55	.....
	20	.....	150 60	173 20
	21	.....	157 80	181 95
	22	.....	165 00	189 75
	23	.....	172 25	198 55
	24	.....	179 50	207 40
	25	.....	186 65	215 15
	26	.....	193 85	222 90
	27	.....	201 00	231 15
	28	.....	208 20	239 45
	29	.....	215 40	247 70
	30	.....	222 60	256 00
	32	.....	.....	272 55
	34	.....	.....	289 10
	36	.....	.....	305 65
	38	.....	.....	322 25
	40	.....	.....	338 80
	42	.....	.....	355 35
	44	.....	.....	371 90
	46	.....	.....	388 45
	48	.....	.....	405 00
	50	.....	.....	421 55
74	8	58 90	75 75	.....
	9	63 40	81 90	.....
	10	68 00	85 50	.....
	11	72 75	94 80	.....
	12	77 60	101 00	.....
	13	82 60	107 70	.....
	14	87 65	114 45	.....
	15	92 80	121 35	.....
	16	98 00	128 25	.....
	17	103 30	135 35	.....
	18	108 60	142 50	.....
	19	.....	149 80	.....
	20	.....	157 10	180 65
	21	.....	164 55	189 20
	22	.....	172 00	197 80
	23	.....	179 50	205 90
	24	.....	187 00	215 05
	25	.....	194 40	223 55
	26	.....	201 85	232 10
	27	.....	209 30	240 65
	28	.....	216 75	249 25
	29	.....	224 20	257 85
	30	.....	231 70	266 45
	32	.....	.....	283 60
	34	.....	.....	300 85
	36	.....	.....	317 95
	38	.....	.....	335 10
	40	.....	.....	352 30
	42	.....	.....	369 50
	44	.....	.....	386 70
	46	.....	.....	403 90
	48	.....	.....	421 10
	50	.....	.....	438 30
76	8	61 80	79 05	.....
	9	66 50	85 50	.....
	10	71 30	92 70	.....
	11	76 25	99 30	.....
	12	81 30	105 50	.....
	13	86 45	112 45	.....
	14	91 60	119 45	.....
	15	96 95	126 60	.....
	16	102 30	133 75	.....
	17	107 80	141 10	.....
	18	113 30	148 45	.....
	19	.....	155 55	.....
	20	.....	163 70	188 25
	21	.....	171 35	197 05
	22	.....	179 00	205 85
	23	.....	186 75	214 75
	24	.....	194 50	223 70
	25	.....	202 15	232 50
	26	.....	209 85	241 30
	27	.....	217 60	250 15
	28	.....	225 35	259 15
	29	.....	233 05	268 00
	30	.....	240 80	276 90
	32	.....	.....	294 75
	34	.....	.....	312 55
	36	.....	.....	330 30
	38	.....	.....	348 00
	40	.....	.....	366 00
	42	.....	.....	384 00
	44	.....	.....	402 00
	46	.....	.....	420 00
	48	.....	.....	438 00
	50	.....	.....	456 05
78	8	64 75	82 35	.....
	9	69 70	89 10	.....
	10	74 70	95 90	.....
	11	79 80	102 85	.....
	12	85 00	110 00	.....
	13	90 35	117 25	.....
	14	95 65	124 50	.....
	15	101 15	131 85	.....
	16	106 65	139 25	.....
	17	112 30	146 85	.....
	18	118 00	154 50	.....
	19	.....	162 40	.....
	20	.....	170 30	195 85
	21	.....	178 20	204 90
	22	.....	186 10	214 00
	23	.....	194 05	223 15
	24	.....	202 00	232 30
	25	.....	209 95	241 45
	26	.....	217 95	250 65
	27	.....	225 95	259 85
	28	.....	233 95	269 05
	29	.....	241 95	278 25
	30	.....	249 95	287 45
	32	.....	.....	305 90
	34	.....	.....	324 30
	36	.....	.....	342 70
	38	.....	.....	361 10
	40	.....	.....	379 50
	42	.....	.....	397 90
	44	.....	.....	416 30
	46	.....	.....	434 75
	48	.....	.....	453 20
	50	.....	.....	471 65
80	8	67 65	85 95	.....
	9	72 80	92 95	.....
	10	78 00	99 85	.....
	11	83 30	106 95	.....
	12	88 60	114 30	.....
	13	94 20	121 90	.....
	14	99 85	129 50	.....
	15	105 60	137 20	.....
	16	111 40	144 95	.....
	17	117 35	152 85	.....
	18	123 30	160 80	.....
	19	.....	168 95	.....
	20	.....	177 10	203 65
	21	.....	185 25	213 00
	22	.....	193 40	222 40
	23	.....	201 70	231 95
	24	.....	210 00	241 50
	25	.....	218 10	249 35
	26	.....	226 25	260 20
	27	.....	234 55	269 75
	28	.....	242 85	279 30
	29	.....	251 10	288 75
	30	.....	259 35	298 25
	32	.....	.....	317 40
	34	.....	.....	336 35
	36	.....	.....	355 45
	38	.....	.....	374 55
	40	.....	.....	393 55
	42	.....	.....	412 65
	44	.....	.....	431 65
	46	.....	.....	450 75
	48	.....	.....	469 85
	50	.....	.....	489 00
82	8	70 65	89 55	.....
	9	75 90	96 70	.....
	10	81 30	103 85	.....
	11	86 80	111 15	.....
	12	92 30	118 65	.....
	13	98 15	126 55	.....
	14	104 05	134 50	.....
	15	110 10	142 55	.....
	16	116 20	150 65	.....
	17	122 40	158 85	.....
	18	128 60	167 10	.....
	19	.....	175 50	.....
	20	.....	183 90	211 50
	21	.....	192 30	221 15
	22	.....	200 70	230 80
	23	.....	209 35	240 75
	24	.....	218 00	250 70
	25	.....	226 30	260 25
	26	.....	234 65	269 85
	27	.....	243 20	279 65
	28	.....	251 75	289 50
	29	.....	260 25	299 30
	30	.....	268 80	309 10
	32	.....	.....	328 90
	34	.....	.....	348 55
	36	.....	.....	368 20
	38	.....	.....	388 00
	40	.....	.....	407 65
	42	.....	.....	427 30
	44	.....	.....	446 95
	46	.....	.....	466 60
	48	.....	.....	486 25
	50	.....	.....	505 90
84	8	73 65	93 25	.....
	9	79 10	100 50	.....
	10	84 65	107 85	.....
	11	90 30	115 35	.....
	12	96 00	123 00	.....
	13	102 15	131 30	.....
	14	108 35	139 60	.....
	15	114 65	148 00	.....
	16	121 00	156 40	.....
	17	127 50	164 95	.....
	18	134 00	173 50	.....
	19	.....	182 10	.....
	20	.....	190 75	219 35
	21	.....	199 40	229 30
	22	.....	208 10	239 30
	23	.....	216 80	249 30
	24	.....	225 50	259 30
	25	.....	234 25	269 40
	26	.....	243 05	279 50
	27	.....	251 85	289 60
	28	.....	260 65	299 75
	29	.....	269 45	309 90
	30	.....	278 30	320 05
	32	.....	.....	340 40
	34	.....	.....	360 75
	36	.....	.....	381 10
	38	.....	.....	402 65
	40	.....	.....	423 60
	42	.....	.....	444 55
	44	.....	.....	465 50
	46	.....	.....	486 45
	48	.....	.....	507 40
	50	.....	.....	528 40
86	8	.....	97 10	.....
	9	.....	104 60	.....
	10	.....	112 25	.....
	11	.....	120 05	.....
	12	.....	128 00	.....
	13	.....	136 15	.....
	14	.....	144 35	.....
	15	.....	153 20	.....
	16	.....	162 05	.....
	17	.....	170 75	.....
	18	.....	179 50	.....
	19	.....	188 45	.....
	20	.....	197 40	227 00
	21	.....	206 40	237 35
	22	.....	215 40	247 75
	23	.....	224 45	258 15
	24	.....	233 50	268 55
	25	.....	242 60	279 00
	26	.....	251 70	289 45
	27	.....	260 80	299 90
	28	.....	269 90	310 40
	29	.....	279 05	320 90
	30	.....	288 20	331 40
	32	.....	.....	352 50
	34	.....	.....	373 50
	36	.....	.....	394 50
	38	.....	.....	416 40
	40	.....	.....	437 85
	42	.....	.....	459 25
	44	.....	.....	480 65
	46	.....	.....	502 15
	48	.....	.....	523 45
	50	.....	.....	545 05
88	8	100 90	.....	.....
	9	108 70	.....	.....
	10	116 65	.....	.....
	11	124 75	.....	.....
	12	133 00	.....	.....
	13	141 35	.....	.....
	14	149 70	.....	.....
	15	158 70	.....	.....
	16	167 70	.....	.....
	17	176 60	.....	.....
	18	185 50	.....	.....
	19	194 75	.....	.....
	20	204 05	234 65	
	21	213 35	245 40	
	22	222 70	256 15	
	23	232 10	266 95	
	24	241 50	277 75	
	25	250 90	288 55	
	26	260 30	299 40	
	27	269 75	310 20	
	28	279 20	321 05	
	29	288 65	331 90	
	30	298 10	342 80	
	32	.....	364 60	
	34	.....	386 30	
	36	.....	408 00	
	38	.....	430 15	
	40	.....	452 10	
	42	.....	474 00	
	44	.....	495 90	
	46	.....	517 85	
	48	.....	539 68	
	50	.....	561 70	
90	8	104 75	.....	
	9	112 80	.....	
	10	121 00	.....	
	11	129 40	.....	
	12	138 00	.....	
	13	146 80	.....	
	14	155 60	.....	
	15	166 80	.....	
	16	173 40	.....	
	17	183 55	.....	
	18	191 50	.....	
	19	201 10	.....	
	20	210 70	242 30	
	21	220 35	253 40	
	22	230 05	264 55	
	23	239 75	275 75	
	24	249 50	286 95	
	25	259 20	298 10	
	26	268 95	309 30	
	27	278 70	320 50	
	28	288 45	331 70	
	29	298 20	342 90	
	30	307 95	354 15	
	32	327 50	376 65	
	34	347 00	399 05	
	36	.....	421 50	
	38	.....	443 90	
	40	.....	466 30	
	42	.....	488 70	
	44	.....	511 10	
	46	.....	533 50	
	48	.....	555 90	
	50	.....	578 30	

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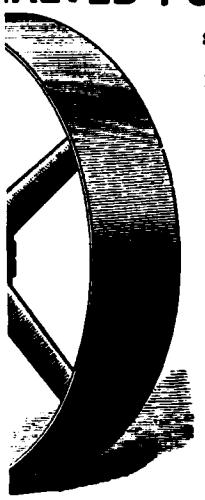
PRICES, FIGS. 6828 AND 6829. CONTINUED

Diams.	Face.	Double Belt.	Double Arm, Double Belt.
94	38	.....	473 75
	40	.....	497 55
	42	.....	521 35
	44	.....	545 15
	46	.....	568 95
	48	.....	592 80
	50	.....	616 70
96	8	117 10	.....
	9	125 85	.....
	10	134 75	.....
	11	143 85	.....
	12	153 00	.....
	13	162 55	.....
	14	172 10	.....
	15	181 90	.....
	16	191 75	.....
	17	202 10	.....
	18	212 50	.....
	19	222 75	.....
	20	233 00	267 95
	21	243 75	270 30
	22	254 50	292 70
	23	265 25	305 05
	24	276 00	317 40
	25	286 50	329 45
	26	297 00	341 55
	27	307 50	353 60
	28	318 00	365 70
	29	328 75	378 05
	30	339 50	390 45
	32	361 00	415 25
	34	382 30	439 65
	36	.....	464 15
	38	.....	488 65
	40	.....	513 15
	42	.....	537 70
	44	.....	562 30
	46	.....	586 95
	48	.....	611 65
	50	.....	636 40
	52	.....	661 20
	54	.....	686 05
	56	.....	716 95
	58	.....	735 90
	60	.....	760 90
98	8	121 65	.....
	9	130 80	.....
	10	140 10	.....
	11	149 50	.....
	12	159 00	.....
	13	168 85	.....
	14	178 75	.....
	15	188 85	.....
	16	198 95	.....
	17	209 20	.....
	18	219 50	.....
	19	230 10	.....
	20	240 75	280 20
	21	251 70	292 80
	22	262 70	305 45
	23	273 65	316 40
	24	284 65	327 35
	25	295 50	339 80
	26	306 35	352 25
	27	317 15	364 70
	28	328 00	377 20
	29	339 00	389 65
	30	350 00	402 15
	32	372 00	427 80
	34	393 00	452 95
	36	.....	478 20
	38	.....	503 35
	40	.....	528 45
	42	.....	553 70
	44	.....	579 00
	46	.....	604 35
	48	.....	629 75
	50	.....	655 20
	52	.....	680 70
	54	.....	706 25
	56	.....	731 85
	58	.....	757 50
	60	.....	783 20
100	8	126 20	.....
	9	135 75	.....
	10	145 45	.....
	11	155 20	.....
	12	165 00	.....
	13	175 20	.....
	14	185 40	.....
	15	195 80	.....
	16	206 20	.....
	17	216 35	.....
	18	226 50	.....
	19	237 50	.....
	20	248 50	287 45
	21	259 70	300 30
	22	270 90	313 20
	23	282 40	325 75
	24	293 95	338 35
	25	304 80	351 15
	26	315 65	364 00
	27	326 80	376 60
	28	338 00	389 20
	29	349 25	401 75
	30	360 50	414 35
	32	383 00	440 45
	34	404 50	466 30
	36	.....	492 25
	38	.....	518 10
	40	.....	543 90
	42	.....	569 85
	44	.....	595 85
	46	.....	621 90
	48	.....	648 00
	50	.....	674 15
	52	.....	700 35
100	54	.....	726 60
	56	.....	752 90
	58	.....	799 25
	60	.....	805 65
102	8	130 75	.....
	9	140 70	.....
	10	150 75	.....
	11	160 85	.....
	12	171 00	.....
	13	181 50	.....
	14	192 00	.....
	15	202 70	.....
	16	213 40	.....
	17	223 95	.....
	18	234 50	.....
	19	245 35	.....
	20	256 25	294 70
	21	267 65	307 80
	22	279 05	320 90
	23	290 50	334 10
	24	302 00	347 30
	25	313 45	360 50
	26	324 95	373 70
	27	336 45	386 90
	28	347 95	400 15
	29	359 45	413 35
	30	370 95	426 60
	32	394 00	453 10
	34	417 10	479 65
	36	.....	506 25
	38	.....	532 80
	40	.....	559 35
	42	.....	585 95
	44	.....	612 50
	46	.....	639 20
	48	.....	665 95
	50	.....	691 75
	52	.....	718 60
	54	.....	745 50
	56	.....	772 45
	58	.....	799 45
	60	.....	826 50
104	8	135 25	.....
	9	145 35	.....
	10	155 60	.....
	11	165 90	.....
	12	176 30	.....
	13	187 05	.....
	14	197 80	.....
	15	208 80	.....
	16	219 75	.....
	17	230 70	.....
	18	241 65	.....
	19	252 90	.....
	20	264 20	303 85
	21	275 85	317 25
	22	287 55	330 70
	23	299 25	344 15
	24	311 00	357 65
	25	322 65	371 10
	26	334 40	384 55
	27	346 15	398 05
	28	357 90	411 55
	29	369 60	425 05
	30	381 40	438 60
	32	405 00	465 75
	34	428 60	492 85
	36	.....	520 05
	38	.....	547 15
	40	.....	574 30
	42	.....	601 45
	44	.....	628 60
	46	.....	655 90
	48	.....	683 25
	50	.....	709 95
	52	.....	737 05
	54	.....	764 55
	56	.....	792 10
	58	.....	819 65
	60	.....	847 30
106	8	139 80	.....
	9	150 05	.....
	10	160 50	.....
	11	171 00	.....
	12	181 65	.....
	13	192 65	.....
	14	203 65	.....
	15	214 90	.....
	16	226 10	.....
	17	237 50	.....
	18	248 85	.....
	19	260 50	.....
	20	272 20	313 05
	21	284 10	326 75
	22	296 05	340 50
	23	308 00	354 20
	24	320 00	368 00
	25	331 90	381 70
	26	343 85	395 40
	27	355 85	409 20
	28	367 85	423 00
	29	379 80	436 80
	30	391 85	450 65
	32	416 00	478 40
	34	440 10	506 10
	36	.....	533 85
	38	.....	561 50
	40	.....	589 25
	42	.....	617 00
	44	.....	644 75
	46	.....	672 75
	48	.....	700 60
	50	.....	728 20
	52	.....	755 55
	54	.....	783 60
	56	.....	811 75
106	58	.....	839 90
	60	.....	868 15
108	8	144 35	.....
	9	154 75	.....
	10	165 35	.....
	11	176 10	.....
	12	187 00	.....
	13	198 25	.....
	14	209 50	.....
	15	221 00	.....
	16	232 50	.....
	17	244 25	.....
	18	256 00	.....
	19	268 10	.....
	20	280 20	322 25
	21	292 35	336 25
	22	304 55	350 25
	23	316 75	364 30
	24	329 00	378 35
	25	341 15	392 35
	26	353 35	406 35
	27	365 55	420 40
	28	377 80	434 45
	29	390 00	448 55
	30	402 35	462 70
	32	427 00	491 05
	34	451 60	519 35
	36	.....	547 65
	38	.....	575 90
	40	.....	604 20
	42	.....	632 55
	44	.....	660 90
	46	.....	689 40
	48	.....	717 90
	50	.....	746 45
	52	.....	774 05
	54	.....	802 70
	56	.....	831 40
	58	.....	860 15
	60	.....	888 93

We can furnish these pulleys up to 120 inches diameter by 60 inch face regularly; larger made to order.

Prices on application.

IALVED PULLEY



Additional prices to be added to list prices. Steel Rim or Cast Iron Pulleys.

FIGS. 6828 AND 6829

Diams., In.	Face, Inches.	Prices.
6 to 10	Up to 3	$1 30
	above 3 " 6	1 75
	" 6 " 10	2 15
	" 10 " 14	3 10
10½ " 18	Up " 3	1 50
	above 3 " 6	2 20
	" 6 " 10	2 85
	" 10 " 14	4 00
	" 14 " 18	5 25
19 " 23	Up " 4	2 65
	above 4 " 6	3 40
	" 6 " 10	4 05
	" 10 " 14	5 60
	" 14 " 20	7 30
	" 20 " 26	11 00
24 " 30	Up " 4	3 60
	above 4 " 6	4 40
	" 6 " 10	5 40
	" 10 " 14	7 25
	" 14 " 20	10 00
	" 20 " 30	14 00
31 " 36	Up " 4	4 50
	above 4 " 6	5 60
	" 6 " 10	6 75
	" 10 " 14	9 80
	" 14 " 20	13 00
	" 20 " 36	19 00

930

ces.	Diams., In.	Face, In.	Prices.
50	48 to 60	above 10 to 14	$18 00
50		" 14 " 20	25 00
00		" 20 " 30	34 50
50		" 30 " 40	48 00
00		" 40 " 50	63 00
00	61 " 84	Up " 10	20 00
00		above 10 " 14	26 00
00		" 14 " 20	35 00
00		" 20 " 30	48 00
	61 to 84	above 30 to 40	$64 00
		" 40 " 50	82 00
	85 " 108	Up " 14	38 00
		above 14 " 20	53 50
		" 20 " 30	70 00
		" 30 " 40	90 00
		" 40 " 50	115 00
		" 50 " 60	150 00

CAST IRON DOUBLE ARM SPLIT PULLEY



FIG. 6831

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CLAMP HUB PULLEY

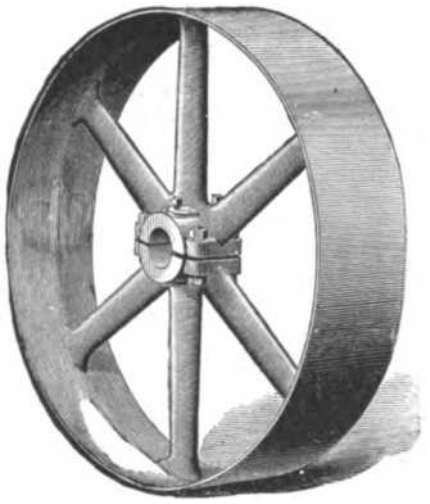


FIG. 6832

This clamp hub is made the same as the hub of split pulley, and is a practical substitute for a forcing fit; it possesses several advantages, as it is not necessary to specially prepare the shaft, as in the case of a forcing fit, and the pulley can be readily shifted or removed from the shaft.

Additional prices to be added to regular list prices of pulleys, Figs. 6828 and 6829.

PRICES

Diameters in Inches.	Face in Inches.	Each.
6 to 10	Up to 3	$0 80
	Above 3 " 6	1 05
	" 6 " 10	1 30
	" 10 " 14	1 85
10½ to 18	Up to 3	90
	Above 3 " 6	1 30
	" 6 " 10	1 70
	" 10 " 14	2 40
	" 14 " 18	3 15
19 to 23	Up to 4	1 60
	Above 4 " 6	2 05
	" 6 " 10	2 45
	" 10 " 14	3 35
	" 14 " 20	4 40
	" 20 " 26	6 60
24 to 30	Up to 4	2 15
	Above 4 " 6	2 65
	" 6 " 10	3 25
	" 10 " 14	4 35
	" 14 " 20	6 00
	" 20 " 30	8 40
31 to 36	Up to 4	2 70
	Above 4 " 6	3 35
	" 6 " 10	4 05
	" 10 " 14	5 90
	" 14 " 20	7 80
	" 20 " 36	11 40
37 to 47	Up to 4	$3 90
	Above 4 " 6	4 50
	" 6 " 10	5 95
	" 10 " 14	8 10
	" 14 " 20	10 80
	" 20 " 30	16 20
	" 30 " 40	22 20
48 to 60	Up to 6	6 00
	Above 6 " 10	7 80
	" 10 " 14	10 80
	" 14 " 20	15 00
	" 20 " 30	20 70
	" 30 " 40	28 80
	" 40 " 50	39 00
61 to 84	Up to 10	12 00
	Above 10 " 14	15 60
	" 14 " 20	21 00
	" 20 " 30	28 80
	" 30 " 40	38 40
	" 40 " 50	50 00
85 to 108	Up to 14	22 80
	Above 14 " 20	32 10
	" 20 " 30	42 00
	" 30 " 40	54 00
	" 40 " 50	69 00
	" 50 " 60	88 00

PRICES, FIG. 6834

Additional prices to be added to regular list prices, Figs. 6828 and 6829.

Diameters in Inches.	Double Flange, Each.	Diameters in Inches.	Double Flange, Each.
3 to 8	$4 65	41 to 44	$26 40
8½ " 10	5 20	45 " 48	29 70
10½ " 12	5 75	49 " 52	33 00
12½ " 14	6 30	53 " 56	36 30
14½ " 16	7 15	57 " 60	40 70
16½ " 18	8 00	61 " 66	46 20
19 " 20	8 80	67 " 72	51 70
21 " 22	9 90	73 " 78	57 20
23 " 24	11 00	79 " 84	62 70
25 " 26	12 10	85 " 90	68 20
27 " 28	13 75	91 " 96	73 70
29 " 30	15 40	97 " 102	79 70
31 " 32	17 05	103 " 108	85 80
33 " 34	18 70	109 " 114	91 30
35 " 36	20 35	115 " 120	96 80
37 " 40	23 10		

Pulleys with one flange only, one-half that given above. Pulleys with three flanges, one-half more than given above.

TIGHT AND LOOSE PULLEYS



FIG. 6833

Additional prices to be added to list price per pair of Figs. 6828 and 6829.

PRICES

Diameters in Inches.	Per Pair.	Diameters in Inches.	Per Pair.
3 to 8	$1 60	37 to 40	$7 20
8½ " 10	1 95	41 " 44	7 90
10½ " 12	2 30	45 " 48	8 60
12½ " 14	2 65	49 " 52	9 30
14½ " 16	3 00	53 " 56	10 00
16½ " 18	3 30	57 " 60	10 70
19 " 20	3 70	61 " 66	11 70
21 " 22	4 05	67 " 72	12 70
23 " 24	4 40	73 " 78	13 70
25 " 26	4 75	79 " 84	14 70
27 " 28	5 10	85 " 90	15 70
29 " 30	5 45	91 " 96	16 70
31 " 32	5 80	97 " 102	17 70
33 " 34	6 15	103 " 108	18 70
35 " 36	6 50		

FLANGE PULLEYS

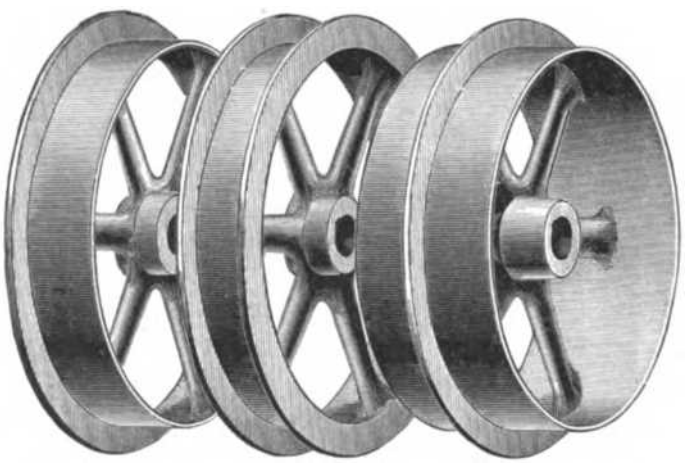


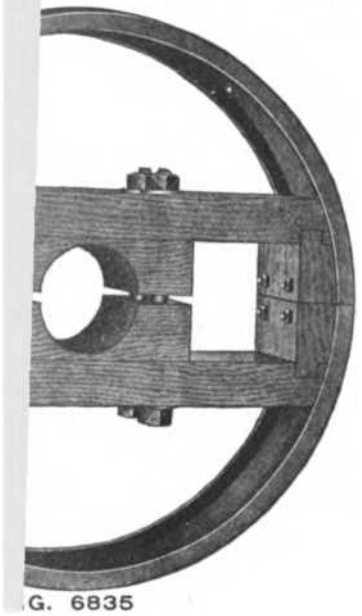
FIG. 6834

These pulleys are finished, balanced and fitted with set screws or key ways, same as the regular pulleys.

Note—When ordering be careful to state whether pulley is to have flange on one or both sides, or in center.

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CLEVELAND PULLEYS



G. 6835

construction, Fig. 6835.

DE FACES

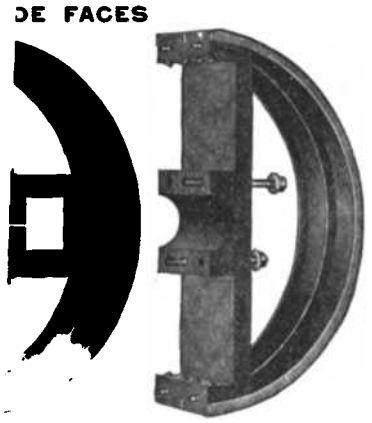


FIG. 6835

DESCRIPTION
FIG. 6835

The rim is rolled from the best quality of cold rolled steel. The arms are made of carefully selected and thoroughly seasoned maple. The finish is the best shellac. The method of construction insures a perfectly true running pulley. The clamping bolts, being a minimum distance from the shaft, give a maximum clamping power without injury to the shaft. It runs perfectly true, thus saving an enormous amount of wear and tear on belting and machinery. It is not harmed in the least by changes in the atmospheric conditions.

Illustrating the construction, Fig. 6835.

NARROW FACES

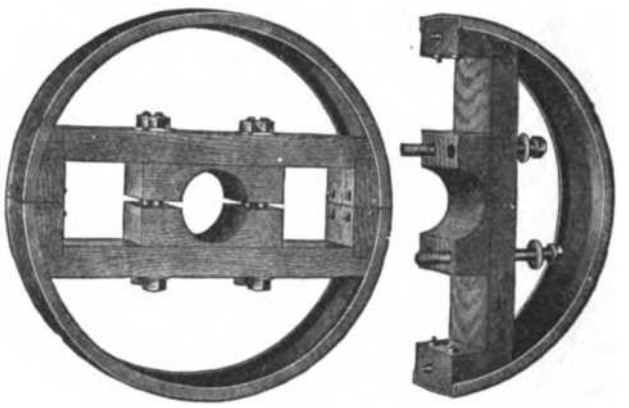


FIG. 6835

PRICES, FIG. 6835

Diams. in Inches.	Face in Inches. 2 In.	3 In.	4 In.	5 In.	6 In.	8 In.	10 In.	12 In.
6	$3 15	$3 30	$3 45	$3 75	$4 05	....	....	....
7	3 22	3 38	3 60	3 90	4 20	....	....	....
8	3 30	3 45	3 75	4 05	4 35	$4 95	$5 60	....
9	3 38	3 60	3 90	4 20	4 50	5 10	5 75	....
10	3 45	3 75	4 05	4 35	4 65	5 25	5 90	$6 45
11	3 65	3 90	4 20	4 50	4 80	5 40	6 00	6 90
12	3 90	4 20	4 63	4 80	5 33	5 78	6 45	7 65
13	4 05	4 35	4 80	5 20	5 62	6 43	7 20	8 40
14	4 20	4 50	5 20	5 65	6 15	7 05	8 03	9 00
15	4 35	4 65	5 45	5 80	6 55	7 65	8 80	9 75
16	4 50	4 95	5 75	6 10	6 90	8 25	9 45	10 50
17	....	5 25	6 00	6 50	7 28	8 78	10 05	11 25
18	....	5 55	6 38	7 00	7 65	9 30	10 65	12 00
19	....	5 80	6 75	7 50	8 25	10 13	11 25	12 90
20	....	6 00	7 50	8 10	9 00	10 73	12 00	14 25
21	....	6 25	8 00	8 90	9 60	11 25	12 98	15 60
22	....	6 50	8 55	9 50	10 28	12 00	14 10	16 80
23	....	7 00	8 70	9 90	10 58	12 60	14 75	18 00
24	....	7 50	8 90	10 00	10 95	13 20	15 68	19 05

ALL WROUGHT STEEL SPLIT PULLEYS

HALF PULLEY

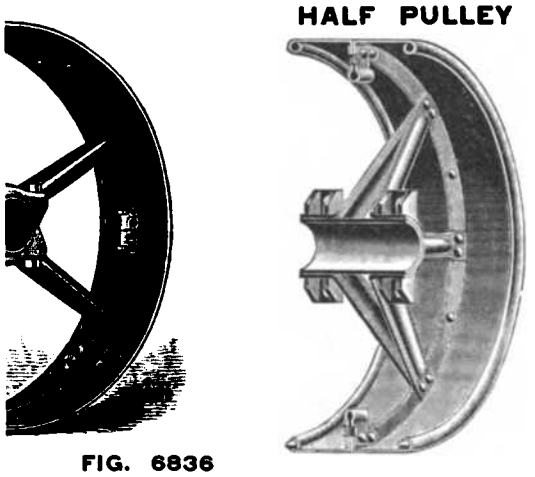


FIG. 6836

al Bushings to Fit Any Shaft.

TABLE OF HUBS AND BORES OF ALL WROUGHT STEEL SPLIT PULLEYS, FIG. 6836

Diameters.	FACES 2"	3"	4"	5"	6"	8"	10"	12"
6	1 1/16" Bore, 3 1/4" Hub			1 1/16" Bore, 4 1/4" Hub				
7	1 1/16" or 2 1/16" Bore, 3 1/4" Hub			2 1/16" Bore, 4 1/4" Hub				
8		2 1/16" Bore, 3 1/4" Hub		2 1/16" Bore, 4 1/4" Hub		2 1/16" Bore		
9	2 1/16" Bore	or 2 1/16" Bore, 4 1/4" Hub		or 2 1/16" Bore, 4 1/4" Hub		4 1/4" Hub		
10	3 1/4" Hub			2 1/16" Bore, 4 1/4" Hub		2 1/16" or		
11				or 2 1/16" and 3 1/16" Bore		3 1/16" Bore		
12		2 1/16" Bore		5 1/4" Hub		5 1/4" Hub		
13		3 1/4" Hub or						
14		2 1/16" and 3 1/16" Bore						
15		4 1/4" Hub						
16								
17		2 1/16", 2 1/16" or		2 1/16" or 3 1/16" Bore				
18		3 1/16" Bore		5 1/4" Hub				
19		4 1/4" Hub						
20								
21		2 1/16" or 3 1/16" Bore					3 1/16" Bore	
22		4 1/4" Hub					5 1/4" Hub	
23								
24								
26			3 1/16" Bore, 5 1/4" Hub				4 1/16" Bore	
28			or 4 1/16" Bore				6 1/4" Hub	
30			6 1/4" Hub					

PRICES, FIG. 6836

Diams. in Inches.	Face in Inches. 2 In.	3 In.	4 In.	5 In.	6 In.	8 In.	10 In.	12 In.	14 In.	16 In.	18 In.
20	....	$6 00	$7 50	$8 10	$9 00	$10 73	$12 00	$14 25	....	....	....
21	....	6 25	8 00	8 90	9 60	11 25	12 98	15 60	....	....	....
22	....	6 50	8 55	9 50	10 28	12 00	14 10	16 80	....	....	....
23	....	7 00	8 70	9 90	10 58	12 60	14 75	18 00	....	....	....
24	....	7 50	8 90	10 00	10 95	13 20	15 68	19 05	....	....	....
26	....	....	9 55	10 50	11 95	14 40	17 10	21 30	$26 25	$31 20	....
28	....	....	10 80	11 70	12 90	15 45	18 15	22 90	28 50	34 50	....
30	....	....	12 00	12 90	14 10	17 25	19 90	24 75	31 50	38 10	....
32	....	....	13 20	14 10	15 45	19 35	22 50	26 85	34 15	41 65	....
34	....	....	14 40	15 75	17 25	21 75	25 50	30 00	36 75	45 00	....
36	....	....	15 90	17 85	19 50	24 00	28 65	33 75	39 75	48 60	$55 50
38	....	....	19 50	20 65	21 75	26 40	31 05	37 15	42 75	51 75	58 85
40	....	....	21 90	22 75	24 00	28 50	33 75	40 15	46 50	55 15	62 25
42	....	....	23 25	24 90	26 25	32 25	37 50	43 50	50 25	57 75	65 65

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INDEPENDENCE WOOD SPLIT PULLEY



FIG. 6837

PRICES OF EXTRA BUSHINGS

Lengths.	Outside Diameters in Inches.	Each.	Outside Diameters in Inches.	Each.	Outside Diameters in Inches.	Each.	Outside Diameters in Inches.	Each.	Outside Diameters in Inches.	Each.
6	2–2 7/16	$0 30	3	$0 30	3½	$0 30	4	$0 36	4½	$0 42
8	2–2 7/16	40	3	40	3½	40	4	48	4½	56
10	2–2 7/16	50	3	50	3½	50	4	60	4½	70
12	2–2 7/16	60	3	60	3½	60	4	72	4½	84
14	2–2 7/16	70	3	70	3½	70	4	84	4½	98
16	2–2 7/16	80	3	80	3½	80	4	96	4½	1 12
18	2–2 7/16	90	3	90	3½	90	4	1 08	4½	1 26
20	2–2 7/16	1 00	3	1 00	3½	1 00	4	1 20	4½	1 40

Prices will be quoted on application for bushings of larger dimensions.

One bushing is furnished for each standard bored pulley, without extra charge.

FULTON WOOD SPLIT PULLEY

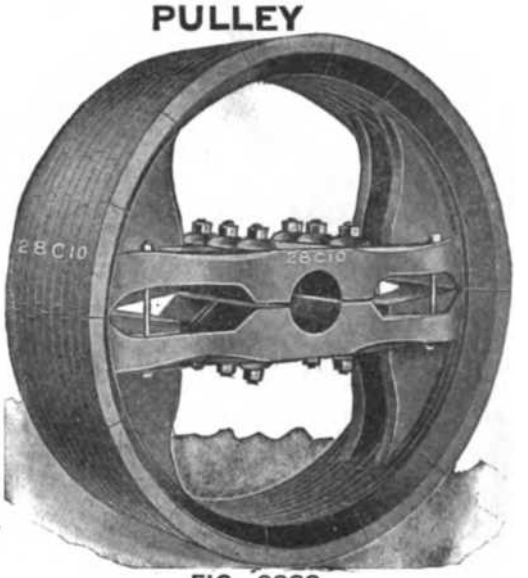


FIG. 6838

PRICES, FIGS. 6837 AND 6838

Diams. in Inches.	Width of Face in Inches. 3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
3	$1 90	2 00	2 10	2 25	2 40	2 60	2 85	3 10	3 35	3 60	3 85	4 10	4 40	4 75	.....	.....	.....	.....	.....	.....	.....	.....
4	2 00	2 10	2 20	2 40	2 60	2 85	3 10	3 35	3 60	3 85	4 10	4 40	4 75	5 10	.....	.....	.....	.....	.....	.....	.....	.....
5	2 10	2 20	2 40	2 60	2 85	3 10	3 35	3 60	3 85	4 10	4 40	4 75	5 10	5 45	.....	.....	.....	.....	.....	.....	.....	.....
6	2 20	2 35	2 55	2 75	3 00	3 25	3 50	3 75	4 00	4 30	4 65	5 00	5 35	5 70	.....	.....	.....	.....	.....	.....	.....	.....
7	2 30	2 45	2 65	2 85	3 10	3 35	3 60	3 85	4 15	4 50	4 85	5 20	5 55	5 90	.....	.....	.....	.....	.....	.....	.....	.....
8	2 45	2 60	2 80	3 00	3 25	3 50	3 75	4 00	4 30	4 65	5 00	5 40	5 80	6 20	.....	.....	.....	.....	.....	.....	.....	.....
9	2 60	2 80	3 00	3 25	3 50	3 75	4 00	4 30	4 65	5 00	5 40	5 80	6 20	6 60	.....	.....	.....	.....	.....	.....	.....	.....
10	2 80	3 00	3 25	3 50	3 75	4 00	4 30	4 65	5 00	5 40	5 80	6 20	6 60	7 00	.....	.....	.....	.....	.....	.....	.....	.....
11	3 00	3 25	3 50	3 75	4 00	4 30	4 65	5 00	5 40	5 80	6 20	6 60	7 00	7 50	.....	.....	.....	.....	.....	.....	.....	.....
12	3 15	3 40	3 65	3 90	4 20	4 55	4 90	5 30	5 70	6 10	6 50	6 90	7 40	7 90	8 50	9 10	9 70	10 40	11 10	11 80	12 60	13 40
13	3 30	3 55	3 80	4 10	4 45	4 80	5 20	5 60	6 00	6 40	6 80	7 30	7 80	8 40	9 00	9 60	10 30	11 00	11 70	12 50	13 30	14 10
14	3 45	3 70	4 00	4 35	4 70	5 10	5 55	6 00	6 45	6 90	7 40	7 90	8 50	9 10	9 70	10 40	11 10	11 80	12 60	13 40	14 20	15 00
15	3 60	3 90	4 25	4 60	5 00	5 45	5 90	6 35	6 80	7 30	7 80	8 40	9 00	9 60	10 30	11 00	11 80	12 60	13 40	14 20	15 10	16 00
16	3 80	4 15	4 50	5 00	5 50	6 00	6 50	7 00	7 50	8 00	8 50	9 00	9 60	10 30	11 00	11 80	12 60	13 40	14 20	15 10	16 00	16 90
17	4 00	4 40	4 90	5 40	5 90	6 40	6 90	7 40	7 90	8 40	8 90	9 50	10 20	11 00	11 80	12 60	13 40	14 20	15 10	16 00	16 90	17 80
18	4 20	4 70	5 20	5 70	6 20	6 70	7 20	7 80	8 40	9 00	9 60	10 30	11 10	11 90	12 70	13 50	14 30	15 20	16 10	17 00	17 90	19 00
19	4 40	4 90	5 40	5 90	6 50	7 10	7 70	8 30	8 90	9 50	10 20	11 00	11 80	12 60	13 40	14 30	15 20	16 10	17 00	17 90	19 00	20 10
20	4 60	5 20	5 80	6 40	7 00	7 60	8 30	9 00	9 70	10 40	11 20	12 00	12 90	13 80	14 70	15 60	16 50	17 50	18 50	19 60	20 70	21 80
21	4 80	5 40	6 00	6 60	7 30	8 00	8 70	9 40	10 20	11 00	11 80	12 70	13 60	14 50	15 50	16 50	17 50	18 60	19 70	20 80	22 00	23 20
22	5 00	5 60	6 30	7 00	7 70	8 40	9 20	10 00	10 80	11 70	12 60	13 50	14 50	15 50	16 60	17 70	18 80	20 00	21 20	22 40	23 60	24 80
23	5 20	5 80	6 50	7 20	8 00	8 80	9 70	10 60	11 50	12 50	13 60	14 70	15 80	17 00	18 20	19 40	20 60	21 80	23 00	24 30	25 60	26 90
24	5 50	6 20	7 00	7 80	8 60	9 40	10 30	11 20	12 10	13 00	14 10	15 20	16 50	17 70	18 90	20 20	21 50	22 80	24 10	25 40	26 80	28 20
25	5 90	6 60	7 30	8 10	9 00	10 00	11 00	12 00	13 00	14 00	15 20	16 40	17 70	19 00	20 40	21 80	23 20	24 60	26 00	27 50	29 00	30 50
26	6 20	7 00	7 80	8 60	9 50	10 50	11 50	12 60	13 75	15 00	16 30	17 60	19 00	20 40	21 80	23 30	24 80	26 30	27 90	29 50	31 10	32 70
27	6 60	7 40	8 20	9 00	10 00	11 10	12 20	13 40	14 60	15 80	17 10	18 50	20 00	21 50	23 00	24 50	26 10	27 70	29 30	30 90	32 50	34 10
28	7 00	7 80	8 60	9 50	10 50	11 60	12 80	14 00	15 20	16 50	17 90	19 40	20 90	22 40	24 00	25 60	27 20	28 80	30 40	32 00	33 60	35 30
29	7 30	8 20	9 10	10 00	11 10	12 30	13 50	14 75	16 00	17 50	19 00	20 50	22 10	23 70	25 30	27 00	28 70	30 40	32 10	33 80	35 50	37 20
30	7 70	8 60	9 50	10 60	11 80	13 00	14 30	15 60	17 00	18 50	20 00	21 50	23 25	25 00	26 75	28 50	30 25	32 00	33 75	35 50	37 25	39 00
31	8 00	9 00	10 00	11 10	12 35	13 60	15 00	16 50	18 00	19 60	21 20	22 80	24 60	26 40	28 20	30 00	31 80	33 60	35 40	37 20	39 00	40 80
32	8 50	9 50	10 50	11 60	12 85	14 10	15 50	17 00	18 60	20 30	22 00	23 80	25 60	27 40	29 20	31 00	33 00	35 00	37 00	39 00	41 00	43 00
33	9 00	10 00	11 15	12 35	13 65	15 00	16 45	18 00	19 65	21 40	23 10	24 95	26 75	28 60	30 40	32 30	34 35	36 40	38 50	40 00	42 70	44 90
34	9 40	10 60	11 80	13 10	14 45	15 90	17 40	19 00	20 70	22 50	24 20	26 10	27 90	29 80	31 70	33 60	35 70	37 80	40 00	42 20	44 40	46 80
35	9 85	11 15	12 45	13 85	15 25	16 80	18 35	20 00	21 70	23 50	25 30	27 20	29 10	31 00	32 90	34 90	37 00	39 20	41 50	43 80	46 10	48 70
36	10 30	11 70	13 10	14 60	16 10	17 70	19 30	21 00	22 00	24 00	26 00	28 00	30 00	32 00	34 00	36 00	38 00	40 00	43 00	45 00	47 00	50 00
38	....	12 80	14 40	16 00	17 70	19 50	21 20	23 00	24 50	26 00	28 00	30 00	32 00	34 00	36 00	38 00	41 00	43 00	46 00	48 00	51 00	54 00
40	....	13 90	15 70	17 50	19 30	21 25	23 10	25 00	26 50	28 00	30 00	32 00	34 00	36 00	39 00	41 00	43 00	46 00	49 00	51 00	54 00	58 00
42	....	15 00	17 00	19 00	21 00	23 00	25 00	27 00	29 00	31 00	33 00	35 00	37 00	39 00	41 00	44 00	46 00	49 00	52 00	55 00	58 00	62 00
44	....	17 00	19 00	21 00	23 00	25 00	27 00	29 00	31 00	33 00	35 00	37 00	40 00	42 00	44 00	47 00	50 00	53 00	56 00	60 00	63 00	67 00
46	....	19 00	21 00	23 00	25 00	27 00	29 00	31 00	33 00	36 00	38 00	40 00	43 00	45 00	48 00	51 00	54 00	57 00	61 00	65 00	68 00	73 00
48	....	21 00	23 00	25 00	27 00	29 00	31 50	33 90	36 20	38 50	40 00	43 00	46 00	48 00	51 00	54 00	58 00	61 00	65 00	70 00	74 00	78 00
50	....	....	25 00	27 00	29 00	31 00	33 70	36 20	38 60	41 00	43 00	46 00	49 00	51 00	54 00	58 00	62 00	65 00	70 00	75 00	79 00	84 00
52	....	....	28 00	30 00	32 00	34 00	36 00	38 50	41 00	43 50	46 00	49 00	52 00	55 00	58 00	62 00	66 00	70 00	75 00	80 00	85 00	90 00
54	....	....	30 00	32 00	34 00	36 00	38 50	41 20	43 80	46 00	49 00	52 00	55 00	59 00	62 00	66 00	70 00	75 00	80 00	85 00	90 00	95 00
56	....	....	....	35 00	37 00	39 00	41 00	43 00	46 00	49 00	52 00	55 00	59 00	63 00	66 00	71 00	75 00	80 00	85 00	90 00	95 00	101 00
58	....	....	....	38 00	40 00	42 00	44 00	46 00	49 00	52 00	55 00	59 00	62 00	67 00	71 00	75 00	80 00	85 00	90 00	95 00	101 00	106 00
60	....	....	....	41 00	43 00	45 00	47 00	49 00	52 00	55 00	58 00	62 00	66 00	71 00	75 00	80 00	85 00	90 00	95 00	100 00	106 00	112 00
66	....	....	....	48 00	50 00	52 00	54 00	57 00	61 00	64 00	69 00	73 00	78 00	83 00	88 00	93 00	98 00	103 00	109 00	115 00	122 00	129 00
72	....	....	....	54 00	56 00	58 00	62 00	66 00	70 00	75 00	80 00	85 00	90 00	95 00	100 00	105 00	111 00	117 00	123 00	130 00	138 00	146 00
78	....	....	....	....	....	71 00	75 00	80 00	85 00	90 00	95 00	100 00	105 00	110 00	116 00	121 00	127 00	133 00	140 00	147 00	155 00	164 00
84	....	....	....	....	....	85 00	90 00	96 00	101 00	107 00	112 00	118 00	123 00	130 00	136 00	143 00	149 00	156 00	163 00	170 00	179 00	188 00
90	....	....	....	....	....	100 00	107 00	114 00	121 00	128 00	135 00	142 00	149 00	157 00	165 00	173 00	181 00	189 00	197 00	206 00	215 00	225 00
96	....	....	....	....	....	115 00	123 00	132 00	140 00	149 00	157 00	166 00	174 00	184 00	193 00	203 00	212 00	222 00	231 00	241 00	251 00	262 00
102	....	....	....	....	....	130 00	140 00	150 00	160 00	170 00	180 00	190 00	200 00	211 00	222 00	233 00	244 00	255 00	266 00	277 00	288 00	299 00
108	....	....	....	....	....	145 00	155 00	165 00	175 00	186 00	196 00	207 00	218 00	229 00	241 00	253 00	265 00	277 00	289 00	301 00	314 00	326 00
114	....	....	....	....	....	160 00	170 00	180 00	191 00	202 00	213 00	224 00	236 00	248 00	260 00	273 00	286 00	300 00	313 00	326 00	340 00	353 00
120	....	....	....	....	....	175 00	185 00	195 00	206 00	218 00	230 00	242 00	254 00	266 00	276 00	293 00	307 00	322 00	337 00	351 00	366 00	380 00

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STEEL OR CAST IRON RIM CLUTCH PULLEYS

FOUR ARMS

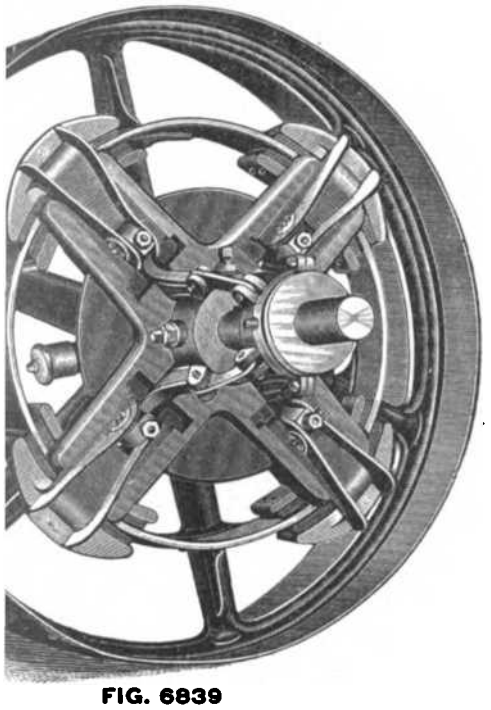


FIG. 6839

SIX ARMS



FIG. 6840

lleys are furnished with single or double arm spiders to the pulley and with two, four, six or eight arms to the clutch, we re-etermine these details, but guaranteeing to furnish the proper means to transmit the power called for.

ıtely no contact of frictional surfaces when not in clutch. The operation of clutching and releasing is so easy that it can be by moving the cone by the hand, unaided by the lever. All the clutch pulleys are furnished with split cast sleeves for bear-itted with the best quality of metal, turned on the outside to fit the hub of the pulley and bored on the inside to fit the shaft. n position by means of two cap screws, and when the babbitt is worn they can be readily taken out, rebabbitted and placed in t removing the pulley from the shaft.

PRICES ON APPLICATION

TIONAL VIEW

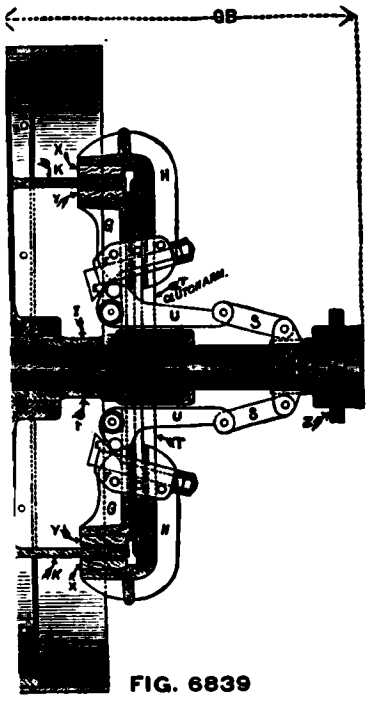


FIG. 6839

SHIFTER FORKS

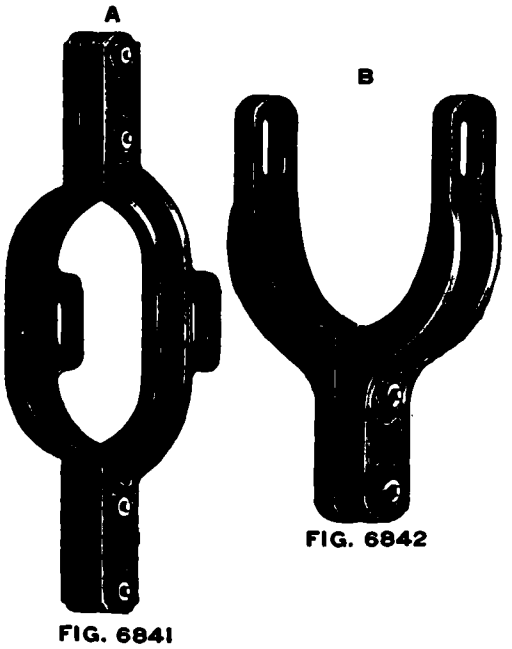


FIG. 6841

FIG. 6842

DESCRIPTION, FIGS. 6841 AND 6842

We furnish either of the styles. When orders do not designate which style is desired, the style A, long fork, will be furnished. We furnish one fork with each clutch without extra charge—*i. e.*, price of clutch includes fork.

A represents a long fork designed for use when the lever fulcrum is located on the opposite side of shaft from the operator.

B represents a short fork designed for use when the fulcrum is located between operator and shaft.

FRICTION CLUTCH PULLEYS

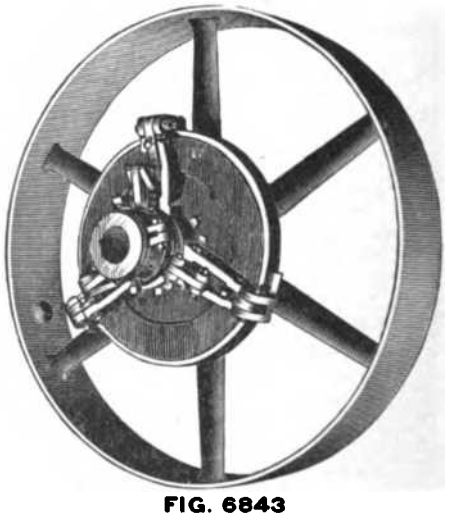


FIG. 6843

We furnish any size pulley or sheave of the steel plate type. Our rule is to furnish these fitted with clutch capable of transmitting the full horse power of the pulley. Information or suggestions relative to this subject will be cheerfully given. Prices on application.

his clutch will be readily understood from the above sketch. The clutch ring out one-half of the diameter of the pulley, onto the arms of which it is cast. ch arm are forced outward, and the outer jaws H inward, by means of the h operate upon the jaw driving lever F. Lever F has its fulcrum between its th G and H, and is operated upon at E by U. The jaws, of which there are m clutches and six sets on the six arm clutches, grasp the clutch ring with an ip. The pressure of the inside and outside jaws upon the friction ring K is

e power may be applied by degrees and the pulley started gradually instead of as is the case when the cone R is slipped over its entire course by one quick ug lever.

are adjustable by means of the steel wedges E in the short lever F; are shod ed maple at X and Y, which will wear many years; is renewable, and requires re subject to wear are renewable at a very small expense, and without trouble unnecessary to remove pulley from shaft in order to replace worn out parts. ept well lubricated.

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FRICTION CLUTCH PULLEY

SECTIONAL

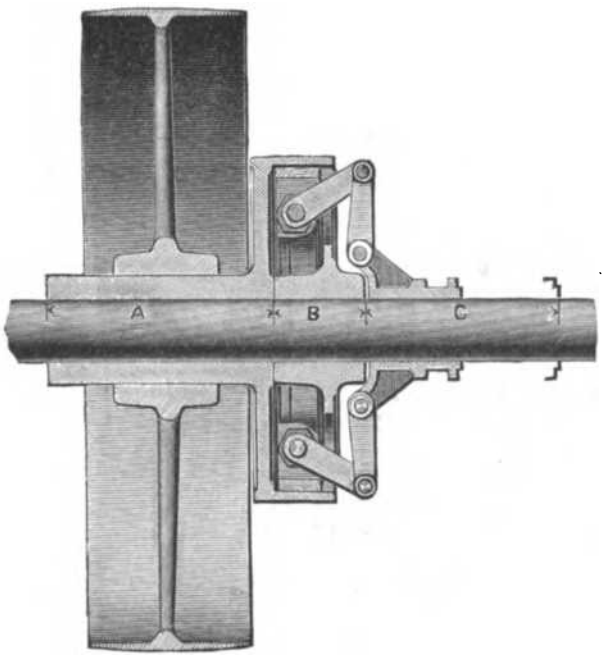


FIG. 6844

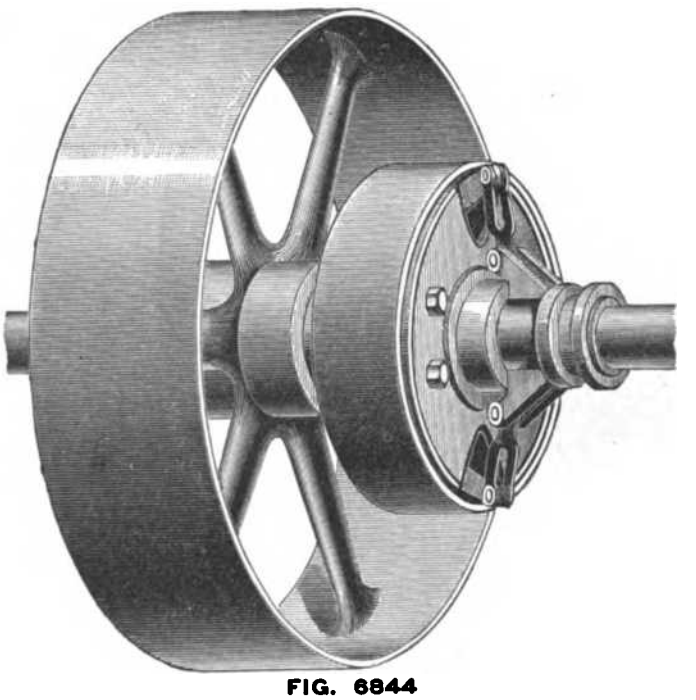


FIG. 6844

To find space required on shaft add B and C (as given in table below) to one and one-third times the width of pulley face (equal to A), viz.: A friction pulley 36 inches by 9 inches by $2^{15}/_{16}$ inches, with a 15 inch friction clutch attached, would require A, 12 inches; B, 3½ inches; C, 10 inches = 25½ inches on shaft.

Diams. of clutch,	6	10	12	15	18	21	24	27	30	36	42	48
" of shaft..	$1^{11}/_{16}$	$2^{7}/_{16}$	$2^{11}/_{16}$	$2^{15}/_{16}$	$3^{7}/_{16}$	$3^{15}/_{16}$	$4^{7}/_{16}$	$4^{15}/_{16}$	5⅜	5⅞	6⅜	6⅞
A.....	2¼	3½	4½	6	7	8½	9	11½	11½	12	13½	15
B.....	$1^{15}/_{16}$	2¾	3½	3½	$4^{13}/_{16}$	5½	7	8	7½	8¼	9⅛	10
C.....	$5^{13}/_{16}$	7¾	9½	10	11¼	11¾	12½	12¾	13½	14⅝	20⅛	20⅛

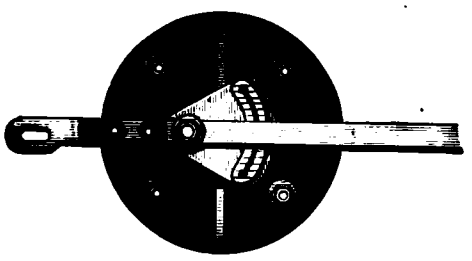
For a Friction Clutch Pulley we furnish the hub on shell of friction clutch extra long to correspond with pulley. The pulley is then bored large enough to fit on this hub, which runs loose on shaft. When thrown out of gear it is a loose pulley; we therefore recommend using the self-oiling gun metal bushing.

When ordering state diameter and face of pulley, diameter of shaft, number of revolutions per minute, and whether pulley or shaft runs continuously.

PRICES ON APPLICATION

SHIFTER STAND

For Friction Clutch and Jaw Clutch Coupling.



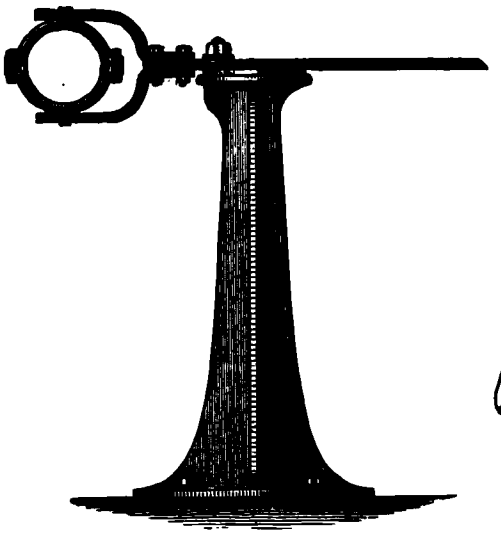


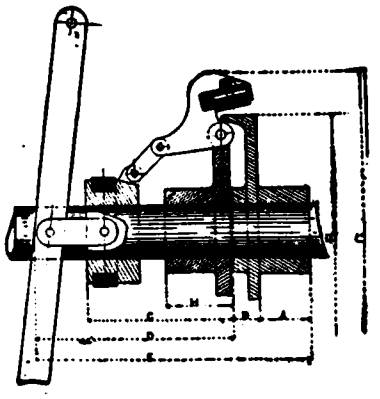
FIG. 6845

DESCRIPTION, FIG. 6845

When ordering specify distance from floor to center of shaft. We furnish many other styles of shifters to suit special cases.

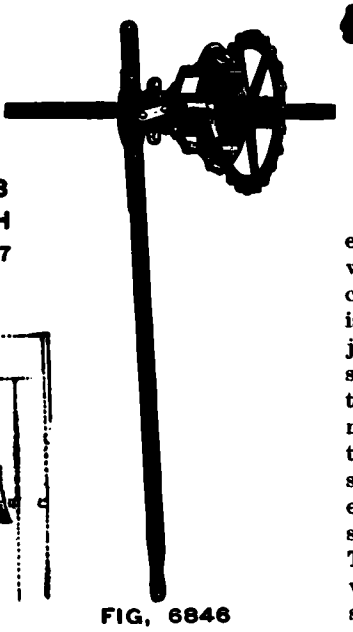
PRICES ON APPLICATION

DIAGRAM OF HUB FRICTION CLUTCH
FIGS. 6846 AND 6847



HUB FRICTION CLUTCH

This shows one of the Hub Friction Clutches attached to a sprocket wheel.



FIG, 6846



FIG. 6847

This Hub Friction Clutch is especially designed to meet a want for small powers, and consists of an iron hub to which is applied, by means of a toggle joint, the wood shod shoe as shown in cut. The adjustment to allow for wear is made by means of a set screw against the back of the wood friction surface in the shoe, which lowers it against the iron friction surface as fast as it wears. These shoes can be easily replaced when worn out entirely, at a very small cost.

PRICES ON APPLICATION

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CLUTCH COUPLING

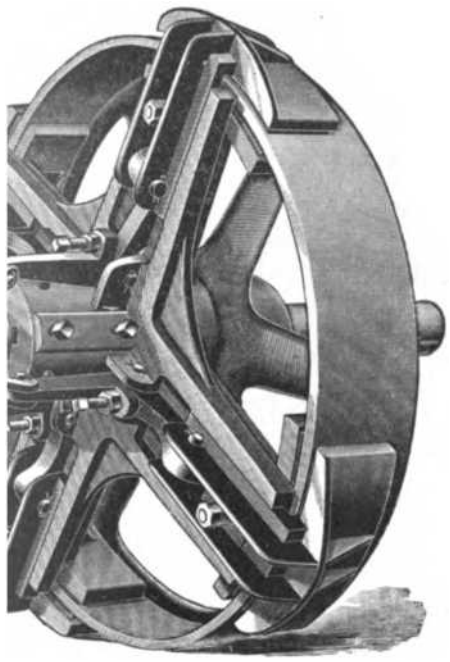


FIG. 6848

STANDARD CLUTCH AND PULLEY

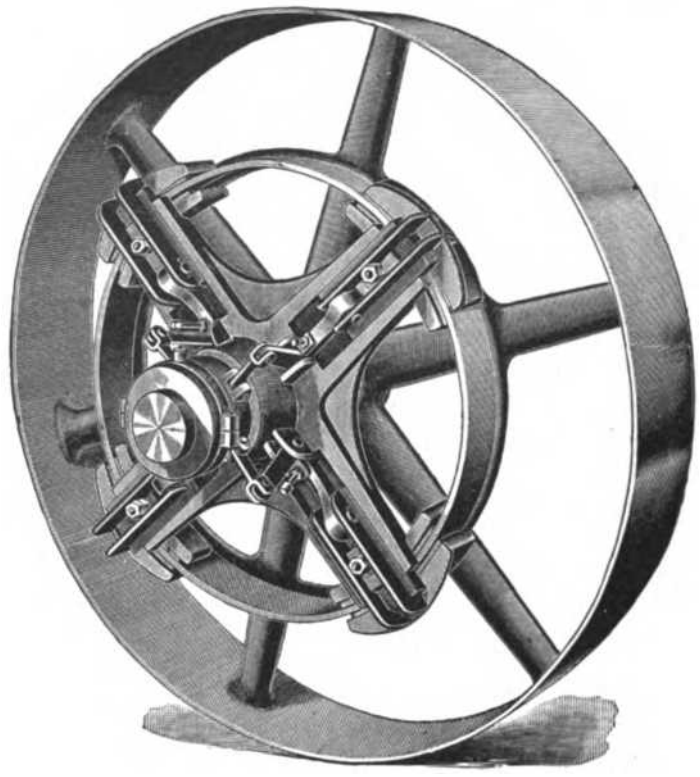


FIG. 6849

these clutches are made interchangeable with like parts, and are lettered or numbered; therefore, when
d to replace old parts, order by number or letter. It is not necessary to return the old part to have it
extra parts may be ordered by wire, thus : "Send three thirty-six A," etc., Fig. 6848.
e size of shaft in ordering. Prices on application.

FRICTION CLUTCH CUT OFF COUPLING

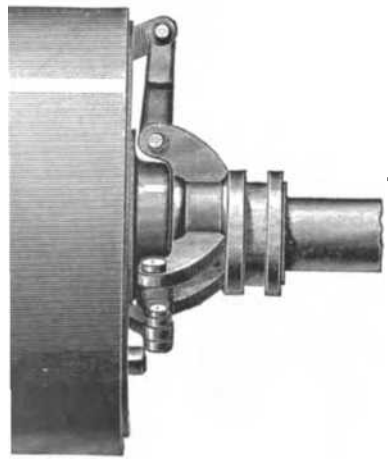


FIG. 6850

and compact, and having few small
o get out of order; engage gradually,
n gear" have a strong grip. The point
the friction surfaces is equal to nearly
nce of the clutch.
faces are wood (especially prepared for
iron, and not liable to strike fire.
l, we make the clutch with a long hub,
d a pulley, gear or sprocket wheel.
or order should state the number of
te, and exact diameter of bore.

PRICES, FIG. 6850

Diameters of Friction Clutch.	Diameters of Shaft.	Horse Power at 100 Revs. per Minute.	Each.
6 inches.	From 1 3/16 to 1 7/16 inches.	5	$50 00
10 "	" 1 15/16 to 2 7/16 "	12	65 00
12 "	" 1 15/16 to 3 7/16 "	20	75 00
15 "	" 2 7/16 to 3 15/16 "	30	90 00
18 "	" 2 15/16 to 4 7/16 "	45	115 00
21 "	" 3 7/16 to 4 15/16 "	60	150 00
24 "	" 3 7/16 to 5 7/8 "	80	200 00
27 "	" 4 15/16 to 6 3/8 "	100	235 00
30 "	" 5 3/8 to 6 7/8 "	125	315 00
36 "	" 5 7/8 to 8 "	180	415 00
42 "	" 6 3/8 to 10 "	245	550 00
48 "	" 6 3/8 to 10 "	320	700 00

The cost of shipping levers is not included, but we furnish the composition metal rings for the fork. The shipping levers vary so much, according to location, that it is impossible to state the price, unless we are familiar with all the details required.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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SINGLE MOVEMENT HUB FRICTION CUT OFF COUPLING

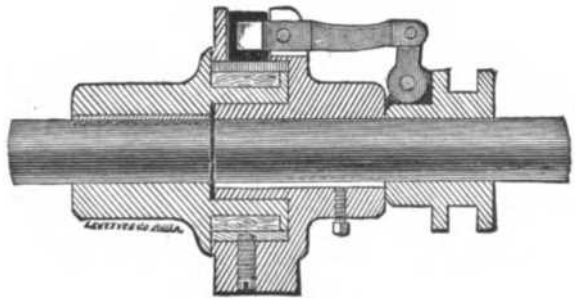


FIG. 6851

SECTIONAL

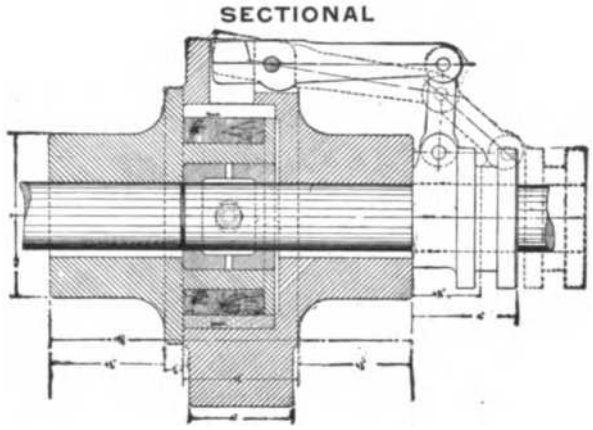


FIG. 6851

Note.—In order to insure a perfect fit of the coupling, it would be advisable wherever possible to turn down the ends of the shafts where coupling goes; say 1/16 inch less than full size of shaft. This is particularly desirable in old shafts that have been long running; for such shafts are very apt to be out of round, not true running, or variously jammed and scarred. In such cases the shafts would have to be taken down to be turned. The shafts should not be turned until the coupling is at hand to be fitted to. The fit should be a moderately tight driving fit.

When the ends of the shaft can not be turned down, it will be necessary to transmit to us very accurate measurement of the shafts, which is best done in the following manner: Caliper, very nicely, the shaft where coupling goes; then cut a piece of wire (have wire so large that it will not bend or spring; should not be less than 1/8 inch diameter), and file ends of wire until the caliper feels the same when tried on the wire as it does when tried on the shaft; then send the wire to us. If there be any difference in the sizes of the two shafts which the couplings are to connect, send two wires, one for each shaft, and say which wire is for the shaft to be stopped, and which is for the continually running shaft.

RIM FRICTION CLUTCH

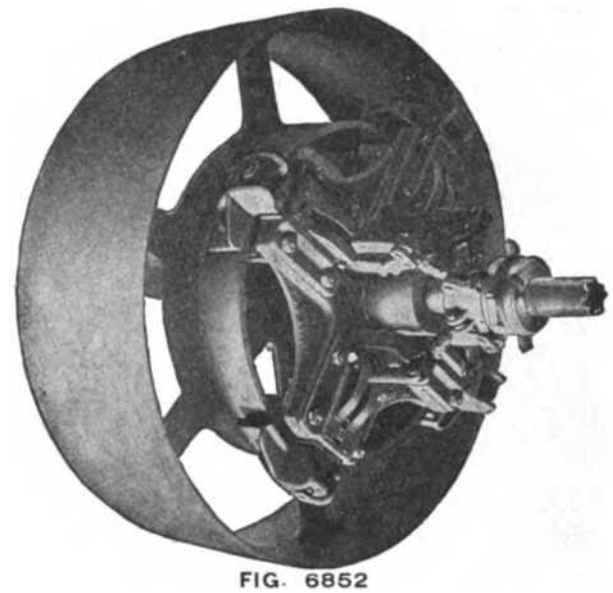


FIG. 6852

DESCRIPTION

This clutch is of the opposite jaw type and each jaw is operated by independent levers, which connect at the spool by a turnbuckle, which serves to adjust and load the clutch after the shoes are worn. The wear of the wooden shoes is taken up by bolts carrying levers, and as the operating mechanism of the jaw is independent, the unequal wear on the wooden shoes can be easily adjusted. The wooden shoes or friction blocks are easily renewed without moving clutch from its position on shaft; by disconnecting levers from fulcrum bolts and dropping down inside jaw and raising outside jaw far enough to allow wooden shoe to slide into its place, where it is fastened by means of countersunk bolts. The main features of this clutch are strength and simplicity, ease of adjustment, no springs to overcome, positive grip and release, and high efficiency.

PRICES

Prices do not include pulley.

Diameters of Coupling.	Nos. of Arms.	Horse Power at 100 Revs.	Largest Bore, Inches.	Space Required on Shaft, By Pulley, Inches.	By Clutch, Inches.	To Operate Spool, Inches.	Total Inches.	Each.
12	2	6	1 15/16	5¼	4	5¾	15	$50 00
12	3	12	1 15/16	5¼	4	5¾	15	75 00
15	2	12	2 15/16	5¾	4½	6½	16¾	75 00
15	3	18	2 15/16	5¾	4½	6½	16¾	105 00
18	2	20	3 7/16	6¼	4½	7	17¾	110 00
18	3	30	3 7/16	6¼	4½	7	17¾	120 00
18	4	40	3 7/16	6¼	4½	7	17¾	130 00
22	2	30	4 7/16	6½	5¾	7¾	20	120 00
22	3	45	4 7/16	6½	5¾	7¾	20	135 00
22	4	60	4 7/16	6½	5¾	7¾	20	160 00
26	4	70	4 15/16	8½	6¼	7¾	22½	200 00
30	4	85	6 15/16	9	6¾	8¼	24	210 00
36	4	125	7 15/16	9½	7½	8½	25½	260 00
36	6	180	7 15/16	9½	7½	8½	25½	300 00

PRICES, FIG. 6851

Nos. of Clutch or Diameters of Hub.	Cut Off Coupling, Each.	Shifter Fork, Each.	Face of Hub, Inches.	Largest Diameters of Shaft on which the Clutch Can Be Used, Inches.	Extreme Outside Diameters or Sweep of Clutch, Inches.	Space Occupied on Shaft, Including Movement of Spool, Inches.	Sizes of Shaft Equal in Power to Clutch at 150 Revolutions, Inches.	H. P. at 150 Revolutions.	Nos. of Clutch or Diameters of Hub.	Cut Off Coupling, Each.	Shifter Fork, Each.	Face of Hub, Inches.	Largest Diameters of Shaft on which the Clutch Can Be Used Inches.	Extreme Outside Diameters or Sweep of Clutch, Inches.	Space Occupied on Shaft, Including Movement of Spool, Inches.	Sizes of Shaft Equal in Power of Clutch at 150 Revolutions, Inches.	H. P. at 150 Revolutions.
5E	$24 25	$6 25	1¼	2 7/16	9½	10½	1 5/16	3	8	$77 25	$9 50	4	4 7/16	15¾	22½	2 3/16	25
6E	29 00	6 85	1½	2 11/16	11½	12½	1 5/16	4	9	89 00	11 00	4½	5 5/16	17½	24½	2 5/16	35
7E	38 00	6 85	1¾	3 3/16	13¾	12½	1 7/16	6½	10	107 25	11 50	5	5 15/16	19	26	2 7/16	45
8E	44 00	8 25	2	3 11/16	16½	13½	1 11/16	10	11	141 25	11 50	6	6 15/16	20½	28	2 11/16	60
8	24 25	6 25	1¾	1 7/16	8½	10½	1 5/16	3	12	146 25	11 50	6	7 15/16	22	30	2 15/16	75
8½	25 00	6 25	1⅞	1 11/16	9	12	1 1/16	3½	13	170 00	13 75	6	8 15/16	23½	31½	3 3/16	90
4	29 00	6 85	2¼	1 15/16	9½	13¼	1 3/16	4	14	196 25	13 75	6	8 15/16	25	33½	3 7/16	105
4½	31 00	6 85	2½	2 3/16	10½	14½	1 5/16	5	15	217 50	13 75	6	8 15/16	26¼	35½	3 7/16	125
5	38 00	6 85	2¾	2 7/16	11¼	15½	1 7/16	6½	16	241 50	13 75	6	8 15/16	27½	37½	3 11/16	150
5½	40 50	8 25	2¾	2 11/16	12	16½	1 9/16	8	18	288 00	13 75	6	8 15/16	30	41½	3 15/16	175
6	44 00	8 25	3½	2 15/16	13	18½	1 11/16	10	20	.....	.....	7	8 15/16	32½	44½	4 3/16	210
6½	55 00	8 25	3¼	3 3/16	13¾	19½	1 13/16	12½	22	.....	.....	7	8 15/16	35	47	4 7/16	250
7	58 25	9 50	3½	3 7/16	14½	20½	1 15/16	16	24	.....	.....	7	8 15/16	37½	49½	4 11/16	300
7½	68 00	9 50	3½	3 15/16	15	21½	2 1/16	20	28	.....	.....	8	8 15/16	50	53	4 15/16	350

Sizes larger than No. 18, prices quoted on application.

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PAPER FRICTION PULLEY

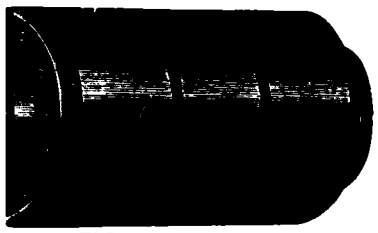


FIG. 6853

PRICES, FIG. 6853

Diams. in Inches.	Face in Inches. 6	8	10	12	14	18	20	24
10	$35	$40	$70	$80	....	....	....	....
12	...	...	75	90	....	....	....	....
16	...	...	115	125	$140	$175	....	....
20	...	...	...	...	160	225	$260	$300
24	...	...	...	...	...	250	300	350

CONE PULLEYS

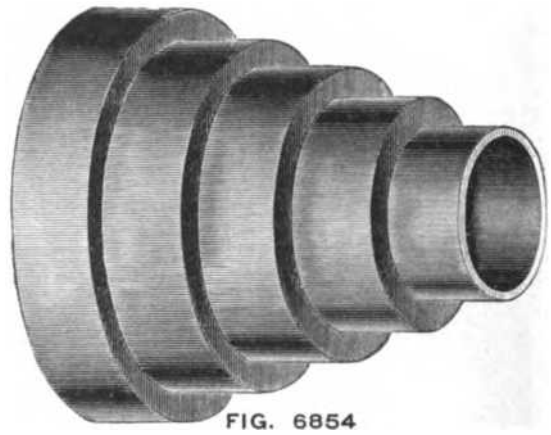


FIG. 6854

We are prepared to furnish cones of any diameter and face, with any number of steps.

PRICES ON APPLICATION

HIDE SPUR PINION

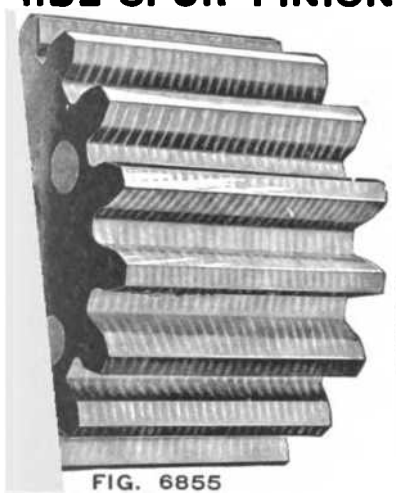


FIG. 6855

SOLID RAWHIDE SPUR, BEVEL AND FRICTION GEARS

A Pair of 19 Inch Bevel Wheels.

RAWHIDE CAST IRON

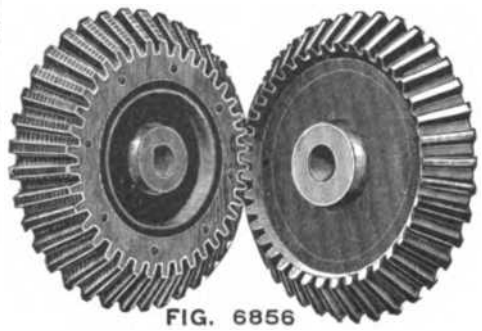


FIG. 6856

HOW TO ORDER FIGS. 6855 AND 6856

orders for Rawhide Gears, give outside diameter, face, bore, number of l size of keyway.

erwise specified, we furnish the B. & S. involute form of tooth, but are ıish the Epicycloidal, if desired.

will transmit fully as much power as metal gears of same dimensions.

run together or against metal gears.

wo gears but one need be of rawhide—the other may be of any suitable it.

gears every alternate one should be of rawhide, the balance of metal.

s running loose on shaft should be bushed.

PRICES ON APPLICATION

RAWHIDE FINISHED BLANK

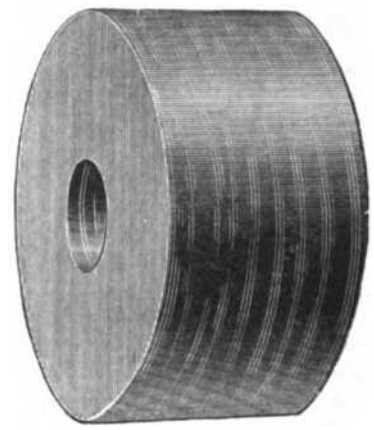


FIG. 6857

READY FOR CUTTING TEETH

We sell no rough blanks, as all blanks are riveted, hence must be turned to exact size.

In ordering blanks, give depth of teeth to be cut, that we may know where to place the rivets.

PRICES ON APPLICATION

E OR GROOVED PULLEY

MANILA OR HEMP ROPE



FIG. 6859

urnish these sheaves from 3 feet to 30 feet pitch er of grooves required.

ES ON APPLICATION

PARA PNEUMATIC PULLEY



FIG. 6860

This pulley is especially adapted to high and uniform speed wood and metal workers' machinery, fan blowers, and electric light machinery.

Prevents slipping of belts.

Eliminates the air cushion from between it and a belt.

Overcomes pneumatic retarding influences.

Obviates the necessity for any material, such as belt stuffing or a pulley covering, to cause engagement of a belt.

Is a practical application of the science of Aero Dynamics.

PRICES ON APPLICATION

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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PAPER PULLEY

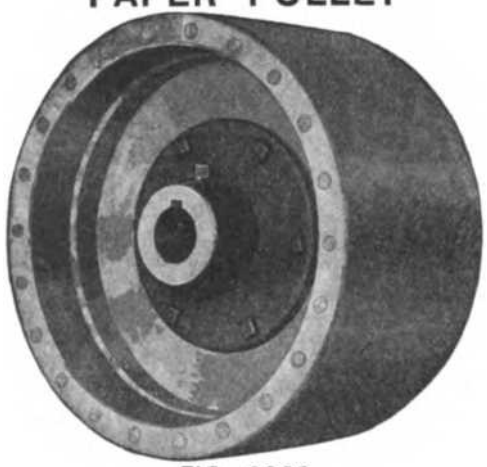


FIG. 6862

ADHESION OF THE BELT

This is the chief merit of the Paper Pulley. Waste of power, loss of time and general inefficiency, due to slipping of belt, are entirely obviated. Prices and special blanks, how to order, on application.

SPUR GEARING

DESCRIPTION, FIG. 6863

Spur Gears are used on shafts running in a line with each other. All Spur Gears of the same pitch are interchangeable. Prices on application.

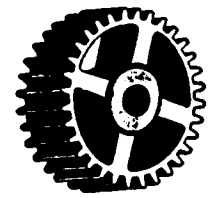


FIG. 6863

BEVEL GEARING



FIG. 6864

We are prepared to furnish planed bevel or miter gears to 48 inches diameter. We are also prepared to cut and hob worm gears, to cut worms and spiral gears, and to cut spur gears to 96 inches diameter.

In orders for special spur gears, please state whether they are to be finished all over or not, whether web or arm gears are wanted, the width of face, the diameter of hub, the length of hub through the hole, and the amount it is to project on each side of rim; also whether involute or epicycloidal forms of teeth are wanted.

In sending Bevel Gears to be cut, it is well to allow us to turn the faces, as we can thus assume the responsibility of obtaining the correct diameter and angles.

Gears are not furnished with key ways or set screws, unless by special agreement.

PRICES ON APPLICATION

GEARING

We are prepared to furnish gearing of all kinds on receipt of sketch or information of what is wanted. Prices quoted on application.

BEVEL MORTISE WHEEL



FIG. 6865

SPUR CORE WHEEL



FIG. 6865A

We are prepared to furnish this style gearing in sizes to transmit any required horse power.

MITER AND HUNTING TOOTH GEAR

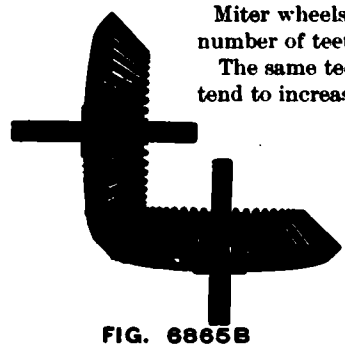


FIG. 6865B

Miter wheels are Bevel Gears of equal diameter and number of teeth, with their axes at right angles.

The same teeth coming in contact at each revolution tend to increase any variations that may occur in pitch, frequently causing noisy and irregular operation, particularly should two of the teeth not be properly lubricated.

An odd tooth in one of the gears serves to change the order of contact of the teeth, so that the same teeth shall not always meet. These are called Hunting Tooth Gears, and as they avoid the difficulty above named with true miters, are much more desirable to use where it is at all practicable. Their proportion being so near, we class them with the miters.

PRICES ON APPLICATION

SHAFTING

STEEL SHAFTS

TURNED, POLISHED AND STRAIGHTENED

Diameters of Shaft, Inches.	Prices per Foot.	Extra Charge for Each Key Way Not Exceeding 1 Foot in Length. Shoulder or Journal.		Sizes of Keys for Couplings and Pulleys.
15/16	$0 40	$0 50	$0 25	7/32 x 7/32
1 3/16	50	55	30	7/32 x 7/32
1 5/16	55	60	35	5/16 x 5/16
1 7/16	65	70	40	7/16 x 7/16
1 11/16	80	85	45	7/16 x 7/16
1 15/16	95	95	50	7/16 x 7/16
2 3/16	1 10	1 00	55	9/16 x 9/16
2 7/16	1 40	1 10	60	9/16 x 9/16
2 11/16	1 70	1 25	65	11/16 x 11/16
2 15/16	2 00	1 40	70	11/16 x 11/16
3 7/16	3 00	1 65	80	11/16 x 11/16
3 15/16	3 75	1 75	90	13/16 x 13/16
4 7/16	5 40	2 00	1 00	13/16 x 13/16
4 15/16	7 00	2 25	1 25	13/16 x 13/16
5 3/8	8 75	2 50	1 50	13/16 x 13/16
5 7/8	11 00	3 00	2 00	15/16 x 15/16

COLD ROLLED STEEL SHAFTING

Diameters, Inches.	Weight per Foot.	Per Pound, Cents.
3/16	.095	10
1/4	.167	
5/16	.259	8 1/2
3/8	.370	7
7/16	.510	
1/2	.666	
9/16	.843	6
5/8	1.05	
11/16	1.25	
3/4	1.50	5 1/2
13/16	1.757	
7/8	2.03	
15/16	2.34	
1	2.64	
1 1/16	3.00	
1 1/8	3.33	
1 3/16	3.77	
1 1/4	4.17	
1 5/16	4.60	
1 3/8	5.05	
1 7/16	5.52	
1 1/2	6.01	5
1 9/16	6.52	
1 5/8	7.05	
1 11/16	7.60	5
1 3/4	8.18	
1 13/16	8.78	
1 7/8	9.39	
1 15/16	10.02	
2	10.68	
2 1/16	11.35	
2 1/8	12.07	
2 3/16	12.78	
2 1/4	13.52	
2 5/16	14.35	
2 3/8	15.07	
2 7/16	15.87	
2 1/2	16.69	
2 9/16	17.55	
2 5/8	18.41	
2 11/16	19.29	
2 3/4	20.19	
2 13/16	21.15	
2 7/8	22.07	
2 15/16	23.04	
3	24.03	
3 1/8	26.09	5 1/4
3 3/16	27.13	
3 1/4	28.21	5 1/4
3 3/8	30.43	
3 7/16	31.55	
3 1/2	32.71	5 1/2
3 5/8	35.09	
3 11/16	36.31	
3 3/4	37.55	
3 7/8	40.10	
3 15/16	41.40	
4	42.72	6
4 3/16	46.82	
4 1/4	48.23	
4 3/8	51.11	
4 7/16	52.58	
4 1/2	54.07	6 1/2
4 11/16	58.67	
4 3/4	60.25	
4 15/16	65.10	
5	66.70	7
5 7/16	78.95	
5 1/2	80.77	7 1/2
5 15/16	94.14	
6	96.14	8

NOTE.—The foregoing prices are for shafts from 2 feet to 24 feet long up to 5 inches diameter. Larger than 5 inches diameter to 6 inches diameter, 2 feet to 20 feet long. Longer than 20 feet, special price will be given.

LARGE FORGED SHAFTS

We are prepared to furnish at short notice large Forged Shafts of any diameter up to 12 inches, and of any length to 40 feet. Prices quoted on application.

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DIFFERENTIAL BLOCKS

YALE DUPLEX BLOCKS
SCREW GEARED

PRICES, FIG. 6866

Capacity in Tons.	Complete.	*Hoist in Feet.	§Extra Hoist, per Foot.	Minimum Dis. between Hooks in Inches.	†Height of Ceiling in Feet.	Net Weight in Pounds.	‡Chain Pull— Pounds.	Feet.
⅛	$18 00	5	$2 80	16	7½	11	35	15
¼	18 00	6	2 80	17	8½	22	72	18
½	21 00	7	2 80	21	9½	30	122	24
1	28 00	8	3 00	26	11	51	216	30
1½	36 00	8½	3 20	32	12	81	246	36
2	45 00	9	3 40	39	13½	122	308	42
3	60 00	9½	4 00	44	14	180	557	38

*Figures denote height in feet which blocks, with regular lengths of chain, will hoist above level on which operator stands. †The "Height of Ceiling" indicates the distance from floor to ceiling when the upper block is hung close to ceiling and the block is extended so that the bottom loop of hand chain is 4 feet from floor (above which point it would be out of comfortable reach), and the bottom block is at a height above the floor sufficient to allow for the space occupied by an average load and its sling (this space is assumed to be the same as the "Minimum Distance between Hooks" given in the table). §Each additional foot of hoist requires 4 feet of additional chain. ‡Figures denote the pull in pounds required to lift the full load, and the number of feet of chain which must be handled to lift the load one foot.

PRICES, FIG. 6867

Capacity in Tons.	Complete.	*Hoist, in Feet.	Extra Hoist, per Foot.	Minimum Dis. between Hooks in Inches.	†Reach.	Net Weight in Pounds.	‡Chain Pull— Pounds.	Feet.
½	$25 00	8	$1 25	13	9 ft. 1 in.	43	68	40
1	30 00	8	1 30	16	9 4	57	87	59
1½	40 00	8	1 35	19	9 7	76	94	80
2	50 00	9	1 40	21	9 9	104	115	93
3	70 00	10	1 50	25	12 1	200	132	126
3½	80 00	10	1 90	26	12 2	210	140	138
4	95 00	10	1 95	29	12 5	225	142	155
5	125 00	12	2 00	31	14 7	340	145	195
6	150 00	12	2 80	33	14 9	360	145	252
7	175 00	12	3 00	34	14 10	370	160	275
8	200 00	12	3 10	36	15 0	390	160	310
10	250 00	12	3 20	45	15 9	570	160	390

*Figures denote height in feet which blocks, with regular lengths of chain, will hoist from level on which operator stands. †The "Reach" is the sum of the "Hoist" and the "Minimum Distance between Hooks." At this Reach or "Height of Suspension" the hand chain hangs down to within 18 inches of the floor. ‡Figures denote the pull in pounds required to lift the full load, and the number of feet of hand chain which must be handled to lift the load one foot.

The improved chain guides permit the use of the block in a horizontal or inclined position. The gearing, composed of a worm wheel and screw, is enclosed in an oiltight housing, and the working parts are thus always immersed in oil, insuring smooth action and thorough lubrication.



FIG. 6867

YALE-WESTON TRIPLEX BLOCKS
SPUR GEARED

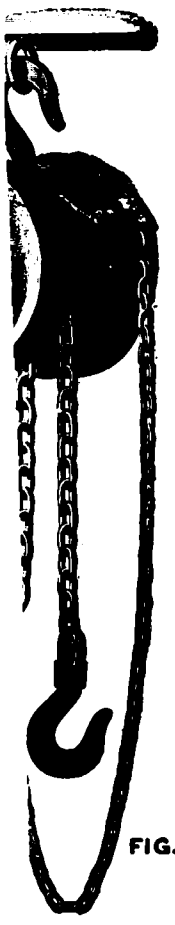


FIG. 6868

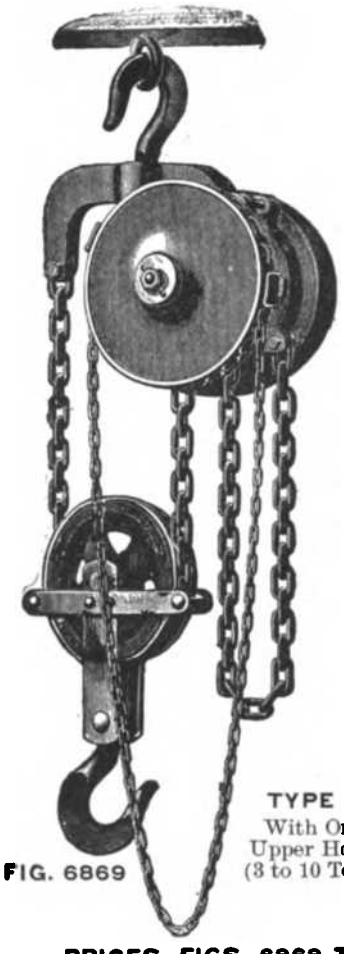
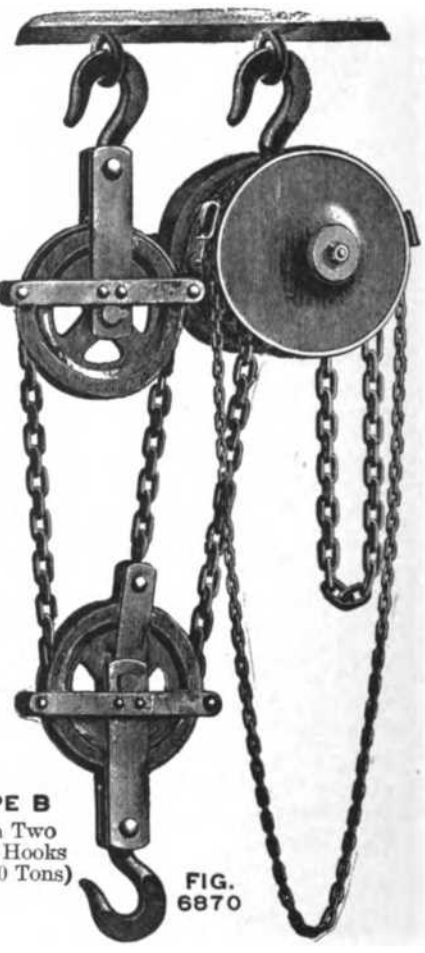


FIG. 6869

TYPE A
With One Upper Hook
(3 to 10 Tons)



TYPE B
With Two Upper Hooks
(3 to 10 Tons)

FIG. 6870

PRICES, FIGS. 6868 TO 6870

	TRIPLEX				TYPE A						TYPE B					
	½	1	1½	2	3	4	5	6	8	10	3	4	5	6	8	10
	$35 00	$45 00	$60 00	70 00	$90 00	$110 00	$140 00	$165 00	$200 00	$240 00	$80 00	$95 00	$120 00	$145 00	$175 00	$215 00
	8	8	8	9	10	10	12	12	12	12	10	10	12	12	12	12
l inches	9 ft. 3	9 ft. 5	9 ft. 7½	11 ft.	12 ft. 8	13 ft. 1	15 ft. 9	15 ft. 10	16 ft. 3	16 ft. 9	12 ft. 7	13 ft. 0	15 ft. 8	15 ft. 9	16 ft. 3	16 ft. 8½
'oot	$0 90	$0 95	$1 00	$1 05	$1 50	$1 60	$2 15	$2 15	$2 70	$3 25	$1 50	$1 60	$2 15	$2 15	$2 70	$3 25
e between hooks, in.	15	17	19½	24	32	37	45	46	51	57	31	36	44	45	51	56½
nds	51	89	133	203	206	307	397	417	505	622	195	287	380	387	471	598
nds to lift full load	62	82	110	120	114	124	110	130	135	140	114	124	110	130	135	140
dled to lift load 1 ft.	21	31	35	42	69	84	126	126	168	210	69	84	126	126	168	210

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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QUICK SPEED TRIPLEX BLOCK

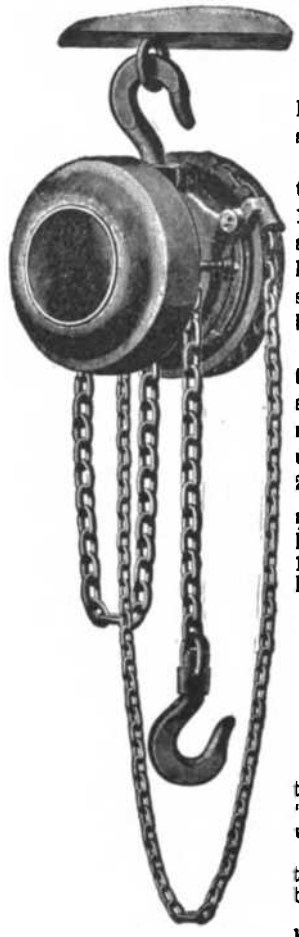


FIG. 6871

A special form for rapid work with light loads. Made in quarter ton and one ton sizes.

With these blocks one man can hoist with the quarter ton, 500, and with the one ton, 1,000 pounds, and can handle light loads at twice the speed obtained with the regular triplex blocks. The increase in speed is still greater when compared with ordinary blocks.

The one ton block is adapted for use when the ordinary load is 1,000 pounds or less, and enables such loads to be handled very rapidly by one man, while it may also be used by two men up to the full capacity of 3,000 pounds.

PRICES

¼ ton	$35 00
Extra hoist, per foot	1 15
1 ton	45 00
Extra hoist, per foot	1 20

TRIPLEX TROLLEY BLOCK

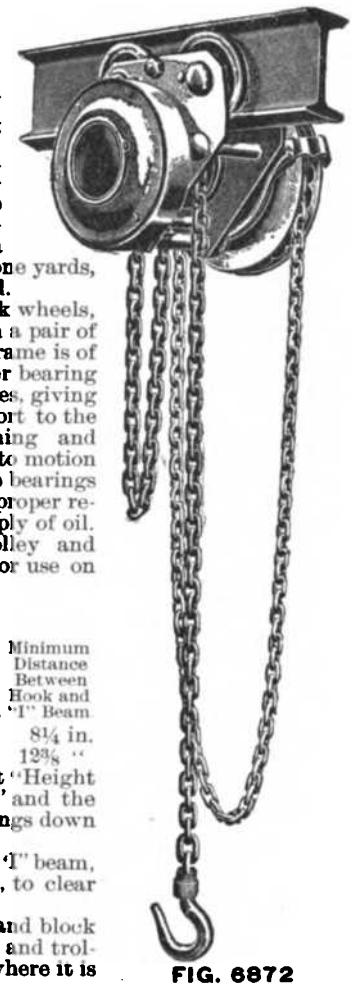


FIG. 6872

This consists of a triplex block combined with a trolley, designed to run on the bottom flange of an overhead "I" beam, the apparatus thus serving both to hoist a load and to transfer it horizontally to any point reached by the overhead track. This feature is particularly useful in taking work to and from machines in shops, foundries, mills, stone yards, and wherever heavy material is handled.

The trolley is provided with four truck wheels, each secured to a steel pin revolving in a pair of self-adjusting bronze bearings. The frame is of wrought iron or steel plates with inner bearing plates securely bolted to the outside plates, giving an inside as well as an outside support to the wheels, which insures steady running and reduces very materially the resistance to motion along the overhead beam. The double bearings are self-oiling, and are equipped with proper receptacles for holding a six months' supply of oil.

We furnish only the combined trolley and block without track. It is adapted for use on standard "I" beams.

PRICES, FIG. 6872

Capacity in Tons.	Each, Complete.	*Hoist in Feet.	*Height to Bottom of "I" Beam.	Extra Hoist, per Foot.	"I" Beam.	Maximum Safe Span of "I" Beam in Ft. for Three-Quarter Load.	Full Load.	Half Load.	Minimum Distance Between Hook and "I" Beam
½	$60 00	8	8 ft. 8¼ in.	$1 15	5 in. 10 lb.	13	16	18	8¼ in.
1	80 00	8	9 " 11⅜ "	1 20	6 " 13 "	13	16	18	12⅜ "

*The "Hoist" is the travel of hook from the floor to the highest point. The greatest "Height to the bottom of 'I' beam," for which this "Hoist" is suitable, is the sum of the "Hoist" and the "Minimum distance between hook and 'I' beam." At this height the hand chain hangs down within 18 inches of the floor.

In these trolleys the wheels are made almost as large in diameter as the depth of the "I" beam, thus causing them to run very easily. We can furnish trolleys with smaller wheels, to clear bolts through the upper flange of the beam, where necessary.

The construction of the Triplex Trolley Block is exceptionally compact, the trolley and block being so made as to take up no more space than that ordinarily required for the track and trolley only. This fact is of great importance, especially where the ceiling is low or where it is desired to lift a load as close to the ceiling as possible.

12, 16 AND 20 TON TRIPLEX BLOCKS

In order to meet the demand for blocks of large capacity and having high efficiency, three new sizes of the Triplex Block have recently been produced capable respectively of handling loads of 12, 16 and 20 tons. The accompanying illustration shows the design of these blocks. The construction consists in placing a yoke on the upper hook, each end of this yoke carrying a triplex mechanism of two tons capacity, and each mechanism being operated by an independent hand chain. The two slack ends of the hoisting chain are attached respectively to the two triplex hoists. The first loop of this chain then passes around the driving sheave in each hoist and thence over two sets of intermediate sheaves, one set carried in the frame of the bottom block, and the other set in the frame connected directly with the shank of the upper hook. The number of parts of chain is such that the maximum load on each part does not exceed two tons. In this way the maximum load on each hoist is limited to two tons, which is also the limit of load carried by each arm of the yoke. All the remainder of the load is suspended directly from the shank of the upper hook. This construction admits of greater compactness and occupies less headroom than any heretofore devised. Still greater compactness and from 18 to 20 inches additional headroom can be obtained by omitting the upper hook and crosshead, and building the block into the trolley of a hand crane or overhead tramrail system.

A most important advantage arises from the fact that either or both of the two hoists may be operated simultaneously or independently. The full load may be raised by two men pulling together on the hand chain of one hoist, or at double speed by four men, two at each hoist. In like manner lowering may be affected at varying speeds by using either or both of the hoists. The location of the hoists at the outer ends of the yoke brings the two hand chains clear of the load, and in the most convenient position for effective use.

This ingenious application of the triplex system adapts it to the largest loads for which portable hoists are usually required, and by reason of the duplication of the hoisting mechanism enables the full power of four men to be utilized, either in lifting the maximum load at normal speed, or lighter loads at greater speed, whereas all other large hoists have heretofore had but a single hand chain, on which it is not possible to utilize effectively the power of more than two, or, at the most, three men.

PRICES

Capacity in Tons.	Each, Complete. Type A.	Type B.*	Hoist in Feet.	Height of Suspension.	Extra Hoist, per Foot.	Approximate Weight.	Minimum Distance Between Top and Bottom Hooks.
12	$300 00	$265 00	12	16 ft. 9 in.	$4 30	800 lbs.	4 ft. 9 in.
16	360 00	300 00	12	17 " 1 "	5 40	1,000 "	5 " 1 "
20	425 00	350 00	12	18 " 5 "	6 50	1,150 "	6 " 5 "

*To be built in trolley.

THE 16 TON TRIPLEX TYPE A

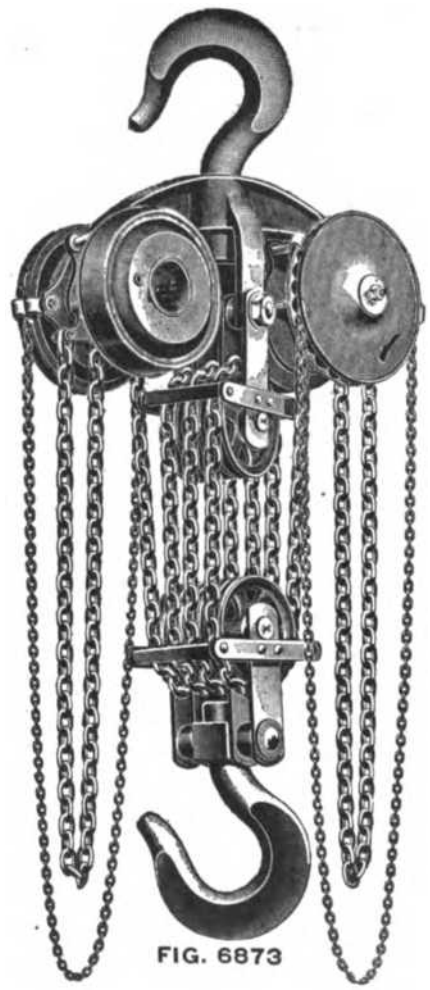
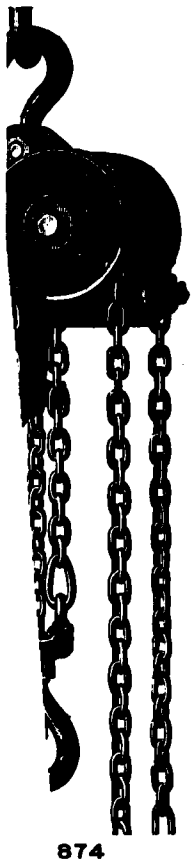


FIG. 6873

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ROVED OIST

. Double Chain.



874

PRICES, FIG. 6874

It is compact, powerful and convenient, and is extensively used for all classes of work.

Capacity, Pounds.	Lift, Feet.	Each.	Extra Lift, Per Foot.	Weight of Machine, Pounds.
500	8	$22 50	$1 00	35
1,000	8	25 00	1 20	52
2,000	8	30 00	1 50	65
3,000	8	40 00	1 75	76
4,000	9	50 00	2 00	140
6,000	10	75 00	2 20	226
8,000	10	95 00	2 40	258
10,000	12	140 00	3 00	625
12,000	12	180 00	3 75	750
16,000	12	210 00	4 00	875
20,000	12	275 00	4 25	925

The gearing is inclosed in an oil tight housing, and the working parts are thus always immersed in oil, insuring smooth action and thorough lubrication

SHORTEST DISTANCE BETWEEN HOOKS OF

500	pound hoist is	14½	inches.	8,000	pound hoist is	31	inches.
1,000	"	16	"	10,000	"	39	"
2,000	"	17	"	12,000	"	39	"
3,000	"	20	"	16,000	"	40	"
4,000	"	22	"	20,000	"	61	"
6,000	"	28	"				

DESCRIPTION AND PRICES, FIG. 6875

The Keystone Hoists are spur geared, will hold the load at any point, and are equipped with two load chains and two load wheels, which can be taken off and turned around, which practically gives a new set of load wheels. They have a very high mechanical efficiency; the loss of power by friction is not very large.

Capacity, Pounds.	Lift, Feet.	Each.	Extra Lift, per Foot.
1,000	8	$35 00	$1 20
2,000	8	45 00	1 50
3,000	8	60 00	1 75
4,000	9	70 00	2 00
6,000	10	90 00	2 20
8,000	10	110 00	2 40
10,000	12	140 00	3 00

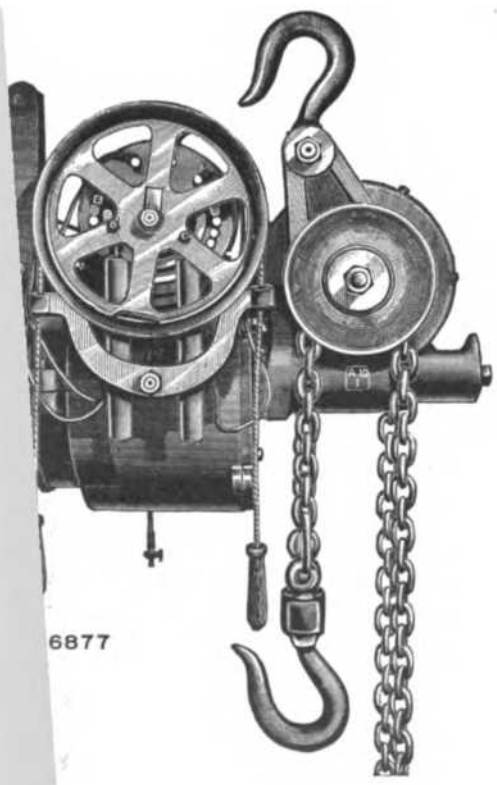
For quick lifting, the 1,000 and 2,000 sizes are equipped with special gearing. They handle light loads at double speed.

KEYSTONE SPUR GEARED HOIST



FIG. 6875

D HOIST AND ELECTRIC MOTOR



6877

DESCRIPTION, FIG. 6877

The motor is multipolar, iron clad, and not affected by surrounding machinery, entirely inclosed, making it dust proof and moisture proof. The controller is attached directly to the Hoist, and is operated by pendant ropes, so arranged that it is necessary, in order to raise or lower the load, to pull on the respective rope. By means of an automatic arrangement, when the rope is released, the current is cut off, and the Hoist stops.

The Hoist will lift the full load at the speed of six feet per minute, and the motor, being series wound, will lift lighter loads proportionately faster. It is not necessary to attach the controller directly to the Hoist; it can be placed in any convenient position some distance away.

Prices on application.

PRICES, FIG. 6878

One hook always down ready for a new load.

To raise	500	pounds,	lift	8	feet....$26 35
"	1,000	"	"	8	" 29 41
"	2,000	"	"	8	" 35 25
"	3,000	"	"	8	" 46 41
"	4,000	"	"	9	" 59 86
"	6,000	"	"	10	" 87 86
"	8,000	"	"	10	" 111 85
"	10,000	"	"	12	" 163 86
"	12,000	"	"	12	" 213 83
"	16,000	"	"	12	" 250 00
"	20,000	"	"	12	" 320 00

DOUBLE HOOK SCREW HOIST

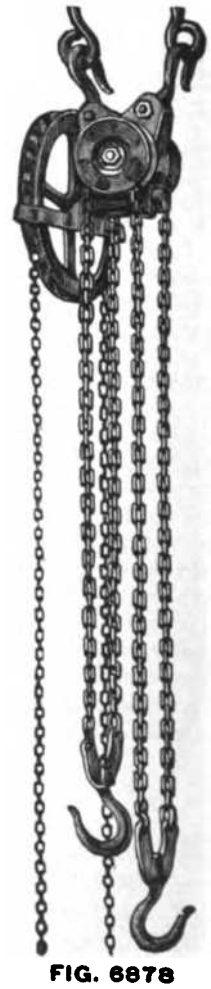


FIG. 6878

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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ANTI-FRICTION DIFFERENTIAL CHAIN HOIST

Automatic Brake.

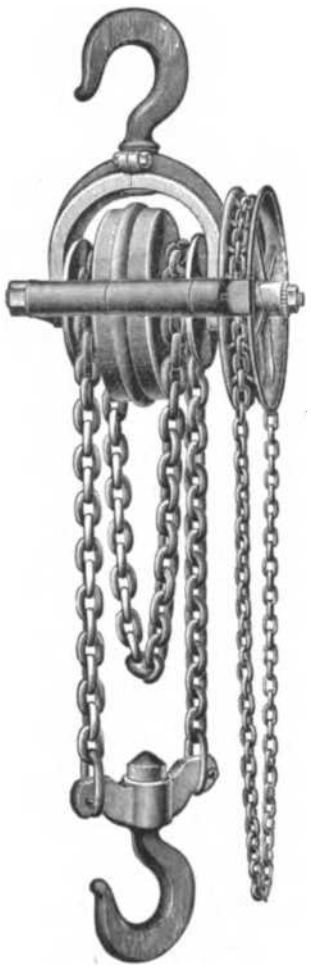


FIG. 6879

DESCRIPTION AND PRICES, FIG. 6879

A perfect lock. The heaviest load may be lowered by a slight pull on the hand chain, a few pounds only, and yet is held with perfect safety at every point. The brake may be readily adjusted to lower more or less freely, or to take up wear.

Nos.	Capacity. Tons.	Prices, Complete with Chain.	Extra Main Chain, per Foot.	Ex. Hand Chain, per Foot.	Height of Hoist. Feet. †	Weight, Complete with Chains, Pounds.	Shortest Distance Between Hooks, Inches.
0	½	$25 00	$0 40	$0 40	7	39	16
1	1	30 00	44	40	8	73	20
1½	1½	40 00	48	40	8½	90	21
2	2	50 00	52	40	9	128	23
3	3	70 00	60	40	10	195	29
4	4	95 00	70	40	11	250	32
5	5	125 00	80	40	12	353	36
6	6	150 00	80	40	12	400	37
8	8	200 00	1 25	40	12	580	41
10	10	250 00	1 25	40	12	625	41
15	15	350 00	1 50	40	12	780	45

† Figures in sixth column denote approximate height which blocks, with regular lengths of chain, will hoist from level on which operator stands.

For every additional foot of hoist desired two feet extra of both main and hand chain will be necessary.

REVERSIBLE PNEUMATIC MOTOR CHAIN HOIST

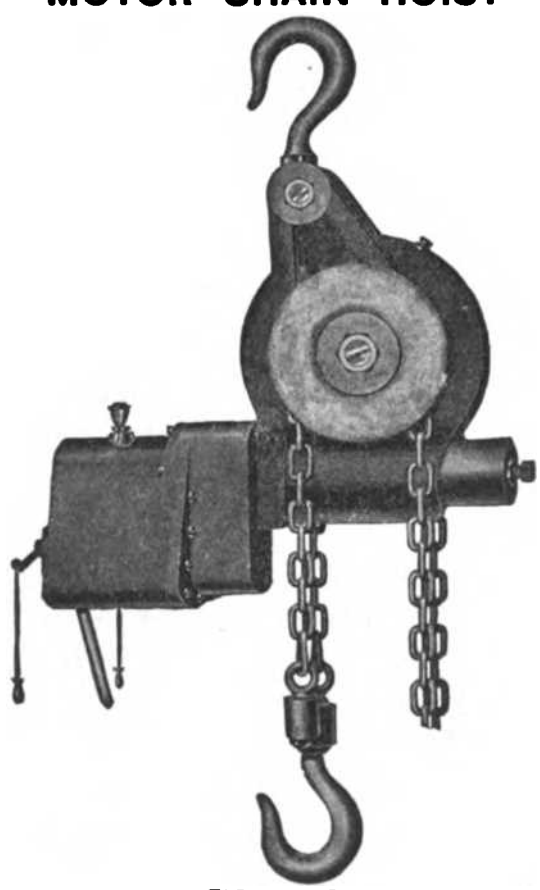


FIG. 6883

PRICES, FIG. 6881

Weight, Pounds.	Lift, Feet.	To Raise, Pounds.	Each.	Extra Lift, per Foot.
25	8	500	$22 50	$0 65
35	8	1,000	25 00	75
50	8	2,000	30 00	95
80	8	3,000	40 00	1 10
100	9	4,000	60 00	1 25
120	10	6,000	75 00	1 50
140	10	8,000	95 00	1 85
180	12	10,000	122 50	2 25
240	12	12,000	150 00	2 85
340	12	16,000	225 00	3 35
450	12	20,000	300 00	4 25

PRICES, FIG. 6882

Nos.	Capacity, Pounds.	Lift, Feet.	Each.	Weight, Pounds.	Extra Lift, per Foot.
1	1,000	9	$25 00	50	$1 00
2	2,000	9	30 00	72	1 20
3	3,000	9	40 00	97	1 50
4	4,000	9	55 00	130	1 75
5	6,000	9	75 00	165	2 00
6	8,000	9	95 00	215	2 20
7	10,000	12	140 00	260	2 40
8	12,000	12	180 00	312	3 00
9	16,000	12	260 00	418	4 00
10	20,000	12	340 00	530	6 00

DESCRIPTION AND PRICES, FIG. 6883

It can be used in works with low head room. It will raise the maximum load eight feet per minute.

Capacity, Pounds.	Lift, Feet.	Each.	Extra Foot of Lift.
2,000	10	$175 00	$1 50
3,000	10	200 00	1 50
4,000	10	225 00	1 50

DOUBLE SCREW HOIST

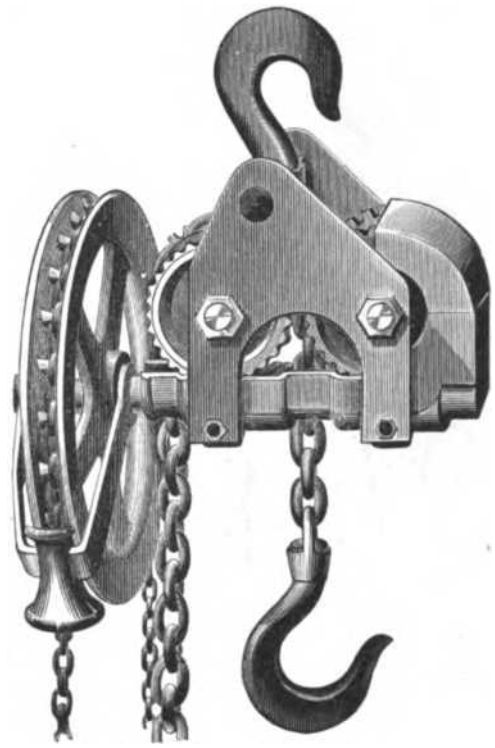


FIG. 6881

KING CHAIN BLOCK



FIG. 6882

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'ENT

CHAIN BLOCKS

DESCRIPTION AND PRICES, FIG. 6884

Weight, Lbs.	To Raise, Lbs.	Lift, Feet.	Each.	Extra Lift, Per Foot.
34	500	8	$18 00	$0 25
44	1,000	8	21 00	30
59	2,000	8	25 00	35
88	3,000	8	30 00	45
128	4,000	9	45 00	55
145	6,000	10	60 00	90
189	8,000	10	80 00	1 10
335	12,000	12	125 00	1 50

Extra Hand Chain, 25 cents per foot double length.



DESCRIPTION AND PRICES, FIG. 6889

The block is automatically self-sustaining, and the load will remain suspended whenever the hand chain is let go.

Capacity, tons	¼	½	1	1½	2
Regular chain in block will lift, feet	8	8	8	9	10
With regular lift, each	$22 00	$26 00	$33 00	$46 00	$60 00
Weight each block complete, pounds	31	49	80	103	151
Space required for block and hook, inches	12	13	15	19	24
Power required on hand chain, load going up, pounds	82	112	168	176	196
Continuous pull on " " " " down, pounds	18	20	21	28	56

FACILE CHAIN HOIST

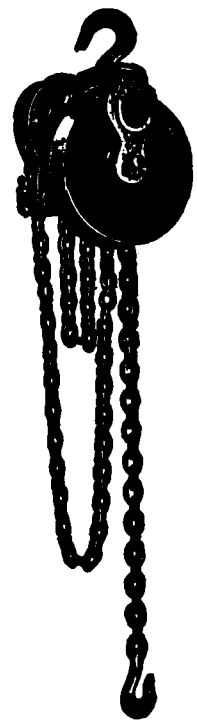


FIG. 6889

ULLEY BLOCK



. 6888

howing Lower Position for the t Speed.

G HOISTS

ght of the lift presume that lift, as given

PRICES, FIGS. 6887 AND 6888

Safe Working Capacity in Pounds.	Complete with Chain, for Regular Lift.	Regular Height of Lift.	Weight, Complete with Chain, for Regular Lift.	For Each Foot of Extra Lift, including Four Chains.	Shortest Distance between Inside of Hooks.
1,000	$25 00	8 ft.	47 lbs.	$1 20	16 in.
2,000	30 00	8 "	58 "	1 30	19 "
3,000	40 00	8 "	78 "	1 40	21½ "
4,000	55 00	9 "	110 "	1 50	24 "
6,000	75 00	10 "	160 "	1 60	2 ft. 4 "
8,000	95 00	10 "	210 "	1 75	2 " 8 "
10,000	120 00	12 "	285 "	1 90	3 " 0 "
12,000	140 00	12 "	300 "	2 20	3 " 0 "
16,000	175 00	12 "	400 "	2 50	3 " 5 "
20,000	225 00	12 "	600 "	2 60	4 " 1½ "
30,000	300 00	12 "	775 "	3 50	4 " 4 "

DESCRIPTION AND PRICES, FIG. 6890

These pulley blocks are self-sustaining. They can be worked at any angle.

Capacity.	Lift.	Each.	Extra Lift per Foot. First Foot.	Each Additional Foot.	Weight.
¼ ton.	7 ft.	$13 00	$2 35	$1 00	24 lbs
½ "	7 "	17 00	2 50	1 10	29 "
1 "	8 "	25 00	2 70	1 50	45 "
1½ "	9 "	32 00	2 85	1 65	70 "
2 "	10 "	40 00	3 00	1 80	103 "
3 "	10 "	65 00	3 25	2 10	153 "
4 "	11 "	80 00	3 50	2 50	210 "

N. B.—The price for extra lift includes one foot of lift chain and two feet of endless hand chain.

EADES PULLEY BLOCK

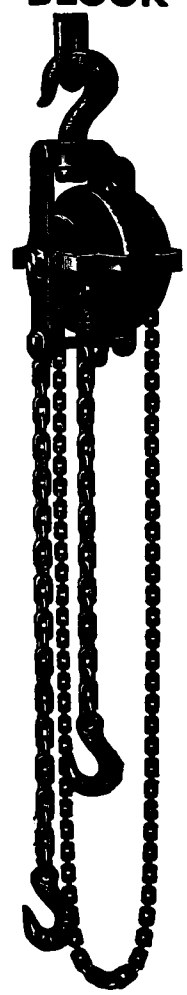


FIG. 6890

MANNING, MAXWELL & MOORE, 85, 87, AND

NEW YORK, THEREIN ALTHEREIT 69 CN

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SAFETY LIFTS

Showing Nos. 4, 5 and 6 Lifts, Strung and Ready for Use.

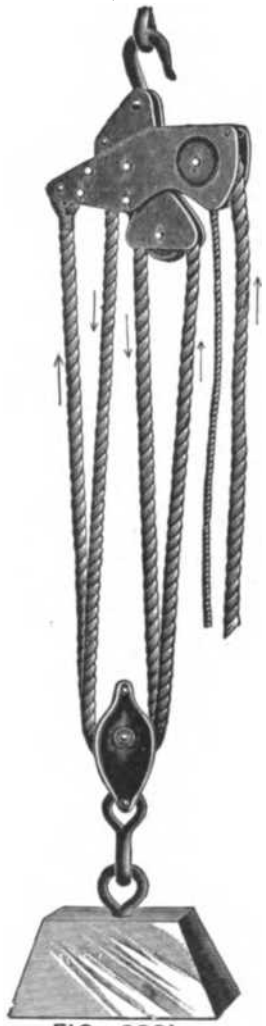


FIG. 6891

DESCRIPTION, FIG. 6891

To lower load when lower block is out of reach, grasp the hoisting rope securely before pulling on the trip rope. Hold rear end of lever down by pulling on the trip rope and allow the hoisting rope to slip back through the other hand.

To lower load when lower block can be reached, pull down upon part of rope passing between block and central sheave in upper block. As this portion of the rope does not pull upon the lever, it is easily slipped between sheave and lock, so that a load can be adjusted with as much nicety as with an expensive chain hoist. This is of the greatest value to painters and all persons working upon swinging scaffolds; also to the workmen in the upper parts of buildings, as they can lower and place material where they wish and not depend upon signaling to the persons below doing the hoisting.

DESCRIPTION, FIG. 6892

The cut represents the Hold Fast Wire Grip, for wire stretching. This simple, durable, practical and cheap device fills the place of a long desired tool for that purpose, the eccentric part being made from the very best 1⅛ inch round steel, knurled on its surface to just such an extent as to not injure the material handled by it, and then tempered in oil to such a degree as not to be easily torn. This grip will take from Nos. 2 to 13 wire, Brown and Sharpe standard wire gauge.

Represents No. 2 and No. 3 Hoist with Hold Fast Grip.

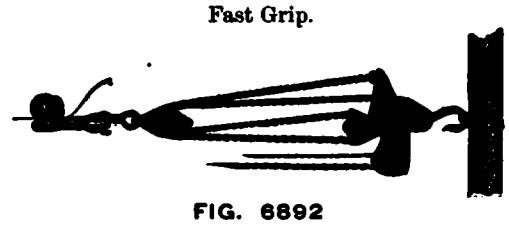


FIG. 6892

PRICES, FIGS. 6891 AND 6892

No. 2	For ¼ inch Rope, or No. 7 Sash Cord. Weight, 22 ozs.; capacity, 600 lbs.	$2 00
No. 3	For ⅜ inch Rope. Weight, 4⅛ lbs.; capacity, 800 lbs.	3 00
No. 4	For ½ inch Rope. Weight, 6½ lbs.; capacity, 1,500 lbs.	5 50
No. 5	For ⅝ inch Rope. Weight, 11 lbs.; capacity, 2,000 lbs.	7 00
No. 6	For ¾ inch Rope. Weight, 17 lbs.; capacity, 2,500 lbs.	8 50
No. 4½	For ½ inch Rope. Weight, 10 lbs.; capacity, 3,000 lbs.	10 00
No. 5½	For ⅝ inch Rope. Weight, 20 lbs.; capacity, 3,500 lbs.	12 00
No. 6½	For ¾ inch Rope. Weight, 28 lbs.; capacity, 5,000 lbs.	14 00
Hold Fast Grip, extra		1 00

The above prices and weights include lower block. No rope.

The principle on which the Safety Lift is made is the locking by the positive action of the load on a lever, the most powerful and unfailing of the elementary mechanical principles.

PICKERING'S PORTABLE QUICK HOIST

Specially Adapted for Raising Loads of 1,000 Lbs. or Less.

Without Brake. With Brake.

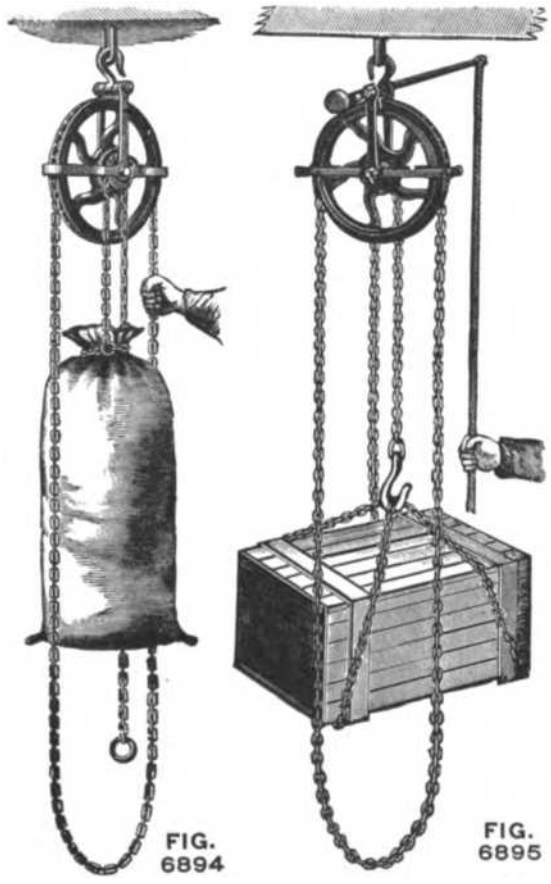


FIG. 6894 FIG. 6895

PRICES, FIGS. 6894 AND 6895

Capacity	500 lbs.	1,000 lbs.
Diameters of Large Wheel	16 inches.	24 inches.
Will lift with Regular Chain	12 feet.	12 feet.
Weight " " "	48 lbs.	84 lbs.
With Regular Lift, no Brake	$25 00	$31 00 each.
" " " with Brake	30 00	36 00 "
Extra Chain, first foot of Extra Lift	1 60	1 80 per foot
For each additional foot of lift	90	1 05 "
For Load or Hand Chain only	30	35 "
Load Wheels for Repairs	2 50	3 00 each.

SELF SUSTAINING ROPE PULLEY BLOCK

The eccentric brake is put in action by pulling the hand rope to the right or left, which will hold the weight firmly at any point. To lower, pull down an inch; this will release the brake. Adapted for hoists, 15 feet or less.

PRICES, FIG. 6896. ROPE EXTRA

Sheave, sizes, diameter..	2½ in.	3½ in.	4 in.	4¾ in.
Each sheave will lift.....	1 cwt.	3 cwt.	5 cwt.	8 cwt.
Use rope.....	⅜ in.	½ in.	⅝ in.	¾ in.
	Per Set.			
1 set, 1 and 1 sheave.....	$4 40	$5 25	$6 00	7 50
1 " 1 " 2 "	5 00	6 00	7 00	8 80
1 " 2 " 2 "	5 65	6 90	8 00	10 50
1 " 2 " 3 "	6 20	7 70	9 00	11 60
1 " 3 " 3 "	6 90	8 40	10 00	12 70
1 " 3 " 4 "	7 70	9 20	11 00	15 00
1 " 4 " 4 "	8 25	10 00	12 00	17 00

To get the capacity, multiply the lift of each sheave by the number of sheaves in the set.

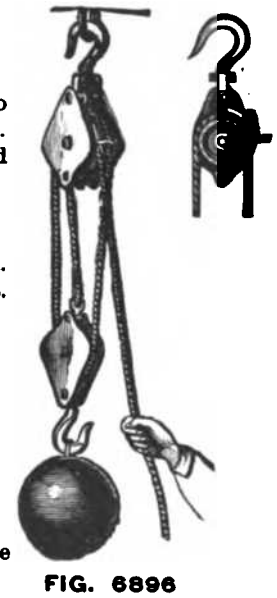


FIG. 6896

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P STEEL TACKLE BLOCK

INSTRUCTIONS FOR REEVING

Enter a rope at A, pass wedge, and follow arrows as shown in cut. It will be noticed the two center ropes coming in contact with wedge always travel in same direction at same time. Take twist out of rope.

PRICES

Including Lower Block.

			Each.
No. 3	To be used with ⅜ inch rope.		
	One man can lift 300	pounds.	
	Capacity 600	"	$3 00
" 4	To be used with ½ inch rope.		
	One man can lift.....350	"	
	Capacity 1000	"	5 50
" 5	To be used with ⅝ inch rope.		
	One man can lift 400	"	
	Capacity 1800	"	7 00
" 6	To be used with ¾ inch rope.		
	One man can lift.....450	"	
	Capacity 2500	"	8 50
" 4½	To be used with ½ inch rope.		
	One man can lift.....600	"	
	Capacity 3000	"	10 00
" 5½	To be used with ⅝ inch rope.		
	One man can lift 700	"	
	Capacity 3500	"	12 00
" 6½	To be used with ¾ inch rope.		
	One man can lift 850	"	
	Capacity 5000	"	14 00

angers, 3½ feet apart, fitted and ready to put
rrying 500 pounds, per lineal foot.....$0 40
0 pounds, per lineal foot..... 72
und track, each..... 1 00
track, " 5 00
an supply hangers alone if wanted.

JUNIOR LOCK TACKLE BLOCK

For all light hoisting and hauling, especially where it is desirable to hold the load at any point.

The case is made of steel—tougher and lighter than cast metal—and tinned.

Made with one size sheave, in single and double case, both with and without hook and automatic lock.

These blocks are similar to those shown in Fig. 6899, except that the lock is released by means of check cord instead of position of operator.

AUTOMATIC LOCK TACKLE BLOCK

Holds Load at Any Point. Adapted for All Positions, and No Check Cord Required.

TINNED CASE

Without Check Cord.

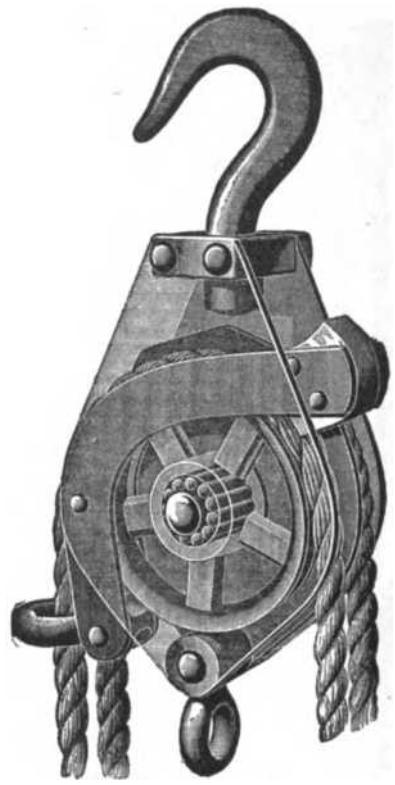


FIG. 6899

The case is of wrought steel, and the bushings of the sheave wheels are formed of steel rollers—never requiring oil—working with great ease and with little perceptible wear. The lock has a long bearing, made to fit the rope, and moves with it when acting, without injury to the rope, and the load is held at any point.

We furnish best Manila rope, reeved in the blocks ready for use, if desired, at market price. All blocks shipped without rope, unless otherwise ordered. To lock, step back a short distance.

PRICES, FIG. 6899

Numbers.	No. of Sheaves.	Sizes of Rope.	Pounds One Man Can Hoist.	Capacity, Pounds.	Each.
80	2 and 1	½	300	600	$3 00
90	2 " 1	⅝	350	1000	5 50
100	2 " 2	⅝	500	1500	6 00
110	3 " 2	⅝	625	2000	6 80
120	3 " 3	⅝	750	3000	7 60
130	4 " 3	⅝	900	3500	8 35
140	2 " 1	¾	350	1250	6 50
150	2 " 2	¾	500	1800	7 00
160	3 " 2	¾	625	2500	8 00
170	3 " 3	¾	750	3700	9 00
180	4 " 3	¾	900	4000	10 00

For blocks with Check Cord, see Fig. 6900.

PRICES, FIG. 6900

Numbers.	No. of Sheaves.	Sizes of Rope.	Pounds One Man Can Hoist.	Capacity, Pounds	Each.
8	2 and 1	½	300	600	$3 00
9	2 " 1	⅝	350	1000	5 70
10	2 " 2	⅝	500	1500	6 00
11	3 " 2	⅝	625	2000	6 80
12	3 " 3	⅝	750	3000	7 60
13	4 " 3	⅝	900	3500	8 35
14	2 " 1	¾	350	1250	6 50
15	2 " 2	¾	500	1800	7 00
16	3 " 2	¾	625	2500	8 00
17	3 " 3	¾	750	3700	9 00
18	4 " 3	¾	900	4000	10 00

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OVERHEAD TROLLEY

Single Track, Flat Iron Rail, Wrought Iron Hanger and Plain Trolley.

SHORT HANGER



FIG. 6902

BRACED HANGER

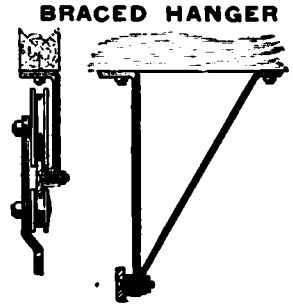


FIG. 6903

The rail and hangers are made of wrought iron and are to be bolted directly to the ceiling or overhead timbers. Trolleys have large and well fitted steel pins, and the wheels are large and run on anti-friction rollers, reducing friction to a minimum. Where obstructions are in the way, the braced hangers can be made deep enough to clear shafting, pipes, belts, etc.

PRICES

Capacity in Pounds.	Largest Distance C to C Hangers.	Rails, per Foot.	Short Hangers, Each.	Trolleys, Each.	Curves, Each.	Switch for Regular Lift of Hoist.
500	8 ft. 0 in.	$0 30	$0 90	$9 75	$0 75	$27 75
1,000	6 " 0 "	40	1 00	10 50	85	28 50
1,500	6 " 0 "	50	1 15	11 25	1 10	29 25
2,000	6 " 6 "	65	1 40	12 00	1 50	30 00
3,000	5 " 0 "	75	1 70	13 50	1 50	31 50
4,000	5 " 6 "	90	2 00	15 00	1 85	33 75
5,000	5 " 0 "	1 00	2 20	16 50	2 00	34 25
6,000	5 " 0 "	1 10	2 40	18 00	2 25	35 00

OVERHEAD TRAMWAY

Single Track with Plain Traveler and Overhead Tramway with Channel Beam Rail.

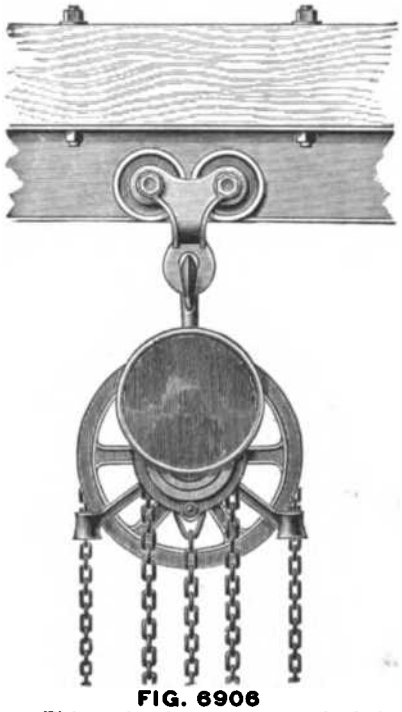


FIG. 6906

SIDE VIEW



FIG. 6906

This style of tramway can be bolted directly to the ceiling, and is a very convenient form for warehouses, mills, factories, etc. The trolleys have large and well fitted steel pins and the wheels run on anti-friction rollers, reducing friction to a minimum.

PRICES

Capacity in Pounds.	Largest Distance Between Hanger Bolts.	Per Foot.	Trolleys, Each.	Curves, Each.	Switch for Regular Lift of Hoist.
500	6 ft.	$0 30	$8 50	$2 50	$26 25
1,000	5 "	35	9 00	2 75	27 00
1,500	6 "	40	10 00	3 25	27 75
2,000	5 "	45	11 00	3 50	28 50
3,000	6 "	50	12 75	3 75	29 25
4,000	5 "	55	13 50	4 00	30 00
5,000	6 "	65	16 50	4 50	31 50
6,000	5 "	75	18 00	5 00	33 00

OVERHEAD TRAMWAY

Single Overhead Track Tramway with Geared Traveler and I Beam Rail.

GEARED TRAVELER

PLAIN TRAVELER

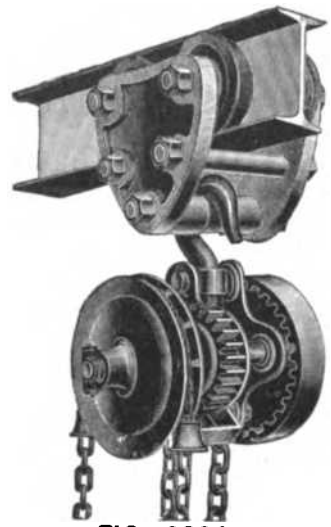


FIG. 6904

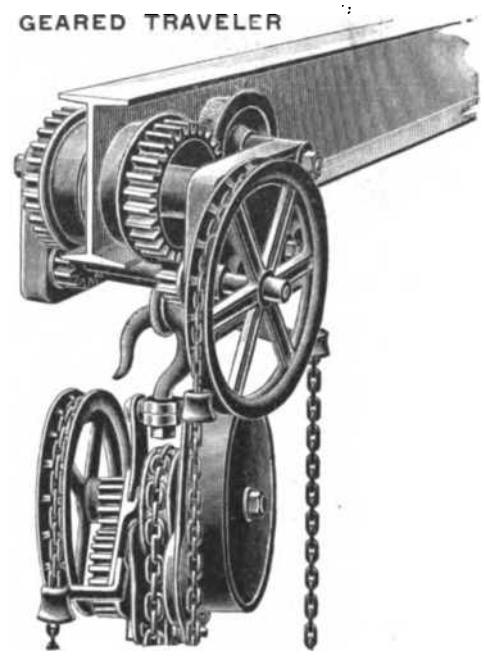


FIG. 6905

The tramways can be bolted directly to the ceiling or supported on trussels, and are well adapted for foundries, machine shops, warehouses, stone yards, ship yards, etc. These types are made with either plain or geared trolley; for loads upward of two or three tons it is best to use the geared trolleys, and where loads have to be moved carefully and without jerking, as in foundries, in handling molds, etc., the geared trolley is a necessity. The geared trolley is moved and operated by an endless hand chain from the floor. In writing for prices, give maximum load to be carried and distance from center to center of supports, if such are given, and the distance from floor to ceiling or overhead timbers.

PRICES

PLAIN TRAVELER Capacity in Pounds.	PLAIN TRAVELER Travelers, Each.	GEARED TRAVELER Capacity in Pounds.	GEARED TRAVELER Travelers, Each.
500	$12 75	3,000	$57 50
1,000	13 50	4,000	60 00
1,500	14 25	5,000	62 50
2,000	16 00	6,000	67 50
3,000	18 00	8,000	75 00
4,000	20 25	10,000	87 00
5,000	24 00	12,000	93 75
6,000	33 75	16,000	112 50
8,000	36 00	20,000	120 00
10,000	37 50	.....	.....

Prices of geared travelers apply to length of chain suitable for hoists with height of lift, viz.: 3,000 pounds, 8 feet; 4,000 pounds, 9 feet; 5,000, 6,000 and 8,000 pounds, 10 feet; 10,000, 12,000, 16,000 and 20,000 pounds, 12 feet. For extra height add 40 cents for each foot of additional lift.

When ordering or writing for prices of overhead tramways, please state which style of track is desired and give maximum load to be handled; where long hangers are required give the distance between overhead timbers and trolley wheels, clearing all obstructions, stating length of track required, whether straight or curved, in the latter case showing on a plain sketch location of the curves, etc.

OVERHEAD TRAMWAY TURNTABLE

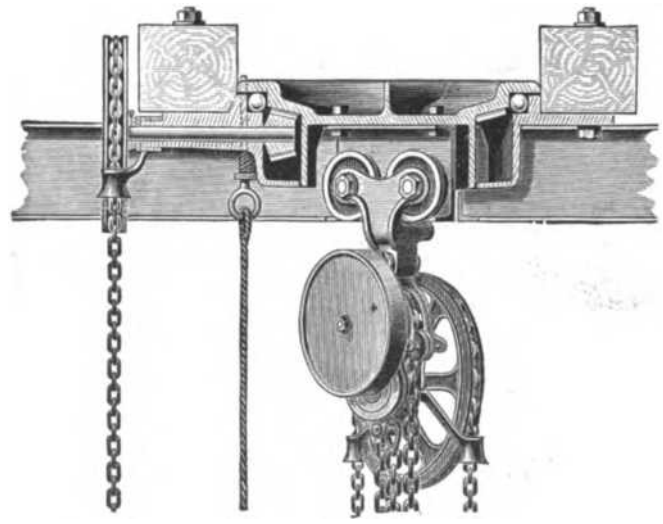


FIG. 6907

PRICES ON APPLICATION

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'EEL PLATE TROLLEY

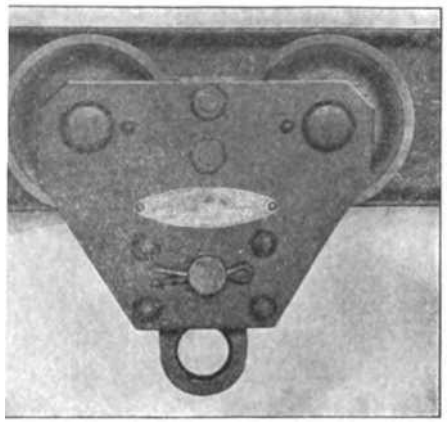


FIG. 6908

STEEL PLATE TROLLEYS

For Hand Power Moving Gear.

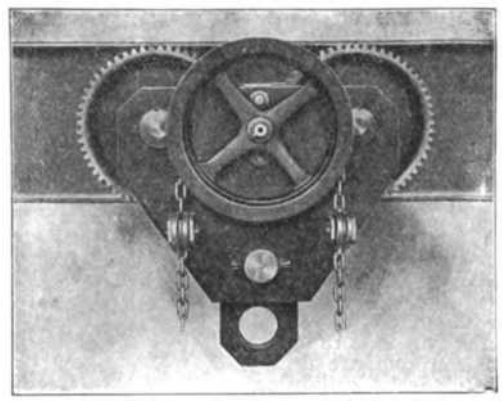


FIG. 6909

For Double Hook Hoist with Triplex Block.



FIG. 6910

For prices, add to price of trolley of desired capacity, Fig. 6906 or Fig. 6909, the price of Triplex Hoist of desired capacity, Figs. 6868, 6869, 6870, 6871 or 6872. These trolleys will be fitted for single or double hook blocks at same prices.

DESCRIPTION

hows the Steel Plate Trolley, in which the frame is of steel plates, with inner bearing plates securely bolted e plates. The wheels are secured on steel pins and revolve in adjustable bearings, giving an inside as well as s support to the wheels, thereby reducing very materially the resistance to movement along the overhead beam. .rings are self-oiling and are equipped with proper receptacles for holding a six months' supply. In these trolleys s are of maximum diameter, this diameter being almost as much as the depth of the I beam. This allows larger arts, and reduces resistance, but is allowable only with a special form of hanger bolt. We can furnish these trolleys ler diameter wheels where necessary, and we can furnish the larger sizes with hand power moving gear like Fig. 6909 nal cost.

PRICES, FIG. 6908 AND 6909

Plain Trolleys, Fig. 6908.

Size of I beam		4 In.	5 In.	6 In.	7 In.	8 In.	9 In.	10 In.	12 In.	15 In.	20 In.	24 In.
Weight of I beam, per foot.		7½ lbs.	9¾ lbs.	12¼ lbs.	15 lbs.	18 lbs.	21 lbs.	25 lbs.	31½ lbs.	42 lbs.	65 lbs.	80 lbs.
¼ ton capacity	40	$25 00	$30 00	$35 00	$40 00	$45 00	$60 00	.....	.....	.....	.....	.....
½ " "	50	.....	30 00	35 00	40 00	45 00	60 00	.....	.....	.....	.....	.....
1 " "	75	.....	.....	35 00	40 00	45 00	60 00	$80 00	.....	.....	.....	.....
1½ " "	100	.....	.....	.....	40 00	45 00	60 00	80 00	$100 00	.....	.....	.....
2 " "	125	.....	.....	.....	.....	45 00	60 00	80 00	100 00	$120 00	.....	.....
3 " "	175	.....	.....	.....	.....	.....	60 00	80 00	100 00	120 00	$150 00	.....
4 " "	300	.....	.....	.....	.....	.....	.....	80 00	100 00	120 00	150 00	$180 00
5 " "	400	.....	.....	.....	.....	.....	.....	.....	100 00	120 00	150 00	180 00
6 " "	500	.....	.....	.....	.....	.....	.....	.....	.....	120 00	150 00	180 00
8 " "	700	.....	.....	.....	.....	.....	.....	.....	.....	.....	150 00	180 00
10 " "	1,000	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	180 00

Weight, in pounds, of trolleys

Geared Trolleys, Fig. 6909.

1 ton capacity	100	.....	.....	$55 00	$60 00	$65 00	$80 00	$100 00	.....	.....	.....	.....
1½ " "	125	.....	.....	.....	60 00	65 00	80 00	100 00	$120 00	.....	.....	.....
2 " "	150	.....	.....	.....	.....	65 00	80 00	100 00	120 00	$140 00	.....	.....
3 " "	200	.....	.....	.....	.....	.....	80 00	100 00	120 00	140 00	.....	.....
4 " "	350	.....	.....	.....	.....	.....	.....	100 00	120 00	140 00	.....	.....
5 " "	450	.....	.....	.....	.....	.....	.....	.....	120 00	140 00	$180 00	.....
6 " "	550	.....	.....	.....	.....	.....	.....	.....	.....	140 00	180 00	.....
8 " "	800	.....	.....	.....	.....	.....	.....	.....	.....	.....	180 00	$210 00
10 " "	1,350	.....	.....	.....	.....	.....	.....	.....	.....	.....	.....	210 00

ECIAL STEEL ATE TROLLEY

ype, Clevis Connection with Triplex Block.

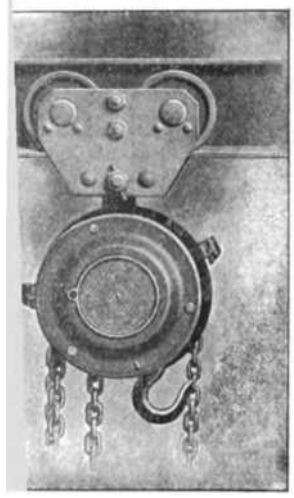


FIG 6911

ARMY TYPE

Fig. 6911 shows Steel Plate Trolley, as especially arranged for handling ammunition and shells in fortifications. The Triplex Block is hung in such a way as to reduce headroom considerably.

PRICES, INCLUDING TRIPLEX BLOCKS

Capacity, Tons.	Weight, Pounds.	Distance Between Lower Flange of Beam and Curve of Hook, Inches.	Size I Beam.	Hoist, Feet.	Each.	Extra Hoist, Per Ft.
½	101	13⅞	5 in. 9¾ lbs.	8	$75 00	$1 15
1	164	16⅝	6 " 12¼ "	8	90 00	1 40

RANE TROLLEY

ning on Top of Two I Beams or With Triplex Block Built in.

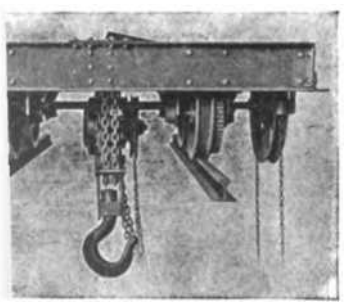


FIG. 6913

DESCRIPTION

lleys have frame built up of steel four truck wheels fast on their axles elf-adjustable roller bearings on both el. These roller bearings run in steel uble flanged truck wheel for standard , or special wheels for I sections, will

Hoisting and trolley travel are by s hanging to the floor. Adapted for ling, jib, bridge, or other kind of

NAVY TYPE

We can also furnish a Steel Plate Trolley, fitted with clamps, etc., for use on ship board, for handling ammunition, torpedoes, etc., with complete special system of switches, turntables, etc., upon which special quotations will be made on application.

PRICES, FIG. 6913

Capacity in Tons.	Weight in Pounds.	With Triplex Block.	Without Triplex Block.	Standard Hoist, Feet.	Extra Hoist, per Foot.
1	600	$200 00	$164 00	8	$1 60
2	800	250 00	194 00	9	1 68
3	1,000	300 00	236 00	10	2 15
4	1,300	340 00	264 00	10	2 80
5	1,400	370 00	284 00	12	3 00
6	1,600	410 00	294 00	12	3 18
8	2,000	510 00	370 00	12	3 68
10	2,400	580 00	406 00	12	4 40
15	3,100	780 00	540 00	12	7 30
20	3,500	840 00	670 00	12	8 65

STEEL PLATE TROLLEY FOR FLAT BAR RAIL

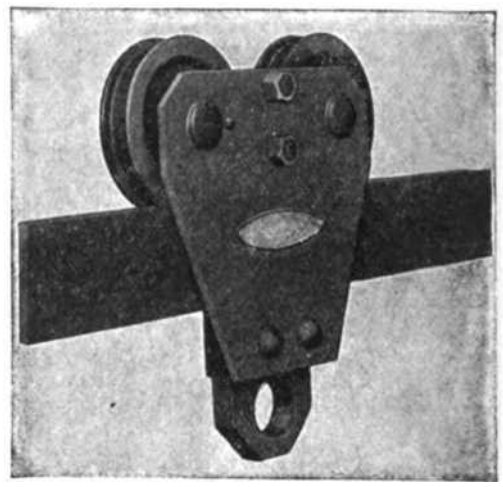


FIG. 6912

DESCRIPTION

Fig. 6912 shows a Flat Rail Trolley of patented construction, with single steel side plate and inner bearing plate supporting the wheels, on both sides. The wheels have tight axles revolving in self-oiling adjustable bearings, carrying a six months' supply of oil.

PRICES, FIG. 6912

Capacity Tons.	Sizes of Rail. Inches.	Greatest Distance Between Hangers, Feet.	Plain, Each.	Geared, Each.
¼	3 x ½	7	$15 00	$30 00
½	3 x ½	6	15 00	30 00
1	4 x ¾	6	20 00	35 00
1½	4 x ¾	5	20 00	35 00
2	4 x ¾	4	20 00	35 00
3	6 x 1	6	25 00	40 00
4	6 x 1	5	25 00	40 00

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OVERHEAD TRAMRAIL

PATENT HANGER BOLT

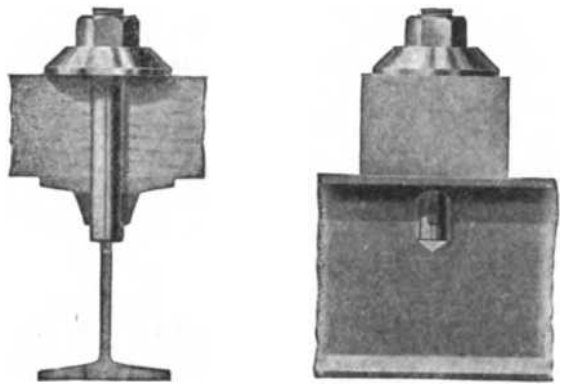


FIG. 6914

This Patent Hanger Bolt is designed expressly to hold the rail securely, and at the same time keep the upper edges of rail free and clear, thereby allowing a trolley wheel of the largest diameter, which is very desirable. This hanger bolt may be arranged as shown in Fig. 6914, where the rail is bolted directly to an overhead timber, or can be used in connection with V drop hangers, as shown in Figs. 6915 and 6916, or with cast iron hangers where it is desired to attach the tramrail to overhead I beams, as shown in Fig. 6917.

V DROP HANGERS

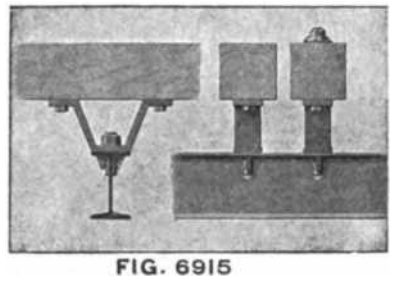


FIG. 6915

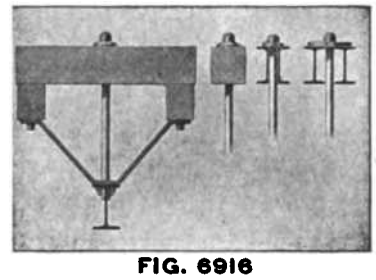


FIG. 6916

CAST IRON DROP HANGERS

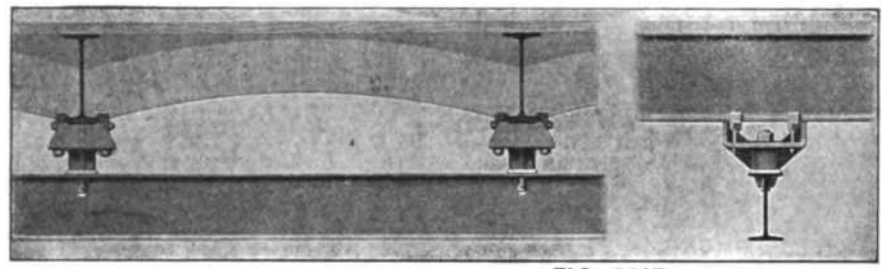


FIG. 6917

SWITCHES AND TURNTABLES

TURNTABLE

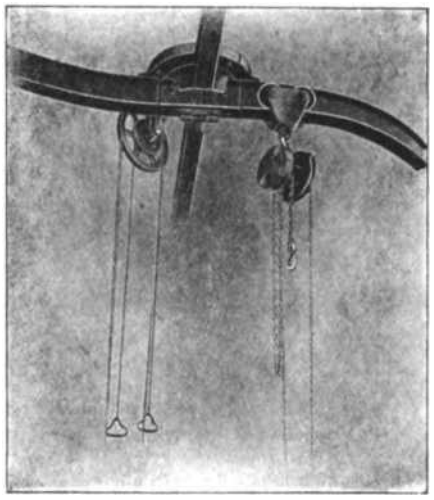


FIG. 6918

Fig. 6918 shows a standard turntable, and Figs. 6919 and 6920 single and double switches. These turntables and switches are attached to the overhead supports by bolts or lag screws or the patent hanger bolt, as circumstances may require, and are operated from the floor, by pulling on pendant hand chains, as shown in the pictures, and they are so arranged that the trolleys can not run off the rail even if not properly set.

SINGLE SWITCH

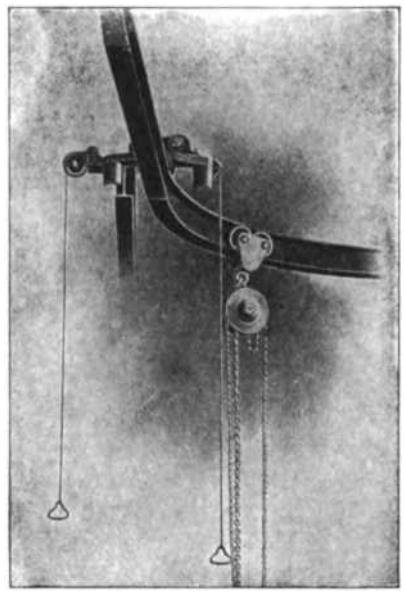


FIG. 6919

DOUBLE SWITCH

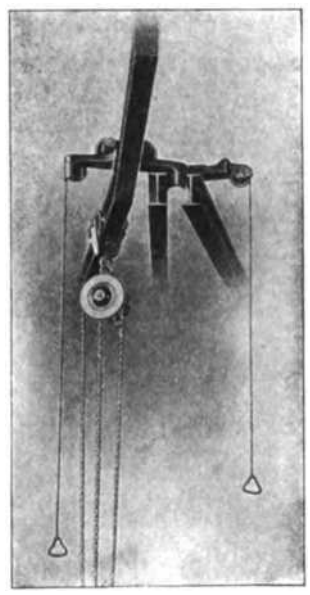


FIG. 6920

PRICES OF TRAMRAIL AND ATTACHMENTS. FIGS. 6914 TO 6920

Capacity, Tons.	Sizes I Beams, Inches.	Rail, per Foot.	Maximum Distance Between Supports, in Feet.	Curves, Each.	Key Bolts with Key, Nut and Washer, 12 in. Long. Fig. 6914.	For Each 3 Inches Additional Add. Fig. 6914.	V Hangers, with Lag Screws and Key Bolts, 12 inch Drop. Figs. 6915 and 6916.	For Each 3 Inches Additional Add. Figs. 6915 and 6916	C. I. Hangers, with Clip Bolts and Key Bolts, 12 Inch Drop. Fig. 6917	For Each 3 Inches Additional Add. Fig. 6917.	Steel Joints, Complete.	Single Switches, Complete with Chains. Fig. 6919.	Double Switches, Complete with Chains. Fig. 6920.	Turntables, Complete with Chains. Fig. 6918.
½	5	$0 65	14	$5 00	$1 50	$0 05	$6 50	$0 25	$9 50	$0 25	$7 00	$40 00	$45 00	$115 00
1	6	80	13	5 75	1 75	05	7 50	25	9 75	25	8 00	40 00	45 00	115 00
1½	7	90	13	6 75	2 00	05	8 75	25	11 00	50	9 00	42 50	47 50	120 00
2	8	1 00	13	6 75	2 25	10	9 00	25	11 25	50	10 00	42 50	47 50	120 00
3	9	1 35	13	7 75	2 75	10	10 50	25	12 75	50	11 00	45 00	50 00	120 00
4	10	1 70	13	9 00	3 00	10	10 75	50	14 00	75	13 00	50 00	55 00	125 00
5	12	1 95	15	10 00	3 50	10	12 50	50	15 50	75	15 00	55 00	60 00	130 00
6	15	2 25	18	11 00	4 00	15	14 00	50	17 00	1 00	18 00	60 00	65 00	135 00
8	20	3 35	25	12 00	4 50	15	15 50	75	18 50	1 00	20 00	70 00	75 00	150 00
10	24	4 45	27 ft. 6 in.	13 00	5 00	25	17 00	75	20 00	1 00	22 00	80 00	85 00	165 00

DIRECTIONS TO OBSERVE WHEN ORDERING OVERHEAD TRAMRAIL AND TROLLEYS

Orders for Overhead Tramrail should state the following particulars:

1. A plan should be submitted to scale, giving location of curves, switches, turntables, etc., and locating overhead supports; and section, showing elevation of tramrail.*

2. Capacity in pounds to be lifted.

3. Type of trolley wanted, and figure number of same.

4. State if you wish us to supply the hoisting blocks.

5. If trolleys only are wanted, give capacity of same, and send a cross section of the I beam they are to run on. This section should show any obstructions to the passage of trolley wheels, such as bolt or rivet heads, or other fastenings, joints or supports.

*This tramrail is machined and fitted at the works from drawings, so that an ordinary mechanic can erect it.

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HOIST … TOM

COMBINED HOIST AND TRAVELER, PLAIN

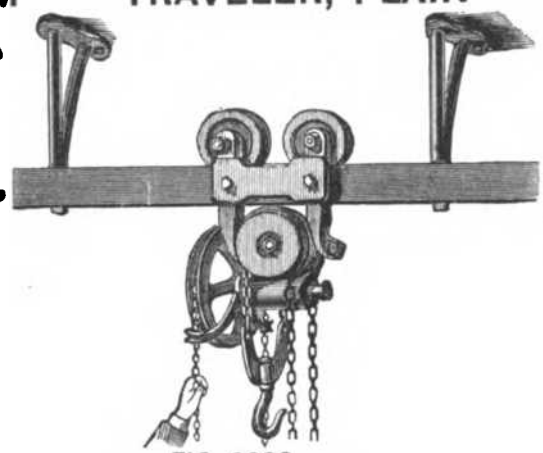


FIG. 6922

COMBINED HOIST AND TRAVELER, GEARED

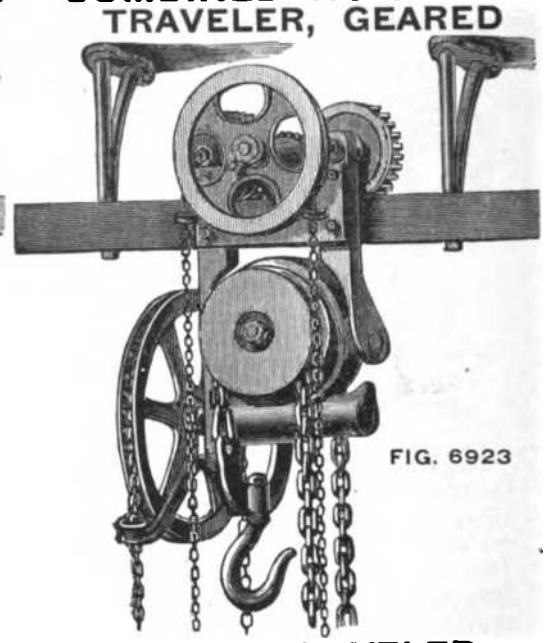


FIG. 6923

PRICES, FIGS. 6922 AND 6923

Capacity, Pounds.		Sizes of Rail, Inches.	Shortest Distance Bottom of Rail to Bottom of Hook. Plain Traveler. Fig. 6922, Inches.	Plain, Fig. 6922.	Geared, Fig. 6923.
500	8 ft. lift.	3 x ½	13	$37 50	$52 50
1,000	8 "	3 x ½	15	40 00	55 00
2,000	8 "	4 x ¾	16	50 00	65 00
3,000	8 "	4 x ¾	18	60 00	75 00
4,000	9 "	4 x ¾	21	70 00	85 00
6,000	10 "	6 x 1	24	100 00	115 00
8,000	10 "	6 x 1	26	120 00	135 00
10,000	12 "	6 x 1	....	.....	190 00
12,000	12 "	.....	....	.....	242 00
16,000	12 "	.....	....	.....	335 00

GEARED TRAVELER



FIG. 6924

PRICES, FIG. 6921

Travelers for Lower Flange of I Beam.

Capacity Pounds.		Sizes of I Beam, Inches.	Plain, Each.	Geared, Each.
500	8 ft. lift.	4	$52 50	.....
1,000	8 "	5	55 00	.....
2,000	8 "	6	65 00	$85 00
3,000	8 "	7	80 00	100 00
4,000	9 "	8	95 00	115 00
6,000	10 "	9	135 00	155 00
8,000	10 "	10	175 00	195 00
10,000	12 "	12	240 00	260 00
12,000	12 "	15	300 00	320 00
16,000	12 "	20	360 00	390 00
20,000	12 "	24	455 00	485 00

RICES, FIG. 6921

lers for Top of I Beam.

Sizes of Beam, Inches.	Plain, Each.	Geared, Each.
4	$52 50	$67 50
5	55 00	70 00
6	65 00	80 00
7	75 00	90 00
8	85 00	105 00
9	115 00	135 00
10	.....	155 00
12	.....	205 00
15	.....	255 00

PRICES, FIG. 6925

Travelers Only.

Capacity, Pounds.	Sizes of Rail, Inches.	Each.
500	3 x ½	$15 00
1,000	3 x ½	15 00
2,000	4 x ¾	20 00
3,000	4 x ¾	20 00
4,000	4 x ¾	20 00
6,000	6 x 1	25 00
8,000	6 x 1	25 00

Shortest distance from top of wheels to eye-bolt of traveler for 3 x ½ inch is 11 inches; for 4 x ¾ inch, 13 inches; for 6 x 1 inch, 16 inches.

PRICES

Travelers Only.

Capacity, Pounds.	Sizes of Rail, Inches.	Each.
500	3 x ½	$30 00
1,000	3 x ½	30 00
2,000	4 x ¾	35 00
3,000	4 x ¾	35 00
4,000	4 x ¾	35 00
6,000	6 x 1	40 00
8,000	6 x 1	40 00
10,000	6 x 1	45 00

OVERHEAD TRAVELERS, TURNTABLE AND SWITCH

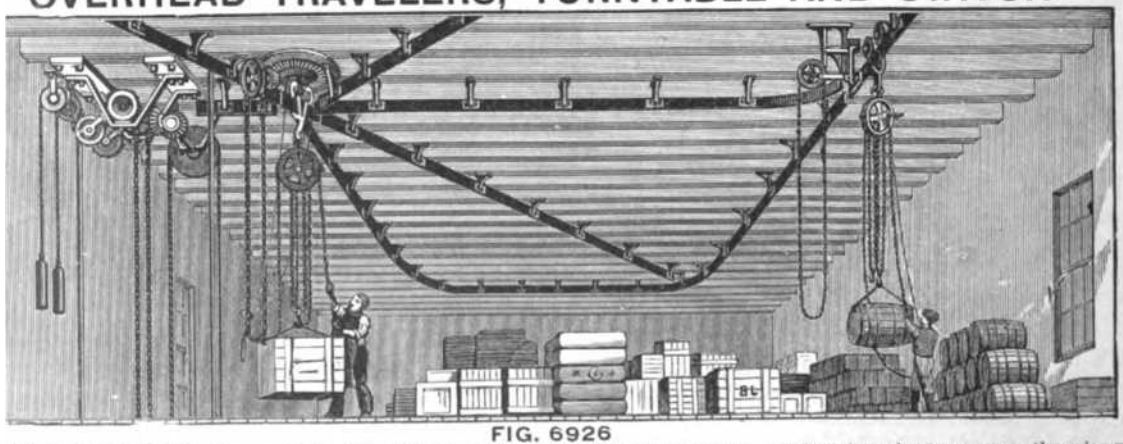


FIG. 6926

RHEAD TRACK. By use of a System of Overhead Track with Curves, Turntables and Switches where necessary, there is a great time and labor in all shops, foundries, warehouses, marble and stone yards, and all other places where heavy loads are to be lifted and The overhead track consists of flat rail. The supports may be placed at convenient distances apart, not exceeding the greatest safe applying for estimate, a plan should be submitted, stating clearly what you desire, and locating the line of track, with curves, switches tables. State overhead construction, whether iron or wood, and send plan of same. Give lowest point of obstruction under which will pass. Give heaviest weight to be carried. Prices on application.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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HAND TRAVELING CRANES

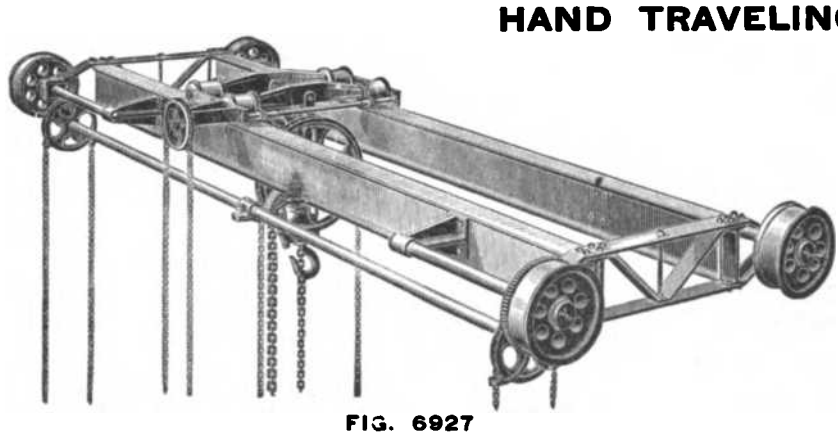


FIG. 6927

WITH SINGLE I BEAM

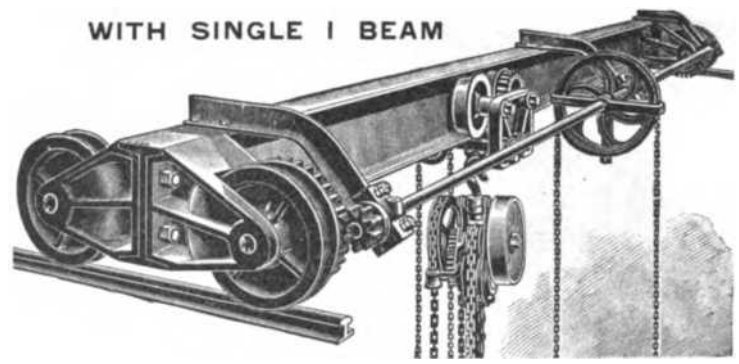


FIG. 6928

DESCRIPTION, FIG. 6927

With longitudinal or transverse hand movements, and can be used with any style of chain hoists. Prices on application, stating full particulars of the requirements.

DESCRIPTION, FIG. 6928

Cut shows Crane with geared bridge and trolley. The bridge is made of a single I beam, with trolley running on its lower flange. All motions are effected by endless hand chains from the floor and are as follows: Hoisting and lowering, two speeds; bridge travel, one speed; trolley travel, one speed. Bridge and trolley wheels are turned in the grooves, have anti-friction roller bearings, and work very freely without a jar. These Cranes are built strong and durable and cause no vibration. These Traveling Cranes are built up to 60 feet span and 30 tons safe working capacity. They are very handy and easily operated. In ordering or writing for prices always state maximum load, distance from floor to top of rails and from top of rail to ceiling or roof truss; also distance from center to center of rails and distance between walls or posts. Prices on application, according to requirements.

SAFETY TRAVELING CRANE

DESCRIPTION, FIG. 6929

Especially well adapted for foundry use, or wherever careful handling of loads is required. Thus copes and molds can be lifted and transported with absolute safety. There is no jumping of chains, no jarring of load, no loss of sand, no breaking down of mold. Will hold the load at any point. It is equally well adapted for heavy or light loads. Capacity 1,000 to 8,000 pounds. State required span and lift when writing for prices.



FIG. 6929

OVERHEAD TRACKS, SWITCHES, ETC.

LONG LEVER SWITCH



FIG. 6930

These switches move the track only. There is no lost or side movement. The lever is connected with the slide which moves the track. This extension can be made any length according to the distance the main track is wanted from the wall. The lever is pivoted; it has a snap and positive lock.

PRICE

Two track Switch, only with 10 inch hangers $7 00

PRICES, FIG. 6933

Including Clamp Bolts.

Lengths, Inches,	8½	10	12	16	18	20	24
500 lbs. capacity,	$0 44	44	44	50	60	80	1 00
1,000 lbs. capacity,	60	60	60	70	$1 20	$1 40	$1 60

HANGER

FOR FIG. 6930

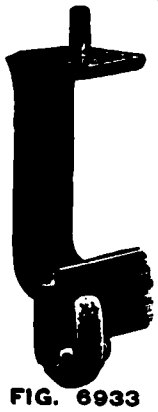


FIG. 6933

With this Hanger the track is not required to be drilled, as it is held in position by a clamp bolt, thereby saving the cost of drilling. It affords a cheap and simple manner of erecting the tracking. Any carpenter or mechanic can erect the track by simply putting the clamp bolt in the hole under the track and screwing up the nut on the back.

THE IDEAL SWITCHES

CURVE CONNECTED

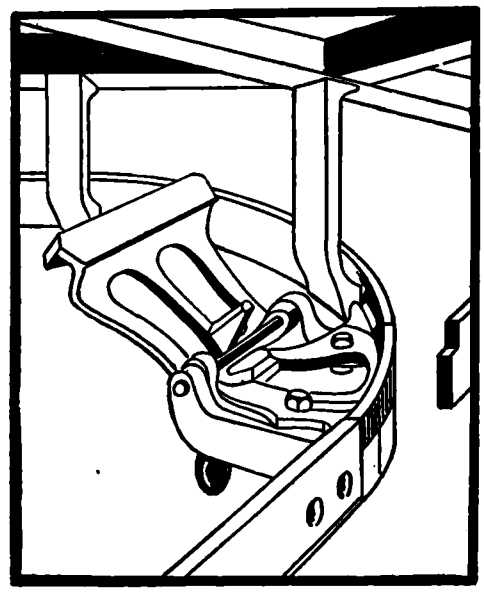


FIG. 6931

STRAIGHT RAIL CONNECTED

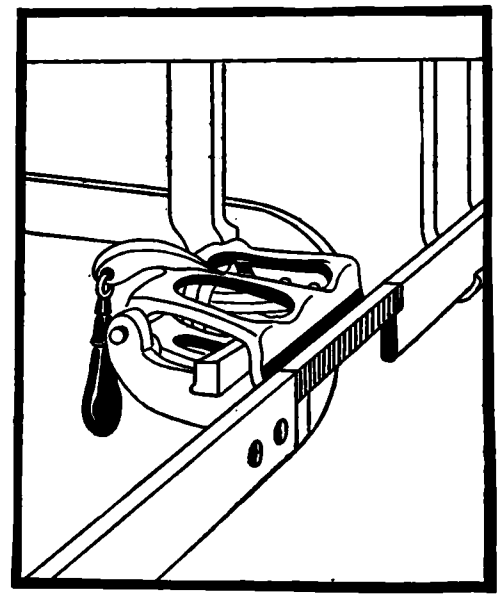


FIG. 6932

PRICES, FIGS 6931 AND 6932

Made to Connect with Two Tracks Only.

For 2½ x ⅜ inch track $5 00
" 2½ x ½ " " 5 50

No hangers furnished with these switches.

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TWIN HOOK TRIPLEX HOIST

FOR HANDLING LONG MATERIAL

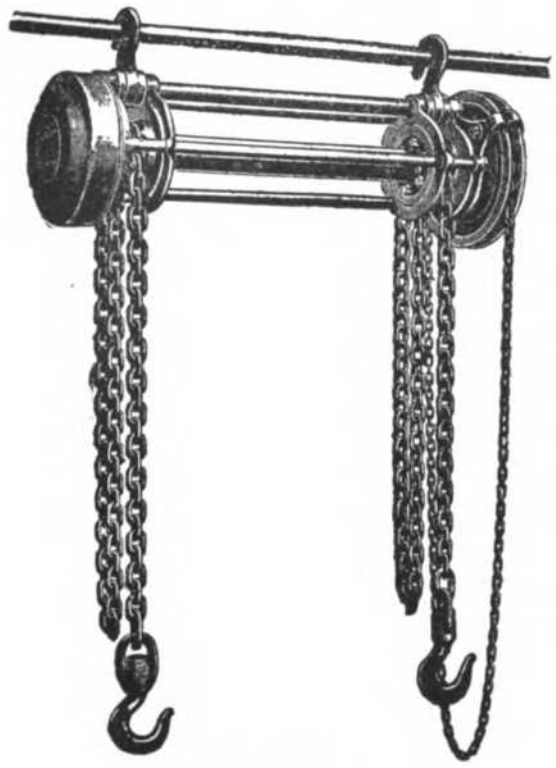


FIG. 6934

DESCRIPTION, FIG. 6934

The illustration shows a special form of the Weston Triplex Chain Block, especially designed for handling long material such as bars, beams, lumber, etc.

It consists of a triplex block with its mechanism separated into two parts, coupled by means of shafts and separators, and provided with two hoisting chains, the combined strength of which is equal to the lifting power of the block. The hoist can be so built as to separate the two hooks any distance desired, according to the character of the material to be handled. The hoist may be hung from a fixed support, or from a trolley on an overhead track or crane, as desired.

The hoist thus provided with two lifting chains and hooks always moving together is adapted to a wide range of uses, and for the handling of long material is much better than a block with a single lifting chain. The latter is sometimes used with a yoke, having hooks at each end, but this arrangement is less steady than the one shown in the illustration and necessarily occupies much more head room. The Triplex Hoist with two lifting chains will doubtless commend itself for a wide variety of uses.

Prices on application.

WELL WHEEL



FIG. 6935

PRICES

CAST IRON, JAPANNED

Diameters, inches	8	10	12	14
Prices, plain, dozen	$5 40	$6 00	$7 50	$13 00

IMPROVED WELL WHEELS

No. 10, roller bushed with plain iron straps, 12 in. wheel, per doz., $30 00

No. 12, roller bushed with wrought iron straps, 12 in. wheel, per doz., 40 00

HAND POWER ELEVATOR

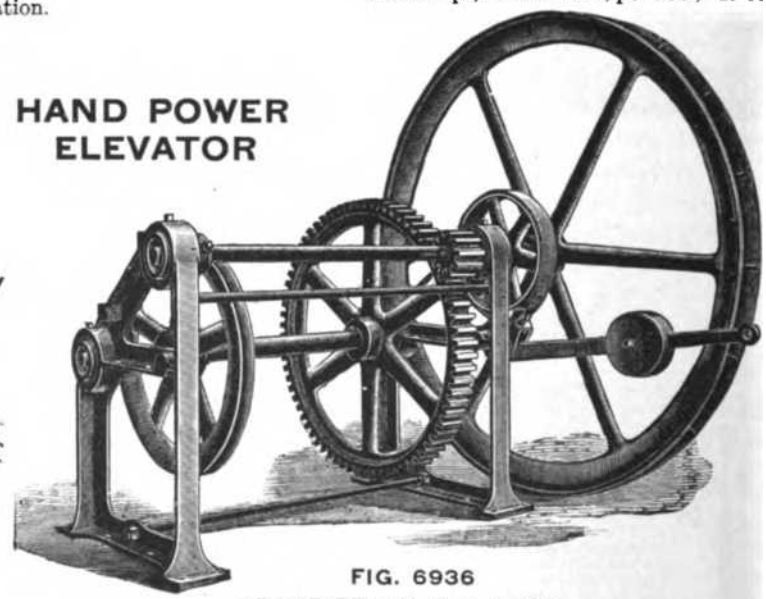


FIG. 6936

DESCRIPTION, FIG. 6936

The machine is extra strong, with large wearing surfaces, is well built and very simple. The housings or side frames for the bearings are made extra heavy and connected with distance bolt, making the two like one strong and stiff frame. The boxes for the roller bearings are self-adjusting in the housings. The roller bearings are of improved design with steel rollers running in brass cages. The brake wheel is keyed to the shaft and an adjustable band brake lined with leather is secured to the iron frame. The brake is operated by a rope fastened to the end of the brake lever and leads down the hatchway, easily accessible to the operator.

Speed and power of the machine are regulated by the proportions of hand rope wheel, spur wheels and hoisting sheave. The machine can be suspended from overhead timbers or stand on same, or it may stand on the floor above. We furnish the following four sizes regularly: 500, 750, 1,200 and 2,000 pounds maximum capacity.

PRICES, FIG. 6936

Machine Nos.	Capacity, Pounds.	Hand Rope Wheel, Inches.	Each.
21	500	30	$50 00
22	750	36	60 00
23	1,200	48	75 00
24	2,000	60	90 00

PRICES, FIGS. 6937 AND 6938

Capacity of Hoist, Load Hanging on Single Chain, Pounds.	Without Chain, Each.	Chain, per Foot.	Two Chain Sheaves in Frames, Each.	Extra for Two Speed Fall Block. Capacity, Load Hanging on Two Chains, Pounds.	Each.
500	$20 00	$0 30	$4 00	1,000	$5 00
1,000	27 50	32	5 00	2,000	6 00
1,500	35 00	34	6 00	3,000	7 00
2,000	45 00	36	8 00	4.000	8 00

Prices do not include woodwork.

ECONOMIC SAFETY HOIST WITH STATIONARY FRAME

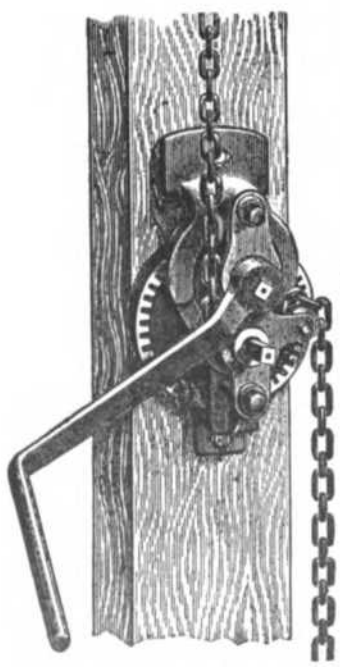


FIG. 6937

HAND JIB CRANE

WITH ECONOMIC SAFETY HOIST AND TWO SPEED FALL BLOCK

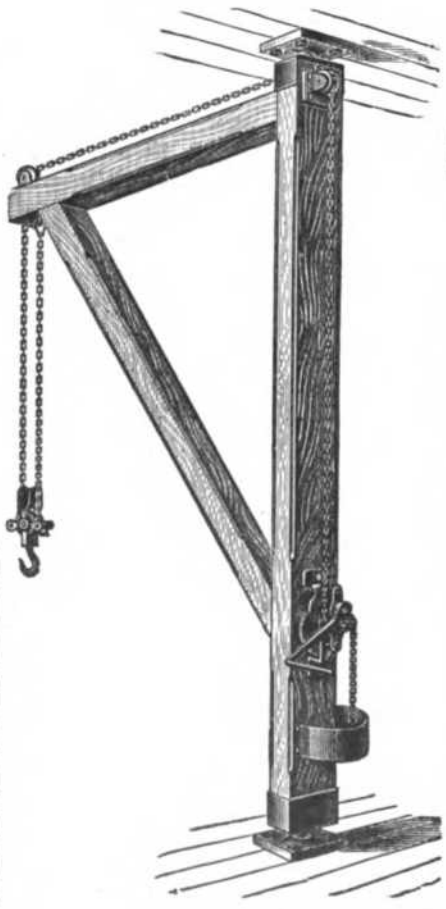


FIG. 6938

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WESTON DOUBLE LIFT HOIST

1,000 POUNDS



FIG. 6939

This device is particularly adapted for the quick handling of light yet bulky loads, worked over hatchways, etc. The load may be attached to either hook so that one of them is always in position ready for use. For hand elevators a counterweight may be attached to one hook and chain led over guide sheaves.

Price of each guide sheave complete with bearings, $4.50.

Speed of 500 pound hoist, 12 feet per minute.
" " 1,000 " " 4.55 " " "
" " 1,500 " " 3.40 " " "
" " 2,000 " " 2.30 " " "

Capacity, Pounds.	Prices Complete, except Hand Rope or Chain.	Hoist, Feet.	Prices for Extra Hoist per Foot.	Hand Rope or Chain Extra. Rope.	Chain.	Prices Extra Length of Shaft.† First Foot, Including Bearing.	Additional Foot.	Distance from Center of Rope Wheel to Center of Chain Sheaves,* in.
500	$31 00	16	$0 37½	$3 75	$6 25	$2 50	$0 95	4⅝
1,000	62 50	24	40	5 00	8 75			3⅝
1,500	81 00	28	42½	5 60	10 00			2⅛
2,000	100 00	32	45	6 25	11 25			10⅛

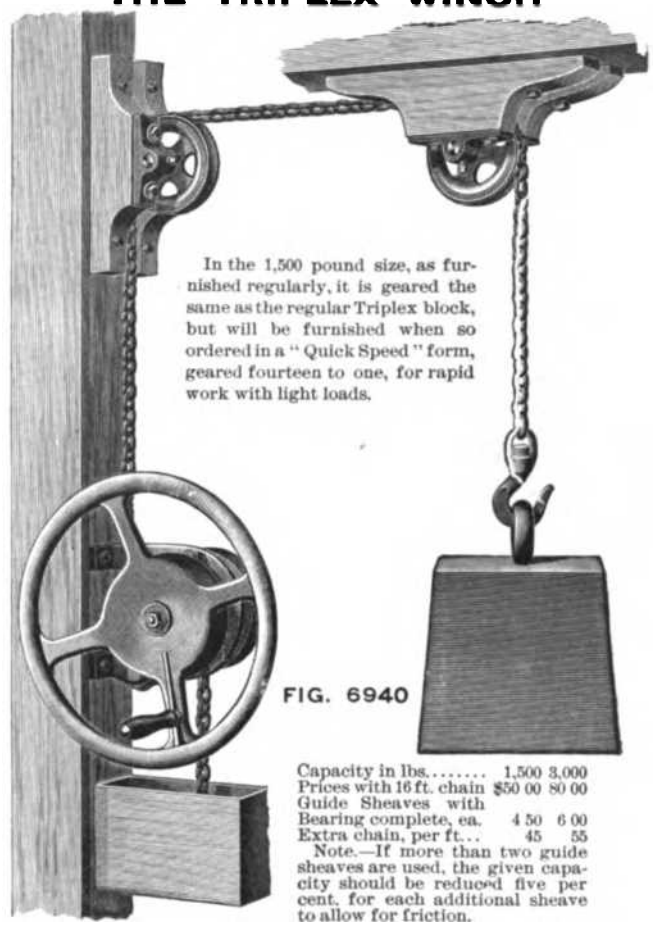
*Figures denote regular length of shaft. Where extra length shafts are required, state distance desired from center of hoistway to a line connecting the two rope holes through the floor (which distance is the same as from the center of rope wheel to center of chain sheave, as will be seen by reference to cut).

†To ascertain the price of a "double lift" with lengthened shaft, add to price of the "double lift" the price for extra shaft, as given in list above.

Unless otherwise ordered, will be furnished with regular length of hoist, and without either hand rope or hand chain. Rope is usually preferred and can be provided by any dealer.

With the 500 pound size one man can lift the full capacity at a speed of about 12 feet per minute and lighter loads at a correspondingly increased speed. As its name implies, the "double lift" consists of a chain (with hook on either end) passing over a sheave, which can be rotated by the hand rope and wheel. Pulling one side of rope or hand chain causes opposite side of load chain to rise with load. In descending the load moves only as long as the rope is pulled, being controlled by the Weston automatic safety brake.

THE TRIPLEX WINCH



In the 1,500 pound size, as furnished regularly, it is geared the same as the regular Triplex block, but will be furnished when so ordered in a "Quick Speed" form, geared fourteen to one, for rapid work with light loads.

FIG. 6940

Capacity in lbs.....	1,500	3,000
Prices with 16 ft. chain	$50 00	80 00
Guide Sheaves with Bearing complete, ea.	4 50	6 00
Extra chain, per ft...	45	55

Note.—If more than two guide sheaves are used, the given capacity should be reduced five per cent. for each additional sheave to allow for friction.

UNIVERSAL GRIP HOIST

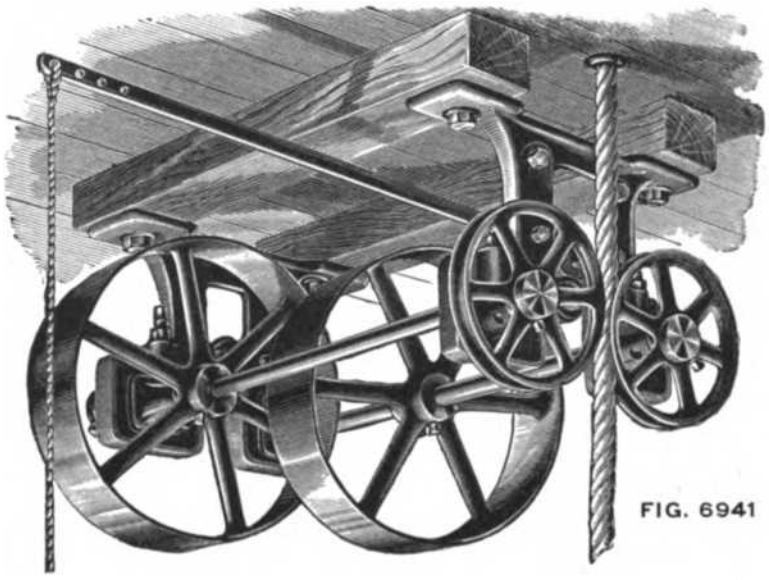


FIG. 6941

For attachment to ordinary hand hoist. They are Universal in every respect, since they are made to go in any position on ceiling, floor or joist work, and the handle can be set to pull up or down from any side of the machine. Shafts are polished steel and boxes are all swivel. Run by steam, electric, gas and water motors. No. 1 Grip—This is the standard machine for general use. No. 2 Grip—This grip is intended for heavy work and was designed more especially for platform hoists, such as are used in stables for lifting horses, carriages, etc., and in situations where over a ton must be lifted.

Ordering Universal Grip Hoists:

1st.—State how many feet of hand rope you pull down to lift elevator (or hook) 1 foot.

2d.—Give heaviest load you must lift; also as much general information about hoist wheel or elevator as convenient, that we may be able to advise you.

Calculating Speed of Universal Grip Hoist:

Suppose your hoist is geared 1 to 16 (1st), and that you want to hoist at the rate of 40 feet per minute; then, as 16 feet of hand rope are pulled through for each foot of lift, we have 40 times 16 feet = 640 feet of rope per minute. No. 1 grip pulls through 2¼ feet of hand rope per revolution, therefore 640 divided by 2¼ gives 284 nearly, as revolutions per minute. No. 2 grip pulls through 3 feet of hand rope per revolution: so 640 divided by 3 gives 213 nearly as speed; or, stated briefly, $\frac{40 \times 16}{2\frac{1}{4}}$ = 284 nearly for No. 1, and $\frac{40 \times 16}{3}$ = 213 nearly for No. 2.

Lifting Capacity of Universal Grip Hoists:

With good elevators or hoists geared 1 to 16 as above, No. 1 will lift 2,000 pounds, and No. 2, 3,000 pounds test load. Not sold for passenger elevators; only for hand hoists and freight elevators.

GENERAL DIMENSIONS AND PRICES

Sizes.....	Inches. No. 1	Inches. No. 2
Belt pulleys (two).....	14 x 4	20 x 5
Rope gripping pulleys (two).....	9	12
Steel shafts.....	1 7/16 x 38	1 11/16 x 42
Space occupied.....	38 x 23	42 x 32
Each.....	$50 00	$80 00

DIFFERENTIAL GRIP HOIST

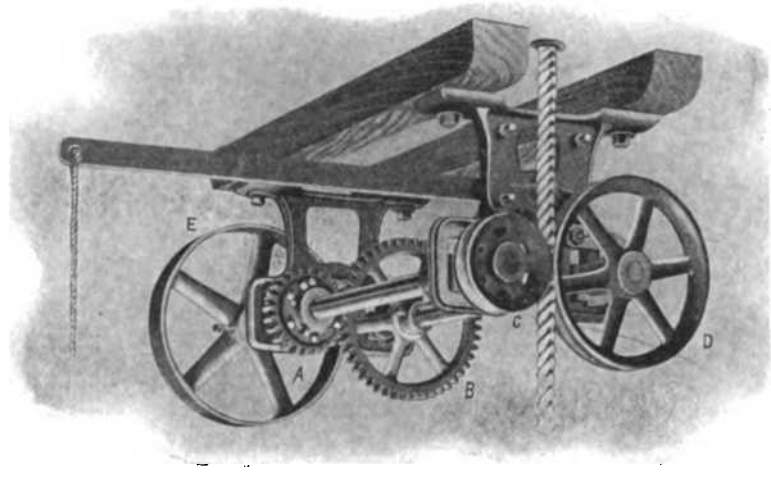


FIG. 6943

For attachment to hand hoists. This machine is general in its application, and may be put on ceiling, floor or joist work. It is positive in its action and pulls equally by both rope sheaves, C D. The gearing, A B, is the highest quality of cut gearing, and runs with great uniformity. The smaller gear, A, is supplied of a special fiber, when ordered for extra quiet running. It is driven by a single belt, and does not need any countershaft. It is, therefore, especially suitable where electric, gas or water motors are used.

Ropes:

If the hand rope or your elevator is about 1¼ inches diameter, it will be all right, but if you need a new hand rope, get it about 1⅜ inches diameter, and by preference, four strand. Lever rope about ⅛ inch diameter.

Ordering:

1st.—State how many feet of hand rope you pull down to lift elevator (or hook) 1 foot.

2d.—State what load you wish to lift. With these two points, we can advise you, and ship the right size of grip and driving pulley, E.

Lifting Capacity:

With good elevators or hoists, No. 1 will lift 2,000 pounds, and No. 2, 3,000 pounds test load.

Not sold for passenger elevators; only for hoisting goods.

GENERAL DIMENSIONS AND PRICES

Sizes, differential grips..	No. 1	No. 2
One Pulley. E, diameter as ordered ..	4 in. face, 1 7/16 in. bore	5 in. face, 1 11/16 in. bore
Rope gripping sheaves C D.....	6 in. and 12 in.	8 in. and 16 in.
Steel shafts (two).....	1 7/16 in. x 30 in.	1 11/16 in. x 42 in.
Space occupied.....	38 in. x 23 in.	42 in. x 32 in
Each.....	$65 00	$95 00

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IMPROVED DOCK STEAM CAPSTAN

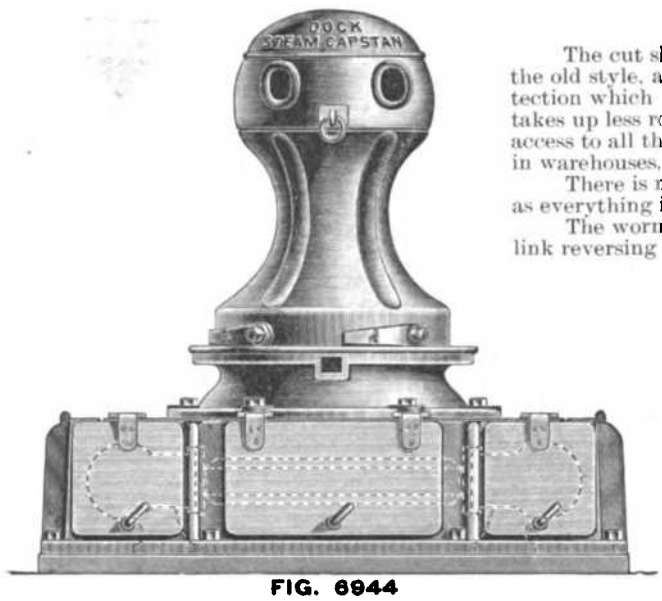


FIG. 6944

DESCRIPTION, FIG. 6944

The cut shows the latest style of Dock Steam Capstan. This capstan weighs little more than the old style, and the engines are possibly not quite so accessible, but it has advantages in the protection which the engines have from the weather, and from the fact that it is more compact and takes up less room. The cylinders are protected on all sides, and yet the large doors afford perfect access to all the parts. This Dock Steam Capstan is designed to go on steamers, wharves, dry docks, in warehouses, or in any place where it is required to handle ropes for pulling or hoisting.

There is no expense for setting, except for connecting steam and exhaust pipes to the engines, as everything is on one plate, and the capstan can be set wherever a smooth surface is prepared.

The worm and worm gear are lubricated automatically. The capstan can be made with brass link reversing engines, or with non-reversing engines, as desired.

DIMENSIONS, FIG. 6944

Nos.		Diameters of Barrel, Inches.	Diameters of Base, Inches.	Approximate Weight, Pounds.	With Double Steam Cylinders, Inches.
A	Capstan,	8	23	1400	4 x 4
B	"	8½	24½	2125	4 x 6
C	"	9½	29½	3000	4 x 6
D	"	10½	32	4075	5 x 7
E	"	11½	34	5200	6 x 8
F	"	12½	36½	6250	7 x 8
F	"	12½	36½	6500	8 x 8

Prices on application.

CRANK CAPSTAN



FIG. 6945

POWER CAPSTAN



FIG. 6946

DESCRIPTION, FIGS. 6945 AND 6946

We furnish these capstans in small sizes of galvanized iron or bronze, the latter finished all over unless otherwise ordered.

For small yachts, desirous of a light and reliable windlass, the Crank Capstans make a first class arrangement, especially where deck room is contracted.

Prices on application.

RATCHET GYPSY WINDLASS



FIG. 6947

Nos.	Chain.	Diams. of Head on Outside End, Inches.	Lengths of Head, Inches.	Diameters at Middle, Inches.	Width of Bitts Outside, Inches	Prices.
0	..	4½	5	2½	8	$8 50
1	..	5½	6	3	9	9 50
2	..	6	6½	3½	10	10 50
3	..	7	7½	4½	11	12 50
A	⅝	8¼	8½	5½	12	16 00
B	½	10	10	7	14	20 00
C	⅝	12	12	7¼	15	26 00
D	11/16	13	13	7½	16	32 00
E	¾	13½	14½	8	17	34 00
F	13/16	14½	16½	8½	18	43 00
G	⅞	15½	18	9¼	19	55 00
H	1	16	20	10	20	70 00

NOTE.—The above table gives the sizes of bitts to which we furnish the windlasses fitted, unless the size of bitts is given with the order.

FRICTION GYPSY PUMP BRAKE WINDLASS

MADE FOR WOOD OR IRON BITTS

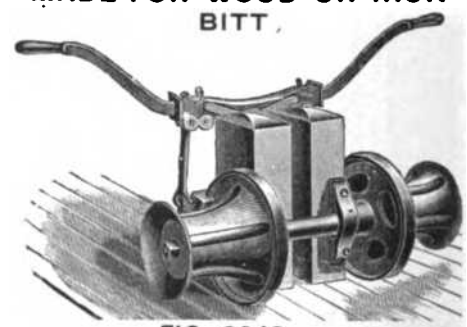


FIG. 6948

Nos.	Chain.	Diams. of Head on Outside End, Inches.	Lengths of Head, Inches.	Diams. of Head at Middle, Inches.	Width of Bitts, Inches.	Prices.	Iron Bitts, Extra.
1	..	5½	7	3	9	$32 00	....
2	..	6	8	3½	9½	34 00	....
3	..	7	9	4½	10	36 00	....
A	⅝	8¼	10	5½	10½	39 00	$6 50
B	½	10	11½	7	12	47 00	8 00
C	⅝	12	14	7¼	14	56 00	8 50
D	11/16	13	15	7½	16	64 00	9 50
E	¾	13½	16	8	17	72 00	12 00
F	13/16	14½	18	8½	18	87 00	15 00
G	⅞	15½	20½	9¼	19	95 00	17 00
H	1	16	22½	10	20	140 00	20 00

NOTE.—The above table gives the sizes of bitts to which we furnish the windlasses fitted, unless the size of the bitts is given with the order.

BARGE WINCH

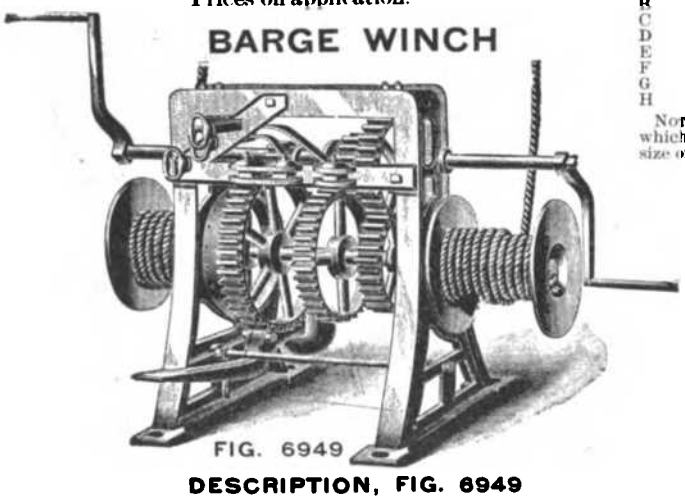


FIG. 6949

DESCRIPTION, FIG. 6949

This winch was designed for barges and lighters, but can be used for other purposes as well. It is a strong, well made machine. The shifting levers are malleable iron, and the handles are made of wrought iron. It is geared 4½ to 1, 2½ to 1, and 1 to 1. Two men will lift, over a single purchase, 2200 pounds, 1200 pounds and 500 pounds, respectively. The machine weighs 1300 pounds.

Price, $100.00.

CARGO WINCH

TO SET IN WOOD BITTS

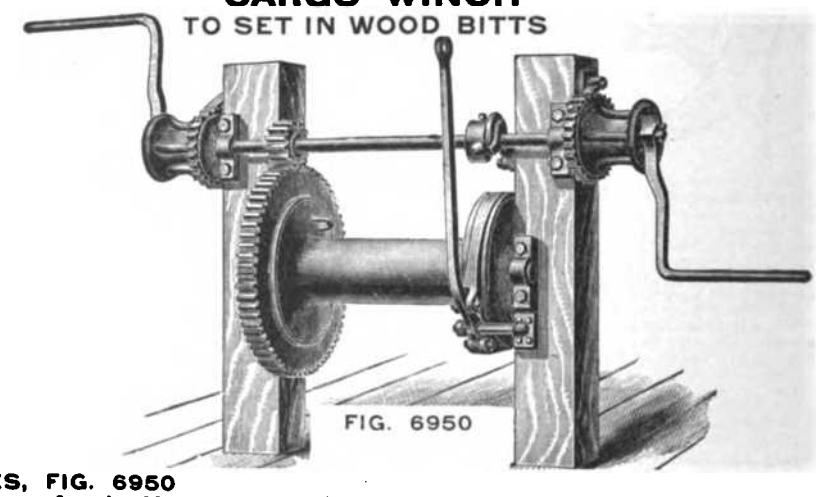


FIG. 6950

PRICES, FIG. 6950

Nos.	Weight, Lbs.	Diams of Drum, Inches.	Lengths of Drum, Inches.	Gear Ratio.	Sizes of Bitts.	Each.
0 Without Gypsy heads	250	6	16	3 to 1	6 x 6	$26 50
0 With two " "	275	6	16	3 to 1	6 x 6	31 00
0 With four " "	300	6	16	3 to 1	6 x 6	35 50
1 Without "	525	7¼	21	4⅝ to 1	7 x 7	44 00
1 With two " "	575	7¼	21	4⅝ to 1	7 x 7	49 50
1 With four " "	630	7¼	21	4⅝ to 1	7 x 7	55 00
2 Without "	850	10	24	6⅔ to 1	8 x 8	74 00
2 With two " "	900	10	24	6⅔ to 1	8 x 8	80 00
2 With four " "	950	10	24	6⅔ to 1	8 x 8	86 00

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IRON HOISTING CRABS OR CARGO WINCHES

SINGLE PURCHASE, CAST IRON SIDES WITH LEVER BRAKE

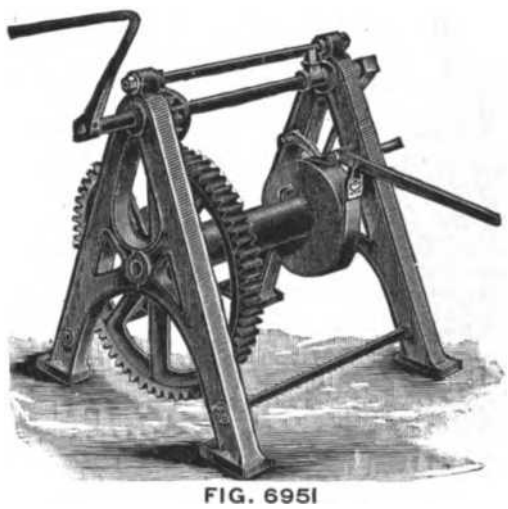


FIG. 6951

Screw brake supplied if required, as shown in Fig. 6952.

DESCRIPTION, FIGS. 6951 AND 6952

These crabs are constructed to lift direct from the barrel the load plainly indicated on the side frames. The power is increased by the number of pulleys used in the blocks. Sides are tied together by wrought stretcher rods with solid collars inside of the frames and nuts outside. The shafts are wrought iron. The barrel, brake wheel and ratchet are cast in one piece and secured to the main spur wheel by joggles fitting between the arms of the wheel. The crank shaft can be thrown out of gear when lowering with the brake, so the handles will not fly around. Can be lowered with either the brake or handles.

Numbers	101 or 131	102 or 132	103 or 133	104 or 134
Capacity with a 2 and 3 sheave block, tons	2	3	4	5
Lifts direct from barrel, cwts	8	12	16	20
Sizes of barrel, inches	12x4½	14x4½	16x4½	18x4½
Width and length, in.	30x24	33x26	36x28	38x30
Height, minus handles, inches	29	30	30	32
Approximate weight, pounds	250	280	340	365

SINGLE PURCHASE WROUGHT IRON SIDES SHOWING SCREW BRAKE

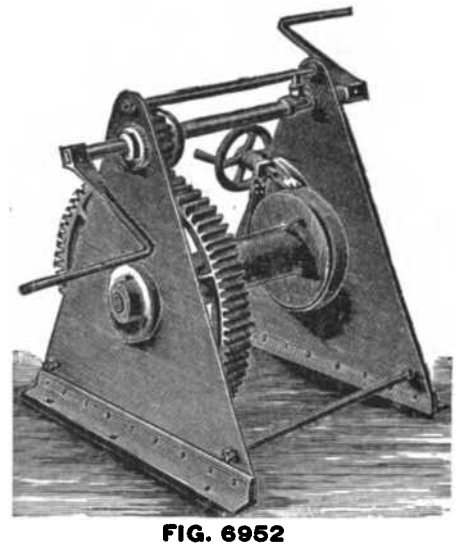


FIG. 6952

Lever brake supplied as shown in Fig. 6951, if required.

PRICES, FIG. 6951

Size Numbers	101	102	103	104
Capacity and dimensions as above, tons	2	3	4	5
With lever brake, each	$31 00	$33 00	$38 00	$42 00
Extras, if ordered, screw brake, each	3 50	3 50	3 50	3 50
" " brass bushing, "	6 50	6 50	7 00	7 50

PRICES, FIG. 6952

Size Numbers	131	132	133	134
Capacity and dimensions as above, tons	2	3	4	5
With lever brake, each	$46 00	$50 00	$58 00	$62 00
Extras, if ordered, screw brake, each	3 50	3 50	3 50	3 50
" " brass bushing, "	6 00	7 00	7 00	7 00

DOUBLE PURCHASE, CAST IRON SIDES, SHOWING SCREW BRAKE

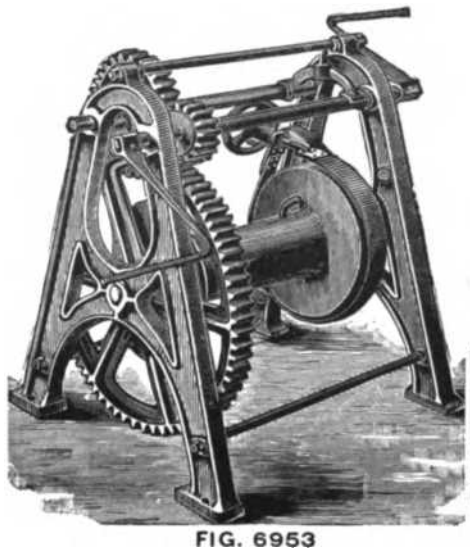


FIG. 6953

Lever strap brake can be supplied as shown in Fig. 6954, if required.

DOUBLE PURCHASE, WROUGHT IRON SIDES, WITH LEVER STRAP BRAKE

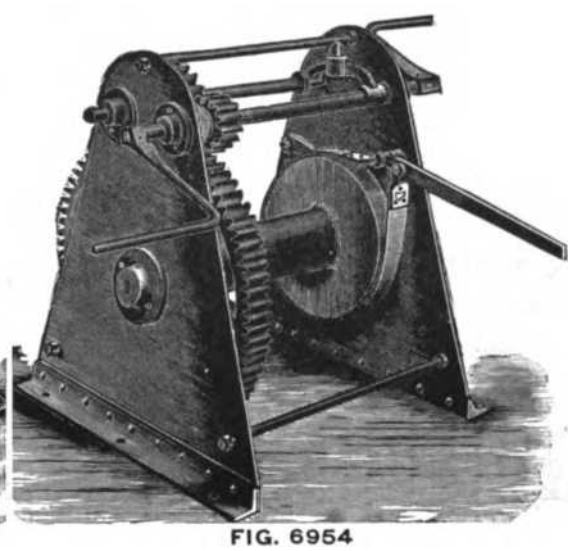


FIG. 6954

Screw brake supplied, if required, as shown in Fig. 6953.

PRICES, FIG. 6953

Size Numbers	110	111	112	113	114	115	116	117	118
Capacity with a 2 and 3 sheave block, tons	4	5	6	7	8	10	12	15	20
Lifts direct from barrel, cwt.	16	20	25	30	35	40	50	60	80
Sizes of barrel, inches	16x4½	18x4½	19x5	20x5	21x6	21x6	22x7	26x8	32x8
Width and length, inches	37x26	39x26	42x27	44x29	45x31	46x33	50x37	59x41	64x49
Height, minus handles, inches	32	33	38	38	38	43	45	48	60
Approximate weight, pounds	365	420	535	615	650	760	1,120	1,460	2,130
With lever brake, each	$43 50	47 50	58 50	66 00	68 00	77 50	109 00	140 00	217 00
Extras, if ordered—									
Screw brake, each	$5 00	5 00	5 00	5 00	5 00	10 00	10 00	10 00	10 00
Brass bushing, "	$8 50	9 00	9 50	10 00	10 50	11 00	12 00	15 00	19 00

PRICES, FIG. 6954

Size Numbers	140	141	142	143	144	145	146	147	148
Capacity and dimensions as above, tons	4	5	6	7	8	10	12	15	20
With lever brake, each	$66 50	71 00	84 00	93 00	99 00	110 00	150 00	186 00	265 00
Extras, if ordered—									
Screw brake, each	$5 00	5 00	5 00	5 00	5 00	10 00	10 00	10 00	10 00
Brass bushing, "	$7 50	7 50	8 50	9 00	9 00	12 00	13 00	15 00	21 00

The double purchase crab is arranged with two speeds, and can be worked either single or double purchase. The crank shaft can be thrown out of gear when lowering with the brake, so the handles will not fly around. Lowering can be done either with the handles or with the brake. The power is increased or diminished by the number of pulleys used in the blocks.

TREBLE PURCHASE HOISTING CRAB

FOR MANILA ROPE AND FOR WIRE ROPE

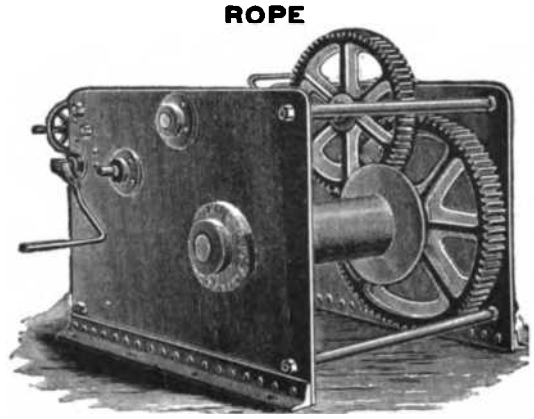


FIG. 6955

DESCRIPTION

These crabs will lift directly from the barrel the load as indicated below. The power is increased in proportion to the number of sheaves used in the pulley blocks; thus a pair of blocks two and three sheaves will increase it five times, making the number 406 a 30 ton crab, etc. The side frames are wrought iron plate with cast iron bosses. The shafts are wrought iron, turned where the gearing is keyed on, and also where they run in the bearings. All the bearings are brass bushed. They are supplied with screw brake and ratchet wheel, fitted to the second motion shaft.

For Manila Rope.

Size Numbers	406	408	410	415
Lifts direct from barrel, tons	6	8	10	15
Sizes of barrel, inches	36x9	39x10	42x12	42x15
Approximate weight, tons	1¼	1½	2¼	3½

Furnished with screw brake and brass bushing. Prices on application.

For Wire Rope.

Similar to above cut but with larger barrels.

Size Numbers	503	504	505	508
Lifts direct from barrel, tons	3	4	5	8
Diameters of barrel, inches	20	22	25	30
Lengths of barrel, inches	21	22	24	27
Circumference of wire rope recommended, inches	3	3½	4	5
Lengths taken in one lap, ft.	110	120	130	140
Approximate weight, tons	1¼	1½	2¼	3½

Furnished with screw brake and brass bushing. Prices on application.

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WIRE ROPE HOISTING CRABS

DOUBLE PURCHASE

Cast Iron, with Lever Brake.

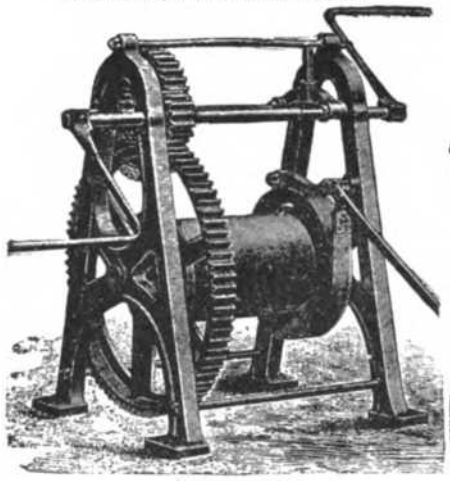


FIG. 6956

Wrought Iron, with Screw Brake.

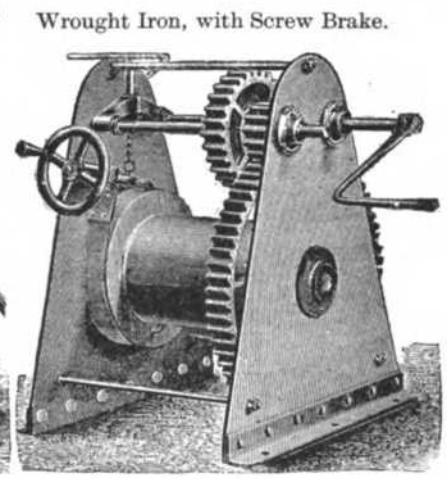


FIG. 6957

They will lift the load direct from the barrel, as indicated below. The capacity is increased in proportion to the number of sheaves used in the pulley blocks; thus a pair of 2 and 3 sheaves will increase it five times, making the number 208 a 2 ton crab, etc.

PRICES, FIGS. 6956 AND 6957

Cast Iron Sides.

Size Nos.	Lifts Direct from Barrel, Cwt.	Sizes of Barrel, Inches.	Circumference of Wire Rope Recommended, Inches.	Length Taken in One Lap, Feet.	Approximate Weight, Pounds.	With Lever Brake, Each.	Extras if Ordered. Screw Brake, Each.	Brass Bushing, Each.
208	8	13 x 7½	1¼	60	365	$45 00	$5 00	$8 50
215	15	14 x 10	1½	70	672	70 00	5 00	9 50
220	20	16 x 12	1¾	75	870	83 00	5 00	10 50
225	25	16 x 12½	2	80	1,100	113 00	10 00	12 00
230	30	18 x 14	2¼	90	1,460	143 00	10 00	15 00
240	40	20 x 15	2½	100	2,350	225 00	10 00	19 00

Wrought Iron Sides.

Size Nos.	Capacity and Dimensions as Above, Cwt.	With Lever Brake, Each.	Extras if Ordered. Screw Brake, Each.	Brass Bushing, Each.
308	8	$70 00	$5 00	$7 50
315	15	97 00	5 00	8 50
320	20	115 00	5 00	9 00
325	25	149 00	10 00	13 00
330	30	190 00	10 00	15 00
340	40	270 00	10 00	18 00

STANDARD COMMERCIAL CRAB

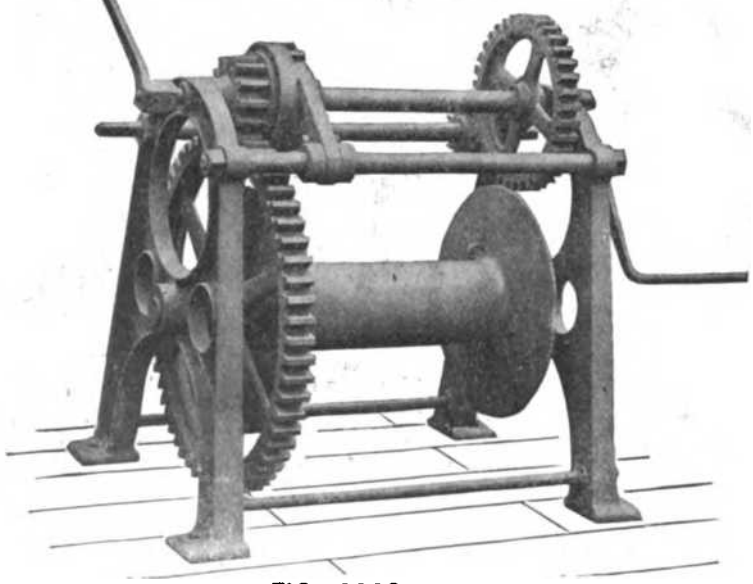


FIG. 6960

PRICES

No. of Crab.	Standard Barrels. Diameters, Inches.	Lengths, Inches.	Capacity Direct Hoist, Tons.	Speeds.	Each.	Add for Each Additional 6 Inches in Length of Barrel.	Add for Strap Brake.	Weight Standard Crab, Pounds.
21	4½	12	½	One	$46 00	$7 00	.....	226
22	5	16	1	Two	60 00	8 00	$27 00	374
23	6	20	1½	"	86 00	10 00	27 00	524
25	7	24	2½	"	133 00	14 00	27 00	812

Strap brake not used on No. 21.

PORTABLE CARGO WINCH

SINGLE GEARED

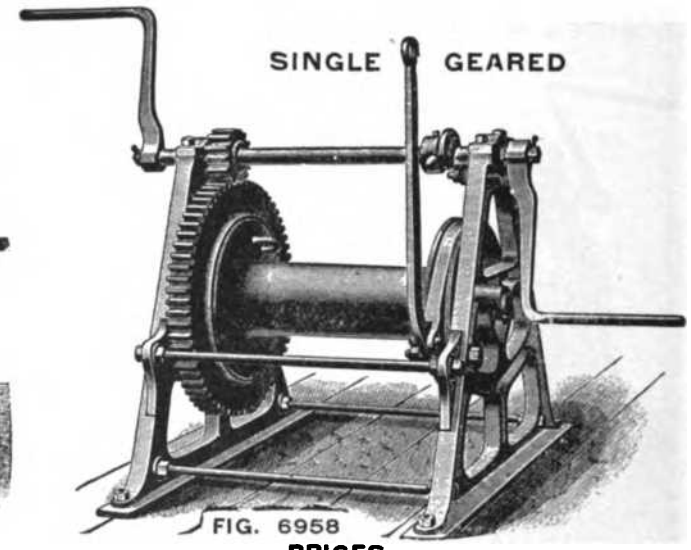


FIG. 6958

PRICES

Nos.	Weight, Lbs.	Each	Nos.	Weight, Lbs.	Each.
0 Without Gypsy Heads..	500	$35 50	1 With four Gypsy Heads..	800	$66 00
0 With two " " ..	533	40 00	2 Without " " ..	1,250	87 00
0 With four " " ..	600	44 00	2 With two " " ..	1,300	93 00
1 Without " " ..	700	55 00	2 " four " " ..	1,350	100 00
1 With two " " ..	750	60 50			

PORTABLE CARGO WINCH

DOUBLE GEARED

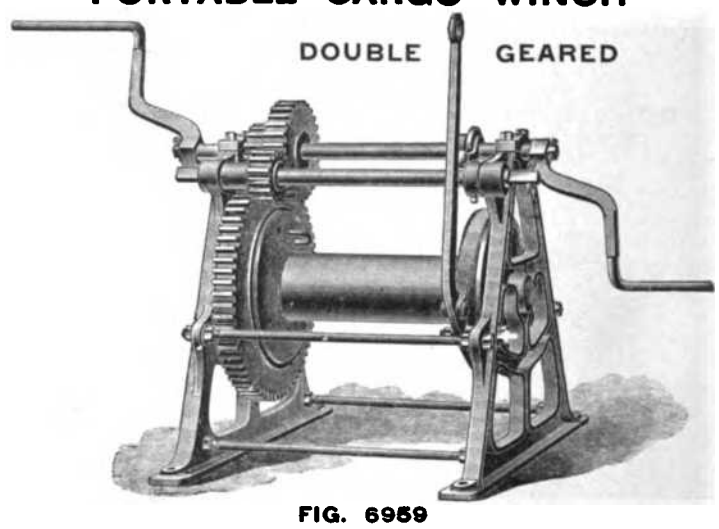


FIG. 6959

PRICES

Nos.	Weight, Lbs.	Each	Nos.	Weight, Lbs.	Each.
0 Without Gypsy Heads..	550	$44 00	1 With four Gypsy Heads..	975	$77 00
0 With two " " ..	600	48 50	2 Without " " ..	1,300	100 00
0 " four " " ..	650	53 00	2 With two " " ..	1,375	106 50
1 Without " " ..	850	66 00	2 " four " " ..	1,500	111 00
1 With two " " ..	925	71 50			

DESCRIPTION, FIG. 6960

Commercial Crab: Frame of cast iron, fitted with straight or capstan barrel for receiving rope or chain. Hoisting arranged for two speeds (except No. 21), effected by cranks or by sprocket wheels for hand rope or chain. Lowering is controlled by Weston's Patent Safety Lowering Device, which sustains the load positively at any point. Lowering is effected by turning the cranks backward, the motion ceasing when the cranks are released. Crabs can be furnished with hand wheels for hand rope or chain instead of cranks, or capstan barrel in place of straight barrel, if desired; either, without extra charge. Crabs can be furnished with capstan end on lower shaft at slight additional cost, if necessary. The prices include a safety brake, but no strap brake. A strap brake for quick lowering can be furnished on any of the three larger sizes as indicated, but is never used on the ½ ton capacity machine.

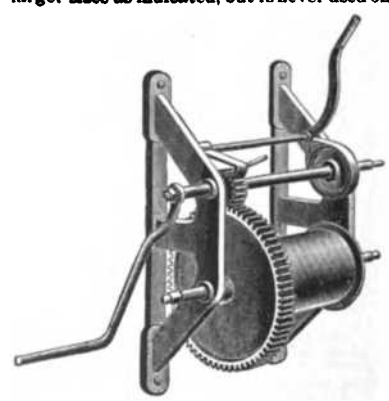


FIG. 6961

THE EXCELSIOR WINCH

DESCRIPTION FIG. 6961

Will raise about 1,000 pounds direct and can be attached to the wall or floor. An improved strap and lever brake controls the lowering. The crank gear can be shifted in lowering so as not to revolve. Arranged for two speeds. Two crank levers supplied.

	Inches.
Outside dimensions of Frame	21 x 21
Height over Wheel	15
Diameter of Drum	5
Diameter over Small Flanged End	7
Length of Barrel	13
Weight, pounds	200
Price	$25 00

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STANDARD COMMERCIAL WINCHES

Single Pole. Double Pole.

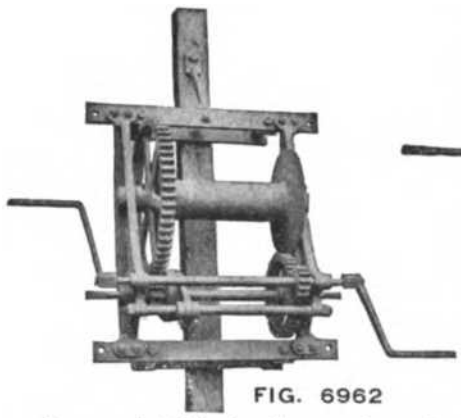


FIG. 6962

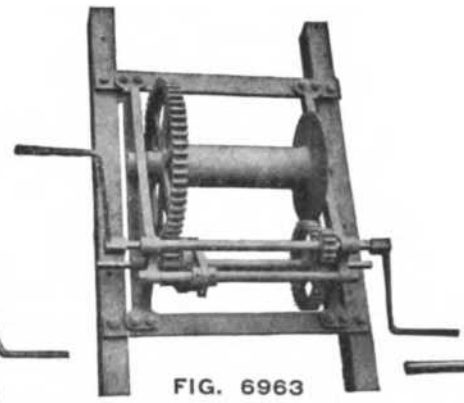


FIG. 6963

Commercial Winch.—Frame of cast iron, fitted with straight or capstan barrel for receiving rope or chain. Hoisting effected by cranks, and arranged for two speeds (except No. 31). Lowering, controlled by Weston's patent safety device, is effected by turning cranks backward, the motion ceasing when cranks are released. Winches, unless otherwise ordered, will always be furnished for double shear poles. Strap brake for special lowering can be furnished in addition to safety brakes, and also larger diameter barrels suitable for wire rope. The safety brake on these crabs and winches makes it impossible for the load to run down, and will not lower unless the cranks are turned backward, the motion ceasing when the cranks are released.

Nos. Winch.	Standard Diams., Inches.	Barrels, Lengths, Inches.	Capacity Direct Hoist, Tons.	Speeds.	Prices, Double Pole.	Add for Each Additional 6 Inches in Length of Barrel.	Add for Strap Brake.	Weight Standard Winch, Lbs.
31	4½	12	½	One	$46 00	$7 00	None	215
32	5	16	1	Two	60 00	8 00	$27 00	412
33	6	20	1½	Two	86 00	10 00	27 00	580
35	7	24	2½	Two	133 00	14 00	27 00	864

Single pole winch. $7 additional to above price.
Strap brake. Not used on No. 31.

HAND POWER WINCH

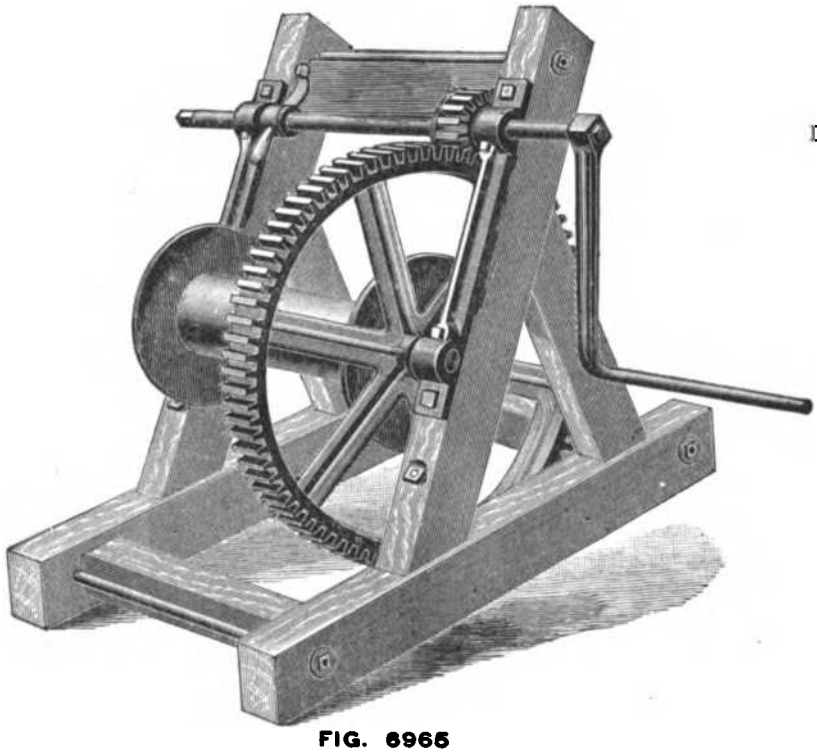


FIG. 6965

Made with single and double purchase gears; double purchase gears not shown in cut; capacity, from 5 to 10 tons.

Sizes.	Kind of Rope.	Diams. Drum.	Length of Drum Between Flanges.	Load for Two Men, Single Line.	Load for Two Men, Single Block.	Prices.
AA	Manila	6	16	1,700	3,400	$33 00
A	"	6	21	1,700	3,400	35 00
B	"	6	26	1,700	3,400	37 00
C	"	6	30	1,700	3,400	38 00
D	Wire	9	16	1,200	2,400	35 00
E	"	9	21	1,200	2,400	37 00

For Brake Band and Wheel add $8.00 to above price.
Concave Drums, $3.00 extra.

HAND POWER WINCH

Single Drum. Single Purchase. Capacity, Five Tons.

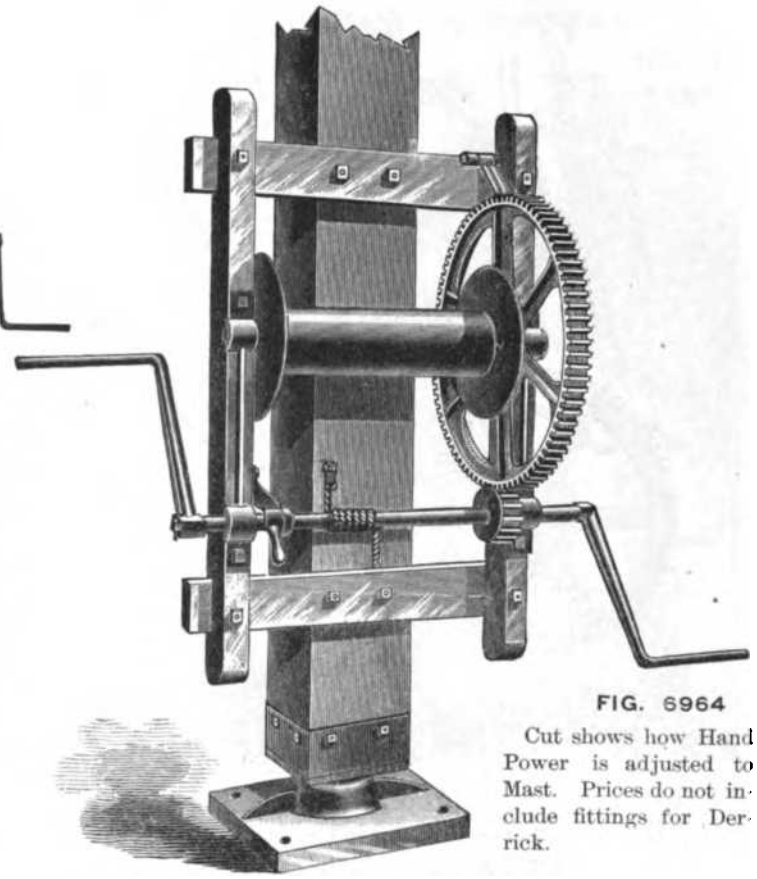


FIG. 6964

Cut shows how Hand Power is adjusted to Mast. Prices do not include fittings for Derrick.

Sizes.	Kind of Rope.	Diams. of Drum.	Lengths of Drum Between Flanges.	Load for 2 Men, Single Line.	Load for 2 Men, Single Block.	Prices.
AA	Manila	6	16	1,700	3,400	$30 00
A	"	6	21	1,700	3,400	30 00
B	"	6	26	1,700	3,400	32 00
C	"	6	30	1,700	3,400	33 00
D	Wire	9	16	1,200	2,400	30 00
E	"	9	21	1,200	2,400	32 00
7	Manila	5	17	1,000	2,000	25 00

HAND POWER WINCH

Double Drum. Double Purchase, with Brake Wheel. Capacity, 20 Tons.

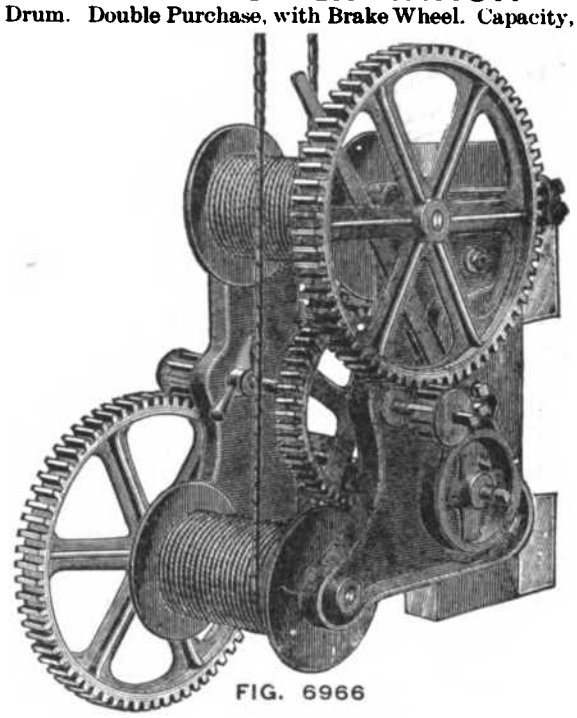


FIG. 6966

Sizes.	Kind of Rope.	Diams. Drum.	Lengths of Drum Between Flanges.	Load for 2 Men with Single Block. Fast Speed.	Load for 2 Men with Single Block. Slow Speed.	Load for 2 Men with Single and Double Block or 4 Men with Single Block. Fast Speed.	Load for 2 Men with Single and Double Block or 4 Men with Single Block. Slow Speed.	Prices.
A	Manila	6	21	3,400	12,000	7,000	24,000	$75 00
B	"	6	26	3,400	12,000	7,000	24,000	80 00
C	Wire	9	16	2,400	9,000	5,000	18,000	75 00
D	"	9	21	2,400	9,000	5,000	18,000	80 00

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6 TON WINCH, DOUBE DRUM, SINGLE PURCHASE

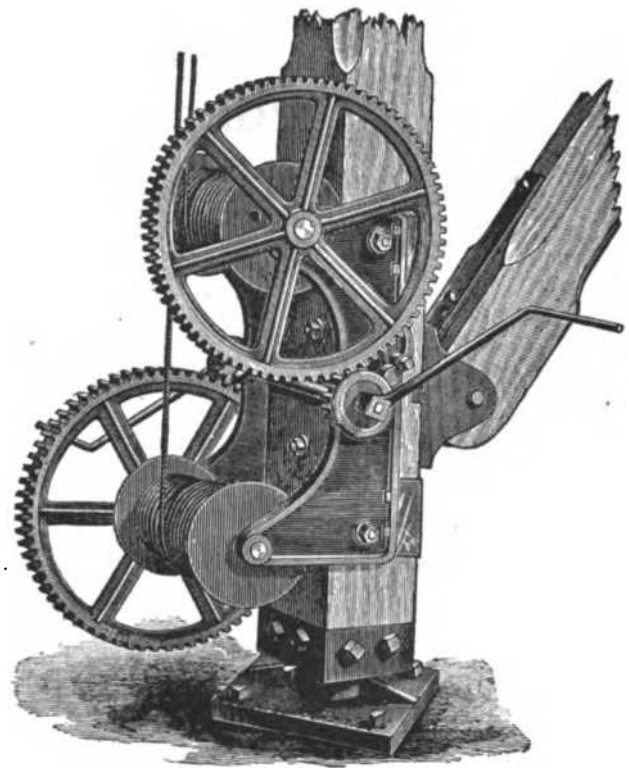


FIG. 6967

20 TON WINCH, SINGLE DRUM DOUBLE PURCHASE, WITH BRAKE WHEEL

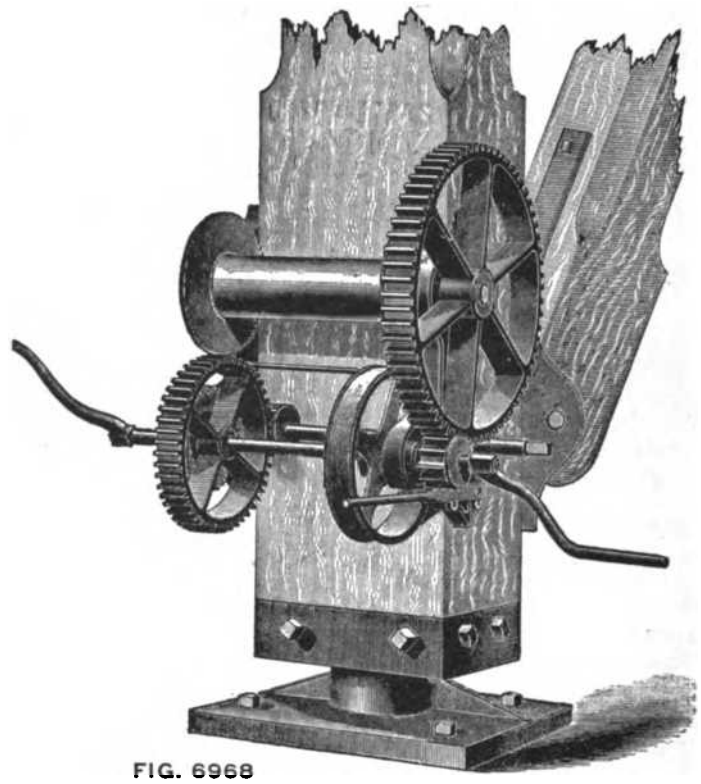


FIG. 6968

These illustrations show how hand power is adjusted to mast, but do not include in prices the fittings for derrick.

PRICES, FIG. 6967

Sizes.	Kind of Rope.	Diams. of Drum.	Lengths of Drum Between Flanges.	Load for Two Men, on Single Line.	Load for Two Men, with Single Block.	Each.
A	Manila	6	21	1,700	3,400	$50 00
B	"	6	26	1,700	3,400	53 00
C	Wire	9	16	1,200	2,400	50 00
D	"	9	21	1,200	2,400	53 00

PRICES, FIG. 6968

Sizes.	Kind of Rope.	Diams. of Drum.	Lengths of Drum Between Flanges.	Load for Two Men. with Single Block. Fast Speed.	Load for Two Men. with Single Block. Slow Speed.	Load for Two Men, with Single and Double Block, or Four Men Single Block. Fast Speed.	Load for Two Men, with Single and Double Block, or Four Men Single Block. Slow Speed.	Each.
A	Manila	6	21	3,400	12,000	7,000	24,000	$60 00
B	"	6	26	3,400	12,000	7,000	24,000	63 00
C	Wire	9	16	2,400	9,000	5,000	18,000	60 00
D	"	9	21	2,400	9,000	5,000	18,000	63 00

GUY DERRICK

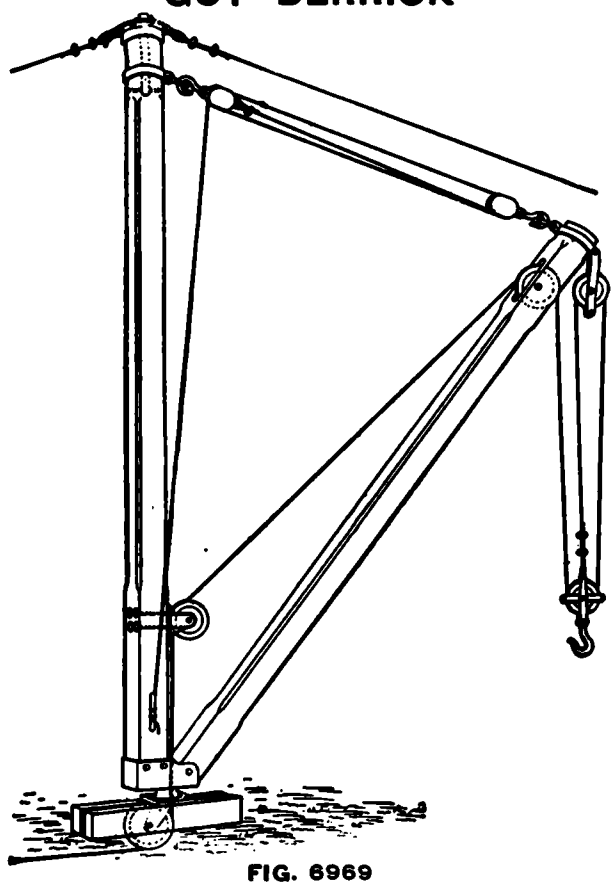


FIG. 6969

LIST OF PARTS FOR GUY DERRICK

FIG. 6969

	10 In. Mast.	12 In. Mast.	14 In. Mast.	16 In. Mast.
1 American Foot Block	$12 00	$15 00	$22 00	$43 00
1 Step with Single Sheave	9 00	11 00	13 50	16 00
1 Plain Round Cap	2 00	2 50	3 25	4 50
1 Wrought Gudgeon	4 20	5 00	6 00	7 50
1 Flat Band with 1 Eye and Link	4 00	5 00	7 50	8 50
1 Flat Split Boom Band, 2 Links	8 25	10 00	11 75	14 00
1 Bracket, 1 Sheave	6 60	7 60	8 50	10 00
1 Phosphor Bronze Bushed Sheave for Point Boom	1 90	2 20	2 50	3 00
1 Steel Pin for Sheave	60	70	80	90
1 Single Clevis Block	5 50	6 25	7 00	8 00
1 Wrought Guard Block with Becket Eye Hook, Single	13 25	16 00	21 00	31 50
1 Cleat for Mast	1 80	1 80	1 80	1 80
Total prices	$69 10	$83 05	$105 60	$148 70

WIRE ROPE FITTINGS

5 Guy Shackles	$9 00	$10 00	$12 50	$16 50
15 Guy Clamps	8 25	10 50	12 75	18 00
4 Hoisting Rope Clamps	1 80	2 00	2 20	2 80
7 Thimbles	1 47	1 75	1 96	2 17

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PORTABLE FOLDING DERRICK

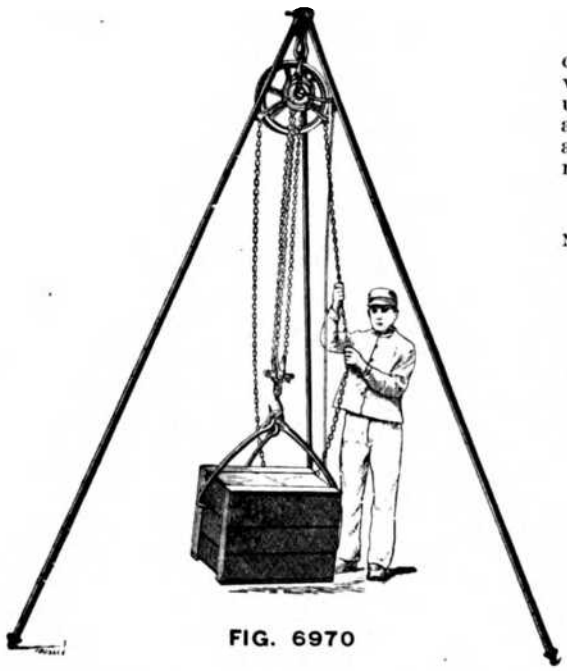


FIG. 6970

DESCRIPTION

These Derricks are made of wrought iron pipe, and can be folded together. They are light, cheap, convenient to handle and take up little room when not in use. They are always ready, as nothing has to be taken apart which might get lost. They are especially adapted for laying heavy sewer pipes, for erecting monuments, for use in stone yards, factories, etc.

PRICES, FIG. 6970

Nos.	Capacity, Pounds.	Lengths, Folded, Feet.	Weight of Derrick, Pounds.	Each.
1	1,000	12	68	$9 75
2	2,000	12	90	12 00
3	4,000	12	120	15 00
4	6,000	14	165	20 25
5	12,000	14	285	30 00
6	16,000	16	375	42 75
7	20,000	16	425	48 00
8	30,000	16	450	52 50

Prices do not include hoists.

PRICES, FIG. 6971

Timbers of best material. Large sizes, 6 inches, square or round. Smaller sizes, 5 inches, square or round. Iron or wooden drum, 5 inches in diameter, and about 4 feet long. Are easily taken apart and set together.

Feet high....	16	20	25	30	35
Each	$47 00	$53 00	$58 00	$65 00	$70 00

Other styles made to order.

BREAST DERRICK

SINGLE GEAR

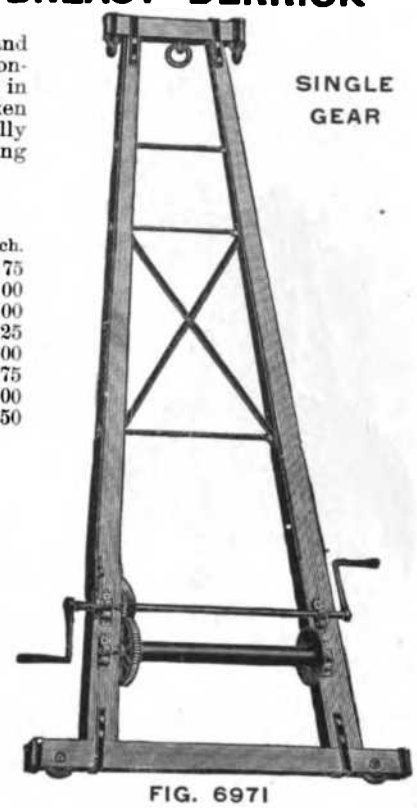


FIG. 6971

WALL CRANE

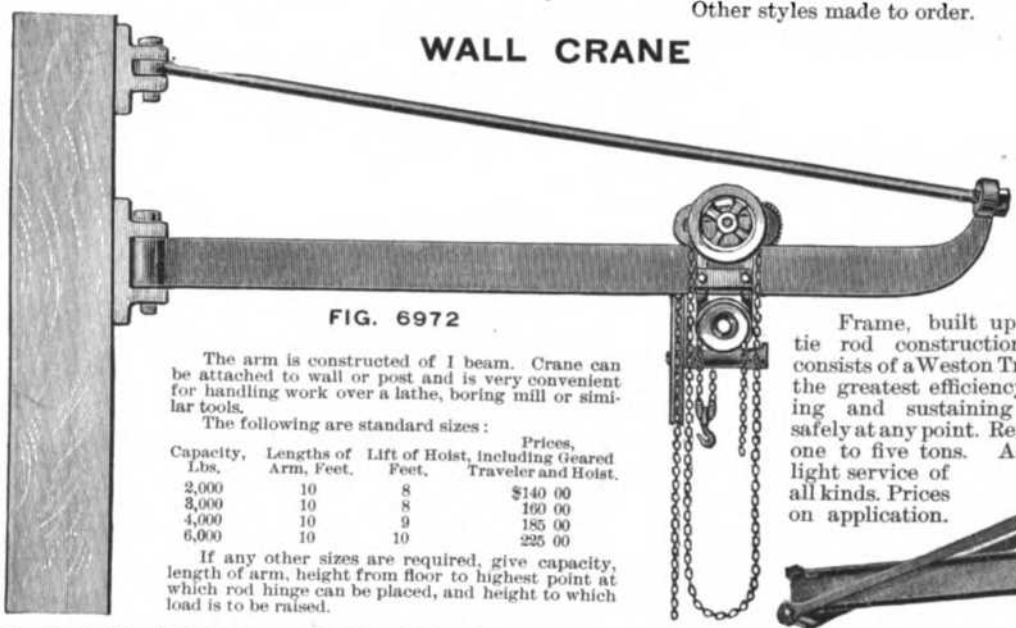


FIG. 6972

The arm is constructed of I beam. Crane can be attached to wall or post and is very convenient for handling work over a lathe, boring mill or similar tools.

The following are standard sizes:

Capacity, Lbs.	Lengths of Arm, Feet.	Lift of Hoist, Feet.	Prices, including Geared Traveler and Hoist.
2,000	10	8	$140 00
3,000	10	8	160 00
4,000	10	9	185 00
6,000	10	10	225 00

If any other sizes are required, give capacity, length of arm, height from floor to highest point at which rod hinge can be placed, and height to which load is to be raised.

PULLEY BLOCK JIB CRANE

DESCRIPTION FIG. 6975

Frame, built up of steel shapes, and of tie rod construction. Hoisting mechanism consists of a Weston Triplex Pulley Block, giving the greatest efficiency for hoisting and sustaining the load safely at any point. Regular sizes, one to five tons. Adapted for light service of all kinds. Prices on application.

SINGLE IRON

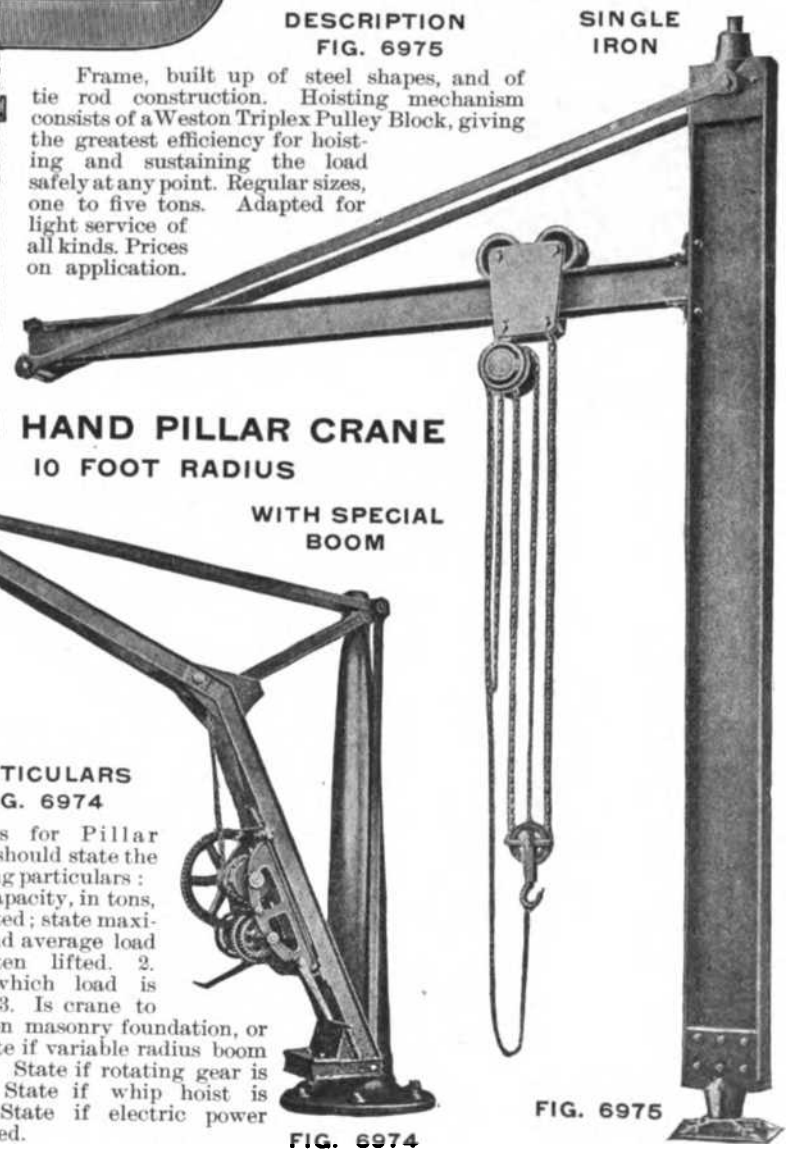


FIG. 6975

2 TON HAND PILLAR CRANE

15 FOOT RADIUS

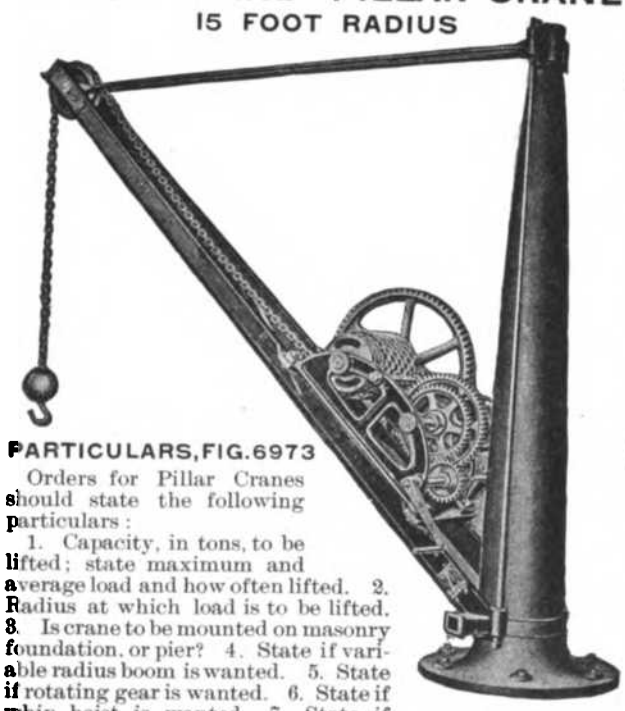


FIG. 6973

PARTICULARS, FIG. 6973

Orders for Pillar Cranes should state the following particulars:

1. Capacity, in tons, to be lifted; state maximum and average load and how often lifted. 2. Radius at which load is to be lifted. 3. Is crane to be mounted on masonry foundation, or pier? 4. State if variable radius boom is wanted. 5. State if rotating gear is wanted. 6. State if whip hoist is wanted. 7. State if electric power crane is wanted.

2 TON HAND PILLAR CRANE

10 FOOT RADIUS

WITH SPECIAL BOOM

FIG. 6974

PARTICULARS FIG. 6974

Orders for Pillar Cranes should state the following particulars:

1. Capacity, in tons, to be lifted; state maximum and average load and how often lifted. 2. Radius at which load is to be lifted. 3. Is crane to be mounted on masonry foundation, or pier? 4. State if variable radius boom is wanted. 5. State if rotating gear is wanted. 6. State if whip hoist is wanted. 7. State if electric power crane is wanted.

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ORANGE PEEL AND CLAM SHELL BUCKETS, DREDGERS, EXCAVATORS AND TRAVELING DERRICKS

PRICES, WEIGHTS AND SIZES OF THE STANDARD ORANGE PEEL BUCKETS

For Hard and Deep Dredging, Excavating, Digging Ores, Phosphates, Coal, etc.



FIG. 6976

Style.	Capacity.	Weight, Pounds.	Buckets, Open — Diameters, Feet, Inches.		Open Height, Feet, Inches.		Each.
M. A.	1 cu. ft.	125	2	2	2	8	$150 00
M. B.	2½ " "	400	3	2	4	0	250 00
M. C.	5 " "	900	4	0	5	0	400 00
M. D.	7 " "	1,000	4	4	5	3	475 00
M. E.	9 " "	1,100	4	8	5	6	550 00
M. H.	12 " "	2,000	5	1	6	6	700 00
M. J.	15 " "	2,200	5	6	6	9	750 00
M. K.	21 " "	3,300	6	4	8	0	900 00
M. L.	1 cu. yd.	3,500	6	10	8	6	1,000 00
M. N.	1¼ " "	4,000	7	2	8	9	1,150 00
M. O.	1½ " "	6,300	8	0	10	0	1,300 00
M. O. S.	1½ " "	5,200	7	8	9	6	1,250 00
M. P.	2 " "	7,000	8	8	10	6	1,550 00
M. R.	2½ " "	8,000	9	4	11	0	1,800 00
M. S. S.	3 " "	10,000	9	8	11	6	2,100 00
M. U.	4 " "	16,000	10	8	12	9	3,200 00
M. X.	5 " "	18,000	11	4	13	3	3,600 00
M. Y.	6 " "	20,000	12	6	14	6	4,000 00
M. Z. 2.	8 " "	24,000	13	3	15	6	4,800 00
M. Z. 4.	10 " "	28,000	14	0	16	6	5,600 00



FIG. 6976A

Orange Peel Buckets will dig anything a pick can penetrate. All bearings are large and have removable bushings of phosphor bronze and steel. All blades have cast steel shoes, which can be easily replaced when worn.

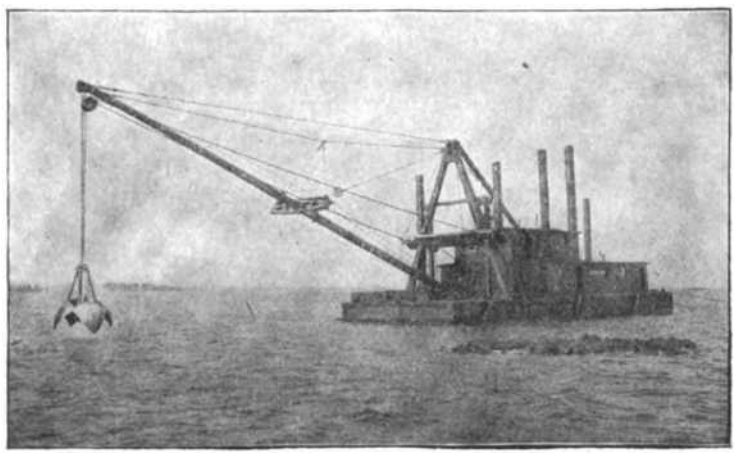


FIG. 6976B

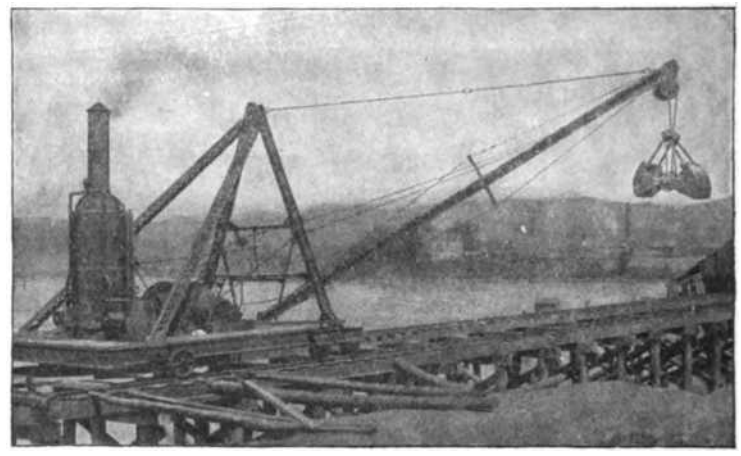


FIG. 6977

Prices and general description of Dredgers, Excavators and Traveling Derricks given on application.

PRICES, WEIGHTS AND SIZES OF STANDARD CLAM SHELL BUCKETS

For Dirt, Sand, Gravel, Crushed Stone and Coal Handling.



FIG. 6977A

Class A. These buckets have removable bushings of phosphor bronze and steel, and the blades are provided with removable cast steel shoes, which add greatly to the life of the buckets.

	Style.	Capacity.	Weight, Pounds.	Buckets, Open — Spread, Feet, Inches.		Heights, Feet, Inches.		Each.
Class A	½	cu. yd.	2,000	5	4	5	6	$550 00
	¾	" "	2,500	6	6	6	6	650 00
	1	" "	3,000	7	0	7	2	750 00
	1¼	" "	3,200	8	0	8	0	800 00
	1½	" "	3,400	8	0	8	0	850 00
	1⅝	" "	3,600	8	0	8	0	900 00
	2	" "	4,600	8	0	8	0	1,150 00
	2	" "	4,800	9	0	9	0	1,200 00
	2½	" "	5,500	9	0	9	0	1,350 00
	3	" "	6,500	9	0	9	0	1,600 00
	4	" "	8,000	10	0	10	0	2,000 00
	5	" "	9,000	10	0	10	0	2,250 00
Class B	½	" "	1,800	5	4	5	6	500 00
	¾	" "	2,250	6	6	6	6	550 00
	1	" "	2,750	7	0	7	2	625 00
	1¼	" "	2,900	8	0	8	0	650 00
	1½	" "	3,100	8	0	8	0	700 00
	1⅝	" "	3,300	8	0	8	0	750 00
	2	" "	4,300	8	0	8	0	1,000 00
	2	" "	4,500	9	0	9	0	1,050 00
	2½	" "	5,000	9	0	9	0	1,150 00
	3	" "	6,000	9	0	9	0	1,350 00
	4	" "	7,500	10	0	10	0	1,700 00
	5	" "	8,500	10	0	10	0	1,950 00



FIG. 6977B

Class B. These buckets are built without blade shoes, and have removable bushings for main shaft only. In other respects the construction is practically the same as Class A buckets.

The Orange Peel and Clam Shell Buckets can be attached to and operated on any style of hoist using a double drum engine.

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23 INCH STANDARD SQUARE SIDE NUMBER HEAD-LIGHT, WITH CURTAINS



FIG. 6978

Cases made with pressed cold rolled, Bessemer steel panels. Reflectors 16 inches deep; extreme height, 44 inches; bottom board, 31 x 22½ inches; side Nos. 7 x 11⅞ inches. Prices on application.

14 INCH ROUND STANDARD HEAD-LIGHT

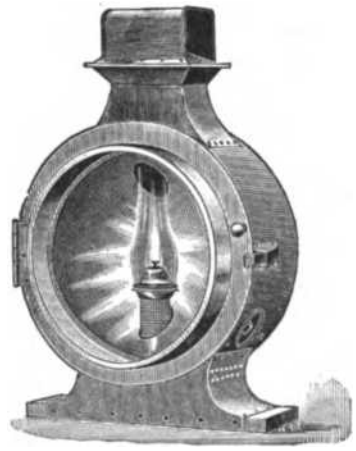


FIG. 6979

Extreme height, 28⅞ inches; bottom board, 17¼ x 6¼ inches.

Specially constructed, when desired, with dash board attachment, for street cars. These headlights are adapted for narrow gauge or traction engines, locomotive tenders, and roadmasters' inspection cars. Prices on application.

16 INCH SQUARE SIDE NUMBER HEADLIGHT

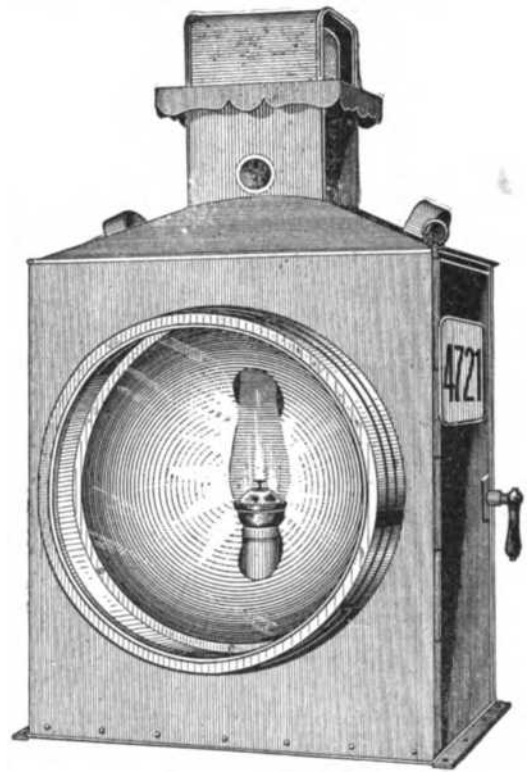


FIG. 6980

Extreme height, 37 inches; bottom, 22¾ x 16¾ inches. Bottom is made of heavy steel, reinforced with heavy angle iron. No wood whatever is used in its construction. Prices on application.

STREET RAILWAY LAMP

10 INCH ELECTRIC HEADLIGHT

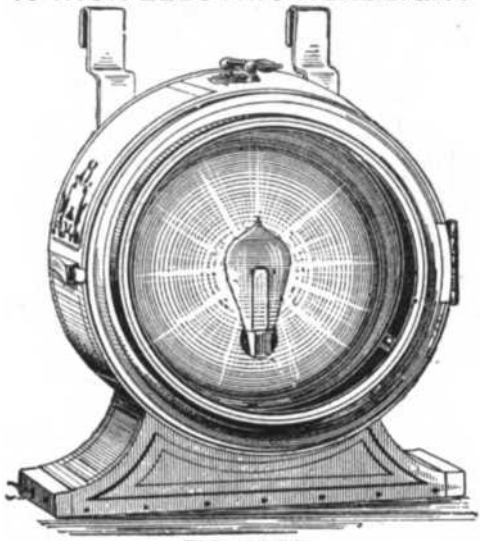


FIG. 6982

For dash or electric motor cars. Case made of heavy tin, and reflector copper, heavily plated with silver. Prices on application.

ALL STEEL HEADLIGHT

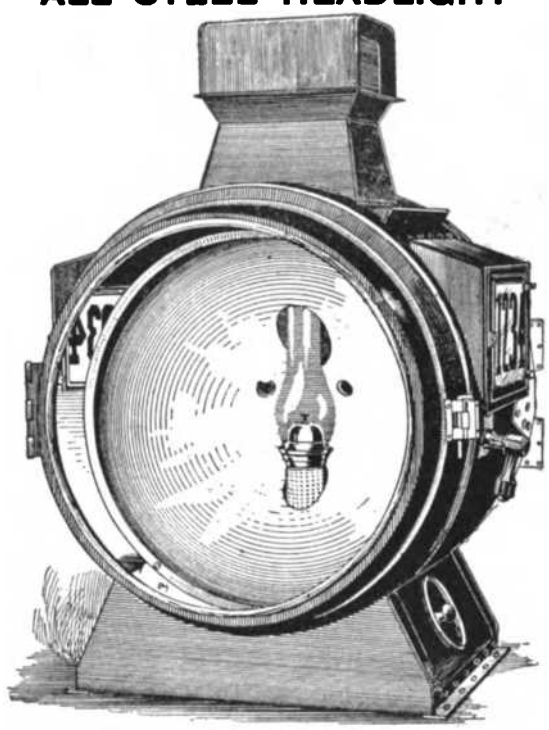


FIG. 6981

They are made in 12, 14, 16, 18, 20 and 23 inch sizes, with a reflector of increased depth. The case is circular style and constructed of Nos. 14, 20, 23 and 24 gauge pickled and cold rolled Bessemer steel, reinforced with heavy band and angle iron, fastened with rivets spaced one inch apart. All of these headlights are equipped with the Wilder glass fastener. Prices on application.

STREET RAILWAY LAMP

10 INCH SQUARE HEADLIGHT



FIG. 6983

Specially constructed with dash-board attachment for cable or motor cars. Extreme height, 21 inches; bottom board, 13 x 7 inches. Fitted with Moehring, Argand, or Student Burner. Prices on application.

TRI-COLORED SIGNAL AND INSPECT-ORS' LANTERN



FIG. 6985

To show red, green or white light. For use at grade crossings by street railways.

Per dozen.....$48 00

EUREKA TAIL LAMP WITH RUBY GLASS



FIG. 6984

DESCRIPTION, FIG. 6984

Designed to meet the requirements of street railway systems for a serviceable but cheap changeable tail light for rear dash.

Per dozen.....$30 00

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HEADLIGHT BURNERS

NO. 2



FIG. 6986
With Wilder Patent Stuffing Box Attachment.

By means of which the stuffing box can be disconnected from the burner to put in new ratchet wheel or shaft without disturbing the packing. With cast brass reservoir connection. Powerful, substantial, economical; each..... $7 00

WILLIAMS

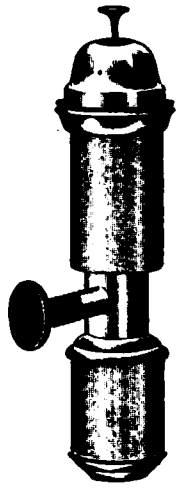


FIG. 6987
For 2¾ inch chimney; each.....$5 50

HALL NO. 2

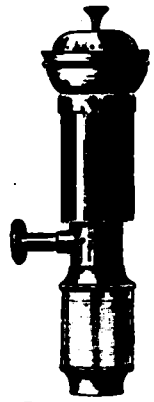


FIG. 6988
For 2¾ inch chimney.
Each.....$5 50

MOEHRING ARGAND

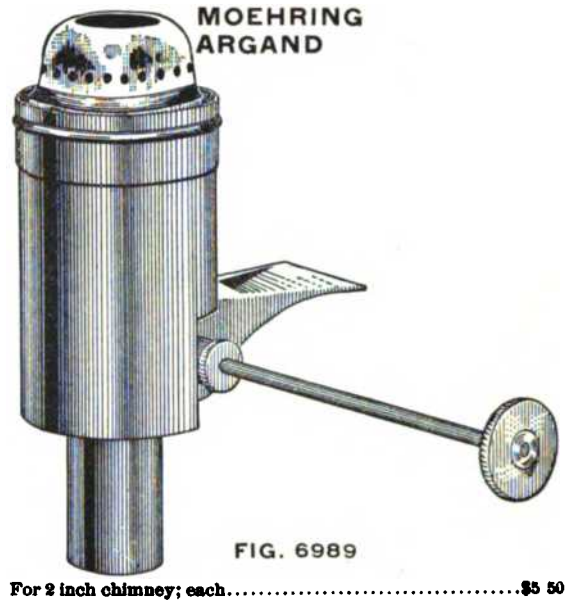


FIG. 6989
For 2 inch chimney; each.....$5 50

ENGINE AND REAR SIGNAL LAMPS

BLIZZARD ENGINE LAMP



FIG. 6990
Two Lenses.

Has 4 inch white semaphore lenses inside corrugation. Fitted with inside colored slides to change color of semaphore; per dozen.....$72 00

ENGINE LAMP

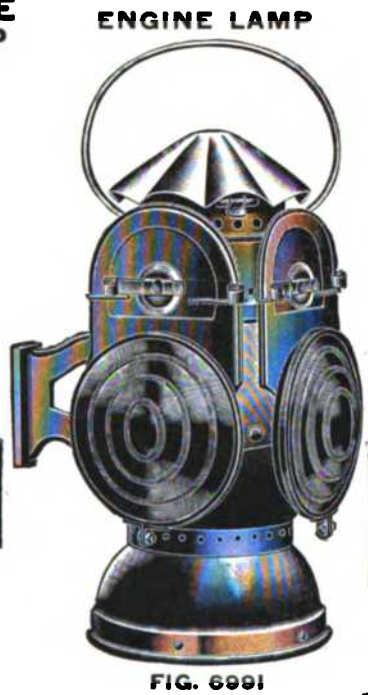


FIG. 6991

REAR SIGNAL LAMP



FIG. 6992

SHOWING REVOLVING BRACKET



FIG. 6993

Prices, Figs. 6991, 6992 and 6993 on application.

SINGLE SEMAPHORE LENS TAIL LAMP



FIG. 6994
Size 8 inches; each.....$12 00

REAR AND SIDE SIGNAL LAMPS
RIGHT AND LEFT



FIG. 6995

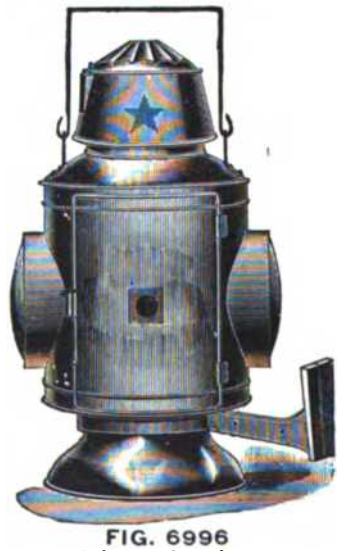


FIG. 6996

Fitted with 4 inch or 5⅝ inch inside corrugated semaphore lenses; any color. These lamps are used on rear and side of passenger trains. Rear signal or tail lamps made to conform to blue prints or railroad standard.
Each.....$6 50

PLATFORM TAIL LAMP



FIG. 6997

With 8 inch semaphore lens. Fitted with high candle power. Kerosene or lard oil burner; each.....$9 25

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ENGINE LAMP



FIG. 6998

Fitted with standard 4, 5 or 5⅜ inch diameter lenses. Inside method of changing colors. Open top lamp and sliding door. Sliding hinge ventilator cap. Reversible or side brackets as specified. Long or short shaft burners.

PRICE, $7.50

MARKER LAMP

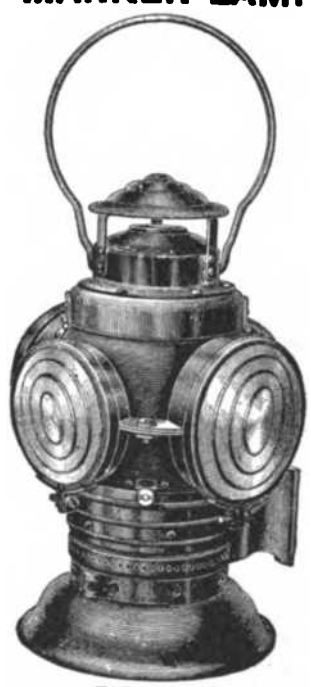


FIG. 6999

DESCRIPTION
FIG. 6999

Fitted with large or small lenses as desired.

Any color or number specified.

PRICES ON APPLICATION

TAIL MARKER LAMP

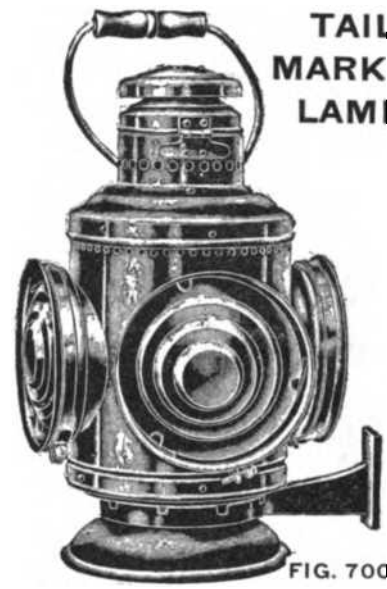


FIG. 7000

DESCRIPTION

Fitted with two, three or four lenses of standard size, 4, 5 or 5⅜ inches diameter. Detachable base for removal of broken hangers. Reversible hangers. Sliding hinge ventilator cap. Long or short shaft burners, as specified.

PRICE, $7.00

STANDARD CLASSIFICATION LAMP
TWO LENSES

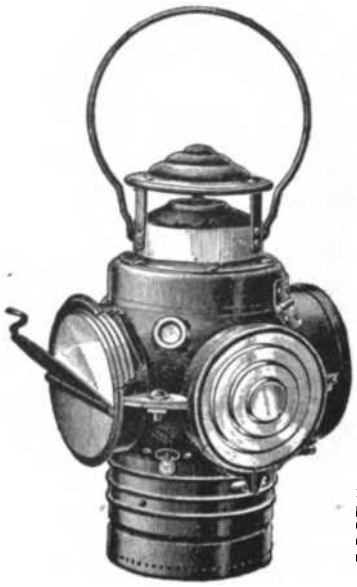


FIG. 7001

DESCRIPTION
FIG. 7001

This Classification Lamp is made with two lenses at right angles and attached to the engine by means of No. 22 arm.

Other methods of attachment employed upon specifications.

Lenses are white.

Prices on application.

CYCLONE SWITCH LAMP



FIG. 7002

DESCRIPTION
FIG. 7002

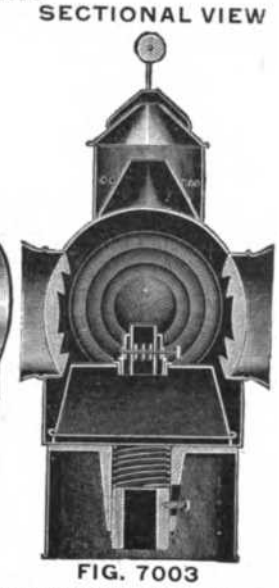
These lamps are made with reference to burning kerosene in place of lard or signal oil. Lenses 4½ to 5⅜ can be used, and placed at the right focus giving the full illuminating service of the lenses. The socket in bottom is fitted with spiral spring, relieving lamp from all jar of train passing over frog point. The method of getting access to the interior of the lamp for lighting and cleaning the lamp is most convenient.

Prices on application.

SPRING BOTTOM SWITCH LAMP



FIG. 7003



SECTIONAL VIEW

FIG. 7003

The spring device prevents the flame from going out from jar caused by passing trains. Price, each, $6.50.

We furnish switch lamps to any drawing, sample or suggestion submitted.

SWITCH LAMP

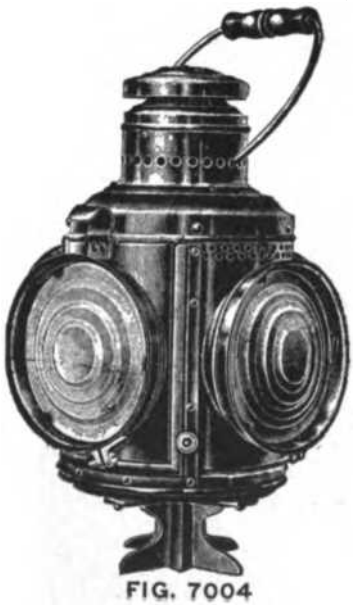


FIG. 7004

DESCRIPTION
FIG. 7004

Fitted with standard 4, 5 or or 5⅜ inch diameter lenses.

Other size lenses supplied as specified.

Long or short shaft burners.

Malleable iron sockets, either plain or with spring attachment.

PRICE, $8.00

DESCRIPTION
FIG. 7005

This pattern of round semaphore lamp is preferred on many roads, as it requires less space and has the same burning qualities as the square pattern.

This lamp has a sliding door, oil pot drawn from one piece of metal and patent lens holder.

PRICES

	Each.
With one 5 inch lens and 2 inch bull's eye.....	$4 75
With two 5 inch lenses ...	4 75

NO. 8. SEMAPHORE LAMP

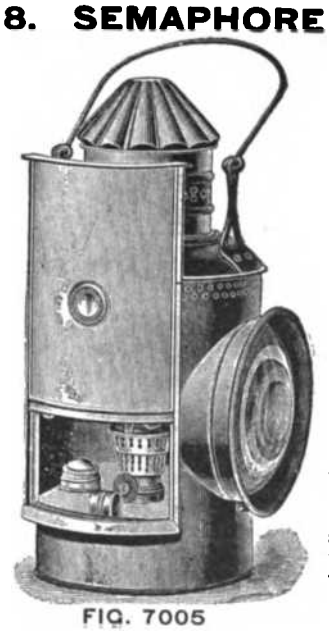


FIG. 7005

SWITCH LAMP
SPRING BOTTOM DIRECT CONTACT

DESCRIPTION
FIG. 7006

Built with either two 4 inch safety lenses and two 4½ inch danger lenses of desired colors, or two 5 inch safety and two 5⅜ inch danger lenses. Arranged with spring to relieve the lamp from the jar of a passing train.

Prices on application.

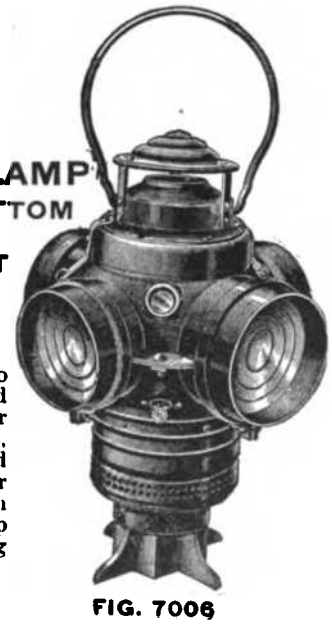


FIG. 7006

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SEMAPHORE LAMPS



FIG. 7007

DESCRIPTION

Fitted with 2 inch back light and one 4 in., 4½ in., 5 in. or 5⅜ in. lens. The back light is mounted on a disk of the same size as lens used, thus providing for rights and lefts. Fitted with arm, or ordinary pattern of socket. Prices on application.



FIG. 7008

DESCRIPTION

Supplied with one or two 5 or 5⅜ inch diameter lenses as specified.

Sliding hinge ventilator cap. Short or long shaft burners as desired.

Each.....$6 00

DISTANT SIGNAL LAMP

NO. 35



FIG. 7009

PRICE

The stationary case has a plate glass reflector and a plain green glass in a hinged door.

With 5⅜ inch lenses, each.....$7 50

DECK CABOOSE LAMP



FIG. 7010

This lamp is so arranged that it can be revolved, cleaned and lighted from the interior of the car.

PRICE

With 8 inch, red and green, red and white, or green and white lenses, each.....$10 00

STEAM GAUGE LAMP

NO. 25



FIG. 7011

DESCRIPTION FIG. 7011

Made of brass, steel oxidized. Have diverting reflectors so that the light is directed on three gauges.

Special patterns made to order.

Each.....$3 00

TARGET LAMP



FIG. 7013

DESCRIPTION FIG. 7013

With any size Semaphore lens.

Any color.

Inside or outside corrugation.

Prices on application.

PIER LAMP NO. 29



FIG. 7015

SIDE CABOOSE LAMP



FIG. 7014

DESCRIPTION, FIG. 7014

This lamp is made with 2 6-inch white lenses and a ruby and green glass slide for changing colors at will, for right and left hand.

Can furnish either of galvanized iron or tin.

Each.....$6 00

PRICES, FIG. 7015

This lamp is made of heavy tin, and with an 8 inch lens, or with a flat colored glass.

A galvanized iron socket on the back will hold the lamp securely in position.

With 8 inch Ruby Lens, each.....$9 50
" 8 " Green " " 9 50
" 8 " Flint " " 9 50

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TRI-COLORED INSPECTOR'S LAMP

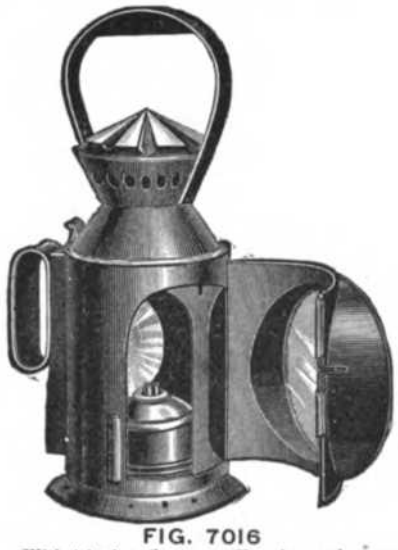


FIG. 7016

With 4 inch reflector. Showing red, green, or white light as desired.

PRICE, EACH, $6.00

SQUARE RAILROAD SIGNAL LIGHT



FIG. 7017

With silvered reflector.

PRICE, EACH $6 00

LOCOMOTIVE GAUGE LAMP

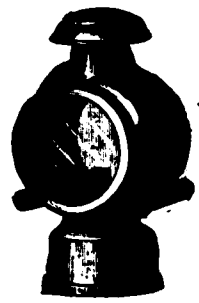


FIG. 7018

Brass or nickel plated.

PRICE, EACH $3.00

LOCO-MOTIVE WATER GAUGE LAMP



FIG. 7019

PRICE EACH, $3.00

LOCOMOTIVE GAUGE LAMP

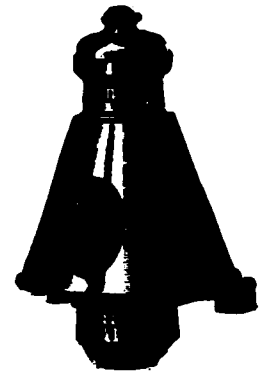


FIG. 7020

Best hand made flint globe.
Brass or nickel plated.

PRICE, EACH $3.00

TUBULAR SQUARE LAMP

FOR KEROSENE



FIG. 7021

DESCRIPTION, FIG. 7021

No chimney; improved burner; do not smoke; outside wick regulator; light very strong; are not affected by the strongest wind.

No. 1. No. 2 burner; 1 inch wick; 7 inch silvered glass reflector; height, 19 inches; width, 8½ inches; depth, 9 inches.

No. 2. No. 3 burner; 1½ inch wick; 8 inch silvered glass reflector; height, 21½ inches; width, 9⅝ inches; depth, 10½ inches.

No. 3. No. 3 burner; 1½ inch wick; 12 inch silvered glass reflector; height, 26 inches; width, 13¾ inches; depth, 13 inches.

PRICES

No. 1 Tubular Square Lamp (japanned blue), each		$5 50
" 2 " " " " " "		6 50
" 3 " " " " " "		8 50
" 2 " Burners, per dozen		1 50
" 3 " " "		4 00

TUBULAR TRIANGULAR LAMP

FOR KEROSENE

DESCRIPTION, FIG. 7022

No. 3 burner; 1½ inch wick; 10 inch silvered glass reflector. No chimney; improved burner; does not smoke; light very strong; flame regulated from the outside; strongly guarded; is not affected by the strongest wind. Height, 22 inches; width, 16 inches; depth, 13 inches.

PRICES

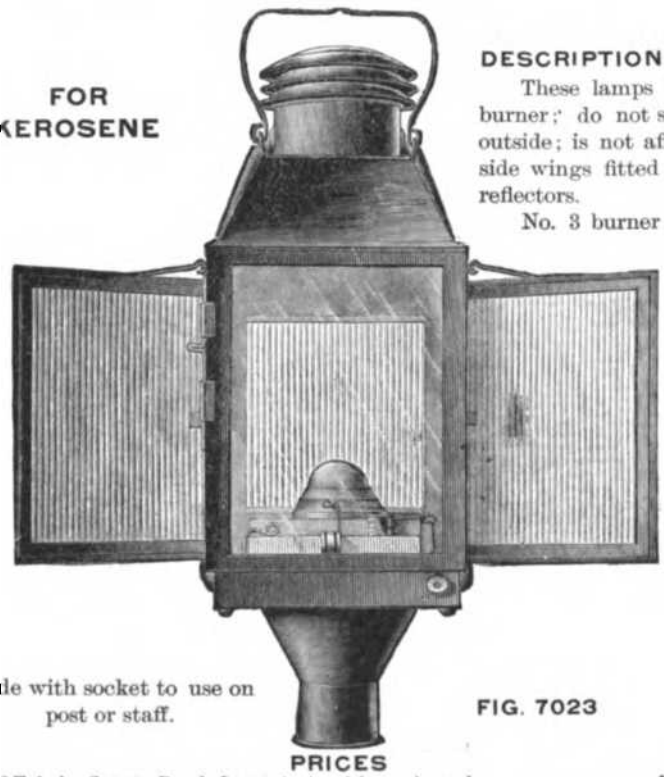
No. 4 Tubular Triangular Lamp (japanned blue), each	$8 50
No. 3 Tubular Burners, per doz.	4 00



FIG. 7022

TUBULAR SQUARE BEACH LAMP

FOR KEROSENE



Made with socket to use on post or staff.

FIG. 7023

DESCRIPTION, FIGS. 7023 AND 7024

These lamps have no chimneys; improved burner; do not smoke; flame regulated from the outside; is not affected by the strongest wind; side wings fitted with corrugated silvered glass reflectors.

No. 3 burner; 1½ inch wick; 3 inch flame.

PRICES

No. 2 Tubular Square Beach Lamp (painted brown), each	$11 00
" 3 " Burners, per dozen	4 00

TUBULAR SQUARE BOW LAMP

FOR KEROSENE



FIG. 7024

Specially designed for use on bridges, canal and tug boats.

PRICES

No. 2 Tubular Square Bow Lamp (painted brown), each	$10 50
" 3 " Burners, per dozen	4 00

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TUBULAR BRIDGE SIGNAL LAMP

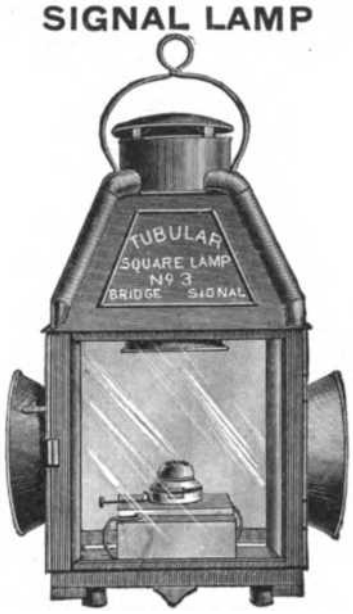


FIG. 7025

DESCRIPTION, FIG. 7025

No. 3 burner. 1½ inch wick. 3 inch flame.

This lamp is arranged for signals from two eight inch Semaphore lenses of any color, and two colored signals from glass sides. It is designed to show the Semaphore signals toward the river when the bridge is closed, and in the direction of the land when the bridge is open. These lamps are being successfully used on a large number of railroad bridges. Fitted with two eight inch Semaphore lenses and colored glass on sides.

PRICE

No. 3 Tubular Bridge Signal Lamp (painted brown), each.....$10 00

DESCRIPTION, FIG. 7026

No. 2 burner. 1 inch wick. 2 inch flame.

No chimney. Light equal to gas. Does not smoke. Is strongly guarded, and has a corrugated silver glass reflector.

PRICES

No. 2 Tubular Square Guarded Government Lamp (painted brown), each.....$8 50
No. 2 Tubular Burners, per dozen..... 1 50

TUBULAR SQUARE GUARDED LAMP

FOR KEROSENE



FIG. 7026

SQUARE STATION LAMP

FOR KEROSENE

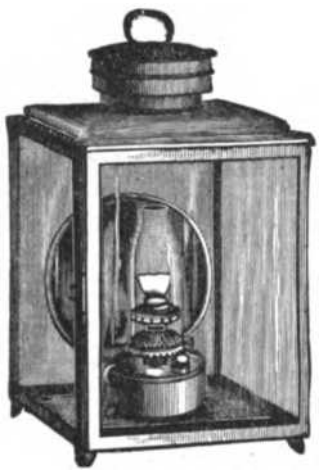


FIG. 7027

DESCRIPTION, FIG. 7027

No. 1. 8 x 10 inches. Has No. 1 burner; ⅝ inch wick; 7 inch silvered glass reflector. No. 2. 10 x 12 inches. Has No. 2 burner; 1 inch wick; 8 inch silvered glass reflector. No. 3. 11 x 15½ inches. Has No. 2 burner; 1 inch wick; 10 inch silvered glass reflector.

Packed one each in a case, complete with fount, burner, chimney and silvered glass reflector, or the three sizes nested together are packed in one case.

PRICES

	Each.	Nested.
No. 1 Square Station Lamp, complete (japanned blue).....	$2 50	.....
" 2 " " " " "	2 90	.....
" 3 " " " " "	3 30	.....
Nos. 1, 2, and 3 Station Lamps, nested complete (japanned blue)		$8 30

DESCRIPTION, FIG. 7028

No. 2 has No. 2 burner. 1 inch wick. 8 inch silvered glass reflector.
No. 3 " " " 1 " " 10 " " "
No. 2 takes glass 9¾ x 11 inches. No. 3 takes glass 11⅞ x 13¾ inches.
Complete with fount, burner, chimney, and silvered glass reflector.

PRICES

No. 2 Triangular Station Lamp, complete (japanned blue).....each, $2 90
" 3 " " " " " ..... " 3 30

TRIANGULAR STATION LAMP

FOR KEROSENE



FIG. 7028

SQUARE STATION LAMP



FIG. 7029

PRICES

Sizes.	Per Dozen.
7 x 11.....	$14 00
8 x 12.....	16 00
10 x 14.....	21 50
12 x 16.....	26 00

BOW TOP STATION LAMP

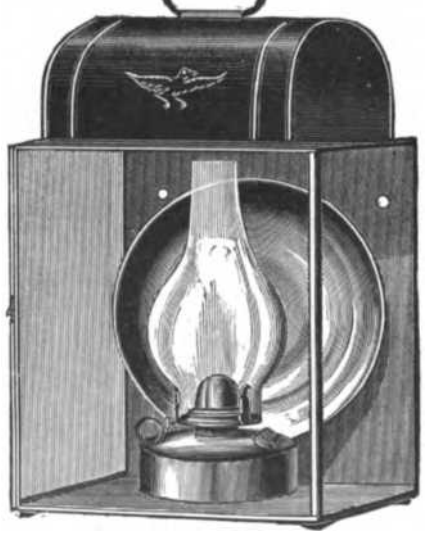


FIG. 7030

PRICES

Sizes.	Per Dozen.	Sizes.	Per Dozen.
6 x 9.....	$12 00	10 x 14.....	$21 50
7 x 11.....	14 00	12 x 14.....	24 50
8 x 12.....	16 00	12 x 16.....	26 00
9 x 13.....	19 20		

LAMP FOR BURNING GAS

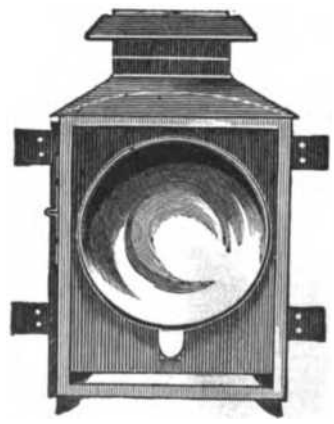


FIG. 7031

PRICES

Painted green, glass bottom, nickel plated reflectors.

Glass, 9x12 in., per doz. $30 00
" 12x14 in., " 36 00

TRIANGULAR STATION LAMP



FIG. 7032

PRICES

	Per Dozen.
Glass 8 x 12 inches.....	$16 00
" 9 x 13 "	19 00
" 10 x 14 "	21 00
" 12 x 16 "	24 00

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SQUARE TUBULAR STREET LAMP



FIG. 7033

FOR KEROSENE

No chimney. Light equal to gas at a less cost. Brilliant flame. Is not affected by the strongest wind. Automatic extinguisher. Can be regulated to burn a certain number of hours. Packed one each in a case, measuring 5⅛ cubic feet. Average weight, with case, 39 lbs.; net, 13 lbs.; 36 inches high; 15½ inches square. No. 3 burner; 1½ inch wick; 3 inch flame.

PRICES, FIG. 7033

	Each.
No. 2 Square Tubular Street Lamp, painted green	$8 00
No. 3 Iron Brackets, japanned black	1 20
Turned Wood Posts, 6 feet 6 inches above ground; 2 feet in ground	2 00
Iron Post, 6 feet 6 inches above ground; 2 feet in ground	8 00
No. 3 Tubular Burners, brass; per dozen	4 00

GLOBE TUBULAR STREET LAMP

FOR KEROSENE

No chimney. Light equal to gas at a less cost. New globe lifter. Outside wick regulator. Does not smoke. Casts no shadow. Is not affected by the strongest wind. Can be regulated to burn a certain number of hours. Packed one each in a case, measuring 3⅜ cubic feet. Average weight, with case, 27 lbs.; net, 7 lbs.; 27 inches high. No. 3 burner; 1½ inch wick; No. 3 globe.

PRICES, FIG 7034.

	Each.
No. 3 Globe Tubular Street Lamp, painted green	$6 00
No. 3 Globe Tubular Street Lamp, brass, painted green	11 00
No. 3 Iron Brackets, japanned black	1 20
Turned Wood Post, 6 feet 6 in. above ground; 2 feet in ground,	2 00
Iron Post, 6 feet 6 inches above ground; 2 feet in ground	8 00
No. 3 Tubular Globes, white, per dozen	6 40
No. 3 Tubular Burners, per doz.,	4 00

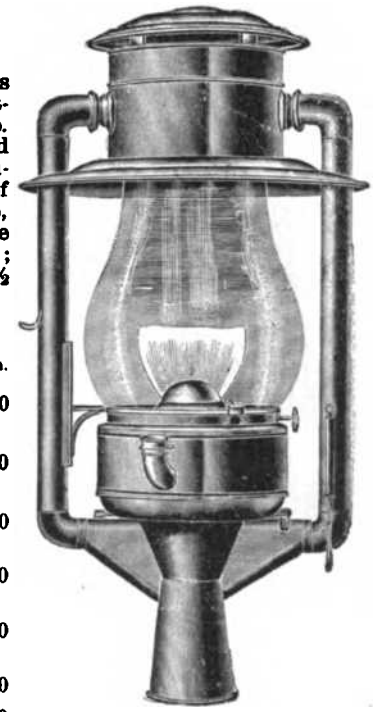


FIG. 7034

GLOBE TUBULAR HANGING LAMP



FIG. 7035

FOR KEROSENE

No. 3 light equal to 22½ candle power. No. 3 has automatic extinguisher. No chimney. New globe lifter. Improved burner. Outside wick regulator. Does not smoke. Light equal to gas. Is not affected by the strongest wind. Can be regulated to burn a certain number of hours. Specially adapted wherever a strong light is desired. No. 2 packed one each in a case, measuring 2⅛ cubic feet. Average weight, with case, 18½ lbs.; net, 4½ lbs.; 20 inches high. No. 3 packed one each in a case, measuring 2¾ cubic feet. Average weight, with case, 25 lbs.; net, 7 lbs., 22 inches high. No. 2 lamp has No. 2 burner, 1 inch wick, No. 2 globe. No. 3 lamp has No. 3 burner, 1½ inch wick, No. 3 globe.

PRICES, FIG. 7035

	Each.
No. 2 Globe Tubular Hanging Lamp, painted green	$5 50
No. 3 Globe Tubular Hanging Lamp, painted green	6 00

	Per Doz.
No. 2 Tubular Globes	$4 80
" 3 " "	6 40
" 2 " Burners	1 50
" 3 " "	4 00

GLOBE TUBULAR SIDE LAMP

FOR KEROSENE

No. 3 light equal to 22½ candle power. Can be used on a wall or hung up. Is not affected by the strongest wind. No. 3 can be regulated to burn a certain number of hours. No. 3 has automatic extinguisher. No chimney. New globe lifter. Improved burner. Outside wick regulator. Does not smoke. Light equal to gas. Is useful wherever a strong light is desired. Packed one each in a case, measuring 2¾ cubic feet. Average weight, with case, 28 lbs.; net, 10 lbs.; 22 inches high. No. 2 lamp has No. 2 burner, 1 inch wick, 8 inch silvered glass reflector, No. 2 globe. No. 3 lamp has No. 3 burner, 1½ inch wick, 10 inch silvered glass reflector, No. 3 globe.

PRICES, FIG. 7036

	Each.
No. 2 Globe Tubular Side Lamp, painted green	$7 00
No. 3 Globe Tubular Side Lamp, painted green	8 50

	Per Doz.
No. 2 Tubular Globes	$4 80
" 3 " "	6 40
" 2 " Burners	1 50
" 3 " "	4 00



FIG. 7036

TUBULAR HAND LAMP

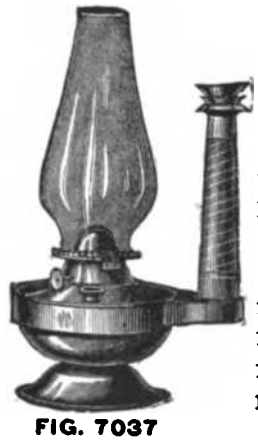


FIG. 7037

FOR KEROSENE

Packed in cases of one dozen each, without chimneys, measuring 1¾ cubic feet. Average weight with case, 20 lbs.; net, 9 lbs. No. 1 Sun Hinge Burner, with Skirt; ⅝ inch wick; No. 1 Sun Hinge Chimney.

PRICES, FIG. 7037

Nos.	Per Doz.
1 Tubular Hand Lamp, bright tin	$10 00
1 Sun Hinge Burners, with Skirt	2 40
1 " " Chimneys	96

TUBULAR SOCKET LAMP

FOR KEROSENE

Takes a 5 inch silvered glass reflector. Can be used as a side lamp, hand or table lamp. Packed in cases of one dozen each, with reflectors, but without chimneys, measuring 3¼ cubic feet. Average weight, with case, 32 lbs.; net, 16 lbs. No. 2 Sun Hinge Burner, with skirt, 1 inch wick, No. 2 Sun Hinge Chimney.

PRICES, FIG. 7038

Nos.	Per Doz.
2 Tubular Socket Lamps, bright tin	$10 00
2 Sun Hinge Chimneys	1 28
2 " " Burners, with Skirt	3 60
5 inch Silvered Glass Reflectors	1 90

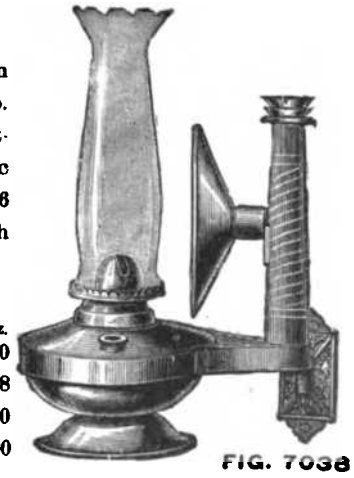


FIG. 7038

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TUBULAR SIDE LAMP

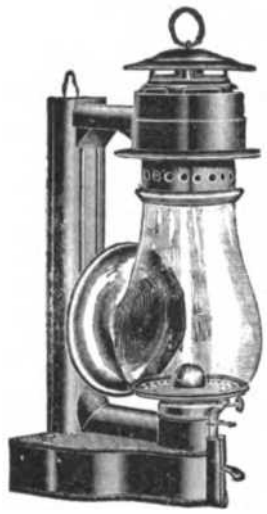


FIG. 7039

DESCRIPTION AND PRICES, FIG. 7039

This lamp operates upon the principle of the tubular lantern; is not affected by currents of air, never heats, and is perfectly safe. Can be filled, lighted and regulated without removing the globe. For use in shops, halls and like places. Packed in cases of one-half dozen each, complete with reflectors, measuring 2½ cubic feet. Average weight, with cases, 44 pounds to the dozen; net, 26 pounds. No. 1 burner, ⅝ inch wick, No. O globe, 5 inch silvered glass reflector. For kerosene.

		Per Doz.
No. 15	Tubular Side Lamp and Reflector (japanned blue)	$18 00
" O	" Globes	90
" 1	" Burners	70

DESCRIPTION AND PRICES, FIG. 7040

Takes a 6 inch silvered glass reflector and standard No. O tubular globe; it gives a large volume of light. Packed in cases of one-half dozen each, complete with reflectors, measuring 3½ cubic feet. Average weight, with cases, 60 pounds to the dozen; net, 32 pounds. No. 2 burner, 1 inch wick, No. O globe. For kerosene.

		Per Doz.
No. 25	Tubular Side Lamp and Reflector (japanned blue)	$25 00
" O	" Globes	90
" 2	" Burners	1 50

TUBULAR SIDE LAMP



FIG. 7040

TUBULAR SEARCH LIGHT

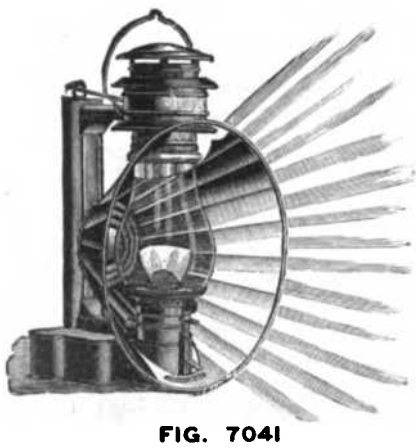


FIG. 7041

DESCRIPTION AND PRICES, FIG. 7041

This lamp spreads the light over a large surface; it has a bright tin reflector, 12 inches in diameter and 7 inches deep. It will stand the strongest wind; is equally good for indoor use. It is suitable for mills, warehouses, workshops, etc., or in fact any place where a good light is required. Packed in cases of one-quarter dozen each; measuring 3⅞ cubic feet; average weight, 29 pounds; net, 9 pounds. No. 2 burner, 1 inch wick, No. O globe. For kerosene.

		Per Doz.
No. 30	Search Light (japanned blue) and Bull's Eye Lens	$30 00
" O	Tubular Globes	90
" 2	" Burners	1 50

DESCRIPTION AND PRICE, FIG. 7042

For use in mills, mines, storehouses and factories. It can be filled, lighted, regulated and extinguished without removing the globe. Packed in cases holding one-half dozen, measuring 2⅞ cubic feet, weighing, net, 40 pounds per dozen; gross, 64 pounds. Bright tin, No. 2 burner, 1 inch wick, blizzard globe.

	Per Doz.
No. 2 Reflector Tubular Blizzard	$20 00

TUBULAR LANTERN WITH REFLECTOR

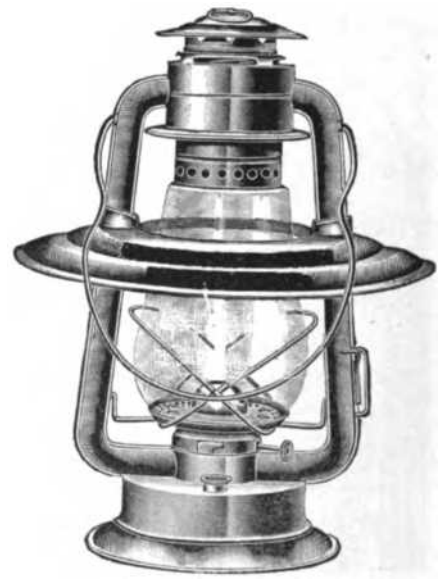


FIG. 7042

MILL TUBULAR LANTERN



FIG. 7043

DESCRIPTION AND PRICES, FIG. 7043

Burner is locked in place. Guard has patent wind brake which prevents access to the flame over the top of globe. Base is locked permanently to the frame independently of solder. Light brilliant and the oil never heats. Fount is large, holding sufficient oil to burn for twenty hours without refilling. Packed in cases of one dozen each, measuring 5¼ cubic feet. Average weight, with case, 53 pounds to the dozen; net, 33 pounds. No. 1 burner, ⅝ inch wick, No. O globe. A safety lantern burning kerosene.

	Per Doz.
Tubular Mill Lantern (bright tin)	$18 00
No. O Tubular Globes	90
No. 1 " Burners	70

CRYSTAL TUBULAR LANTERN

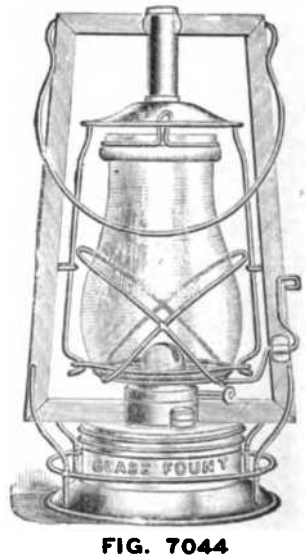


FIG. 7044

DESCRIPTION AND PRICES, FIG. 7044

This is a strongly guarded tubular lantern with a glass fount instead of tin. This enables the user to see how much oil is in the fount, and the fount will never leak. Fitted with improved side lift. The fount on this lamp is strongly guarded and is not liable to breakage. Packed in cases of one dozen each, measuring 3¹⁰⁄₁₂ cubic feet. Average weight, with case, 45 pounds to the dozen; net, 31 pounds. No. 1 burner, ⅝ inch wick, No. O globe. Standard size. For kerosene.

	Per Doz.
Crystal Tubular Lantern (bright tin)	$13 00
No. O Tubular Globes	90
No. 1 " Burners	70

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IRON CLAD TUBULAR LANTERN



FIG. 7045

DESCRIPTION

No 1 burner; ⅝ inch wick; No. O globe, standard size; for kerosene.

It has patent braces and an iron bottom, making it almost indestructible. It is largely used by contractors.

PRICES

	Per Doz.
Iron Clad Tubular Lantern (bright tin)	$12 50
No. O Tubular Globes	90
" 1 " Burners	70

VICTOR TUBULAR LANTERN

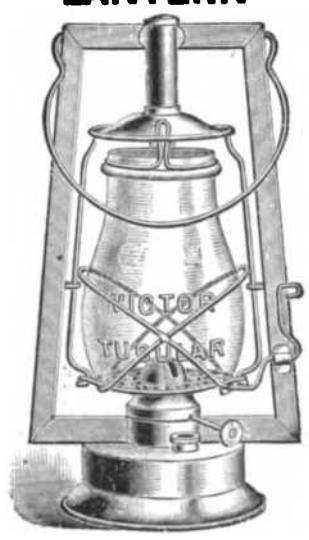


FIG. 7046

DESCRIPTION

No. 1 burner; ⅝ inch wick; No. O globe, standard size; for kerosene.

The crank at the side raises and lowers the globe and securely locks the burner in place when down.

PRICES

	Per Doz.
Victor Tubular Lantern (bright tin)	$9 50
No. O Tubular Globes	90
" 1 " Burners	70

O. K. TUBULAR LANTERN

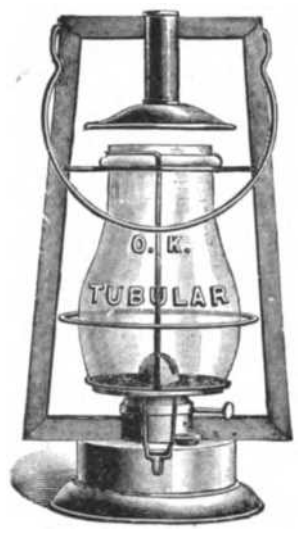


FIG. 7047

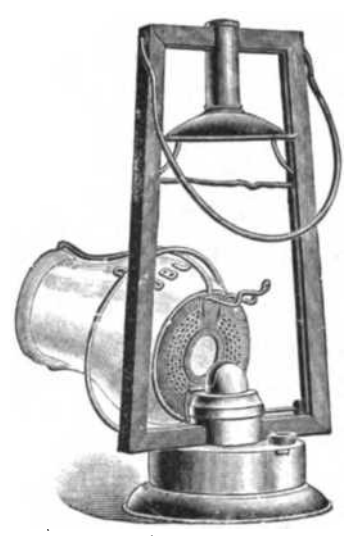


FIG. 7048

DESCRIPTION, FIGS. 7047 AND 7048

No. 1 burner: ⅝ inch wick; No. O globe, standard size; for kerosene.

One illustration shows the lantern with the globe tilted for lighting, the other shows the globe in place and the lantern ready for use.

PRICES

	Per Doz.
"O. K." Tubular Lantern (bright Tin)	$9 50
No. O Tubular Globes	90
" 1 " Burners	70

NO. O REGULAR TUBULAR LANTERN



FIG. 7049

DESCRIPTION, FIG. 7049

No. 1 burner; ⅝ inch wick; No. O globe, standard size; for kerosene.

The oil pots are drawn in one piece, and are made from I X tin. The burners are extra heavy, and the globes are carefully selected.

PRICES

	Per Doz.
No. O Regular Tubular Lantern (bright tin)	$9 00
" O " " Globe	90
" O Ruby Globes	3 50
" O Blue "	
" O Green "	

GLOBES

		White, Per Doz.	Green or Blue, Per Doz.	Ruby, Per Doz.
U. S.	Tubular Globes	$0 90	$3 50	$8 50
No. 0	" " (in barrels)	90	3 50	3 50
" 0	" " (flint glass)	3 00	10 00	13 00
" 0	" Bull's Eye Globes	1 92	.....	.....
" 1	" Globes	1 42	.....	.....
" 2	" " for No. 2 Hanging Lamp	4 80	.....	.....
" 3	" " for No. 3 St. Lamp	6 40	50 00	60 00
" 39	Railroad Globes (flint)	3 00	10 00	13 00
" 39	"	1 50	4 00	4 00
" 39	" Bull's Eye Globes	2 00	.....	.....

COLORED GLOBES

		Per Doz.
No. 0	Ruby Tubular Globes	$8 50
" 0	Blue or Green Tubular Globes	3 50
" 0	Half Ruby " "	30 00
" 0	" Blue or Green Tubular Globes	30 00
" 0	Ruby Tubular Globes (Corning)	18 00
" 0	Green or Blue Tubular Globes (Corning)	10 00
" 39	Ruby Globes	13 00
" 39	Green or Blue Globes (Corning)	10 00
" 3	Ruby Tubular Globes for Street Lamp	60 00
" 3	Blue or Green Tubular Globes for Street Lamp	50 00

WICKS

PRICES, EXTRA

		Per Gross.
No. 0	Wicks, ⅜ inch	$ 0 40
" 1	" ⅝ "	56
" 2	" 1 "	80
" 3	" 1½ "	1 28

Prices include regular package.

HEADLIGHT CHIMNEYS

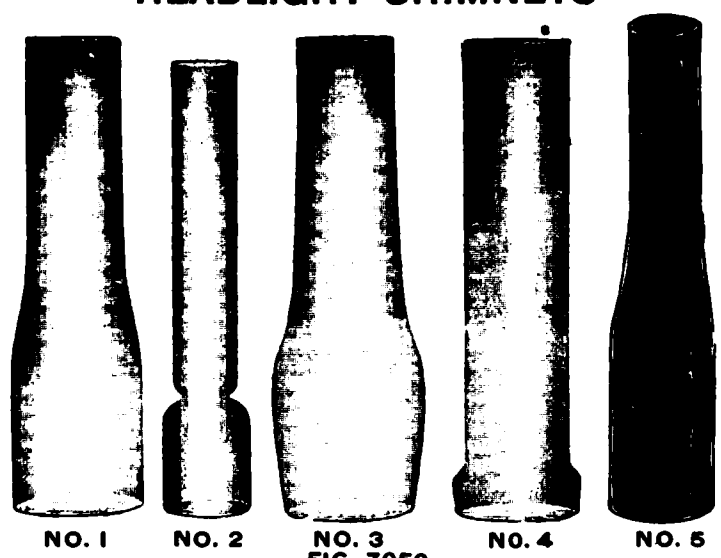


FIG. 7050

		Per Doz.
No. 1	Standard Chimney; fits all sizes of headlights from 14 to 23 inches	$2 50
" 2	" " for cable or motor car headlights	2 00
" 3	" " " hall burner	2 50
" 4	" Ft. Wayne Chimney	2 00
" 5	Moehring Argand	2 00

All the above chimneys are the best flint glass.

INSIDE CORRUGATED SEMAPHORE

DESCRIPTION

No. 1. Bull's Eye Lens.

Nos. 2 and 3. Flat Semaphore Lenses.

No. 4. Outside Corrugated Semaphore.

No. 5. Inside Corrugated Semaphore.

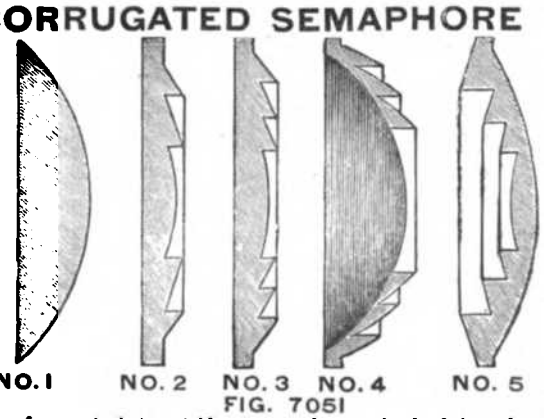


FIG. 7051

Give diameter of lens, from outside to outside, measured across back of rim, when ordering. Prices on application.

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LANTERNS

CONDUCTOR'S

NO. 3

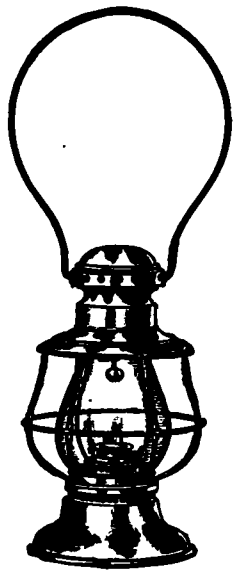


FIG. 7052

NO. 8. WIRE BASE

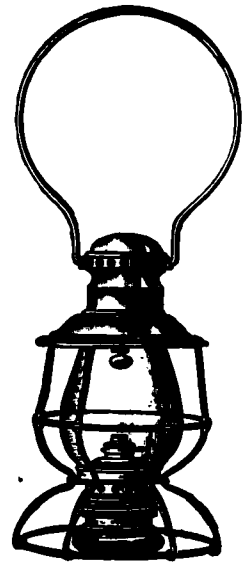


FIG. 7053

DESCRIPTION, FIGS. 7052 AND 7053

⅝ inch ratchet burner. Burns lard or railroad signal oil. Finely finished brass and nickel plated; also gold and silver plated to order. Hinge top. Globe removable. Furnished with half ruby, green or blue, or plain flint globe.

PRICES

		Per Doz.
No. 3	Polished Brass Conductor's Lantern	$60 00
" 3	Nickel plated " "	72 00
" 8	Polished Brass " "	66 00
" 8	Nickel plated " "	78 00
" 3	Hand made Flint Globes	6 00

CONDUCTOR'S

NO. 39



FIG. 7054

FIREMAN'S

NO. 39. WITH RING IN TOP



FIG. 7055

These lanterns are finely finished.

PRICES, FIGS. 7054 AND 7055

		Per Doz.
No. 39	Single Guard Conductor's Lantern, brass	$36 00
" 39	" " " " nickel plated	42 00
" 39	" " Fireman's " brass	36 00
" 39	" " " " nickel plated	42 00

WIRE BOTTOM RAILROAD LANTERN

NO. 39



FIG. 7058

DOUBLE GUARD



FIG. 7056

STEEL CLAD RAILROAD LANTERNS

NO. 39

DESCRIPTION, FIGS. 7056 AND 7057

Standard size. Burns lard oil. Made in tin, and the single guard brass and nickel plated. Bail attached to the guard frame, and is so arranged that when the lantern is in use the bail stands upright. The bail can be thrown down on base of lantern if required. Fitted with bayonet catch. These lanterns have drawn oil pot in one piece, which makes it impossible for them to leak. Glass oil pots can be furnished if desired. Hinged top and removable globe.

PRICES

No.		Per Doz.
39	Railr'd Lantern, single or double guard, tin,	$12 50
39	" " " " " brass,	40 00
39	" Globes	3 00

SINGLE GUARD



FIG. 7057

DESCRIPTION, FIG. 7058

Standard size. Burns lard oil. Hinge top, removable globe. Wire bottom. Casts no shadow.

The guard wires on all Wire Bottom No. 39 Railroad Lanterns are securely locked together with a patent band, making it very strong.

Bail is attached to guard frame, and is so arranged that when the lantern is in use the bail stands upright. The bail can be thrown down on base of lantern if required. Bayonet catch on oil pot.

PRICES

		Per Doz.
No. 39	Wire Bottom Railroad Lantern, single guard, tin	$11 00
" 39	Railroad Globe	3 00

STEEL GUARD SOLID TOP LANTERN



FIG. 7060

Prices on application.

GAS LANTERN



FIG. 7059

DESCRIPTION FIG. 7059

This lantern is invaluable for firemen (as it is impervious to smoke and steam) and also is a very safe lantern about the house, stable, yard, tent or cabin.

No oil, no smoke; gives a brilliant light and is positively odorless.

Efficient operation; easily charged; no jarring or blowing out; impossible to explode.

PRICES

	Each.
Highly polished nickel, tin frame	$3 50
Highly polished brass nickel plated	7 00
Colored Globes, extra	1 25

NO. 74 LANTERN



FIG. 7061

DESCRIPTION, FIG. 7061

Has three burners, for oil, candle and kerosene, ⅝ inch wick. No. O tubular globe. Sangster spring on oil pot.

PRICE

No. 74 lantern.....Per dozen, $6 00

HAND MADE FLINT GLOBES FOR CONDUCTORS' LANTERNS

PRICES

		Per Doz
No. 3	Conductors' Globes, white	$6 00
" 3	" " blue	18 00
" 3	" " green	18 00
" 3	" " ruby	18 00
" 3	" " half blue	30 00
" 3	" " half green	30 00
" 3	" " half ruby	30 00
Engraving name on globe,		each 1 00
"	" with wreath,	" 1 50

Above prices include regular package.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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MAST HEAD OR BOW LIGHT

Nos. 268–269–270–271.

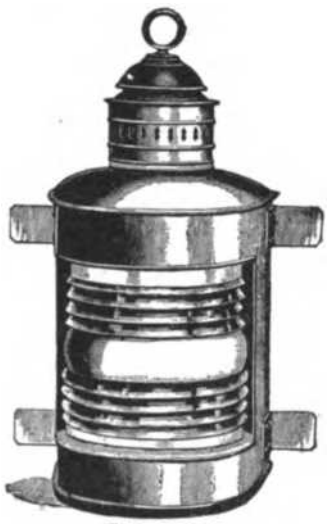


FIG. 7062

SIDE LIGHT

Nos. 280–281–282–283–284.

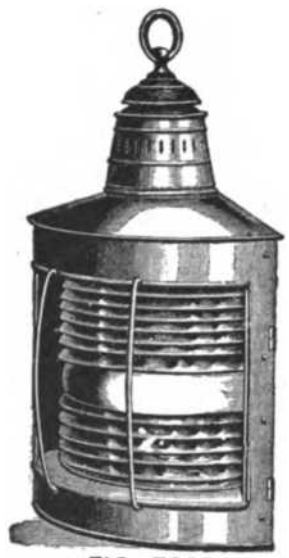


FIG. 7063

ANCHOR LIGHT

Nos. 302–303–304.

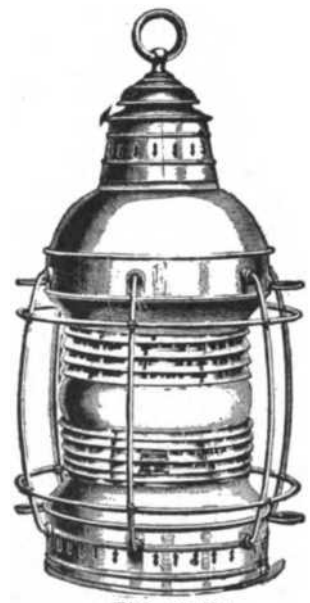


FIG. 7064

COMBINATION LIGHT

No. 293.

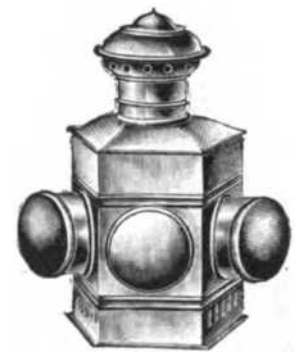


FIG. 7065

No. 293. Lamp for launches, brass. Complete, each $7 50

Details: Red, green and white lights show through three bull's eye lenses, at proper angles. Burner, kerosene, ½ inch wick. Height, 9½ inches.

MAST HEAD OR BOW LIGHTS

PRICES, FIG. 7062

		Brass or Dark Bronze.	Galv'd Iron.
No. 268.	Large size. Complete, each ..... Details: Lens, Fresuel, 8 inches, half section. Burner, kerosene, 1 inch wick. Height, extreme, 21 inches. Side lights No. 280 and anchor light No. 302 to match.	$20 00	$12 00
No. 269.	Medium regulation size. (Same pattern as No. 268, size smaller.) Complete, each ..... Details: Lens, Fresuel, 6 inches, half section. Burner, kerosene, ¾ inch wick. Height, extreme, 18 inches. Side lights Nos. 281 or 282 and anchor light No. 301 or 303 to match.	10 50	6 00
No. 270.	Small size. (Same pattern as No. 268, two sizes smaller.) Complete, each ..... Details: Lens, Fresuel, 4½ inches, half section. Burner, kerosene, ½ inch wick. Height, extreme, 12½ inches. Side lights Nos. 283 and 284 and anchor light No. 304 to match.	8 00	5 00
No. 271.	Small size. (Same pattern as No. 268, two sizes smaller.) Complete, each ..... Details: Plain bent glass, 4½ inches. Burner, kerosene, ½ inch wick. Height, extreme, 12½ inches. Side lights No. 289 to match.	7 00	4 00

SIDE LIGHTS

PRICES, FIG. 7063

		Brass.	Galv'd Iron.
No. 280.	Large size. Complete, pair ..... Details: Lens, Fresuel, 7½ x 10 inches. Burner, kerosene, 1 inch wick. Height, extreme, 21 inches. Head light No. 268 and anchor light No. 302 to match.	$42 00	$24 00
No. 281.	Regulation pattern, medium size. (Same style as No. 280, size smaller.) Complete, pair ..... Details: Lens, Fresuel, 7½ x 6 inches. Burner, kerosene, ¾ inch wick. Height, extreme, 18 inches. Head light No 269 and anchor light Nos. 301 and 303 to match.	22 00	12 00
No. 282.	Smaller regulation pattern, medium size. (Same shape as No. 280, two sizes smaller.) Complete, pair ..... Details: Lens, Fresuel, 5¾ x 6½ inches. Burner, kerosene, ¾ inch wick. Height, extreme, 15 inches. Head light No. 269 and anchor light Nos. 301 and 303 to match.	20 00	10 00
No. 283.	Old pattern. (Same shape as No. 280, three sizes smaller.) Complete, pair ..... Details: Lens, Fresuel, 4¾ x 5¾ inches. Burner, kerosene, ¾ inch wick. Height, extreme, 15 inches. Head light No. 270 and anchor light No. 304 to match.	18 00	9 00
No. 284.	Small yacht and launch size. (Same shape as No. 280, four sizes smaller.) Complete, pair ..... Details: Lens, Fresuel, 4¾ x 4¼. Burner, kerosene, ½ inch wick. Height, extreme, 12 inches. Head light No. 270 and anchor light No. 304 to match.	12 00	7 50

ANCHOR LIGHTS

PRICES, FIG. 7064

		Brass or Dark Bronze.	Galv'd Iron.
No. 302.	Large size. Complete, each ..... Details: Lens, Fresuel, 8 inches. Burner, kerosene, 1 inch wick. Height, extreme, 23 inches. Side lights No. 280 and head light No. 268 to match.	$15 00	$10 00
No. 303.	Medium size, not illustrated. Complete, each ..... Details: Lens, Fresuel, 6 inches. Burner, kerosene, ¾ inch wick. Height, 18 inches. Side lights Nos. 281 and 283 and head light No. 269 to match.	7 50	5 00
No. 304.	Small size, not illustrated. Complete, each ..... Details: Lens, Fresuel, 4¼ inches. Burner, kerosene, ½ inch wick. Height, 14 inches. Side lights No. 283 and 284 and head light No. 270 to match.	5 00	3 50

BULK HEAD LAMP

Nos. 312–313–314–315–316.



FIG. 7066

BULK HEAD LAMPS

PRICES, FIGS. 7066 AND 7067

		Brass.	Tin, Painted.
No. 312.	Large size, heavy. Complete, each ..... Details: Glass, 9 x 12 inch front; 6 x 12 inch sides, double thick. Burner for 300° or kerosene oil, double 1 inch wick. Reflector, 8 inch, nickeled. Material, extra heavy brass or tin. Height, not including handle, 16 inches.	$9 00	$5 00
No. 313.	Medium size, heavy. Complete, each ..... Details: Glass, 8 x 10 inch front; 5 x 10 inch sides, double thick. Burner, for 300° or kerosene oil, double ¾ inch wick. Reflector, 6 inches, nickeled. Material, extra heavy brass or tin. Height, not including handle, 14 inches.	8 00	4 25
No. 314.	Small size, heavy. Complete, each ..... Details: Glass, 6 x 8 inch front; 4 x 8 inch sides, double thick. Burner, for 300° or kerosene oil, ½ inch wick. Reflector, 6 inches, nickeled. Material, extra heavy brass or tin. Height, not including handle, 12 inches.	7 00	3 50
No. 315.	Large size, light. Complete, each ..... Details: Glass, 9 x 13 inch front and sides. Burner, kerosene, 1 inch wick. Reflector, 8 inch silvered glass. Height, not including handle, 17 inches.	6 00	2 50
No. 316.	Medium size, light. Complete, each ..... Details: Glass, 8 x 10 inch front and sides. Burner, kerosene, ¾ inch wick. Reflector, 7 inches, silvered glass. Height, not including handle, 14 inches.	5 00	2 00
			Galv'd Iron.
No. 317.	Large size, heavy, guarded. Complete, each ..... Details: Glass, 9 x 12 inch front; 6 x 12 inch sides, double thick. Burner, for 300° or kerosene oil, double 1 inch wick. Reflector, 8 inches, nickeled. Material, extra heavy brass or galvanized iron. Height, not including handle, 16 inches.	11 00	7 50

BULK HEAD LAMP

No. 317.

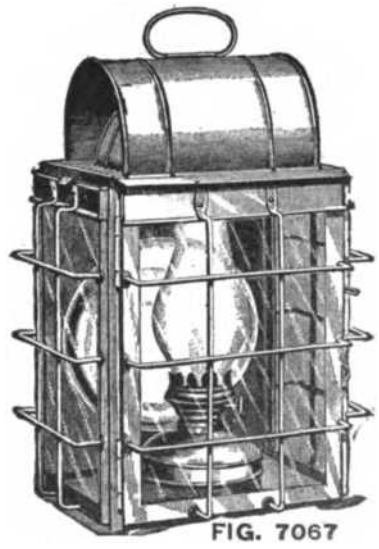


FIG. 7067

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GUARDED ELECTRIC FIXTURES

BULKHEAD FIXTURE
For Molding, Steam Tight.
Nos. 362–362B.

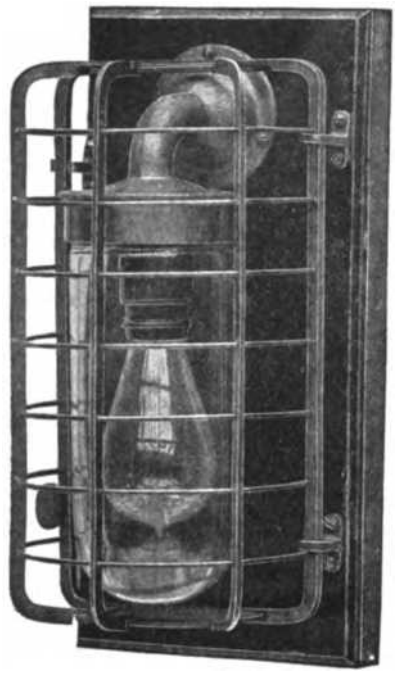


FIG. 7068

BULKHEAD FIXTURE
For Molding, Not Steam Tight.
No. 363.

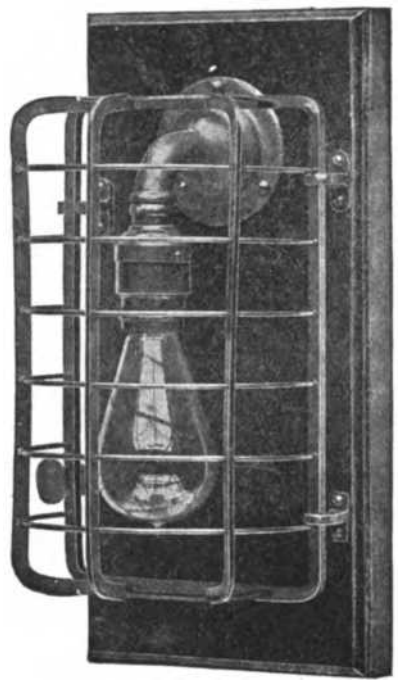


FIG. 7069

BULKHEAD FIXTURE
For Conduit, Steam Tight.
Nos. 365–365B.



FIG. 7070

DROP FIXTURE
For Conduit, Steam Tight.
Nos. 369–369B.



FIG. 7071

PRICES

No. 365 Bulkhead Fixture, steam tight globe, guarded, for conduit, brass or dark bronze, each $5 50
No. 365B Bulkhead Fixture, U. S. Navy Standard. Price on application.
No. 369 Drop Fixture, steam tight globe, guarded, for conduit, brass or dark bronze, each $5 00
No. 369B Drop Fixture, U. S. Navy Standard. Price on application.

PRICES, FIGS. 7068 AND 7069

No. 362 Bulkhead Fixture, steam tight globe, full guarded for molding, with wood block, brass or dark bronze, each $6 00
" 362B " " U. S. Navy Standard. Price on application.
" 363 " " Open lamp, full guarded, for molding, with wood block, brass or dark bronze, each 4 25

PORTABLE LANTERN OR STAFF LIGHT
Steam Tight.
Nos. 375–375B.



FIG. 7072

PORTABLE LANTERN
Not Steam Tight.
No. 376.



FIG. 7073

HAND PORTABLE
Steam Tight.
Nos. 377–377B.



FIG. 7074

HAND PORTABLE
Not Steam Tight.
Nos. 378–378B.

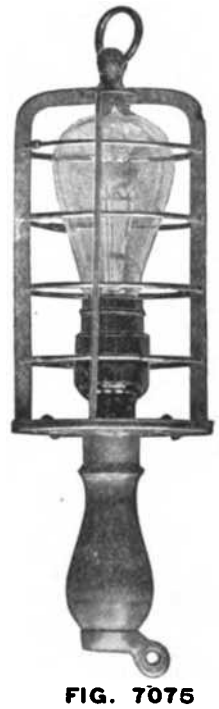


FIG. 7075

COAL BUNKER LAMPS
No. 355.



FIG. 7076

No. 356.



FIG. 7077

PRICES, FIGS. 7072 TO 7075

No. 375 Portable Lantern, steam tight globe, guarded, brass or dark bronze, each $4 50
" 375B " " U. S. Navy Standard. Price on application.
" 376 " " Open lamp, guarded, brass or dark bronze, each 2 50
" 377 Hand Portable, steam tight globe, guarded, brass or dark bronze, each 6 00
" 377B " " U. S. Navy Standard. Price on application.
" 378 " " Open lamp, guarded, brass or dark bronze, each 3 00
" 378B " " U. S. Navy Standard. Price on application.

Above prices do not include electric lamps or sockets.

PRICES, FIGS. 7076 AND 7077

No. 355. Capacity, one pint. Galvanized iron, extra heavy.
Per dozen $6 00
No. 356. Capacity, over one pint. Galvanized iron, extra heavy.
Per dozen $9 00

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SEARCHLIGHT PROJECTORS

COMMERCIAL SEARCHLIGHT PROJECTORS

Hand Control, 18 Inches.

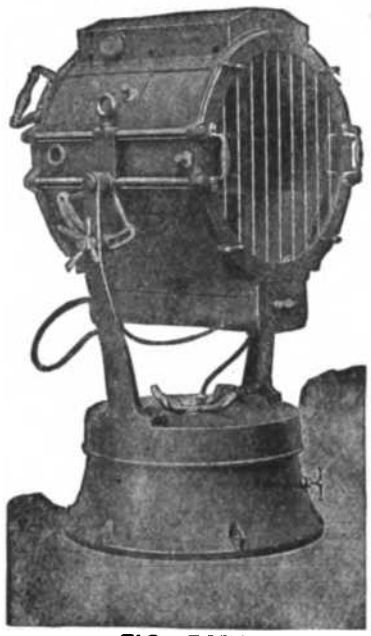


FIG. 7078

Pilot House Control.



FIG. 7079

Hand Control, 13 Inches.

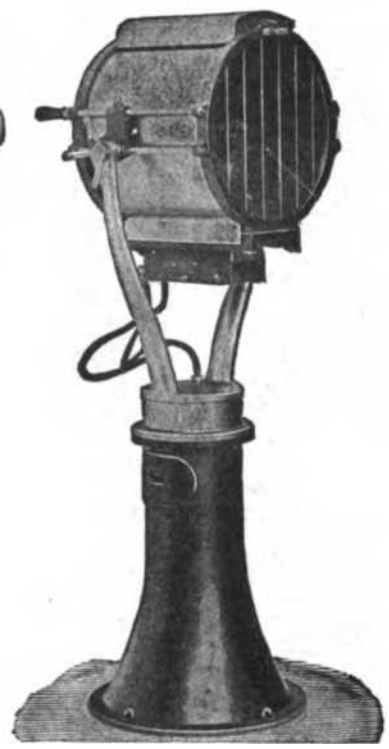


FIG. 7080

U. S. GOVERNMENT SEARCHLIGHT PROJECTOR

With Controller.



FIG. 7081

METHOD OF CONTROL

The 9 inch, 13 inch, and 18 inch projectors are made for either hand or pilot house control; the 24 inch, for hand, pilot house, or electric control; and the 30 inch and 36 inch, for either hand or electric control.

HAND CONTROL

The beam of light from the hand control projectors can be trained vertically or horizontally by the operator standing at the projector and moving the barrel in the desired direction with the handles. A star wheel, mounted on the end of the trunnion, acts as a locking device, by means of which the barrel of the projector may be held at any desired angle.

PILOT HOUSE CONTROL

The pilot house control projectors are mounted on top of the pilot house and operated from within. Both horizontal and vertical movements of the beam of light are accomplished by means of the same lever, which is located conveniently within reach of the pilot. The projector may be locked at any desired angle by turning the handle of the lever so that it screws against the quadrant like a set screw.

ELECTRIC CONTROL

Electrically controlled projectors may be operated from a distance. They have electric motors mounted in the base of the projector, one motor operating a train of gears controlling the vertical movement, and the other motor operating another train of gears controlling the horizontal movement of the projectors. These motors are regulated by a controller conveniently located and connected to the projector by seven conductors. The movement of the beam of light corresponds to the movement of the handle of the controller, and both horizontal and vertical movement can be obtained at the same time. On releasing the handle of the controller it is brought back by a strong spring to the neutral position, short circuiting the armatures of the motors and holding the projector locked in position. An electrically controlled projector can also be operated as a hand control projector by opening the circuit switch on the top of controller and releasing the clutches connected to the motors in the base of the projector. The following table shows the sizes of standard projectors, the current, volts at arc, and dimensions of carbons:

Sizes, Inches.	Current		Carbons	
	Amperes.	Volts at Arc.	Positive—Cored. Inches.	Negative—Solid. Inches.
9	10	43–46	½ x 5½	7/16 x 3½
13	20	45–48	¾ x 6	½ x 4½
18	35	47–50	15/16 x 8½	⅝ x 5

Sizes, Inches.	Current		Carbons	
	Amperes.	Volts at Arc.	Positive—Cored. Inches.	Negative—Cored. Inches.
24	50	48–52	1 x 12	¾ x 7
30	80	49–53	1⅛ x 12	⅞ x 7
36	130	50–55	1¼ x 12	1 x 7

FURTHER INFORMATION AND PRICES ON APPLICATION

MARINE PROJECTORS AND SEARCHLIGHTS

PILOT HOUSE PROJECTOR

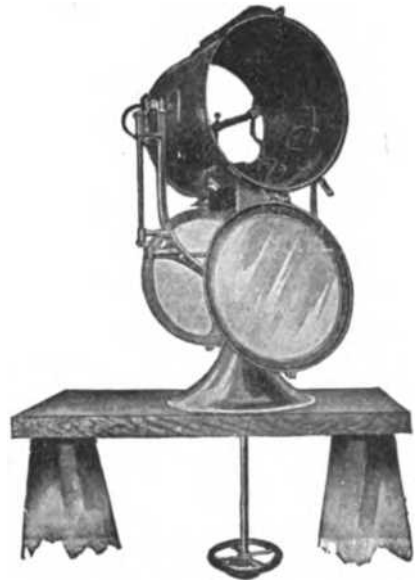


FIG. 7082

PRICES, FIGS. 7082 AND 7083

			Deck Type		Pilot House	
			Iron.	Brass.	Iron.	Brass.
7 in. Mirror,	low stand		$120 00	$145 00	$150 00	$170 00
	high	"	125 00	155 00	.....	.....
9 " "	low	"	145 00	170 00	175 00	200 00
	high	"	150 00	185 00	.....	.....
12 " "	low	"	190 00	230 00	220 00	260 00
	high	"	200 00	255 00	.....	.....
16 " "	low	"	325 00	370 00	385 00	430 00
	high	"	340 00	410 00	.....	.....
20 " "	.....		375 00	430 00	.....	.....
24 " "	.....		425 00	490 00	.....	.....
28 " "	.....		500 00	600 00	.....	.....
12 " Reflector	.....		110 00	130 00	160 00	180 00
16 " "	.....		130 00	150 00	190 00	210 00
20 " "	.....		160 00	190 00	.....	.....

7 inch portable Projector, 10 amperes, $100.00. Weight in aluminum, 15 pounds; in brass, 20 pounds.

DECK TYPES

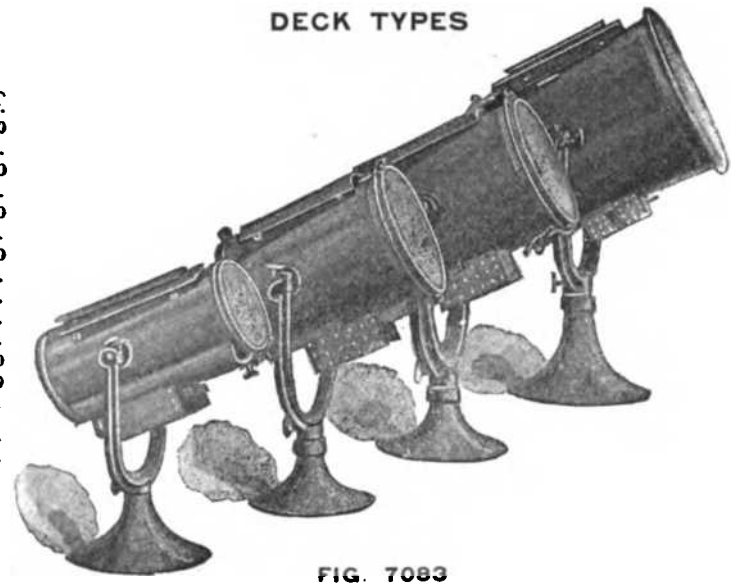


FIG. 7083

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THE DAVY OR GAUZE SAFETY LAMPS

FOR THE DETECTION OF GAS IN COAL MINES, SEWERS AND BREWERY VATS. FOR PRODUCERS AND USERS OF GAS. FOR COKE OVENS, ETC. WITH AND WITHOUT IMPROVED BONNETS OR WIND SHIELDS

NO. 7 THOMAS

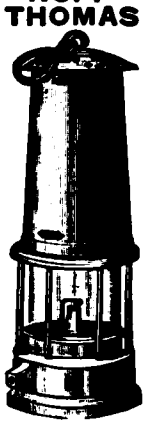


FIG. 7085
PRICE, $3.70

NO. 22 MARSAUT

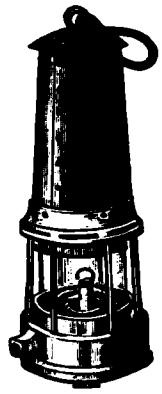


FIG. 7086
PRICE, $3.50

NO. 20 CAMBRIAN BONNETED

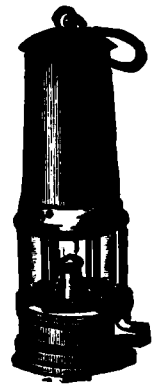


FIG. 7087
PRICE, $3.00

NO. 24 BONNETED CLANNY



FIG. 7088
PRICE, $2.80

BONNETED MUESELER

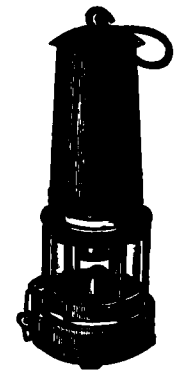


FIG. 7089
PRICE, $4.35

CELYNEN MUESELER

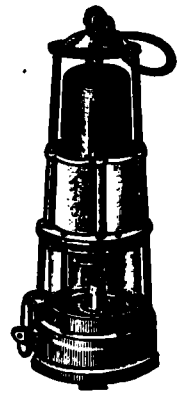


FIG. 7090
PRICE, $4.20

NO. 3 MUESELER

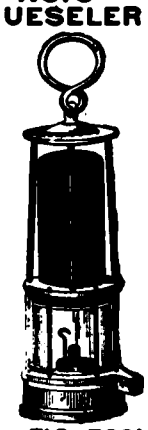


FIG. 7091
PRICE, $3.15

DESCRIPTION, FIGS. 7085 TO 7091

The bonneted type of lamp is safe in all currents of air. No. 7 is a most efficient lamp. The flame is bright and steady in the strongest air current. It showed no signs of danger in an explosive atmosphere moving with a velocity of 3,200 feet per minute after a test of nearly eight minutes. At the bottom of the bonnet there is a brass flange ring which allows the air to pass in between the flange and the bonnet, to the light. It is not easily extinguished by being turned over.

The Marsaut is similar to the bonneted Clanny, but has a double gauze, so that the flame is not so liable to pass out, as in a single gauze lamp, and gives an excellent light. The Nos. 20 and 24 are the ordinary Clanny with single gauze and bonnet as shown, and are largely in use, meeting all the present requirements of the mining laws.

The Mueseler is similar to the Clanny with a conical metal chimney through the center of the gauze cylinder, which has the effect of forcing all the air to feed the flame, before passing up the chimney. We furnish it in three patterns: the bonneted and open lamp, and the Celynen.

ASHWORTH HEPPLEWHITE GRAY IMPROVED

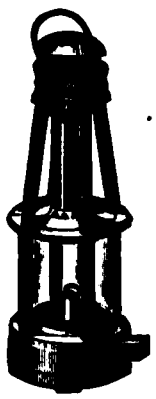


FIG. 7092
PRICE, Brass $6.00, Aluminum $11.00

NO. 2 UNIVERSAL CLANNY



FIG. 7093
PRICE, $2.90

NO. 17 WILLIAMSON DOUBLE SAFETY

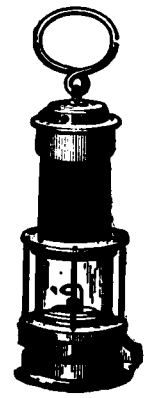


FIG. 7094
PRICE, $4.65

NO. 4 NEWCASTLE DAVY

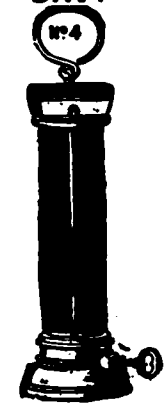


FIG. 7095
PRICE, $2.10

NO. 10 FIREMAN'S

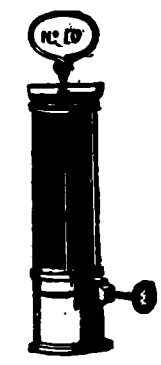


FIG. 7096
PRICE, $2.10

DESCRIPTION, FIGS. 7092 TO 7096

The Gray's lamp is especially adapted for use as a fire tester. It has port holes in the tubular standards both at the top and the bottom, and by opening one or the other the air is made to enter either at the bottom or the top of the lamp to feed the light. By using the top openings the gas can be detected in the roof or in the openings without turning the lamp sidewise, as is usual with other lamps. The No. 2 Clanny lamp has a glass cylinder surrounding the flame, with an iron gauze cylinder above it. The air enters through the gauze cylinder and out at the top. This gives a much better light than an all gauze cylinder Davy lamp, and is used to a large extent where there is not a great velocity of air.

The Williamson No. 17 is an improved form of Clanny, having two glass cylinders, the inner one extending nearly to the top of the lamp. It has a perforated metal cover, making it doubly safe. A wire gauze cylinder covers the upper part and the air enters from the bottom through perforations covered with wire gauze. This lamp resists a much higher current of air than the No. 2. Nos. 4 and 10 are patterns with all gauze chimneys or cylinders, useful in mines where the air currents do not exceed 360 feet per minute.

The above prices are for lamps with ordinary screw lock and with iron gauze chimneys. Lead seal locks and copper gauze chimneys extra.

BULL'S EYE LANTERN



FIG. 7097
PRICE
No. 2, 3 inch lens, 8 inches high, japanned, per doz., $6.00.

GERMAN LAMP TRIMMER

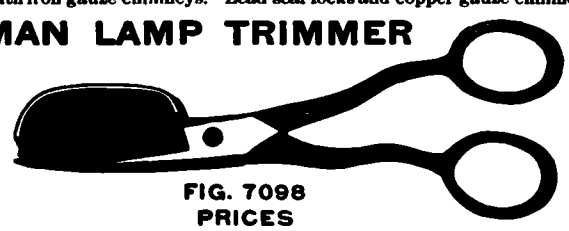


FIG. 7098
PRICES

No. 5548	Japanned cast steel, 5¼ inches	per doz.,	$3 80
" 5544	Polished " 6 "	"	4 20

CHALLENGE LAMP TRIMMER



FIG. 7099
PRICE
Maroon handles, per dozen..... $4 40

ALCOHOL TORCH

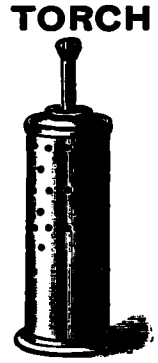


FIG. 7100

This torch has an outer perforated sheath which, when raised, prevents the extinguishing of the light by strong draughts.

PRICE
Per dozen.....$7 60

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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LOCOMOTIVE TORCHES

NO. 1

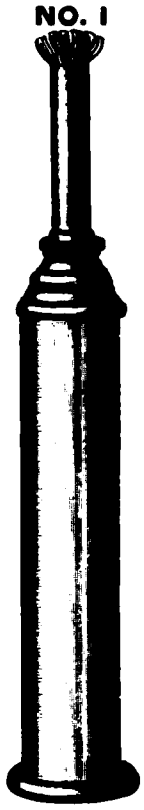


FIG. 7101

NO. 2



FIG. 7103

NO. 3

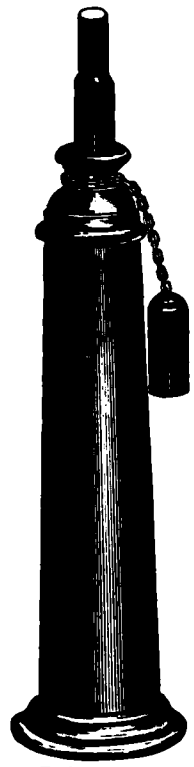


FIG. 7104

PRICES, FIGS. 7101 TO 7104

		Per Dozen.
No. 1	Tin, 1 pint, height 14 inches	$10 00
" 1	Brass, 1 " " 14 "	12 00
" 2	Tin, 1 quart, " 10 " diameter of bottom 6 inches	12 00
" 2	Brass, 1 " " 10 " " " " 6 "	18 00
" 3	Tin, 1 pint, extra heavy, height 13 inches	18 00
" 3	Brass, 1 " " " " 13 "	24 00
Torch bracket, brass, for Nos 1 and 3		10 00

HAND LAMP



FIG. 7107

Spout is reversible. Long end for kerosene; short, for lard.

PRICES	Tin.	Brass.	Copper Plated.
Lamp No. 1, per doz.	$2 00	$3 00	$2 70
" " 2, " "	2 25	3 75	3 00
" " 2½, " "	2 65	4 50	3 75
" " 3, " "	3 00	5 00	4 25

ENGINEER'S HAND LAMP



FIG. 7108

Tin, per dozen.....$3 75
Brass, " " 6 50

SCREW TOP STEEL LAMP



FIG. 7111

For mills, foundries, furnaces, machine shops, tunnels and railroads, with 1, 2, 3 and 4 burners.

PRICES, FIG. 7111

	Per Dozen.
Half pints	$8 00
Pints	8 50
Quarts	9 50
3 pints	10 50
2 quarts, 1 spout	12 50
2 " 2 "	13 50
3 " 3 " }	on application
4 " 4 " }	

COPPER PLATED STEEL INSPECTORS' AND LOCOMOTIVE TORCHES

NO. 27

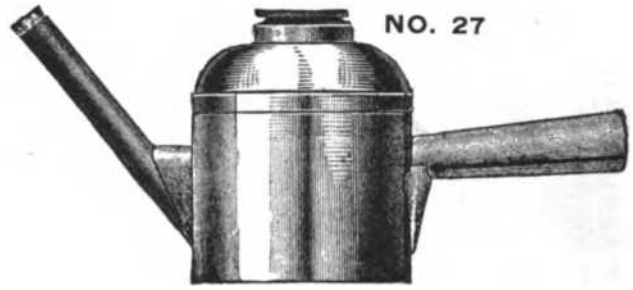


FIG. 7105

NO. 26



FIG. 7106

PRICES, FIGS. 7105 AND 7106

No. 26 1 pint, 2 inches diameter, 15 inches high, brass cap and tube, per dozen.....$12 00
" 27 1½ pints, 2 inches diameter, 4⅛ inches high, brass cap and tube, per dozen..... 12 00
" 28 1 quart 4 ounces, 5¼ inches diameter, 4¼ inches high, brass cap and tube, per dozen, 15 00

These torches are made of extra heavy steel, making them a strong and safe torch for railroad use with kerosene.

Heavily copper plated inside.

ENGINEERS' HAND LAMPS

TIN



FIG. 7109

MALLEABLE IRON



FIG. 7110

PRICES, FIGS. 7109 AND 7110

	Per Dozen.
½ pint, tin	$4 00
1 " "	7 00
½ " galvanized iron	5 00
1 " " "	8 00
½ " brass	6 00
1 " "	10 00
½ " malleable iron	5 00
Extra burners to fit above	50

COPPER PLATED STEEL LAMP



FIG. 7112

Nos.	Capacity.	Diameters.	Per Dozen.
20	5 oz.	3⅜ in.	$6 00
20½	½ pt.	3¾ "	9 00
21	1½ "	4⅛ "	12 00

PETTY COAT LAMP



FIG. 7113

Tin, per dozen.....$2 00
Galvanized iron, per dozen.. 2 50

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STEEL MILL LAMPS



FIG. 7114 FIG. 7115



FIG. 7116

These mill, foundry, furnace and machine torch lamps are made with 1, 2, 3 and 4 burners.

Pints, per dozen	$10 00
Quarts, " "	11 00
3 pints, " "	12 00
½ gallons, 1 spout, per dozen	13 00
½ " 2 " " "	14 00
Gallons, 3 " " "	18 00
" 4 " " "	19 00

SOLID CAST IRON FURNACE LAMP



FIG. 7117
No solder used in its construction.

PRICES

No. 1, holding 3 pints, per dozen	$9 00
" 2, " 3 " " "	7 50
Extra wicks, No. 1, " "	55
" " " 2, " "	30

MINER'S CAST IRON LAMP



FIG. 7118

For kerosene or whale oil. Brass collar and breast in one piece; spout and body in one piece. No seams to melt.

Price, per gross.....$18 00

CLIMBER'S LAMP

With Double Reservoir.

DESCRIPTION, FIG. 7120

Especially designed for climbing around lofts, erecting new work, etc. The oil is placed in reservoir A, which fits snugly into main reservoir of lamp, preventing leakage of oil in any position the lamp may be placed. The main reservoir holds wick, which can be very readily inserted when the oil reservoir is removed. The bail is riveted to the body of lamp and is rigid—will not swing. The bail is sufficiently high to enable the arm to pass through, permitting the use of both hands in climbing. Made of best quality heavy sheet steel, brazed with hard spelter. Can not be broken, bruised or melted.



FIG. 7120

1 quart, per dozen.....$30 00

WELLS LIGHT TORCHES

NO. 3 LAMP



FIG. 7121

NO. 1, 800 CANDLE POWER

Flame, 15 inches long; oil used, ½ gallon per hour; size of tank, 10½ x 16 inches; weight when full, 75 pounds; when empty, 45 pounds.

It holds sufficient oil to burn for about 5 hours, but can be refilled while burning without danger or putting out the light.

It is a handy shop light for foundries, boiler works, machine shops, round houses, etc., and in any work requiring a smaller light than the No. 3, and for repair work generally.

Price, complete.....$75 00

NO. 3, 2000 CANDLE POWER

Flame, 30 inches long; oil used, 1 gallon per hour; size of tank, 18 x 24 inches; weight when full, 245 pounds; when empty, 110 pounds.

This tank is of steel boiler plate, with handles on each side. It can be carried by two men, or, by using a carriage, as Fig. 7122, may be moved about by one person. In actual tests, this size light has been found of greater illuminating power than two arc lights rated at 1200 C. P. each. It holds sufficient oil to burn 14 hours, but may be refilled while burning, absolutely free from danger, giving a clear white light, without smoke or spray: is not dazzling, and does not throw intense shadows.

Price, complete.....$100 00

NO. 5, 4000 CANDLE POWER

Flame, 36 inches long; oil used, 1½ gallons per hour. Tank same as No. 3. Either burner can be used on same tank.

Price, complete.....$110 00

EXTRA BURNERS

For No. 1 Light, $10. For No. 3 Light, $12. For No. 5 Light, $20.

An extra burner is of value where lights are in constant use in tunnels, mines, etc. A spare burner being kept always clean, ready for immediate use, is always an advantage.

No. 1 Burners to work with No. 3 Lights are very useful, as a light of 800 C. P. is often sufficient in clearing up foundries, and in machine shops, and enables users to have either 800 or 2000 C. P. light as desired with a No. 3 Light.

CARRIAGE FOR NO. 3



FIG. 7122

This handy carriage is made to pick up any No. 3 Lamp. By its use lamps, when full of oil, can be easily wheeled about by one person. A large number are in use at blast furnaces, steel works, engineering works, etc., and by cable and subway construction companies.

Price, Carriage only, to fit any No. 3 Lamp.....$18 00

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WELLS LIGHT TORCHES

ARRANGEMENT FOR HEATING OR LIGHTING

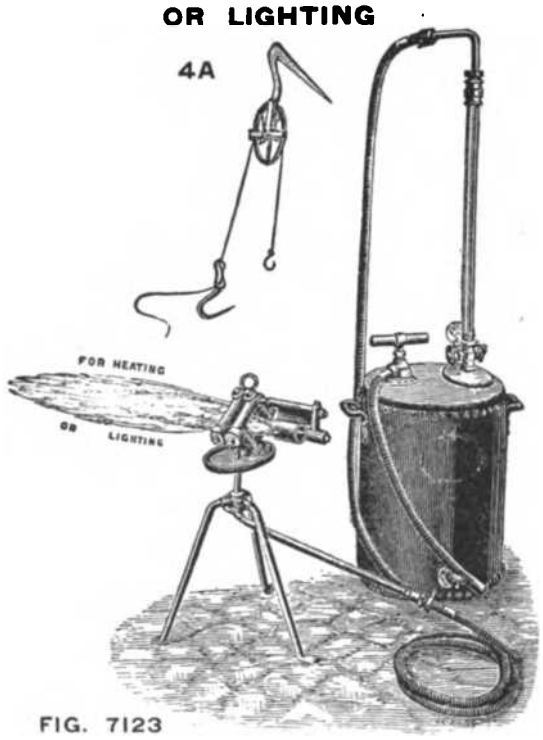


FIG. 7123

As an adjunct to No. 3 light, the arrangement shown above will be found very useful for many purposes. The burner can be swung up to a wooden pole or beam or lowered below the level of the lamp, and is thus rendered practically independent of the tank. For use in dry docks, or up and down the sides of a ship during building, it is invaluable. For heating quickly it is often very useful; saves the lengthy and troublesome operation of lighting a fire under the work. Of special value for iron workers, boilermakers, etc. For builder's use it will in many cases be found more serviceable than the iron mast arrangements, as the burner can stand anywhere on a scaffold, while the tank remains in a secure position.

PRICES

Tripod burner, with brass gland to drop any size burner in, telescope tail pipe, with 10 feet flexible oil hose and couplings.....$16 00
Snatch block, 4a, with hook and spike and 20 feet of flexible wire..... 5 00
Longer lengths of special oil piping supplied if requested.

OUTDOOR TORCH BURNER

For Foundries, Machine Shops, and for Any Outdoor Use.

It will stand the strongest wind.

It can be made in two and four light pendant form, for lighting large area.



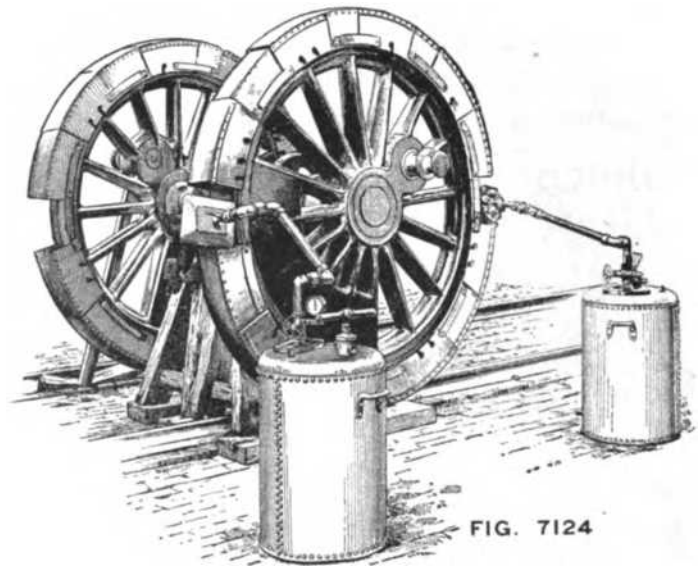
FIG. 7125

PRICES

½ gallon Outdoor Torch Wall Lamp, complete with ⅛ burner..... $2 00
1½ gallons Outdoor Torch Wall Lamp, complete with ¼ burner..... 3 00

AS A COMBINATION TOOL FOR TIRE EXPANDING, ETC.

DESCRIPTION
FIG. 7124


FIG. 7124

This system of expansion allows tires to be removed or set while the wheels are under the locomotive, with from 10 to 15 minutes reheating.

For other heating purposes the Wells Light meets requirements almost, if not quite as important as tire expanding. Bent locomotive frames can, in a few minutes, be heated by the direct application of the flame sufficiently hot to straighten without burning the paint off or heating adjacent parts, and the time required for such heating is less than the time required to build up an arch on a forge, as is done in most shops at the present time. For boiler shop work in laying up laps and corners around water legs and openings, in boiler repairs for heating sagged crown sheets, shaping patches on fire boxes, the Wells Light supplies a long felt want, as it is practically a large blow pipe, and will heat a considerable section of the plate red hot in from 10 to 15 minutes. As a combination shop tool, for lighting shops, turntables, yards, tire expanding, heating bent frames and boilermaking and repairing, it is one of the most useful additions that can be made to a shop equipment. The lights, when not in use for tire expanding, can be used as lights for wrecking purposes, etc., etc.

PRICES

Complete outfit.....$325 00
Tire covers, universal joints and burners alone.... $125 00

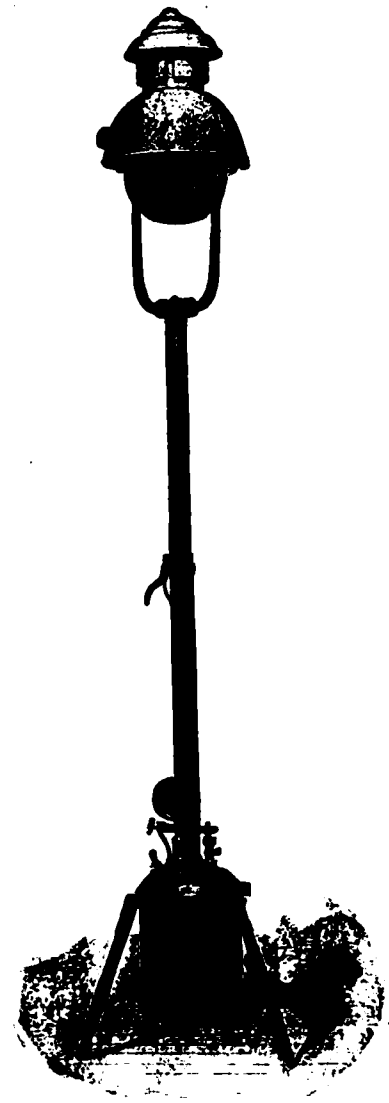
PORTABLE LAMP FOR SHOP USE

DESCRIPTION, FIG. 7126

This is a high power portable lamp, being of nominal 2,000 candle power, giving a greater light than that produced by the electric arc. As seen from the illustration, it is adapted to ready removal from place to place, this feature making it desirable for use in mines, about blast furnaces, in foundries, and in all forms of street and railway construction, where it is essential to have an excellent light, which can readily be moved by an ordinary laborer. The lamp is fitted with two Welsbach mantles, and the fuel used is ordinary kerosene oil, one gallon of which will burn from 12 to 14 hours.

PRICE

Complete.....$75 00


FIG. 7126

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FUSEE AND TORPEDO CASE

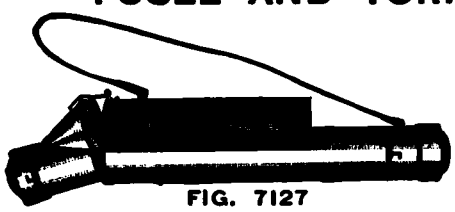


FIG. 7127

Made in a variety of shapes and sizes, and to take 5, 10 or 15 minute fusees. Special patterns made on application. Made of heavy tin, japanned and lettered with initials of railroad. Furnished with leather straps or handles.
Prices on application.

TORPEDO, FUSEE AND FLAG HOLDER

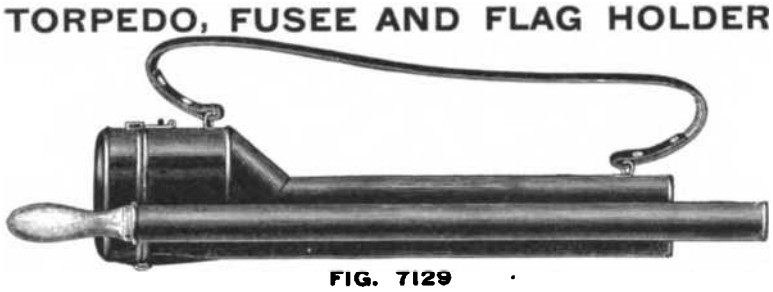


FIG. 7129

Made of heavy tin, neatly japanned in any desired color, with gilded letters.

	PRICE		
Length of Holder, feet	3	Capacity, Fusees	3
" " Strap "	3	Per dozen	$25 00

TORPEDO

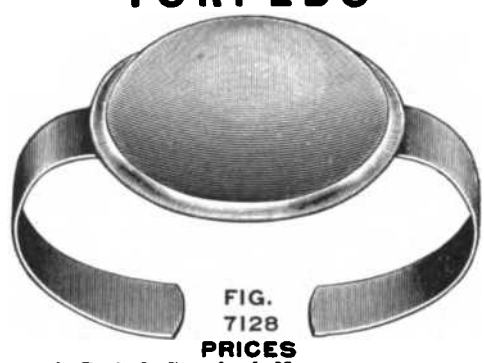


FIG. 7128

PRICES

	Per Gross.
Acme Safety or C. B. & Q. Standard, No. 1	$1 15
" No. 2	1 10
" " 3	1 05
" " 4	1 00
" " 5, Steel Spring Clip	2 50
" " 6, " " "	2 00

RED AND GREEN LIGHT FUSEES

	Per Gross.		Per Gross.
Acme 10 min. Fusee, No. 1	$18 00	Acme 10 min. Fusee, No. 3	$15 00
" 10 " " " 2	16 00	" 10 " " " 4	14 00

Acme 5 minute Fusees, $3.00 less than 10 minute.

COMBINATION FLAG AND LANTERN SOCKETS

NO. 6



FIG. 7130

NO. 7

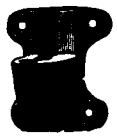


FIG. 7131

NO. 8



FIG. 7132

Made of malleable iron. No. 6 for Locomotives. Long Socket to carry Lantern and Flag at same time. No. 7 for Coaches. No. 8 Short Socket for Locomotives. Prices on application.

BUNTING

We are prepared to furnish Bunting in all colors and widths, for Flags, Railway Signals and Decorations.

GRADES

U. S. Standard,
American Navy,
High Grade.

U. S. ARMY AND NAVY FLAGS

Regulation Sizes.

Lengths, Feet.	Width, Ft.	Width, In.	Lengths of Union, Ft.	Lengths of Union, In.	Width of Union, Ft.	Width of Union, In.	Width of Stripe.	Prices of Flags, Complete.
36	19	6	12	0	10	7	18	.....
32	17	0	12	10	9	4	16	.....
30	17	0	12	0	9	4	16	.....
28	14	10	11	3	8	2	14	.....
25	13	2	10	0	7	0	12	.....
20	10	0	6	8	5	3	9	.....
16	8	6	6	5	4	8	8	.....
14	7	5	5	7	4	1	7	.....
12	6	3	4	10	3	6	6	.....
10	5	3	4	0	2	11	5	.....
8	4	2	3	2	2	4	4	.....
7	4	2	3	2	2	4	4	.....
6½	6	0	3	0	3	0	5½	.....
6	3	2	2	5	1	9	3	.....
5	3	2	2	5	1	9	3	.....

Flags are made with patent clamp, dyed union and stripes.

SCANDINAVIAN PADLOCKS

FAST SHACKLE — LOOSE SHACKLE

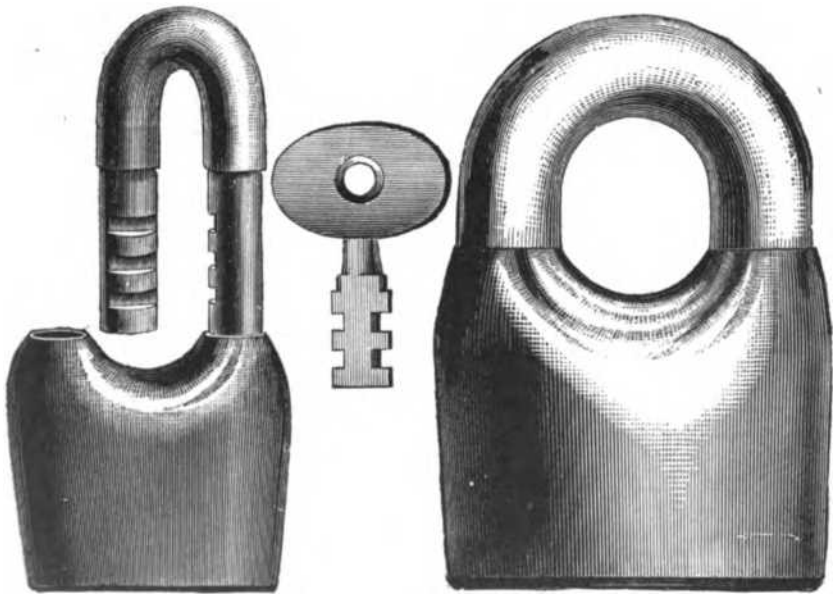


FIG. 7133 — FIG. 7134

PRICES

Loose Shackles. Nos.	Weight per Dozen, Pounds.	Per Dozen.	Fast Shackles. Nos.	Weight per Dozen, Pounds.	Per Dozen.
135	4½	$4 50	1350	4½	$4 50
137	6	5 00	1370	6	5 00
139	7	6 00	1390	7	6 00
141	10	7 50	1410	10	7 50
143	12	9 00	1430	12	9 00
145	15	10 50	1450	15	10 50
147	22	12 00	1470	22	12 00
149	25	13 50	1490	25	13 50

Put up with extra keys. Keys to pass, etc., when wanted.

DEFENDER PADLOCKS



FIG. 7135



Nos. 853 and A53. Shackle closed. Actual size 2 inches.



FIG. 7136

PRICES, FIGS. 7135 AND 7136

Nos.	Per Dozen.
853 With Steel Case, Bower-Barff finish, Bronze Inside Work, Steel Shackle, Nickel Plated	$18 00
A53 Brass Case, Bright Finish, Bronze Inside Work, Steel Shackle, Nickel Plated.	19 80
S503 is No. 853, with 9 inches of Galvanized Iron Curb Chain	22 80
A503 " " A53 " 9 " " " " " "	24 60
853MK (853 Master Keyed)	22 20
A53MK (A53 " ")	24 60

144 changes. Two Corrugated German Silver Keys with each lock.

STANDARD PADLOCK

Solid Cast Bronze. Four Lever Tumblers.

Actual size 2½ inches.

Nos.		Per Dozen.
8073	With Bronze Case and Bronze Shackle and 9 in. of Galvanized Iron Curb Chain	$64 20
8074	With Bronze Case and Steel Shackle and 9 in. of Galvanized Iron Curb Chain	71 40
8273	With Nickel Plated Bronze Case and Shackle and 9 in. of Galvanized Iron Curb Chain	70 80

144 changes.
Two keys with each lock.



FIG. 7137

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CAST BRONZE METAL SPRING PADLOCKS

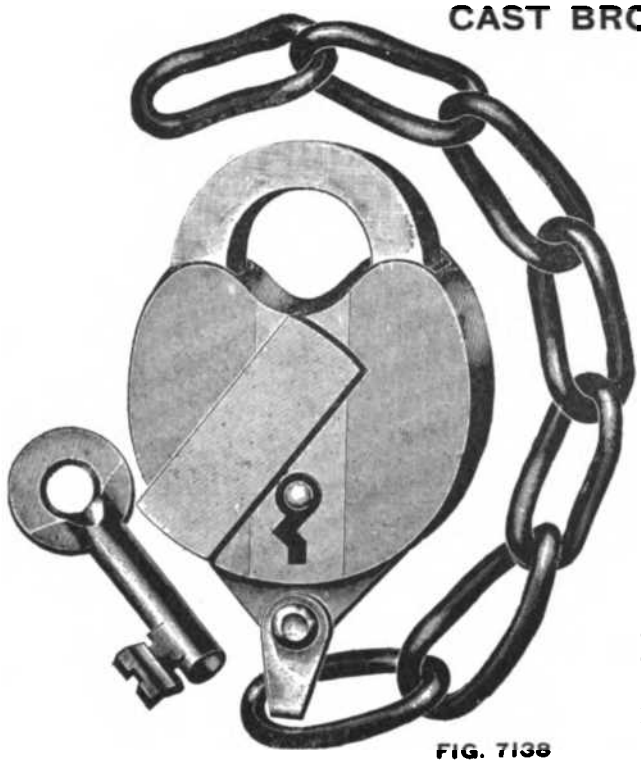


FIG. 7138

DESCRIPTION AND PRICES
FIG. 7138

No. 87. 2½ in. Heavy Tumbler Lock, spring cover and chain; 12 keys, $14.00 per dozen; 24 keys, $15.50 per dozen.

No. 88. 2½ in. Extra Heavy Tumbler Lock, spring cover and chain; 12 keys, $15.00 per dozen; 24 keys, $16.50 per dozen.

No. 89. 2½ in. Extra Heavy Tumbler Lock, spring cover and chain, waterproof; 12 keys, $16.00 per dozen; 24 keys, $17.50 per dozen.

Above locks are for railroad cars and switches.

DESCRIPTIONIAND PRICES
FIG. 7139

No. 119. 2½ in. Heavy Tumbler Lock, spring cover and chain, for railroad cars and switches; 12 keys, $14.00 per dozen; 24 keys, $15.50 per dozen.

Above locks can be made to suit any key furnished.

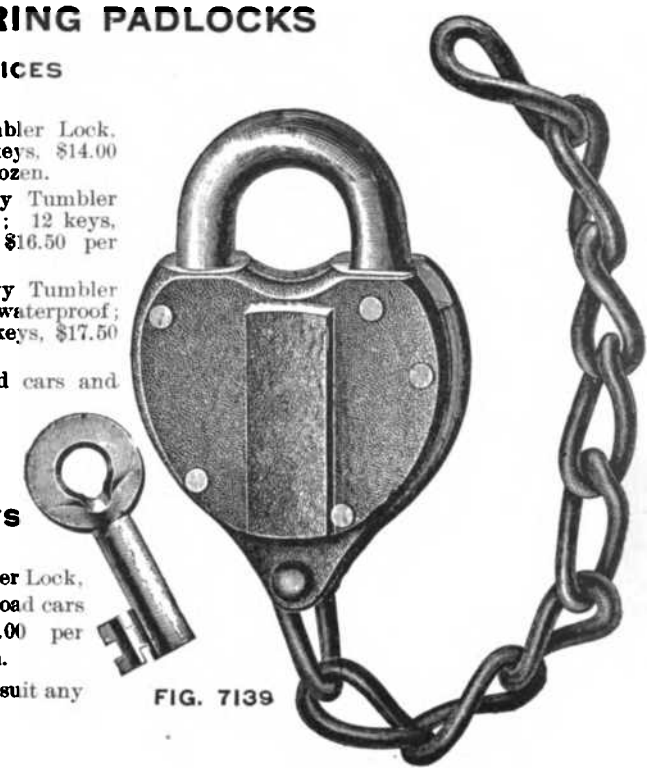


FIG. 7139



FIG. 7140

DESCRIPTION AND PRICES, FIG. 7140

No. 115. 2½ in. Heavy Tumbler Lock, spring cover and chain, for railroad use; 12 keys, $13.50 per dozen; 24 keys, $15.00 per dozen.

Can be made to suit any key furnished.

DESCRIPTION AND PRICES
FIG. 7141

The above locks are for railroad cars and switches, and can be made to suit any key furnished.

No. 116. 2½ in. Heavy Tumbler Lock, spring cover and chain, malleable iron case, tinned; 12 keys, $10.25 per dozen; 24 keys, $11.75 dozen.

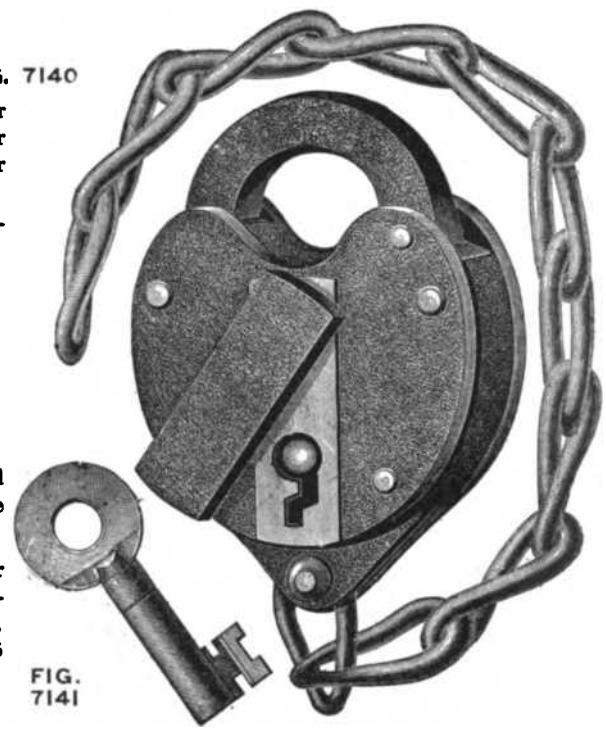


FIG. 7141

SOLID BRONZE SPRING PADLOCK



FIG. 7142

Extra heavy; oval case, engraved front and back; dust proof plunger; revolving cylinder key guide; spring shackle; self locking; all brass inside work; six ward tumblers; highest quality; flat steel keys.

PRICES

No. 406. Solid, real bronze, as above. 24 keys, $5.50 per dozen.

No. 406C. Same, with 9 inch tinned chain; 24 keys, $7.50 per dozen.

NICKEL PLATED SPRING PADLOCK

Full nickel plated on iron. This is a good, durable tumbler lock, operated by turning the key; spring shackle; self locking; all brass tumblers and inside work; very heavy and extra high finish; engraved front and back; two flat steel keys each.

PRICE

No. 85. 2¼ in., as above; 24 keys, $3.50 per dozen.



FIG. 7143

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CAR SEALER OR LEAD SEAL PRESS



FIG. 7144

This Car Seal Press is made of semi-steel, and is provided with an adjustable die. The plunger works on the principle of the cam lever, and is very powerful when a slight pressure is brought to bear upon the handles.

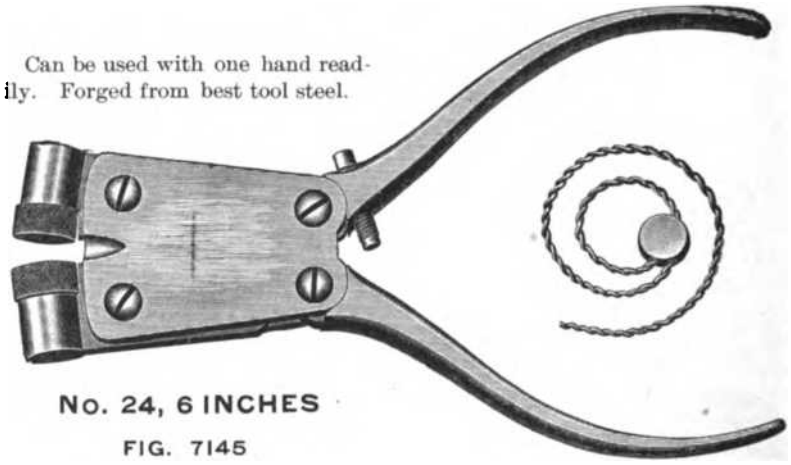
The diameter of the die of No. 1 measures 9/16 of an inch. The diameter of No. 2 measures 3/4 of an inch. These presses are used by express companies and shippers of sealed merchandise, etc.

PRICES

No. 1, 9¾ inches long.....$1 50
" 2, 9¾ " " 2 00

COMPOUND LEVER SEAL PRESS

Can be used with one hand readily. Forged from best tool steel.



NO. 24, 6 INCHES

FIG. 7145

In daily use on railway, freight and refrigerator lines; also used by brewing and malting and distilling concerns, express offices, electric light, oil, cotton press and phosphate companies. Very powerful and durable.

PRICES

	6 Inch.	8 Inch.	11 Inch.
No. 24 (Black) per dozen.....	$29 25	$32 95	$36 60
" 124 (Polished) "	32 95	36 60	41 40
" 224 (Nickeled) "	36 60	41 40	46 30
Seal blanks, per dozen.....	1 50	1 50	1 50

HORSESHOE LEAD SEALS

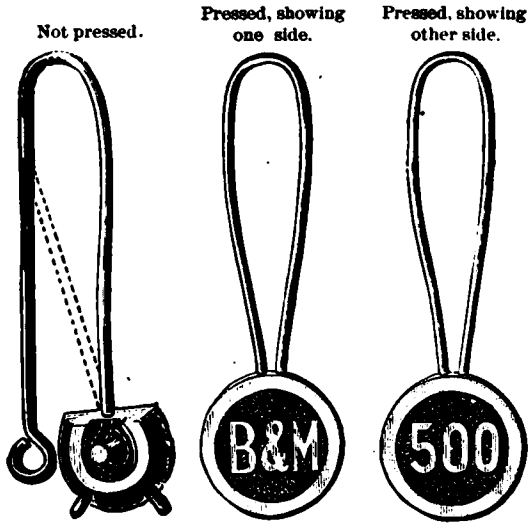


FIG. 7146

When closed, it cannot be pried open with a toothpick, pointed wire, penknife, or any sharp pointed instrument. The single wire is used so as to prevent any cutting and retwisting of the wire. The lead disk is cast on one end of the wire, saving loss and much time and trouble to men during the sealing of the cars. One looped end of the wire is cast in the lead disk, and when the seal is pressed or locked the other loose looped end of the wire which fits into the horseshoe part of the lead disk is so pressed that the wires can not be unlocked or tampered with without detection.

Seals and wires per 1,000, packed 2,500 or 5,000 in a box.....$4 00
Presses lettered and ready for use..... 4 00

DESCRIPTION, FIG. 7147

It is a perfect and easily worked seal. The wire used in this seal is a flat indented wire, which has a coil on one end (as shown in cut), and this end having the coil on it is cast into the lead disk, the coil of which encircles the hole in the lead disk, and the loose end of the indented wire runs through the hole in seal and consequently through the iron wire coil around the hole. When the seal is pressed or sealed (as shown by cut) access to the end of the wire passing through the hole is completely cut off, thereby preventing the possibility of tampering with the seal, and the seal cannot be pried open with a pointed wire, sharp-pointed instrument, penknife, toothpick or long finger nail. The patent indented B wires are used so as to prevent any cutting and retwisting of the wires, and the indenting part of the wire prevents stripping. The lead disk is cast on one end of the wire, saving loss of seals or wires, and much time and trouble to men during the sealing of the cars.

SAFETY CAST IN CASE HARDENED COIL

WITH PATENT INDENTED B WIRES



FIG. 7147

Seals and wires, packed 2,500 or 5,000 in box, per 1,000.....$4 00
Presses lettered and ready for use, each..... 4 00

PRESS FOR SEALING FIG. 7146



FIG. 7149

This cut is about one-third the size of press.

The press is composed of but two parts of steel with dies, weighing only 1 pound, one of the lightest presses in the market, and gives a perfect impression every time. We can have the dies of presses pebbled, which will produce seals pressed like samples, or plain, as may be preferred.

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KEYSTONE SEAL PRESS

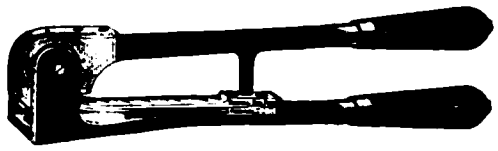


FIG. 7150

Used with the Keystone Seal. This press is all steel and drop forged, and so constructed as to make imperfect or careless sealing absolutely impossible.
With dies lettered to order, each..... $5 50

KEYSTONE SEAL

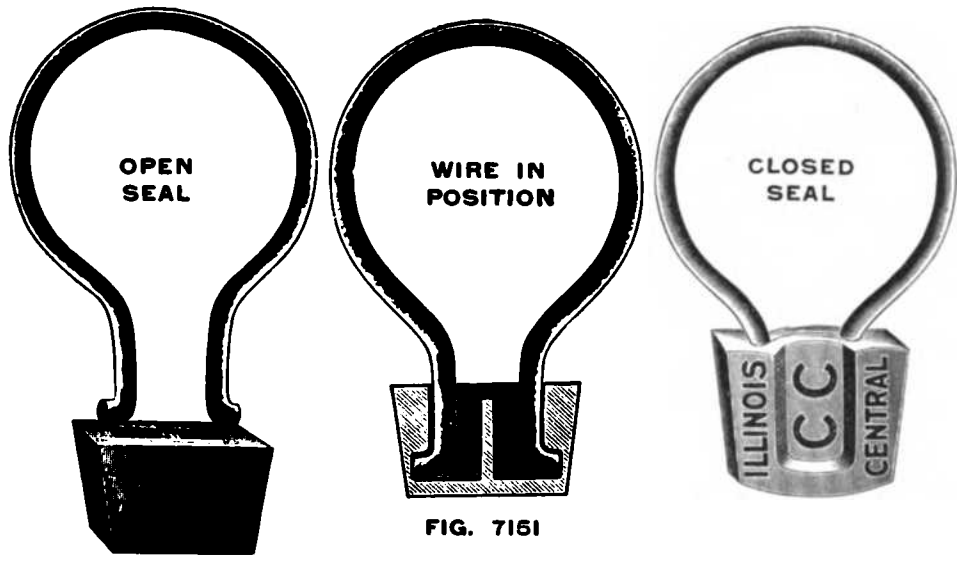


FIG. 7151

A combined lock and seal, adapted to railway and express service, fast freight and refrigerator lines, for all through and long distance cars and valuable freight.
Price, per thousand..... $10 00

ANCHOR SEAL

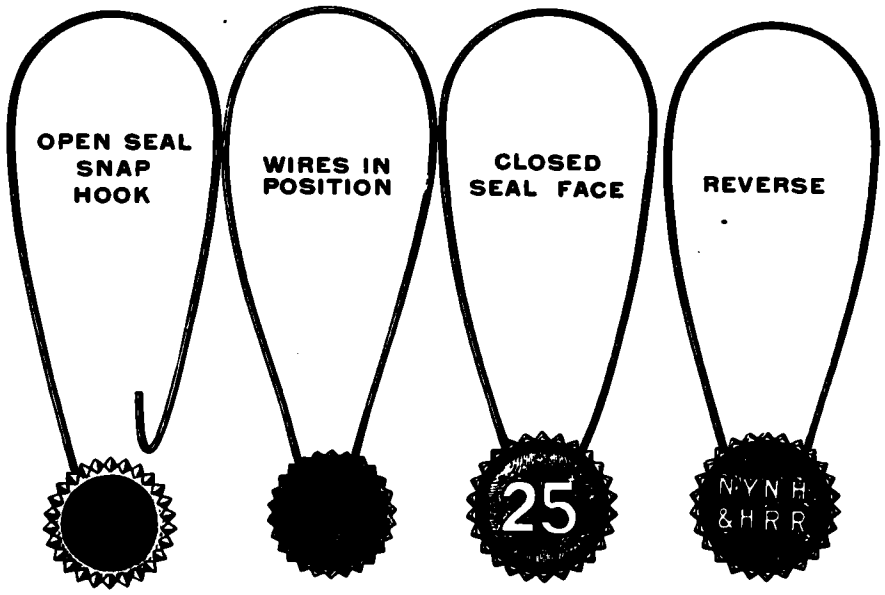


FIG. 7153

A high grade seal for general railway service. The firm and reliable anchorage of the wires, the protected edge (serrated), the large station numbers and the method of securing the wires (snap hook) render the seal a good one for general service.
Price, per thousand..... $3 50

GIANT SEALER

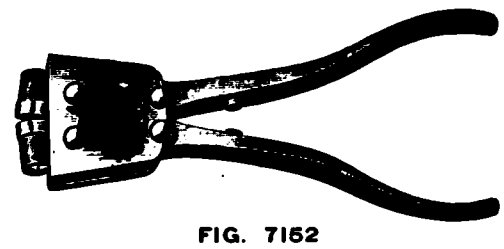


FIG. 7152

Compound leverage, very powerful, quick acting, forged steel; finished in nickel and oil; all working parts secured by round head shoulder rivets; very durable and efficient in service. The Giant Sealer is used for either the Anchor or Diamond Seal. Lettered to order.
Each..... $3 50

DIAMOND SEAL

DESCRIPTION, FIG. 7154

This is an adjustable loop seal, the loop allowing sufficient variation in length of shackle to cover all requirements. The wires crossing in seal, and being firmly forced into mesh by the Giant Sealer, render stripping impossible. This seal is adapted to railway and express service, and is also used as a meter, case and milk can seal, and for like purposes.
Price, per thousand..... $3 00

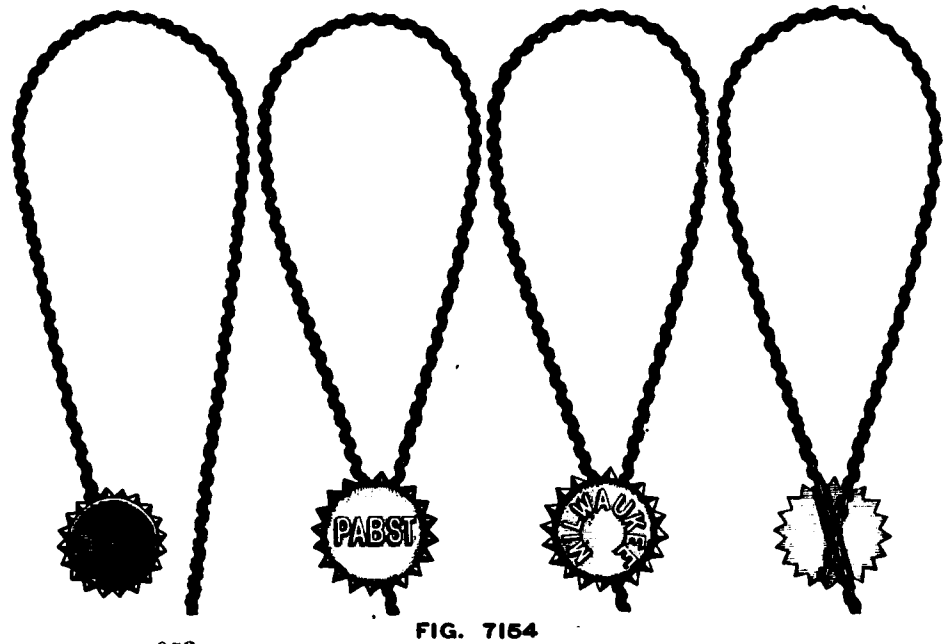


FIG. 7154

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STAMPING LETTERS, FIGURES AND BRANDS

STEEL STAMPING LETTERS ALPHABET

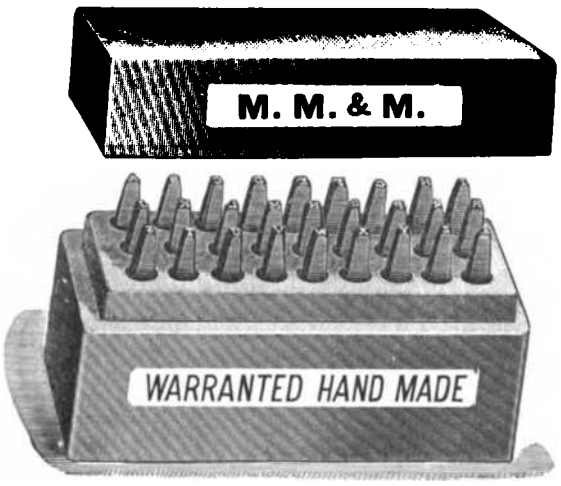


FIG. 7155

PRICES, FIGS. 7155 AND 7156

Sizes, Inches.	Set of 26 Letters, Fig. 7155.	Set of 9 Figures, Fig. 7156.
1/16	$2 70	$0 90
3/32	2 70	90
1/8	2 70	90
5/16	4 05	1 35
1/4	5 40	1 80
5/16	6 75	2 25
3/8	8 10	2 70
7/16	9 45	3 15
1/2	10 80	3 60
5/8	13 50	4 50
3/4	16 20	5 40

Die Figures and Letters double price of above.

DESCRIPTION, FIG. 7157

Fig 7157 is used for stamping leather, wood, tools and metals of all kinds. In ordering, state material you are going to stamp on; as we furnish different cuttings and temperings for different materials.

STEEL FIGURES



FIG. 7156

STEEL STAMP

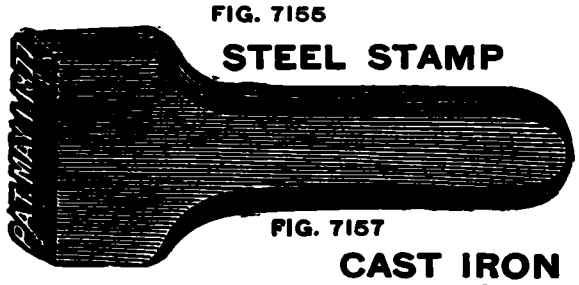


FIG. 7157

PRICES, FIG. 7157

1/16 to 1/8 inch per letter or figure, each	$0 15
5/16 " " " "	20
1/4 " " " "	30
5/16 " " " "	35
3/8 " " " "	40

On stamps less than five letters count price of one letter extra.

CAST IRON LETTERS AND FIGURES

Full Size of 3/4 Inch Letter and Figure.

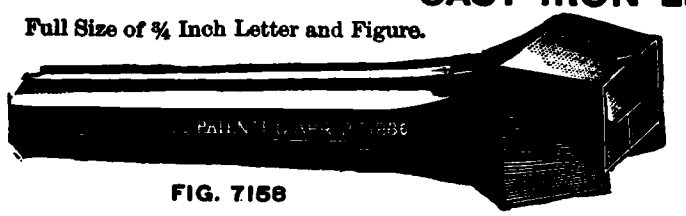


FIG. 7158

Full Size of 1/2 Inch Letter and Figure.

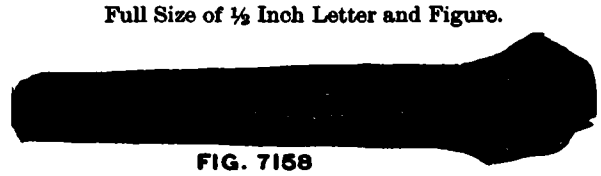


FIG. 7158

PRICES, FIG. 7158

1/2 inch, full set		Letters, 27	pieces, per set		$6 00
1/2 "	"	Figures, 9	"	"	2 00
3/4 "	"	Letters, 27	"	"	10 00
3/4 "	"	Figures, 9	"	"	3 50

For marking wood, soft metals, leather goods, etc., they are fully equal to steel, and at about one-third the price. May also be used for burning names and figures on wood and other substances

SOLID BURNING BRAND

These are cast in one piece of solid metal and the letters are cut much deeper and sharper, and are more durable than Fig. 7159A. Special prices on brands with a large number of letters. In ordering state size and shape of brand, and lettering required.



FIG. 7159

PRICES

		Extra Letters, Each.
1/4, 3/8 and 1/2 in., 5 Letters or less,	$1 50	$0 30
3/4 inch, 3 Letters or less	1 50	45
1 " 3 " "	2 25	60

CHANGEABLE BURNING BRAND

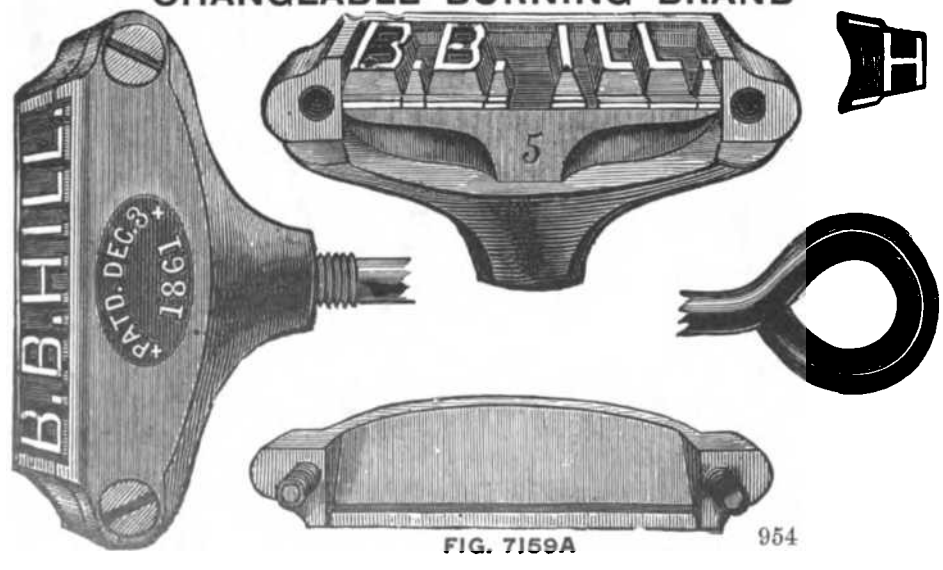


FIG. 7159A

NUMBERING MACHINE

STYLE A 65762 STYLE B 12345 STYLE C 27136

For printing numbers, operates consecutively, duplicates and repeats. Figure disks change automatically and are self inking. The changing from consecutive to duplicate and continuous numbering is effected by the mere moving of the pointer in front of the dial.

PRICES

Number of Wheels.	Numbering From	Each.
4	1 to 9999	$8 00
5	1 " 99999	9 00
6	1 " 999999	10 00

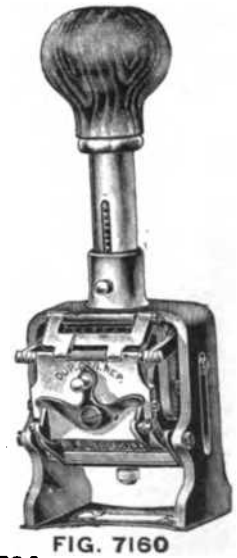


FIG. 7160

PRICES, FIG. 7159A

1/4 inch Holders for from 1 to 10 letters, each	$1 00
1/2 " " " 1 " 12 " "	1 00
1/4 " Letters fitted in holder ready for use, each	06
1/2 " " " " " " "	10

Periods and commas will be charged 1/2 price of letters when there are an unusual number in a brand.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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HAND STAMPS AND STENCILS

PRICES, FIG. 7161

4	Wheel	Machines,	will	number	from	1 to 10,000	$10 00
5	"	"	"	"	"	1 " 100,000	12 00
6	"	"	"	"	"	1 " 1,000,000	14 00
7	"	"	"	"	"	1 " 10,000,000	18 00

This machine can be furnished with wheels having any ten letters of the alphabet, or ten characters, or with the abbreviation "No." on. If with letters or characters, $3.00 extra per wheel; if with abbreviation "No.," $2.00 extra per wheel. Letters or characters can be on wheels to come before or after the figures at above prices.

THE AMERICAN DATER



FIG. 7162

Price..... $6.00

NO. 1 RAILROAD TICKET STAMP

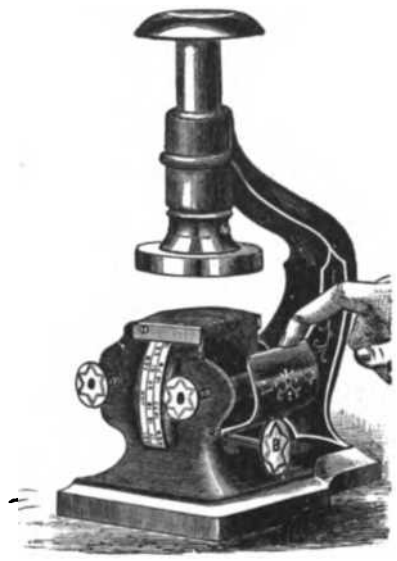


FIG. 7163

Price..... $7.00

AUTOMATIC NUMBERING MACHINE

Sizes of Figures.

1234567890

1234567890

1234567890

Style M 1234567890

Style N 1234567890

Style O 1234567890

Style T 1234567890

Style W 1234567890

Marks consecutively automatically; duplicates automatically; repeats any number desired indefinitely.



FIG. 7161

THE CENTENNIAL TICKET STAMP



FIG. 7164

These stamps have an Engraved Dial, and each is furnished with an Ink Ribbon.

Price..... $8.00

BRASS ALPHABETS AND FIGURES



FIG. 7165

MACHINE CUT BRASS ALPHABETS AND FIGURES

Alphabets.		Figures.	
¼ inch, per set,	$0 40	¼ inch, per set,	$0 24
⅜ " "	40	⅜ " "	24
½ " "	40	½ " "	24
¾ " "	50	¾ " "	26
1 " "	50	1 " "	26
1¼ " "	70	1¼ " "	34
1½ " "	80	1½ " "	40
1¾ " "	1 00	1¾ " "	50
2 " "	1 00	2 " "	50
2½ " "	1 60	2½ " "	80
1½ " lower case, "	80		

HAND CUT BRASS ALPHABETS AND FIGURES

Alphabets.		Figures.	
3 in., per set,	$3 00	3 in., per set,	$1 00
3½ " "	4 50	3½ " "	1 50
4 " "	5 25	4 " "	1 75
4½ " "	6 00	4½ " "	2 00
5 " "	6 75	5 " "	2 25
6 " "	9 00	6 " "	3 00
7 " "	12 00	7 " "	4 00
8 " "	15 00	8 " "	5 00

STENCIL COMBINATION

DESCRIPTION, FIG. 7166

Each box contains stencil alphabet and figures, ink and brush for marking boxes, barrels, bags and packages for shipment; printing all manner of show cards, notices, signs, numbers, prices, etc., and many other purposes.



FIG. 7166

PRICES, FIG. 7167

Alphabet, with Figures.	
⅛ inch	$1 25
¼ "	1 25
⅜ "	1 25
½ "	1 25
⅝ "	1 50
¾ "	1 50
⅞ "	1 75
1 "	2 00
1¼ "	2 50
Without Figures.	
1½ inch	$2 00
2 "	3 00
Figures Only.	
⅛, ¼, ⅜ inch	$0 60
½, ⅝ "	70
¾, ⅞, 1 "	80
1¼ "	1 00
1½ "	1 25
2 "	1 50
2½ "	1 75
3 "	2 00
3½ "	2 25
4 "	2 50

⅛ inch size			$0 80
¾ " "			90
1 " "			90
1¼ " "			1 25
1½ " "			1 40
1¾ " "			1 65
2 " "			1 65
2½ " "			2 50
1½ " "	with lower case		2 20

CIRCULAR ALPHABET AND FIGURES

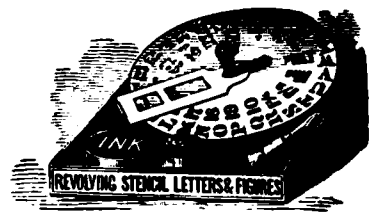


FIG. 7167

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STENCILS AND BRASS CHECKS

ADJUSTABLE STENCIL

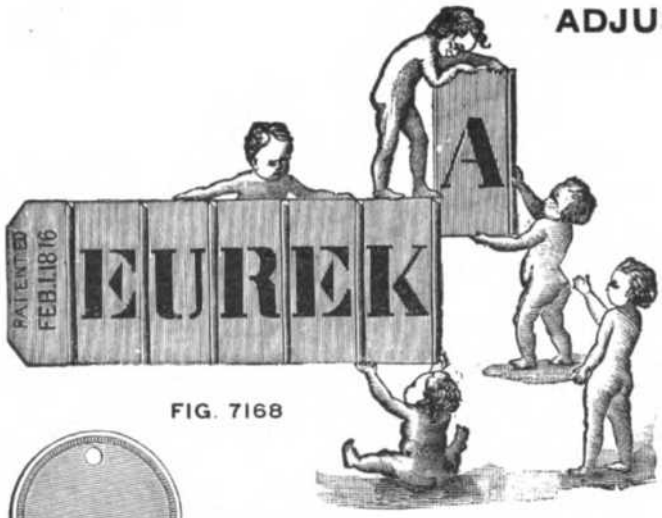


FIG. 7168

DESCRIPTION, FIG. 7168

The improvement consists in a beaded lock on the edge of the letters, so that they can be joined together, thereby enabling you to form any word, name or address, and, after being used for that purpose, they can be distributed and formed again for another address, and so on continually; while a common stencil plate can only be used for one certain brand.

By having a font of these stencils, you can address packages, make signs, show cards, etc, etc. The letters, when joined, are perfectly level on the under side, and are accurately spaced, so that when an impression is taken the print is perfect.

Alphabets contain 27 letters, beginner, ender, period, apostrophe, comma and blank.

Figures contain, 1 to 0, $ mark, cent mark, period, beginner and ender.

PRICES OF ALPHABETS

Inches.	Per Set.
½	$0 80
¾	90
1	1 00
1½	1 25
2	1 75
2½	2 50

PRICES OF FIGURES 15 PIECES

Inches.	Pieces.	Per Set.
½	15	$0 35
¾	15	40
1	15	45
1½	15	55
2	15	80
2½	15	1 15

PRICES FONTS, BOXED WITH INK AND BRUSH

	2A, 55 Pieces.	3A, 70 Pieces.	5A, 100 Pieces.
½	inch, per font $1 55	Per font $1 95	Per font $2 65
¾	" " " 1 75	" " 2 15	" " 2 95
1	" " " 1 90	" " 2 35	" " 3 25
1½	" " " 2 30	" " 2 85	" " 4 00



FIG. 7169
80c per pound.

BRASS CHECKS
IN QUANTITIES ONLY



FIG. 7170
80c. per pound.

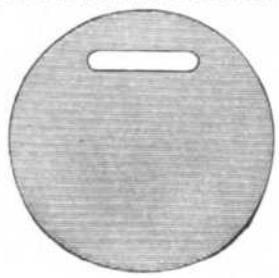


FIG. 7171
75c per pound.

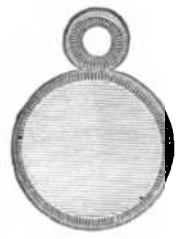
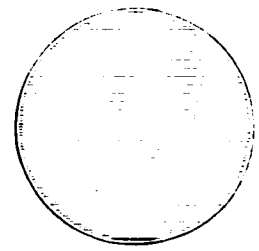


FIG. 7172
90c. per pound.

BRASS CHECKS

NOS. 9, 10, 13, 18, 19, 23 AND 24



NOS. 16 AND 17



NOS. 2, 15, 22 AND 25



FIG. 7173

PRICES, FIG 7173. 2 TO 36

Nos.	Per Hundred.
2	$1 20
3	1 20
4	1 50
5	2 00
6	2 00
7	2 00
8	75
9	50
10	60
11	90
12	90
13	1 00
14	1 00
15	1 00
16	1 00
17	1 20
18	75
19	1 20
20	75
21	1 50
22	2 00
23	2 00
24	1 50
25	1 50
27	1 50
35	1 20
36	1 50

Please observe that the above prices are for checks and plates not numbered or lettered; the price for numbering, in addition to price of checks, will be:

Any style check, with figures not exceeding ⅜ inch, per hundred $1 00
Any style check, with figures not exceeding ½ or ⅜ inch, per hundred 2 00

Checks lettered at the rate of ½ cent per letter. When large quantities are required, special estimates will be given.

BRASS CHECKS

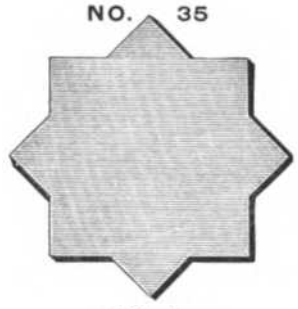
NO. 36



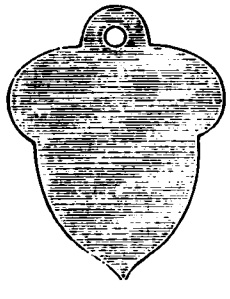
NO. 5



NO. 35



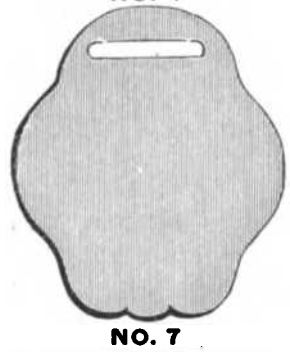
NO. 14



NO. 27



NO. 4



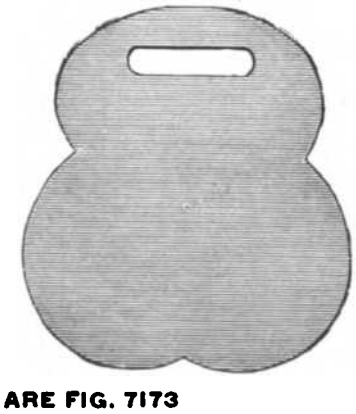
NO. 6



NO. 3



NO. 7



ALL BRASS CHECKS, NOS. 2 TO 36, ARE FIG. 7173

BAGGAGE STRAPS

Per hundred $3 00

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY ST., NEW YORK

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EUREKA TICKET PUNCH

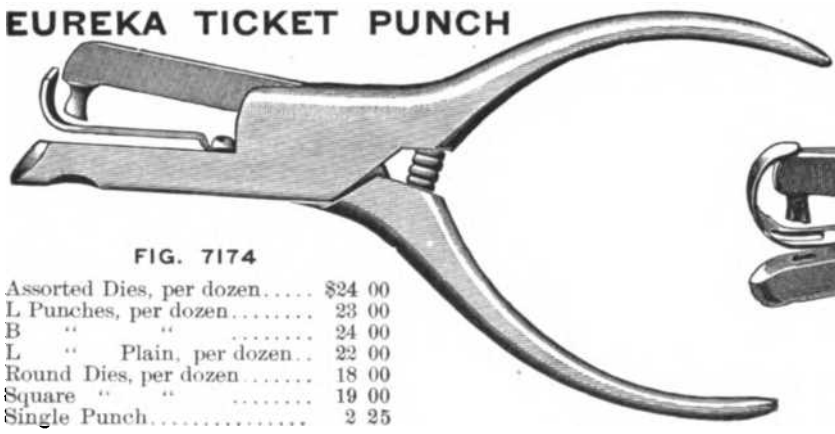


FIG. 7174

Assorted Dies, per dozen	$24 00
L Punches, per dozen	23 00
B " "	24 00
L " Plain, per dozen	22 00
Round Dies, per dozen	18 00
Square " "	19 00
Single Punch	2 25

ACME TICKET PUNCH

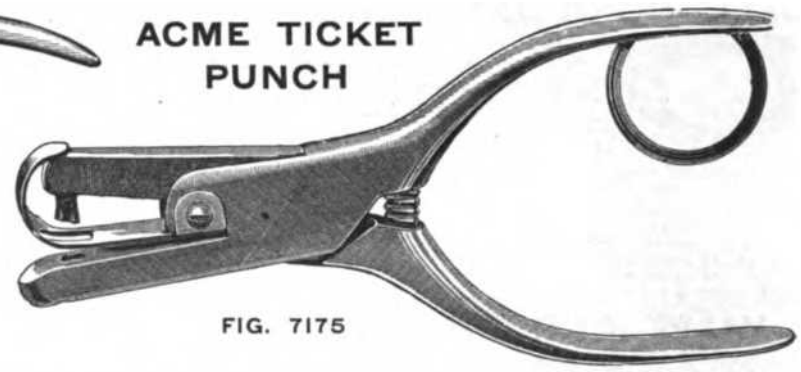
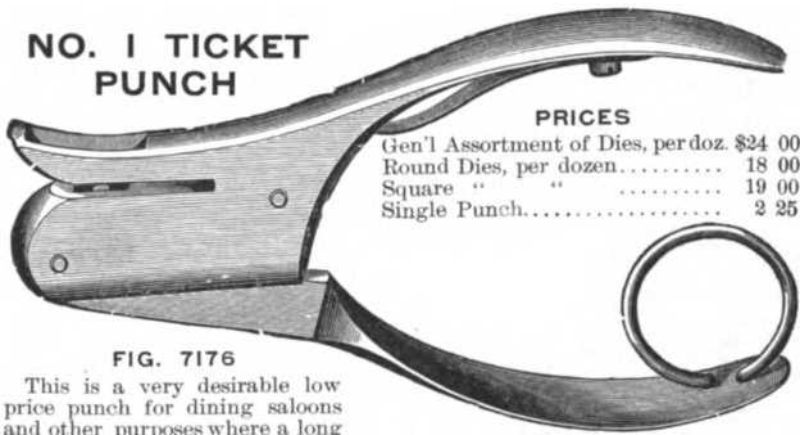


FIG. 7175

Assorted Dies, per doz.,	$30 00	Square Dies, per doz.,	$19 00
L Punches, "	28 00	Round " "	18 00
B " "	28 00	Single Punches, each,	3 00
L " Plain, "	24 00		

NO. 1 TICKET PUNCH



PRICES

Gen'l Assortment of Dies, per doz.	$24 00
Round Dies, per dozen	18 00
Square " "	19 00
Single Punch	2 25

FIG. 7176

This is a very desirable low price punch for dining saloons and other purposes where a long reach is not absolutely necessary.

NO. 2 TICKET PUNCH



FIG. 7177

All goods are nickel plated and made of best cast and tool steel.

DESCRIPTION AND PRICES

This has a longer reach than the No. 1, and is intended for Commutation, Duplex, and all other kinds of Railroad Tickets. It is made in over five hundred different designs for dies; letters will cost extra, varying from $3.00 each to $7.00, according to design.

General Assortment of Dies, per dozen	$30 00		
Round Dies, per dozen	$18 00	Square Dies, per dozen	19 00
L Punches, "	28 00	B Punches, "	26 00
L " Plain, per dozen	24 00	Single Punch	3 00

TICKET CHOPPER



FIG. 7179

TICKET CANCELING BOX

A substantial walnut pedestal surmounted with a plate glass box, in nickel plated metal frame. Price..... $100 00

EDGE CUTTER FOR COMMUTATION TICKETS



FIG. 7178

The Edge Cutters are invaluable to railroads that have heavy suburban travel and use commutation tickets, cutting the ticket all around the margin. There is no chance of pasting the chips and beating fares. Price, per dozen..... $40 00

CONDUCTOR'S PUNCH

PRICES, FIG. 7180

No. 1. Round Hole, Rubber Spring, nickel plated, per dozen	$11 00
No. 2. Round Hole, Steel Spring, nickel plated, per dozen	11 00
No. 3. Fancy Figure, Steel Spring, nickel plated, per dozen	12 00
No. 4. Fancy Figure, Rubber Spring, nickel plated, per dozen	11 00

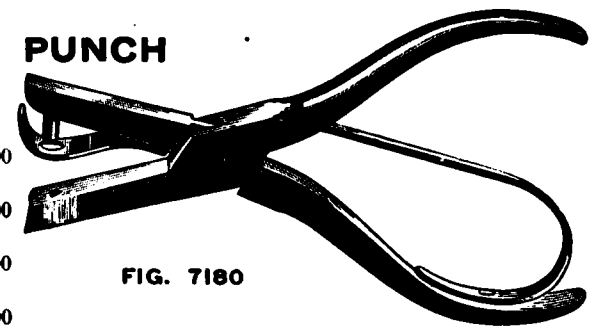


FIG. 7180

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BELL CORD COUPLING



FIG. 7181

To insert solid braided cord in a coupling, cut the end diagonally and twist it in.

Put up one dozen hooks in a box, complete, with screws to match.

PRICES

Japanned, No. 8 and No. 9				60	cents per dozen.
"	"	10 "	" 12	70	" "
Tinned,	"	8 "	" 9	60	" "

VALVE CORD HOOK



FIG. 7183

For use with air brake and air signal systems. With socket for firmly holding the cord. Furnished in brass, in size for No. 6 or No. 7 cord, complete, with screws.

Price, per dozen.....$1 00

ROPE COUPLING



FIG. 7184

These are steel couplings drilled and fitted with pins which rivet the coupling firmly to the cord.

For Nos.		Per Doz. Pairs.	For Nos.		Per Doz. Pairs.
10	Cord.....	$3 00	18	Cord.....	$6 00
12	"	3 60	20	"	9 00
14	"	4 25	24	"	13 00
16	"	5 00	28	"	18 00

TRANSMISSION OR HAULAGE ROPE



FIG. 7185

Composed of 6 Strands and a Hemp Center, 7 Wires to the Strand.

SWEDISH IRON

Trade Numbers.	Diameters, Inches.	Approximate Circumference, Inches.	Weight per Foot, Pounds.	Approximate Breaking Strain in Tons of 2,000 Pounds.	Allowable Working Strain in Tons of 2,000 Pounds.	Minimum size of Drum or Sheave in Feet.	Prices per Foot.
11	1½	4¾	3.55	34	6.80	13	$0 51
12	1⅜	4¼	3.00	29	5.80	12	43
13	1¼	4	2.45	24	4.80	10¾	36
14	1⅛	3½	2.00	20	4.00	9½	29
15	1	3	1.58	16	3.20	8½	23
16	⅞	2¾	1.20	12	2.40	7½	17½
17	¾	2¼	0.89	9.3	1.86	6¾	14
18	11/16	2⅛	0.75	7.9	1.58	6	12
19	⅝	2	0.62	6.6	1.32	5¼	10
20	9/16	1¾	0.50	5.3	1.06	4½	8
21	½	1½	0.39	4.2	0.84	4	6½
22	7/16	1¼	0.30	3.3	0.66	3¼	5½
23	⅜	1⅛	0.22	2.4	0.48	2¾	4½
24	5/16	1	0.15	1.7	0.34	2½	3¾
25	9/32	⅞	0.125	1.4	0.28	2¼	3¼

NOTE.—Siemens-Martin steel rope, same price as iron rope.

CAST STEEL

Trade Numbers.	Diameters, Inches.	Approximate Circumference, Inches.	Weight per Foot, Pounds.	Approximate Breaking Strain in Tons of 2,000 Pounds.	Allowable Working Strain in Tons of 2,000 Pounds.	Minimum Size of Drum or Sheave in Feet.	Prices per Foot.
11	1½	4¾	3.55	68	13.6	8½	$0 60
12	1⅜	4¼	3.00	58	11.6	8	51
13	1¼	4	2.45	48	9.60	7¼	43
14	1⅛	3½	2.00	40	8.00	6¼	36
15	1	3	1.58	32	6.40	5¼	28
16	⅞	2¾	1.20	24	4.80	5	22
17	¾	2¼	0.89	18.6	3.72	4½	16
18	11/16	2⅛	0.75	15.8	3.16	4	13½
19	⅝	2	0.62	13.2	2.64	3½	11
20	9/16	1¾	0.50	10.6	2.12	3	9
21	½	1½	0.39	8.4	1.68	2½	7½
22	7/16	1¼	0.30	6.6	1.32	2¼	6½
23	⅜	1⅛	0.22	4.8	0.96	2	5½
24	5/16	1	0.15	3.4	0.68	1¾	4½
25	9/32	⅞	0.125	2.8	0.56	1½	4

NOTE.—When the iron or steel rope named above is galvanized or tinned, add 10 per cent. to list price per foot. When made with wire center, add 10 per cent. to list price per foot.

RAILROAD SIGNAL CORD

SOLID BRAIDED BELL CORD

Conductors' Air Brake Cord,
Whistle Valve Cord,
Engine Bell Cord, Etc., Etc.

Unless otherwise ordered, these cords will be put up in coils of about 1,000 feet each; but many railroad companies are now taking full coils of about 100 pounds, and we can furnish any length desired.

PRICES

Fancy Cotton, No. 6. 5/16 inch in diameter, blue, with orange spiral, 60 cents per pound.

Fancy Cotton, No. 8. ¼ inch in diameter, drab, with spiral of red, blue and yellow, 60 cents per pound.

Mahogany Cotton, Nos. 6, 7, 8 and 9. 5/16, 7/32, ¼ and 9/32 inch in diameter, 60 cents per pound.

Drab Cotton, Nos. 7, 8, 9 and 12. 7/32, ¼, 9/32 and ⅜ inch in diameter, 55 cents per pound.

BRAIDED ROPE

No. 14 (7/16 inch in diameter), about 7 pounds per 100 feet.

No. 16 (½ inch in diameter), about 9 pounds per 100 feet.

No. 18 (9/16 inch in diameter), about 12 pounds per 100 feet.

No. 20 (⅝ inch in diameter), about 15 pounds per 100 feet.

Sizes larger than No. 20 made to order, by braiding over a smaller cord.

Put up in coils of 500 feet or 1,000 feet each.

Unless otherwise ordered, the cotton is unglazed, and the linen and Italian hemp are glazed. Both the cotton and linen rope are used largely for dumb waiters, hoist rope, hand rails and lariats.

PRICES

White cotton	.50	cents per pound.
Drab cotton	.55	" "
Italian hemp	.50	" "
Linen	.70	" "

TRANSMISSION ROPE

We can furnish a rope especially prepared for the transmission of power and hoisting purposes. This rope is made from the best selected Cebu Manila hemp.

STANDARD SIZES

MANILA TRANSMISSION ROPE

Diameters—Inches.	Diameters—Millimeters.	Circumference—Inches.	Circumference—Millimeters.
⅞	22	2.75	70
1	25	3.14	80
1⅛	29	3.53	90
1¼	32	3.93	100
1⅜	35	4.32	110
1½	38	4.71	120
1¾	45	5.50	140
2	51	6.28	160

MANILA HOISTING ROPE

Diameters—Inches.	Diameters—Millimeters.	Circumference—Inches.	Circumference—Millimeters.
1	25	3.14	80
1⅛	29	3.53	90
1¼	32	3.93	100
1⅜	35	4.32	110
1½	38	4.71	120
1⅝	41	5.12	130
1¾	45	5.50	140

Transmission Rope.....	Cents per Pound.
Hoisting Rope.....	" "

ARC LIGHT CORD AND TROLLEY CORD



FIG. 7182

The size most frequently used for hanging arc lamps is No. 12 (⅜ inch in diameter); for trolley cord No. 8 (¼ inch in diameter); No. 9 (9/32 inch in diameter); or No. 10 (5/16 inch in diameter).

Unless otherwise ordered, the waterproof finish is always applied to the arc lamp cord and the trolley cord, and they are put up in coils of about 1,000 feet each.

Price, per pound.....$0 50

OIL, GAS AND ARTESIAN WELL ROPES

Drilling Cables, Bolt Rope.....	cents per pound.
" " Regular.....	" "
Sand Lines.....	" "
Bull Ropes.....	" "
Tubing Lines.....	" "
Sucker Rod Lines.....	" "
Reverse Cord.....	" "
Telegraph Cord.....	" "
Torpedo Lines.....	" "

Diameter and Approximate Weight of Drilling Cables and Sand Lines.

Diameters, Inches.	Weight per Foot, Pounds.	Diameters, Inches.	Weight per Foot, Pounds.
½	1/16	1⅝	1
⅝	⅛	1¾	1¼
¾	¼	1⅞	1⅝
⅞	⅜	2	1 7/16
1	½	2⅛	1 11/16
1⅛	⅝	2¼	1 15/16
1¼	¾	2⅜	2 1/16
1½	⅞	2½	2⅜

Weights of rope are liable to vary, either way.

GALVANIZED STEEL WIRE STRAND



FIG. 7186

For Smokestack Guys, Signal Strand, Trolley Line Span Wire and Other purposes. Composed of 7 Wires Twisted Together.

Diameters, Inches.	Weight per 100 Feet, Pounds.	Approximate Breaking Strain, Pounds.	Prices per 100 Feet.
½	52	8,320	$3 15
7/16	40	6,000	2 50
⅜	30	4,700	2 00
5/16	22	3,300	1 60
¼	13	1,750	1 15
4/16	8	1,000	80
9/32	5	700	60
⅛	3.50	375	45
9/32	2.25	320	35

Galvanized strand is made, on application, of wire of any strength from 60,000 pounds to 350,000 pounds per square inch. When it is intended to run over sheaves a soft wire is advisable.

For strands of larger diameter than those given in the table, or if to be prepared from special stock, apply for information and prices.

CORDAGE

BASE

Manila Rope	.....c. lb. basis.
Sisal Rope	.....c. " "
Tarred Sisal Lath Yarn	.....c. " "
American and Russian Hemp Tarred Rope, Ratline, etc	.....c. " "
Tarred Hemp Spun Yarn	.....c. " "
Marline, Houseline, Hambroline and Rounding	.....c. " "

LATH YARN

Fine, Tarred, Single..	.....c. above med. and coarse.
Ex. Fine " " ..	.....c. " " "

DIFFERENCES

ROPE

1¼ in. cir. or 7/16 in. diam. and up. 12-thd. or ⅜ in. diam	.....c. above basis.
6-thd. and 9-thd. or ¼ and 5/16 in. diam	.....c. above basis.
Fine 6-thd. or 5/16 in. diam	.....c. " "
Patent Stretched Tarred	.....c. below "
Oil Well Ropes and Drilling Cables	.....c. above "
Artesian Well Ropes	.....c. " "
Transmission Rope, Selected Stock	.....c. " "
4-str. Ropes, 2 in. cir. or ⅜ in. diam. and smaller	.....c. " "
Tallow Laid Rope	.....c. " "
All Rope Unoiled	.....c. extra.

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STANDARD HOISTING ROPE

Composed of 6 Strands and a Hemp Center, 19 Wires to the Strand.

SWEDISH IRON

Trade Numbers	Diameters, Inches.	Ap. Circumference, Inches.	Weight per Foot, Lbs.	Ap. Breaking Strain in Tons of 2,000 Lbs.	Allowable Work. Strain in Tons of 2,000 Lbs.	Min. Size of Drum or Sheave, Feet.	Prices per Foot.
..	2¾	8⅝	11.95	114.0	22.8	16	$1 70
..	2½	7⅞	9.85	95.0	18.9	15	1 40
1	2¼	7⅛	8.00	78.0	15.60	13	1 17
2	2	6¼	6.30	62.0	12.40	12	92
3	1¾	5½	4.85	48.0	9.60	10	80
4	1⅝	5	4.15	42.0	8.40	8½	63
5	1½	4¾	3.55	36.0	7.20	7½	57
5½	1⅜	4¼	3.00	31.0	6.20	7	48
6	1¼	4	2.45	25.0	5.00	6½	40
7	1⅛	3½	2.00	21.0	4.20	6	33
8	1	3	1.58	17.0	3.40	5¼	26
9	⅞	2¾	1.20	13.0	2.60	4½	20
10	¾	2¼	0.89	9.7	1.94	4	16
10¼	⅝	2	0.62	6.8	1.36	3½	12
10½	9/16	1¾	0.50	5.5	1.10	2¾	10
10¾	½	1½	0.39	4.4	0.88	2¼	8
10a	7/16	1¼	0.30	3.4	0.68	2	7½
10b	⅜	1⅛	0.22	2.5	0.50	1½	7
10c	5/16	1	0.15	1.7	0.34	1	6¾
10d	¼	⅞	0.10	1.2	0.24	⅞	6½

Note—Siemens Martin Steel Rope, same price as Iron Rope.

CAST STEEL

Trade Numbers.	Diameters, Inches.	Ap. Circumference, Inches.	Weight per Foot, Lbs.	Ap. Breaking Strain in Tons of 2,000 Lbs.	Allowable Work. Strain in Tons of 2,000 Lbs.	Min. Sizes of Drum or Sheave, Feet.	Prices per Foot.
..	2¾	8⅝	11.95	228.0	45.6	10	$2 10
..	2½	7⅞	9.85	190.0	37.9	9½	1 75
1	2¼	7⅛	8.00	156.0	31.2	8½	1 42
2	2	6¼	6.30	124.0	24.8	8	1 11
3	1¾	5½	4.85	96.0	19.2	7¼	93
4	1⅝	5	4.15	84.0	16.8	6¼	74
5	1½	4¾	3.55	72.0	14.4	5¾	66
5½	1⅜	4¼	3.00	62.0	12.4	5½	56
6	1¼	4	2.45	50.0	10.00	5	46
7	1⅛	3½	2.00	42.0	8.40	4½	38
8	1	3	1.58	34.0	6.80	4	30
9	⅞	2¾	1.20	26.0	5.20	3½	23
10	¾	2¼	0.89	19.4	3.88	3	18
10¼	⅝	2	0.62	13.6	2.72	2¼	14
10½	9/16	1¾	0.50	11.0	2.20	1¾	12
10¾	½	1½	0.39	8.8	1.76	1½	11
10a	7/16	1¼	0.30	6.8	1.36	1¼	10
10b	⅜	1⅛	0.22	5.0	1.00	1	9½
10c	5/16	1	0.15	3.4	0.68	⅞	9¼
10d	¼	¾	0.10	2.4	0.48	½	9

Note—When the iron or steel rope named above is galvanized or tinned, add 10 per cent. to list price per foot. When made with wire center, add 10 per cent. to list price per foot.

GALVANIZED IRON WIRE ROPE

FOR SHIPS' RIGGING AND DERRICK GUYS

Composed of 6 Strands and a Hemp Center, 7 or 12 Wires to the Strand.

Approximate Diameters, Inches.	Circumference Inches.	Weight per Foot, Pounds.	Approximate Breaking Strain in Tons of 2,000 Pounds.	Circumference in Inches of New Manilla Rope of Equal Strength.	Prices per Foot With 7 Wires to the Strand.	Prices per Foot With 12 Wires to the Strand.
1¾	5½	4.85	44.0	11	$0 44	$0 46
1 11/16	5¼	4.40	40.0	10½	41	43
1⅝	5	4.00	36.0	10	38	40
1½	4¾	3.60	32.0	9½	35	37
1 7/16	4½	3.25	29.0	9	31	33
1⅜	4¼	2.90	26.0	8½	27	29
1¼	4	2.55	23.0	8	24	25
1 3/16	3¾	2.25	20.0	7½	21	22
1⅛	3½	1.95	18.0	6½	18	19
1 1/16	3¼	1.70	15.0	6	16	17
1	3	1.44	13.0	5¾	14	15
⅞	2¾	1.21	11.0	5¼	12	..
15/16	2½	1.00	9.0	5	10	..
¾	2¼	0.81	7.3	4¾	9	..
⅝	2	0.64	5.8	4½	8	..
9/16	1¾	0.49	4.4	3¾	7	..
½	1½	0.36	3.2	3	6	..
7/16	1¼	0.25	2.3	2½	5	..
⅜	1⅛	0.20	1.8	2¼	4	..
5/16	1	0.16	1.4	2	3½	..
					5 Strands, 7 Wires Each.	
9/32	⅞	0.123	1.1	1¾	3	..
¼	¾	0.090	0.81	1½	2½	..
7/32	⅝	0.063	0.56	1¼	2¼	..
5/16	½	0.040	0.36	1⅛	2	..

Note—When made with wire center, add 10 per cent. to price per foot.

CAST STEEL FLAT ROPE



FIG. 7188

Flat Ropes consist of a number of strands of alternately right and left lay, sewed together with soft iron wire so as to form a band or ribbon, usually from three-eighths to one-half inch in thickness, and from one inch in width up to almost any desired dimension. Steel flat ropes are chiefly used for hoisting purposes. They possess certain advantages over round ropes for some classes of work. In very deep shafts using long hoisting ropes, it is desirable to have ropes which are neutral, that is, have no tendency to twist and untwist, a condition fulfilled by flat ropes.

1/2 INCH THICK

Width and Thickness, Inches.	Weight per Foot, Pounds.	Approximate Breaking Strain in Tons of 2,000 Pounds.	Allowable Working Strain in Tons of 2,000 Pounds.	Approximate Diameters in Inches of Round Cast Steel Rope of Equal Strength.
½ x 7	5.90	89	17.8	1⅝
½ x 6	5.10	77	15.4	1 9/16
½ x 5½	4.82	72	14.4	1½
½ x 5	4.27	64	12.8	1⅜
½ x 4½	4.00	60	12.0	1 5/16
½ x 4	3.30	50	10.0	1¼
½ x 3½	2.97	45	9.0	1⅛
½ x 3	2.38	36	7.2	1

3/8 INCH THICK

Width and Thickness, Inches.	Weight per Foot, Pounds.	Approximate Breaking Strain in Tons of 2,000 Pounds.	Allowable Working Strain in Tons of 2,000 Pounds.	Approximate Diameters in Inches of Round Cast Steel Rope of Equal Strength.
⅜ x 5½	3.90	55	11.0	1 5/16
⅜ x 5	3.40	50	10.0	1¼
⅜ x 4½	3.12	47	9.4	1 3/16
⅜ x 4	2.86	43	8.6	1⅛
⅜ x 3½	2.50	38	7.6	1
⅜ x 3	2.00	30	6.0	15/16
⅜ x 2½	1.86	28	5.6	⅞
⅜ x 2	1.19	18	3.6	¾

Prices on Iron or Plough Steel Flat Ropes furnished on application.

GALVANIZED CAST STEEL YACHT RIGGING

Composed of 6 Strands and a Hemp Center, 7 or 19 Wires to the Strand.

Approximate Diameters, Inches.	Circumference, Inches.	Weight per Foot, Pounds.	Approximate Breaking Strain in Tons of 2,000 Pounds.	Circumference in Inches of New Manila Rope of Equal Strength.	Prices per Foot With 19 Wires to the Strand.	Prices per Foot With 7 Wires to the Strand.
1¼	4	2.55	53.0	13	$0 50	$0 48
1 3/16	3¾	2.25	47.0	12	46	44
1⅛	3½	1.95	41.0	11	42	40
1 1/16	3¼	1.70	36.0	10	38	36
1	3	1.44	31.0	9	33	31
⅞	2¾	1.21	26.0	8½	28	25
15/16	2½	1.00	22.0	8	23	21
¾	2¼	0.81	17.6	7	20	18
⅝	2	0.64	14.0	6	16	12
9/16	1¾	0.49	10.8	5¼	13½	10
½	1½	0.36	8.1	4¾	12	8½
15/32	1⅜	0.30	6.8	4½	11½	8
7/16	1¼	0.25	5.7	4¼	11	7½
⅜	1⅛	....	....	....	10½	6¼
5/16	1	0.16	3.7	3	10	5

GALVANIZED FLEXIBLE RUNNING ROPES

Composed of 6 Strands and a Hemp Center, each Strand consisting of 12 Wires and a Hemp Core.

Approximate Diameters, Inches.	Circumference, Inches.	Weight per Foot, Pounds.	Approximate Breaking Strain in Tons of 2,000 Pounds. Iron.	Approximate Breaking Strain in Tons of 2,000 Pounds. Cast Steel.	Prices per Foot. Iron.	Prices per Foot. Cast Steel.
1 1/16	3¼	1.14	12.00	24.00	$0 22	$0 30
1	3	0.97	10.7	21.5	20	27
⅞	2¾	0.81	8.21	16.4	17	23
13/16	2½	0.67	7.20	14.4	14½	19
¾	2¼	0.54	6.13	12.3	11½	15
⅝	2	0.43	4.29	8.58	9	12
9/16	1¾	0.33	3.47	6.94	8	10
½	1½	0.24	2.78	5.56	7	9
7/16	1¼	0 17	2.15	4.30	6½	8½
⅜	1⅛	....	....	....	6	7¾
5/16	1	0.11	1.14	2.28	5½	7

TILLER ROPE

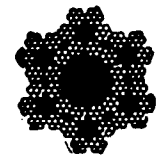


FIG. 7189

Composed of 6 Ropes and a Hemp Center, each Rope consisting of 6 Strands of 7 Wires each and a Hemp Core.

Tiller Ropes are used for steering ropes on river steamers, for hand ropes on elevators, and in any place where a smooth and extremely flexible rope is required. They are composed of 252 wires, and are made up of a hemp core, around which are twisted six ropes, each of which consists of six strands, inclosing a hemp center. They will pass around very small pulleys and sheaves. The wires are necessarily very fine, and should not be subjected to scraping of any kind or much frictional wear.

Diameters, Inches.	Approximate Circumference, Inches.	Weight per Foot, Pounds.	Prices per Foot—Iron.	Prices per Foot—Cast Steel.
1	3	1.10	$0 33	$0 43
⅞	2¾	0.84	27	36
¾	2¼	0.62	22	30
⅝	2	0.43	17	24
9/16	1¾	0.35	14	19
½	1½	0.28	11	17
7/16	1¼	0.21	10	15
⅜	1⅛	0.16	9	14
5/16	1	0.11	8	12½
¼	¾	0.07	7½	11

EXTRA FOR LABOR OF SPLICING ROPE TO MAKE ENDLESS

Diameters of Rope, Inches.	Extra for Splicing, Each.	Diameters of Rope, Inches.	Extra for Splicing, Each.
1½ to 1¼	$4 00	7/16 to ⅜	$2 50
1⅜ to ⅞	3 50	5/16 to ¼	2 00
¾ to ½	3 00	.....	.....

The charge named to be in addition to the charge made for rope used in making the splice. The prices named to apply only on wire ropes spliced at the works of the manufacturer. Special charge will be made for splicing done elsewhere, such charge depending on the circumstances of each individual case.

GALVANIZED MAST ARM ROPE

Composed of 9 Strands and a Cotton Center, 4 Wires to the Strand.

Diameters, Inches.	Weight per Foot, Pounds.	Approximate Breaking Strain, Pounds.	Prices per Foot. Cents.
⅜	0.158	2,300	5
5/16	0.109	1,700	3½
¼	0.070	1,100	2¾

GALVANIZED STEEL HAWSERS



FIG. 7191

Composed of 6 Strands and a Hemp Center, each strand consisting of 12 Wires and a Hemp Core.

Approximate Diameters, Inches.	Circumference, Inches.	Weight per Foot, Pounds.	Approximate Breaking Strain in Tons of 2,000 Pounds.	Circumference in Inches of New Manila Hawser of Equal Strength.	Prices per Foot.
1¾	5½	3.23	61.0	13½	$0 85
1 11/16	5¼	2.95	57.0	13	82
1⅝	5	2.70	53.0	12½	62
1½	4¾	2.42	45.0	12	56
1 7/16	4½	2.18	42.0	11½	50
1⅜	4¼	1.94	39.0	11	45
1¼	4	1.72	32.0	10	40
1 3/16	3¾	1.51	29.0	10¼	36
1⅛	3½	1.32	27.0	9¾	33
1 1/16	3¼	1.14	24.0	8½	30
1	3	0.97	21.5	8	27
⅞	2¾	0.81	16.4	6½	23
13/16	2½	0.67	14.4	6	19
¾	2¼	0.54	12.3	5½	15

GALVANIZED STEEL HAWSERS

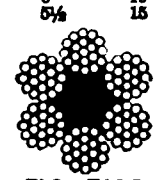


FIG. 7193

Composed of 6 Strands and a Hemp Center 37 Wires to the Strand.

Approximate Diameters, Inches.	Circumference, Inches.	Weight per Foot, Pounds.	Approximate Breaking Strain in Tons of 2,000 Pounds. Cast Steel.	Approximate Breaking Strain in Tons of 2,000 Pounds. Special.
2	6¼	6.25	128	166
1¾	5½	4.85	101	131
1⅝	5	4.00	84	109
1½	4¾	3.60	76	99
1⅜	4¼	2.90	62	81
1¼	4	2.55	55	73
1⅛	3½	1.95	42	55
1	3	1.44	31	40

Prices on application.

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WIRE ROPE FASTENINGS

MADE OF THE BEST FORGED WROUGHT IRON

CLOSED SOCKETS



FIG. 7194

Diams. of Rope, Inches.	Circum. of Rope, Inches.	For Cast Steel Rope—Loose, Each.	For Cast Steel Rope—Fastened, Each.	For Iron Rope—Loose, Each.	For Iron Rope—Fastened, Each.
2¼	7⅛	$19 00	$22 00	$15 00	$18 00
2	6¼	17 00	19 75	12 00	14 75
1¾	5½	14 50	16 75	10 00	12 25
1⅝	5	12 00	14 00	8 00	10 00
1½	4¾	10 00	12 00	6 00	8 00
1⅜	4¼	8 00	9 75	4 75	6 50
1¼	4	6 00	7 75	3 75	5 50
1⅛	3½	4 50	6 00	3 00	4 50
1	3	3 75	5 00	2 75	4 00
⅞	2¾	3 00	4 25	2 50	3 75
¾	2¼	2 50	3 75	2 00	3 25
⅝	2	2 00	3 00	1 50	2 50
9/16	1¾	2 00	3 00	1 50	2 50
½	1½	1 60	2 50	1 25	2 15
7/16	1¼	1 60	2 50	1 25	2 15
⅜	1⅛	1 35	2 10	1 10	1 85
5/16	1	1 35	2 10	1 10	1 85
¼	¾	1 35	2 10	1 10	1 85

OPEN SOCKETS



FIG. 7197

Diams. of Rope, Inches.	Circum. of Rope, Inches.	For Cast Steel Rope—Loose, Each.	For Cast Steel Rope—Fastened, Each.	For Iron Rope—Loose, Each.	For Iron Rope—Fastened, Each.
2¼	7⅛	$22 00	$25 00	$18 00	$21 00
2	6¼	19 50	22 25	15 00	17 75
1¾	5½	17 00	19 25	12 50	14 75
1⅝	5	14 00	16 00	10 00	12 00
1½	4¾	11 75	13 75	7 75	9 75
1⅜	4¼	9 75	11 50	6 25	8 00
1¼	4	7 50	9 25	5 00	6 75
1⅛	3½	5 50	7 00	4 00	5 50
1	3	4 50	5 75	3 50	4 75
⅞	2¾	3 75	5 00	2 75	4 00
¾	2¼	3 25	4 50	2 50	3 75
⅝	2	2 60	3 60	2 00	3 00
9/16	1¾	2 60	3 60	2 00	3 00
½	1½	2 20	3 10	1 70	2 60
7/16	1¼	2 20	3 10	1 70	2 60
⅜	1⅛	1 90	2 65	1 50	2 25
5/16	1	1 90	2 65	1 50	2 25
¼	¾	1 90	2 65	1 50	2 25

THIMBLE SPLICED ON ROPE



FIG. 7200

Diameters of Rope, Inches.	Circumference of Rope, Inches.	For Cast Steel Rope, Each.	For Iron Rope, Each.
1½	4¾	$6 00	$4 50
1⅜	4¼	5 25	4 00
1¼	4	4 50	3 50
1⅛	3½	3 75	3 00
1	3	3 00	2 50
⅞	2¾	2 50	2 10
¾	2¼	2 15	1 75
⅝	2	1 80	1 50
9/16	1¾	1 80	1 50
½	1½	1 60	1 35
7/16	1¼	1 60	1 35
⅜	1⅛	1 40	1 15
5/16	1	1 40	1 15
¼	¾	1 40	1 15

HEAVY GALVANIZED OVAL THIMBLE



FIG. 7203

Width Score, Inches.	Circum. of Rope, Inches.	Each.	Width Score, Inches.	Circum. of Rope, Inches.	Each.
1⅝	5	$0 40	⅞	2¾	$0 16
1½	4¾	35	¾	2¼	16
1⅜	4¼	29	⅝	2	15
1¼	4	25	½	1½	12
1⅛	3½	20	⅜	1⅛	11
1	3	19	¼	¾	11

SOCKET WITH CHAIN



FIG. 7205

Prices according to size and length of chain.

SOCKET WITH TURN BUCKLE



FIG. 7206

Prices according to size and weight.

SWIVEL HOOK AND SOCKET



FIG. 7195

Diams. of Rope, Inches.	Circum. of Rope, Inches.	For Cast Steel Rope—Loose, Each.	For Cast Steel Rope—Fastened, Each.	For Iron Rope—Loose, Each.	For Iron Rope—Fastened, Each.
2¼	7⅛	$29 00	$32 00	$23 00	$26 00
2	6¼	25 00	27 75	19 00	21 75
1¾	5½	21 50	23 75	16 00	18 25
1⅝	5	17 50	19 50	13 00	15 00
1½	4¾	15 00	17 00	10 00	12 00
1⅜	4¼	12 50	14 25	8 50	10 25
1¼	4	10 50	12 25	7 25	9 00
1⅛	3½	8 50	10 00	6 25	7 75
1	3	7 50	8 75	5 75	7 00
⅞	2¾	6 50	7 75	5 25	6 50
¾	2¼	5 50	6 75	4 50	5 75
⅝	2	4 50	5 50	3 75	4 75
9/16	1¾	4 50	5 50	3 75	4 75
½	1½	3 60	4 50	3 25	4 15
7/16	1¼	3 60	4 50	3 25	4 15
⅜	1⅛	3 00	3 75	2 80	3 55
5/16	1	3 00	3 75	2 80	3 55
¼	¾	3 00	3 75	2 80	3 55

HOOK AND SOCKET



FIG. 7198

Diams. of Rope, Inches	Circum. of Rope, Inches	For Cast Steel Rope—Loose, Each.	For Cast Steel Rope—Fastened, Each.	For Iron Rope—Loose, Each.	For Iron Rope—Fastened, Each.
1½	4¾	$14 00	$16 00	$9 00	$11 00
1⅜	4¼	11 50	13 25	7 50	9 25
1¼	4	9 50	11 25	6 25	8 00
1⅛	3½	7 50	9 00	5 25	6 75
1	3	6 50	7 75	4 75	6 00
⅞	2¾	5 50	6 75	4 25	5 50
¾	2¼	4 50	5 75	3 50	4 75
⅝	2	3 50	4 50	2 75	3 75
9/16	1¾	3 50	4 50	2 75	3 75
½	1½	2 75	3 65	2 40	3 30
7/16	1¼	2 75	3 65	2 40	3 30
⅜	1⅛	2 25	3 00	2 00	2 75
5/16	1	2 25	3 00	2 00	2 75
¼	¾	2 25	3 00	2 00	2 75

THE CROSBY DROP FORGED WIRE ROPE CLIP

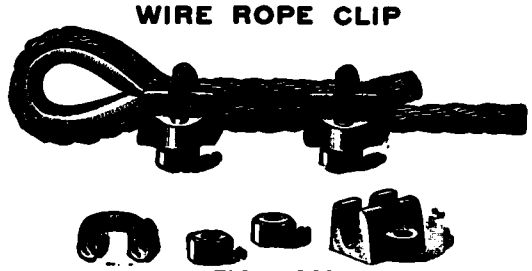


FIG. 7201

Light, durable and convenient. Easily applied.

Diams. of Rope, Inches.	Circum. of Rope, Inches.	Each.	Diams. of Rope, Inches.	Circum. of Rope, Inches.	Each.
2½	7⅞	$6 00	1	3	$0 50
2¼	7¼	5 00	⅞	2¾	45
2	6¼	4 00	¾	2¼	40
1¾	5½	3 50	⅝	2	35
1½	4¾	60	½	1½	30
1⅜	4¼	55	⅜	1⅛	25
1¼	4	50	5/16	1	25
1⅛	3½	50	¼	¾	25

Can not be broken. Die forged of 60,000 pounds, T. S. Steel. Will stand hammering, bending and frost. You can not make them slip or break.

SUSPENSION BRIDGE AND CABLEWAY SOCKETS

CAST IRON

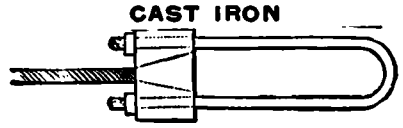


FIG. 7207

Closed Socket.

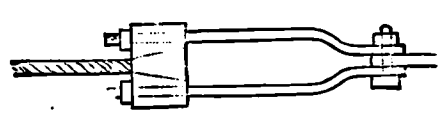


FIG. 7208

Open Socket.

Prices furnished on application.

SISTER HOOKS AND THIMBLE



FIG. 7196

Diams. of Rope, Inches.	Circum. of Rope, Inches.	For Cast Steel Rope—Loose, Each.	For Cast Steel Rope—Fastened, Each.	For Iron Rope—Loose, Each.	For Iron Rope—Fastened, Each.
1½	4¾	$10 00	$12 00	$7 50	$9 50
1⅜	4¼	8 75	10 50	6 75	8 50
1¼	4	8 00	9 75	6 00	7 75
1⅛	3½	6 75	8 25	5 25	6 75
1	3	5 75	7 00	4 50	5 75
⅞	2¾	5 00	6 25	3 85	5 10
¾	2¼	4 15	5 40	3 25	4 50
⅝	2	3 30	4 30	2 75	3 75
9/16	1¾	3 30	4 30	2 75	3 75
½	1½	2 50	3 40	2 30	3 20
7/16	1¼	2 50	3 40	2 30	3 20
⅜	1⅛	2 20	2 95	1 90	2 65
5/16	1	2 20	2 95	1 90	2 65
¼	¾	2 20	2 95	1 90	2 65

HOOK AND THIMBLE



FIG. 7199

Diams. of Rope, Inches.	Circum. of Rope, Inches.	For Cast Steel Rope—Loose, Each.	For Cast Steel Rope—Fastened, Each.	For Iron Rope—Loose, Each.	For Iron Rope—Fastened, Each.
1½	4¾	$10 00	$12 00	$7 50	$9 50
1⅜	4¼	8 75	10 50	6 75	8 50
1¼	4	8 00	9 75	6 00	7 75
1⅛	3½	6 75	8 25	5 25	6 75
1	3	5 75	7 00	4 50	5 75
⅞	2¾	5 00	6 25	3 85	5 10
¾	2¼	4 15	5 40	3 25	4 50
⅝	2	3 30	4 30	2 75	3 75
9/16	1¾	3 30	4 30	2 75	3 75
½	1½	2 50	3 40	2 30	3 20
7/16	1¼	2 50	3 40	2 30	3 20
⅜	1⅛	2 20	2 95	1 90	2 65
5/16	1	2 20	2 95	1 90	2 65
¼	¾	2 20	2 95	1 90	2 65

PATENT WIRE ROPE CLAMP

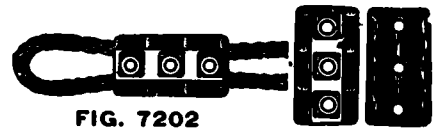


FIG. 7202

Diams. of Rope, Inches.	Circum. of Rope, Inches.	Each.	Diams. of Rope, Inches.	Circum. of Rope, Inches.	Each.
2¼	7⅛	$8 00	1	3	$0 60
2	6¼	5 00	⅞	2¾	50
1¾	5½	4 00	13/16	2½	45
1⅝	5	3 00	¾	2¼	40
17/16	4½	1 50	⅝	2	35
1¼	4	1 10	9/16	1¾	30
1 9/16	3¾	90	½	1½	30
1⅛	3½	75	7/16	1¼	25
1 1/16	3¼	65	5/16	1	25

Made with either two or three bolts.

THE JUPITER WIRE ROPE CLIP

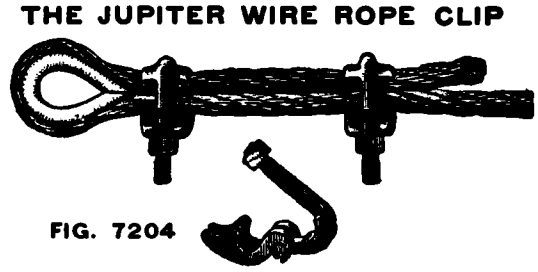


FIG. 7204

Compact, Inexpensive, Simple.

Diameters of Rope, Inches.	Circumference of Rope, Inches.	Each.
1½	4¾	$0 60
1⅜	4¼	55
1¼	4	50
1⅛	3½	50
1	3	50
⅞	2¾	45
¾	2¼	40
⅝	2	35
½	1½	30
⅜	1⅛	25
5/16	1	25
¼	¾	25

The Jupiter Clip is practically in one piece. It is applied by simply loosening the nut, swinging back the bolt, putting rope to be secured into score, and then swinging the bolt forward to its former position and tightening the nut.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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IRON TACKLE BLOCKS
WITH PHOSPHOR BRONZE BUSHINGS

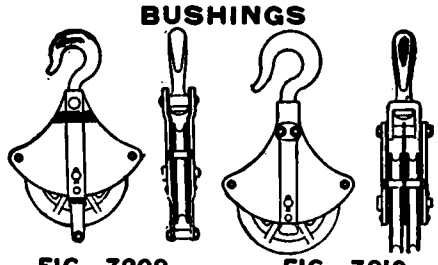


FIG. 7209 FIG. 7210

PRICES

WITH SINGLE SHEAVE.	WITH DOUBLE SHEAVE.
10 in. diam....each, $.....	10 in. diam....each, $.....
12 " " .... "	12 " " .... " .....
14 " " .... "	14 " " .... " .....
16 " " .... "	16 " " .... " .....
18 " " .... "	18 " " .... " .....

Special prices furnished on Triple and Quadruple Sheave Blocks.

SOLID IRON SHEAVE
FOR ELEVATORS AND DERRICKS

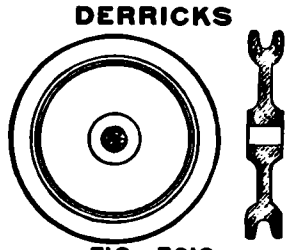


FIG. 7213

Prices Bored to Fit Shaft.	Diameters in Inches at Bottom of Groove.	Diameters in Inches Over All.	Approximate Weight in Pounds.	Diameters of Largest Rope Fitting Groove in Inches.
$12 00	30	33	205	1
11 00	28	31	167	1
10 00	26	29	156	1
9 00	24	27	130	1
7 00	22	25	123	1
5 50	20	23	116	1
4 50	18	20¼	92	1
3 50	16	18½	60	1⅛
2 75	14	16¾	39	1
2 00	12	13⅞	28	1
1 75	10	12⅛	23	⅞
1 50	8	10	20	9/16

In ordering always state diameter of sheave at bottom of groove.

SHEAVE
FOR TRANSMISSION OF POWER BY WIRE ROPE

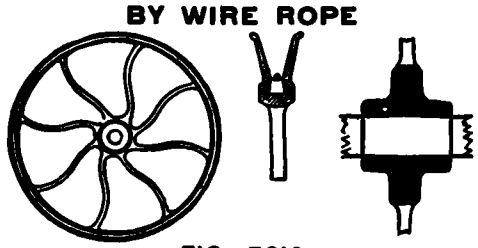


FIG. 7216

Sheaves bored to fit shaft. Grooves filled with patent rubber and leather lining.

Prices Bored and Lined.	Diameters in Feet at Bottom of Groove.	Diameters in Feet and Inches Over All.	Approximate Weight in Pounds.
*$235 00	12	12—8	3,440
*220 00	11	11—9	3,000
*150 00	10	10—8	2,400
120 00	9	9—8	1,800
95 00	8	8—8	1,390
72 00	7	7—8	975
59 00	6	6—6¾	800
37 00	5	5—5	450
24 00	4	4—5¼	275
15 00	3	3—3	161
10 50	2½	2—6	95
7 50	2	2—2	66
5 50	1½	1—8	46

*Cast in halves; all others solid unless specified. Prices for larger sheaves on application.

In ordering always state diameter of sheave at bottom of groove.

PATENT RUBBER AND LEATHER LINING FOR SHEAVES
FOR TRANSMISSION OF POWER BY WIRE ROPE

Prices per set of filling for different sizes of sheaves furnished on application. Fig. 7219 shows reduced sections.

WIRE ROPE GRIP SHEAVE

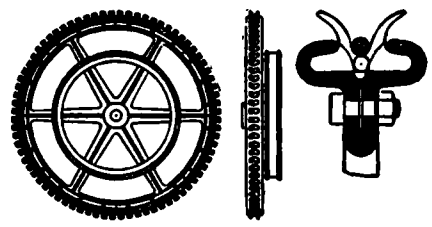


FIG. 7211

Sizes, 4, 5, 6, 7 and 8 feet diameter.
Prices on application.

LIGHT IRON HOISTING SHEAVE

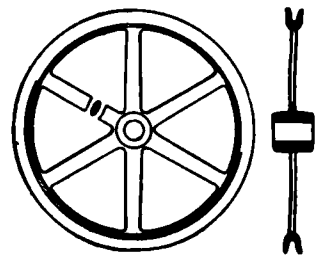


FIG. 7214

PRICES

Bored to Fit Shaft.	Diameters in Inches at Bottom of Groove.	Diameters in Inches Over All.	Approximate Weight in Pounds.	Diameters of Largest Rope Fitting Groove in Inches.
$6 00	30	33	90	1
4 00	24	27	56	1
3 00	18	20½	31	⅞
2 50	16	18	22	1 1/16
2 25	14	16	23	¾
1 75	12	13¾	17	1 1/16

In ordering always state diameter of sheaves at bottom of groove.

LIGHT ARM SUPPORTING SHEAVE
WITH WIDE GROOVES

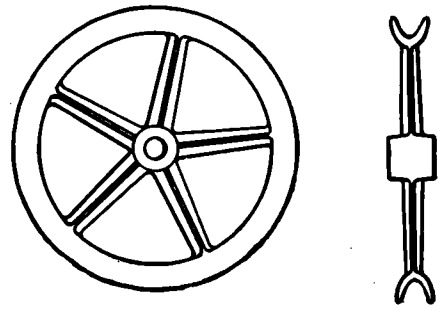


FIG. 7217

PRICES

Bored to Fit Shaft.	Diameters in Inches at Bottom of Groove.	Diameters in Inches Over All.	Approximate Weight in Pounds.
$11 00	30	35	170
9 00	28	32	147
8 00	26	30	133
6 00	24	27½	88
5 80	22	25½	85
4 40	20	23	55
3 60	18	21	46
3 40	16	18½	38
2 80	14	16¼	27
2 50	12	14	22

Sheaves also fitted with set screws.

In ordering always state diameter of sheave at bottom of groove.

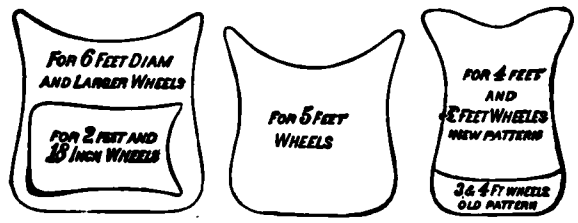


FIG. 7219

HEAVY IRON HOISTING SHEAVE

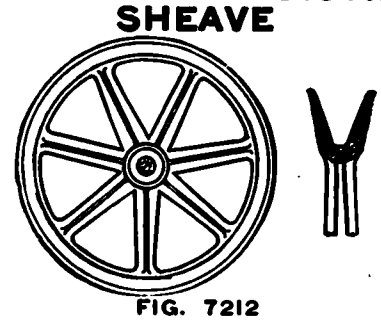


FIG. 7212

Prices Bored to Fit Shaft.	Diameters in Feet at Bottom of Groove.	Diameters in Feet and Inches Over All.	Approximate Weight in Pounds.	Diameters of Largest Rope Fitting Groove in Inches.
$55 00	6	6—7½	1,278	1¾
45 00	5	5—7	866	1½
35 00	4	4—5½	622	1¼
22 00	3	3—5¼	414	1

HEAVY IRON HOISTING SHEAVE
WITH WOOD LINED GROOVES

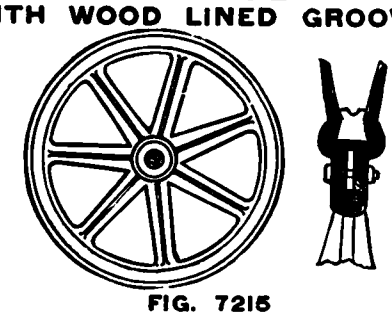


FIG. 7215

Prices Bored to Fit Shaft.	Diameters in Feet at Bottom of Groove.	Diameters in Feet and Inches Over All.	Approximate Weight in Pounds.	Diameters of Largest Rope Fitting Groove in Inches.
$130 00	6	6—7¾	1,800	1¾
72 00	5	5—5¼	975	1½
60 00	4	4—6	700	1¼
45 00	3	3—6¼	470	1

Special prices on both of the above classes of heavy iron sheaves of larger diameters, with cast or wrought iron arms.

In ordering always state diameter of sheave at bottom of groove.

WIRE ROPE THIMBLE

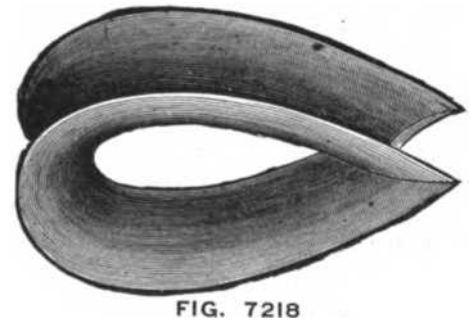


FIG. 7218

GALVANIZED
PRICES

Circ. of rope, inches.	¾	1	1½	2	2½	2¾	3	3½	3¾	4	4½	5
Width of score, inches.	¼	⅜	½	⅝	¾	⅞	1	1⅛	1¼	1⅜	1½	1⅝
Each.	$0 10	10	12	14	15	16	19	22	28	33	38	45

OPEN THIMBLE



FIG. 7220

PRICES

Outside diameter from edge to edge, ¾, ⅞, 1, 1¼ inches.
Japanned, 24c. per dozen. Galvanized, 28c. per dozen
Outside diameter from edge to edge.
1⅜, 1½, 1¾, 2, 2¼, 2½, 2¾, 3, 3¼, 3½, 3¾, 4, 4½, 5, 5½, 6 in.
Japanned, 17c. per lb. Galvanized, 21c. per lb.

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GALVANIZED IRON THIMBLES

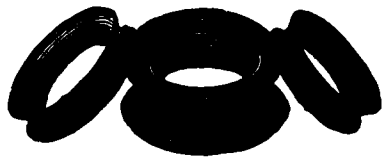


FIG. 7221

PRICES

Outside Diameters, Inches.	Light, per Dozen.	Heavy, per Dozen.	Navy Pattern, Extra Heavy, per Dozen.	Lip or Saddle, per Dozen.
¾	$0 25	....	....	....
⅞	30	....	....	....
1	35	....	....	....
1⅛	38	....	....	....
1¼	40	....	....	....
1⅜	40	....	....	....
1½	45	....	....	....
1¾	50	....	....	....
2	60	$0 70	$1 15	....
2¼	70	85	1 35	$1 35
2½	80	1 25	1 80	1 60
2¾	95	1 60	2 00	1 80
3	1 10	1 70	2 35	2 25
3¼	1 35	1 90	2 70	2 70
3½	1 70	2 15	3 00	3 50
3¾	2 12	2 80	3 60	....
4	....	3 25	4 00	4 00
4¼	....	3 60	4 50	....
4½	....	4 30	5 65	....
4¾	....	5 40	6 10	....
5	....	6 30	6 55	....

TACKLE HOOKS AND THIMBLES

WROUGHT IRON

With Thimbles for Manila Rope.



FIG. 7225

PRICES, FIG. 7226

Sizes, Inches.	Galvanized, per Dozen.	Black, per Dozen.
¼	$2 10	$1 75
5/16	2 10	1 75
⅜	2 10	1 75
7/16	2 20	1 80
½	2 30	1 90
9/16	2 40	2 00

Sizes, ⅝, ¾, ⅞, 1, 1⅛, 1¼, 1⅜, 1½, 1⅝, 1¾, 1⅞, 2, 2¼, 2½ inches.

Per lb., black.....$0 17
" galvanized..... 22

For size, measure diameter of iron in the middle of bend.

With Wire Rope Thimbles.



FIG. 7226

PRICES, FIG. 7225

Sizes, ¼ 5/16 ⅜ 7/16 ½ 9/16 inch.
Per dozen, japanned, $1.50; galvanized, $1.75.

Sizes, ⅝, ¾, ⅞, 1, 1⅛, 1¼, 1⅜, 1½, 1⅝, 1¾, 2, 2¼, 2½ in.
Per lb., japanned, $0.15; galvanized, $0.19.

SMALL EYED BLOCK HOOK

WROUGHT IRON



FIG. 7229

PRICES

SINGLE

⅜ and ½ inch, black, per doz....$2 00 Galvanized, per doz....$2 25
⅝ to 2 inches, black, per lb..... 16 Galvanized, per lb..... 20

DOUBLE

⅜, 7/16, ½, 9/16 inch, black, per doz..$2 50 Galvanized, per doz..$2 75
⅝ to 2 inches, black, per lb..... 20 Galvanized, per lb... 24

BRASS THIMBLE



FIG. 7222

PRICES

Outside diameters, inches...	¾	1	1¼	1½	1¾	2
Per dozen.....	$0 65	0 70	0 75	1 00	1 25	1 50

2¼ to 5 inches, inclusive.....70 cents per pound.

MATCH OR SISTER HOOKS AND THIMBLES

WROUGHT IRON

With Thimble for Manila Rope.



FIG. 7223

For size, measure diameter of iron in the middle of bend, with hooks closed.

PRICES, FIG. 7223

Sizes, ¼ 5/16 ⅜ 7/16 ½ 9/16 inch.
Per dozen, japanned, $2.00; galvanized, $2.50.

Sizes, ⅝, ¾, ⅞, 1, 1⅛, 1¼, 1⅜, 1½, 1⅝, 1¾, 2 in.
Per lb., japanned, $0.18; galvanized, $0.22.

With Wire Rope Thimbles.



FIG. 7224

PRICES, FIG. 7224

Sizes, Inches.	Galvanized, per Dozen.	Black, per Dozen.
¼	$2 75	$2 25
5/16	2 75	2 25
⅜	2 75	2 25
7/16	2 85	2 30
½	2 95	2 40
9/16	3 10	2 50

Sizes, ⅝, ¾, ⅞, 1, 1⅛, 1¼, 1⅜, 1½, 1⅝, 1¾, 2 inches.

Per lb., black.....$0 20
" galvanized 25

CLINCH RINGS

No. 1. Straight Hole.

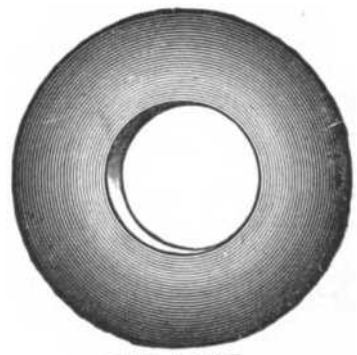


FIG. 7227

No. 2. Countersunk Hole.

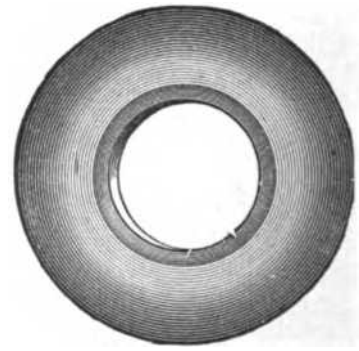


FIG. 7228

PRICES, FIGS. 7227 AND 7228

⅜	inch hole, per lb		$0 50
7/16	" "		40
½	" "		35
9/16	" "		25
⅝	" "		25

1 1/16, ¾, 13/16, ⅞, 15/16, 1, 1 1/16, 1⅛, 1 3/16, 1¼, 1⅜, 1½ inch hole.
Per lb., $0.17; galvanized, 4 cents per lb. extra.

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RIGGER SCREW

Wrought Iron.

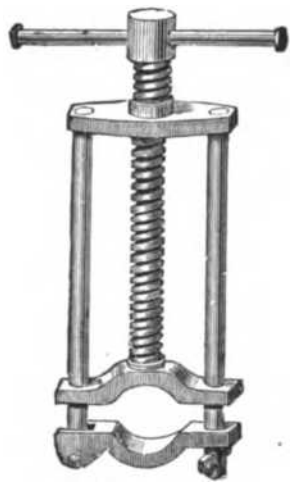


FIG. 7232

Sizes, inches,	⅞	1	1⅛	1¼	1½
Prices, each,	$2 75	3 50	4 75	6 25	8 00

SHIP CLAMP SCREW

Wrought Iron.

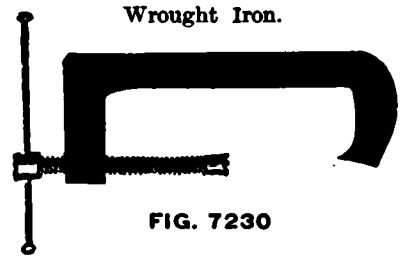


FIG. 7230

Nos.	Sizes of Frame, Inches.	Diams. of Screw, Inches.	Space in Clear, Inches.	Prices Each.
1	5 x 1½	2½	36 x 10	$42 00
2	4½ x 1¼	2	33 x 9	30 00
3	4 x 1⅛	1¾	30 x 8	22 00
4	4 x 1	1¾	27 x 8	19 00
5	3½ x ⅞	1¾	24 x 7	12 50
6	3 x ¾	1½	21 x 6	10 00
7	3 x ⅝	1½	18 x 5	8 00

BOAT CLAMP SCREW

Wrought Iron.

1	2½ x ⅝	1½	18 x 5	$7 00
2	2¼ x ⅝	1½	16 x 4	5 75
3	2 x ½	1¼	14 x 4	5 00
4	1¾ x ½	1¼	12 x 3½	4 50
5	1½ x ⅜	1⅛	10 x 3½	3 75
6	1¼ x ⅜	1⅛	8 x 3	3 00
7	1⅛ x ⅜	1	6 x 3	2 50

SHIP CARPENTER'S CLAMP SCREW

Sliding Jaw.

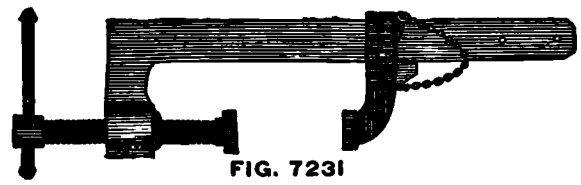


FIG. 7231

Srew, Inches.	Sizes of Frame, Inches,	Space in Clear, Inches.	Each.
1½	3 x ¾	30	$14 25
1¾	3½ x ⅞	36	17 75
2	4 x 1	36	20 00

BARREL OR CAN HOOK

PRICES

Sizes ⅜, ½, ⅝, ¾ and ⅞ inch, 14 cents per pound; galvanized, 17 cents per pound. ⅜ inch is used for kegs; ½ inch is used for barrels; ⅝ inch is used for tierces; ¾ inch is used for hogsheads.

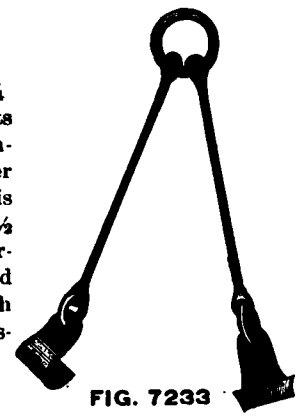


FIG. 7233

BALE HOOK

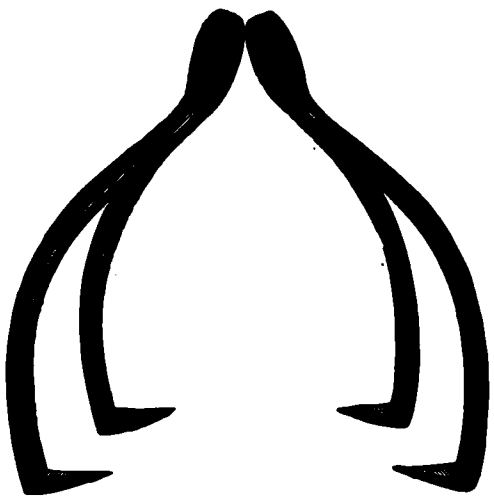


FIG. 7235

Single Bale Hooks, per pair	$0 40
Double " " "	70

BOX HOOK

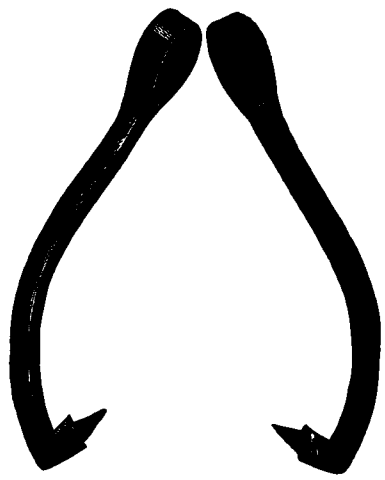


FIG. 7236

Single Box Hooks, per pair	$0 40
Double " " "	70

CHAIN HOOK



FIG. 7234

½ Inch Iron.

Black, per pound	14 cents.
Galvanized, per pound	17 "

CALKER'S TOOL

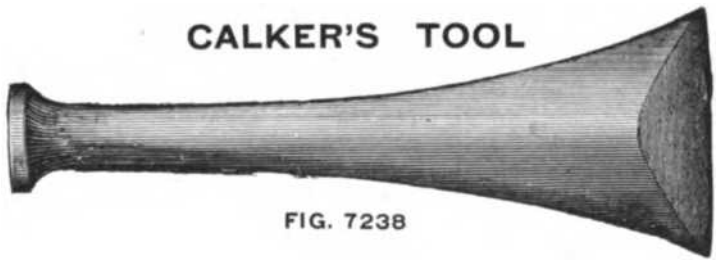
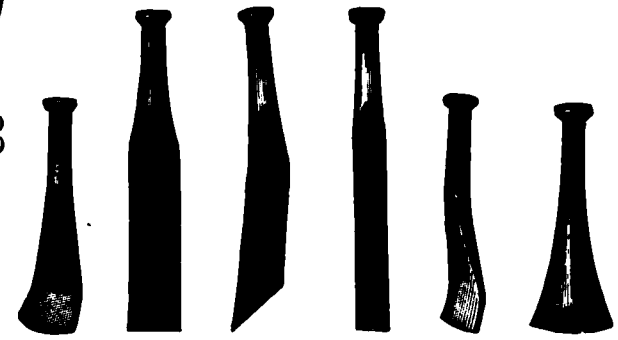


FIG. 7238

Best Cast Steel.

Calking Irons	per dozen, $7 00	Double Crook Irons, per dozen,	$9 00
Making Irons	" 7 00	Treenail Irons	" 6 50
Sharp Irons	" 9 00	Coppering Hammers,	" 12 00
Deck or Dumb Irons,	" 8 00	Coppering Punches,	" 6 00
Clearing Irons	" 7 00	Rochester or Western Pattern,	
Spike Irons	" 6 00	per dozen	12 50
Single Crook Irons	" 8 50		

CALKING IRONS



Bent or Single Crook. Sharp. Reefing or Clearing. Spike. Double Crook. Dumb or Deck.

FIG. 7237

Price, per dozen $5 50

CALKING IRON

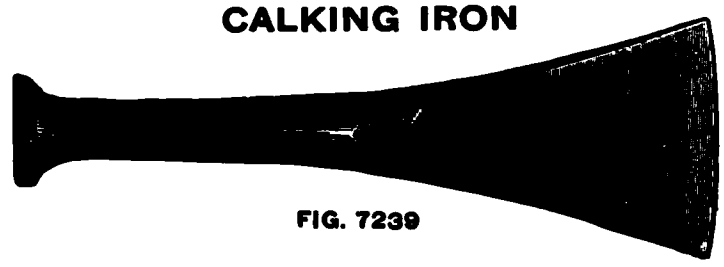


FIG. 7239

Numbers of Crease	0	1	2	3
Price, per dozen	$4 50	$4 65	$4 75	$4 85

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CALKING MALLET

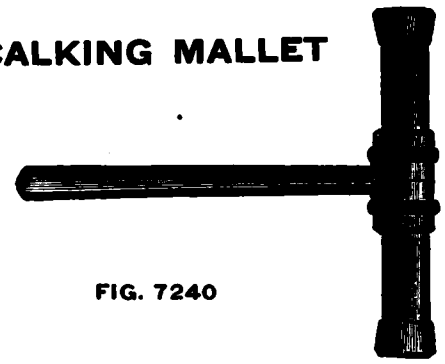


FIG. 7240

No. 000	Tempered Steel Rings, per dozen	$30 00
" 00	Polished " " "	28 00
" 0	" " " "	25 00
" 1	" " " "	22 00
" 2	" " " "	18 00
" 3	Varnished " " "	16 00
" 4	Polished Iron Rings, "	22 00
" 5	" " " "	18 00
" 6	Varnished Iron Rings, "	16 00
" 7	" " " "	14 00
" 8	" " " "	12 00

HAWSING MALLET

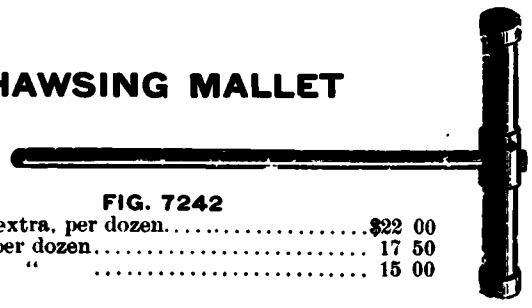


FIG. 7242

Live Oak, extra, per dozen	$22 00
" " per dozen	17 50
White " "	15 00

HAWSING IRON

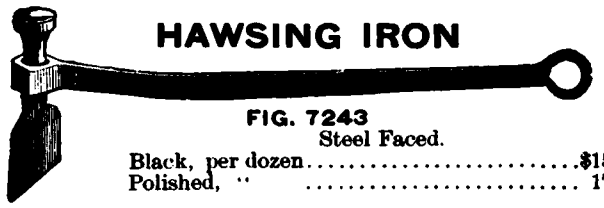


FIG. 7243

Steel Faced.

Black, per dozen	$15 00
Polished, "	17 00

MARLINE SPIKE



FIG. 7245

Polished, Steel Points.

Sizes, inches	10	11	12	13	14	15	16
Prices per doz.	$4 00	$4 50	$5 00	$5 50	$6 50	$7 50	$9 50

Japanned, Steel Points.

Sizes, inches....10, 11, 12, 13, 14, 15, 16....18 cents per pound.

SHIP SCRAPERS

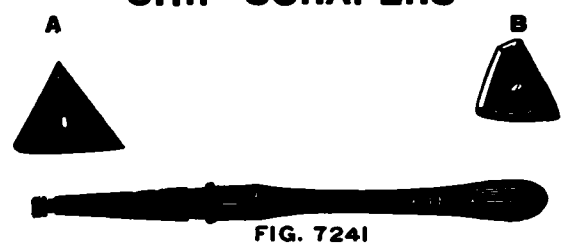


FIG. 7241

Wood Handles. Triangular Blades. Solid Iron Sockets.

No. 1	Blades, ¼ inch thick, Iron and Steel welded; per dozen		$7 50
" 1½	" ¼ " Steel, extra finish;	"	12 00
" 2	" from No. 14 Best Cast Steel;	"	5 50
" 3	" " " 14 Steel, Black Sockets;	"	3 50
" 4	" " " 14 " 2½ inches square;	"	5 50
" 5	" " " 14 " 5 foot Handles;	"	9 00

DIRIGO FOLDING ANCHOR

In this anchor both stock and flukes fold up. They are kept either open or closed, as desired, by the same pin. It has all the good qualities of the regular anchor when in use; in addition, the advantage of being compact for stowage.

OPEN

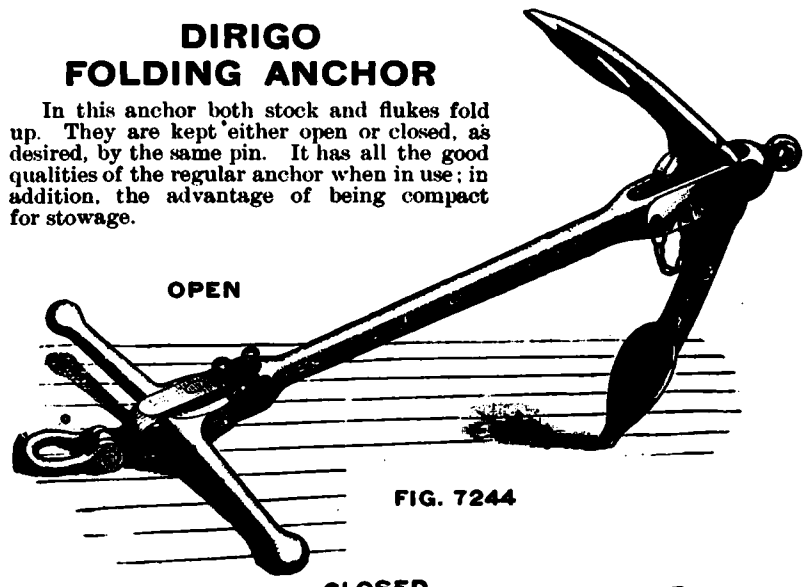


FIG. 7244

CLOSED

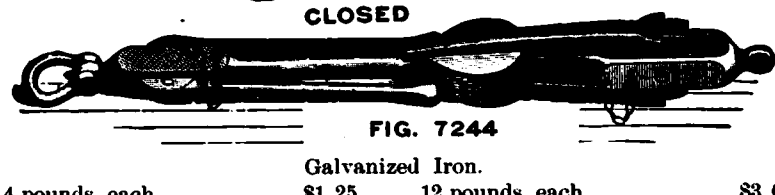


FIG. 7244

Galvanized Iron.

4 pounds, each	$1 25	12 pounds, each	$3 00
6 " "	1 50	16 " "	3 50
8 " "	2 00	20 " "	4 50
10 " "	2 50	25 " and larger, 20c. per lb.	

Brass.—For Canoes.

	Dipped.	Polished.	Nickel Plated.
4 pounds, each	$4 00	$5 00	$5 50

GRAPNEL

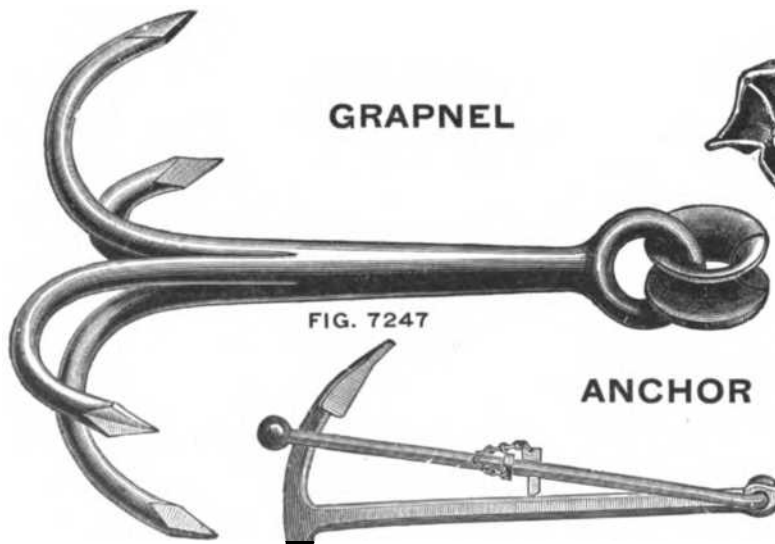


FIG. 7247

ANCHOR

FIG. 7248

Black and Galvanized.
Prices quoted on application.

PRICES FIG. 7247

Black and Galvanized.

Quoted on application.

BABBITT PATENT ANCHOR

GALVANIZED IRON

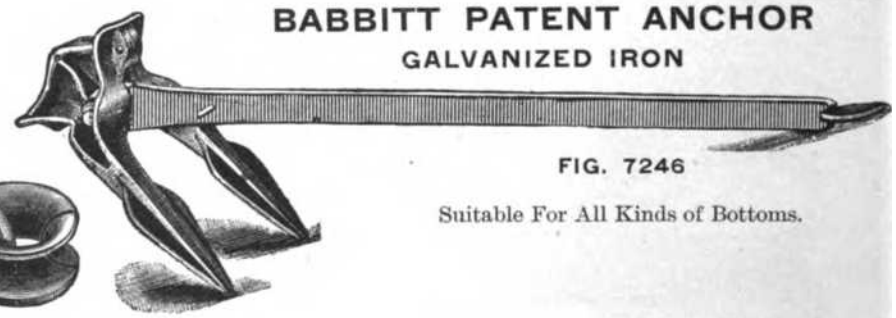


FIG. 7246

Suitable For All Kinds of Bottoms.

PRICES, FIG. 7246

No. 0	5½	pounds,	each	$1 25
" 1	12	"	"	2 50
" 2	18	"	"	3 25
" 3	26	"	"	4 40
" 4	36	"	"	5 75
" 5	56	"	"	7 50
" 6	76	"	"	10 00
" 7	100	"	"	13 50
" 8	125	"	"	16 85
" 9	150	"	"	20 25

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CAST IRON CLEAT

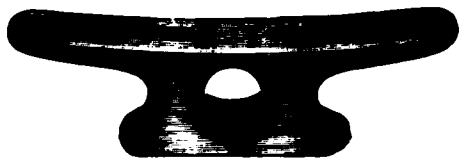


FIG. 7249

Sizes, inches long.....5 7 8½
Price, 9 cents per pound; galvanized, 12 cents per pound
Sizes, inches long.10½ 13 15 18 24 28 32 36 40
Price, 6 cents per pound; galvanized, 9 cents per pound

WIRE ROPE PULLEY BLOCKS

SINGLE HALF SHELL | DOUBLE HALF SHELL | SINGLE DIAMOND SHELL

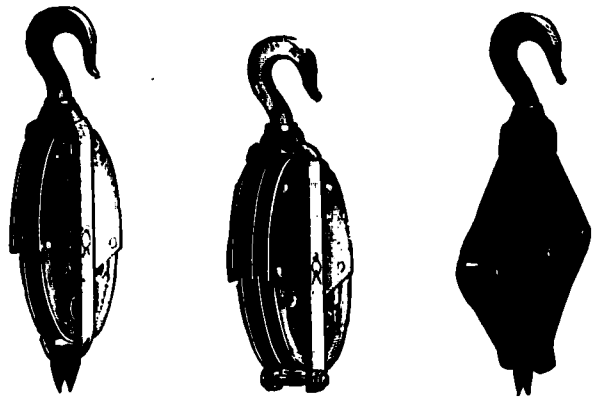


FIG. 7251 FIG. 7252 FIQ. 7253

DESCRIPTION

These blocks have heavy wrought iron frames and hooks, and heavy cast sheaves bored true having steel pins. Three and four-fold blocks and extra heavy blocks for loads up to 50 tons made to order, also with rings or shackles in place of hooks.

PRICES, FIG. 7251 TO 7253

Diameters of Sheaves, Inches.	Diameters of Wire Rope, Inches.	Plain Bushed. Single, Each.	Plain Bushed. Double, Each.	Graphite Bronze Bushed. Single, Each.	Graphite Bronze Bushed. Double, Each.	Extra Sheaves. Plain Bushed, Each.	Extra Sheaves. Graphite Bronze Bushed, Each.
10	⅝	$11 00	$15 50	$13 00	$19 00	$2 40	$4 00
12	¾	12 00	16 50	14 00	21 00	2 75	4 75
14	¾	13 00	18 00	16 50	24 00	3 00	5 75
16	¾	16 50	24 00	19 00	28 00	4 75	6 75
18	¾	18 00	26 00	21 00	31 00	5 50	8 00
20	1	24 00	33 00	26 00	37 00	7 50	10 00

STEEL LOCK SNATCH BLOCK

FOR WIRE ROPE, WITH SELF LUBRICATING GRAPHITE BRONZE BUSHINGS



FIG. 7256

The rope is protected by the steel shell, which is thoroughly japanned, making a strong and durable block.

The strap goes entirely around the shell, giving the block the maximum of strength.

PRICES, FIG. 7256

Sizes of Sheaves, Inches.	Diameters of Rope, Inches.	Each.
8 x 1⅝ x ¾	⅜	$15 00
10 x 1¾ x 1	½	18 00
12 x 1¾ x 1	⅝	21 00
14 x 2 x 1	¾	24 00
16 x 2 x 1	⅞	30 00
18 x 2⅜ x 1⅛	1	40 00
20 x 2½ x 1¼	1⅛	52 00
22 x 2⅝ x 1¼	1¼	60 00

All of these blocks are fitted with a patent guard, to prevent any possibility of the ropes leaving the sheave. This guard may be applied or removed at pleasure.



FIG. 7257

CAST IRON CHOCK

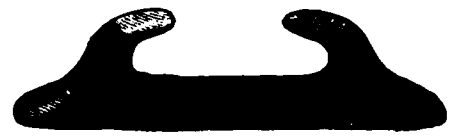


FIG. 7250

Sizes, inches long.....4 4¼ 5 5½ 6 6½ 7¼ 8½
Price, 9 cents per pound; galvanized, 12 cents per pound.
Sizes, inches long.....10½ 11½ 13 14 15 18 20 24 30
Price, 6 cents per pound; galvanized, 9 cents per pound.

WIRE ROPE BLOCKS

LIGHT PATTERN STIFF SWIVEL HOOK | WROUGHT IRON LOOSE HOOK



FIG. 7254

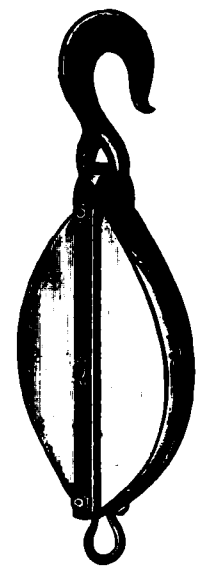


FIG. 7255

PRICES, FIG. 7254 AND 7255

Dimensions. Diameters of Sheaves, Inches.	Dimensions. For Diameter Rope, Inches.	Common Iron Bushed. Single, Each.	Common Iron Bushed. Double, Each.	Self Lubricating, Metalline or Bronze Bushed. Single, Each.	Self Lubricating, Metalline or Bronze Bushed. Double, Each.
10	¾	$10 00	$15 00	$13 00	$21 00
12	¾	12 00	17 00	15 00	23 00
14	¾	14 00	19 00	17 00	25 00
16	⅞	16 00	22 00	19 50	29 00
18	⅞	20 00	28 00	24 00	36 00

STEEL DERRICK AND HOISTING BLOCKS

FOR WIRE ROPE, WITH SELF LUBRICATING GRAPHITE BRONZE BUSHINGS

PRICES, FIGS. 7257 AND 7258

Lengths of Shell, Inches.	Sizes of Sheaves, Inches.	Diameters of Rope, Inches.	Description. Single, Each.	Description. Double, Each.	Description. Triple, Each.
12	9½ x 1½ x ¾	⅜ and ½	$6 50	$12 00	$18 00
13	10½ x 1⅝ x ⅞	½ " ⅝	8 00	15 00	22 00
16	12 x 2 x 1	⅝ " ¾	10 00	19 00	27 00
18	14 x 2⅛ x 1	⅞ " 1	15 00	24 00	36 00

These blocks are made with a steel shell, entirely protecting the sheave from injury when striking obstructions, or when dragging the blocks.

When the block is to be used as a lower block in hoisting, we can send guards at an extra price of $1.60 a pair. They prevent the blocks tipping over. All blocks are drilled for these guards, so that they can be adjusted readily.

These guards, as shown in Fig. 7257, are not furnished unless ordered. When ordering please state how many beckets are wanted.

Furnished with safety link hooks, or loose flattened hooks at same prices.

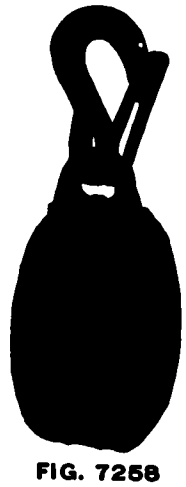


FIG. 7258

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BLOCKS FOR WIRE ROPE

SINGLE MALLEABLE IRON DOUBLE

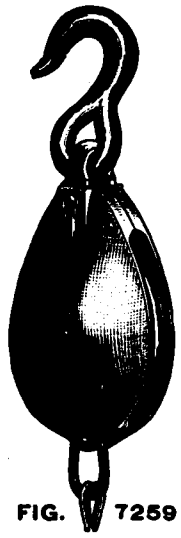


FIG. 7259

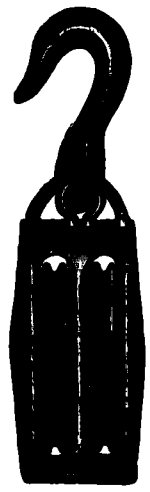


FIG. 7260

Nos.	Shell, Inches.	Sheaves, Inches.	For Rope, Inches.	Style.	Prices.
55	14	10x1½	⅜ and ½	Single	$9 50
57				Double	17 50
59				Triple	25 50
61	16	11x1¾	½ and ⅝	Single	12 50
63				Double	23 00
65				Triple	31 00
67	18	13x2	¾ and ⅞	Single	15 00
69				Double	29 00
71				Triple	41 50

These blocks are all fitted with self-lubricating bushings, and, while very strong, are made with special reference to lightness, for ease in handling.

WIRE ROPE GIN BLOCK

WROUGHT IRON SKELETON



FIG. 7262

With self-lubricating graphite bronze bushing and roller guards to protect the rope. Stiff swivel. With or without beckets.

Sizes of Sheaves, Inches.	Diams. of Rope, Inches.	Description.	Each
10x1¾x1	½	Single	$11 00
		Double	18 00
		Triple	28 00
12x1¾x1	⅝	Single	12 50
		Double	20 00
		Triple	31 00
14x2x1	¾	Single	15 00
		Double	23 00
		Triple	36 00
16x2x1	⅞	Single	18 00
		Double	27 00
		Triple	46 00
18x2⅜x1⅛	1	Single	23 00
		Double	32 00
		Triple	53 00
20x2½x1¼	1⅛	Single	28 00
		Double	38 00
		Triple	65 00

When ordering please state how many beckets are wanted.



FIG. 7263

EXTRA HEAVY LOCK SNATCH BLOCKS

AUTOMATIC, WROUGHT IRON AND STEEL

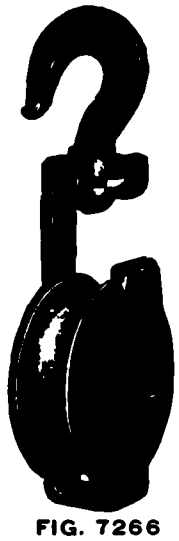


FIG. 7266

These blocks are for extra heavy work, and are made in the most careful manner possible, each part being tested. The strap passes entirely around the block, forming a solid bearing, thereby equalizing the strain throughout. The edges are all neatly rounded to protect the rope from chafing.

PRICES

Lengths of Straps, Inches.	Sizes of Sheaves, Inches.	Diams. of Rope, Inches.	Plain Bushings, Each.	Self-Lubricating Bronze Bushings, Each.
18	11x3¼x1½	2½	$38 00	$45 00
20	13x4 x1½	3	55 00	62 00
22	15x4½x1½	3½	70 00	80 00
24	17x5 x1¾	4	90 00	100 00



FIG. 7267

STEEL SNATCH BLOCKS FOR WIRE ROPE

IRON BUSHED

Japanned Shells, Straps and Sheaves.

Sizes Sheaves, Inches.	Rope, Inches.	Prices, Each.
10	⅜ and ½	$21 00
12	½ " ⅝	26 00
14	⅝ " ¾	31 00
16	¾ " ⅞	34 00
18	⅞ " 1	44 00

METALLINE BUSHED

Galvanized Shells, Sheaves and Pins.

Sizes Sheaves, Inches.	Rope, Inches.	Prices, Each.
10	⅜ and ½	$25 00
12	½ " ⅝	30 00
14	⅝ " ¾	35 00
16	¾ " ⅞	40 00
18	⅞ " 1	50 00



FIG. 7261

STEEL SQUARE CHEEK BLOCKS FOR WIRE ROPE

Made with Loose Safety Link Hooks, Stiff Swivel Hooks or Shackles.

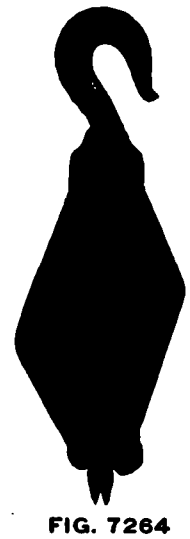


FIG. 7264



FIG. 7265

With self-lubricating graphite bronze bushing roller guards to protect the rope. Stiff swivel.

Sizes of Sheaves, Inches.	Diameters of Rope, Inches.	Description.	Plain Bushed, Prices, Each.	Self-Lubricating, Bronze Bushed, Prices, Each.
10x1¾x1	½	Single	$14 00	$17 00
		Double	20 00	26 00
		Triple	28 00	37 00
12x1¾x1	⅝	Single	16 00	19 00
		Double	23 00	29 00
		Triple	31 00	41 00
14x2x1	¾	Single	18 00	21 00
		Double	25 00	31 00
		Triple	36 00	45 00
16x2x1	⅞	Single	31 00	36 00
		Double	40 00	50 00
		Triple	46 00	62 00
18x2⅜x1⅛	1	Single	34 50	40 00
		Double	45 00	56 00
		Triple	53 00	68 00

These blocks can be furnished with loose swivel hooks at special prices if wanted.

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LOCK SNATCH BLOCKS

Automatic Wrought Iron and Steel.

Lock Closed. Lock Open. Showing Strap.

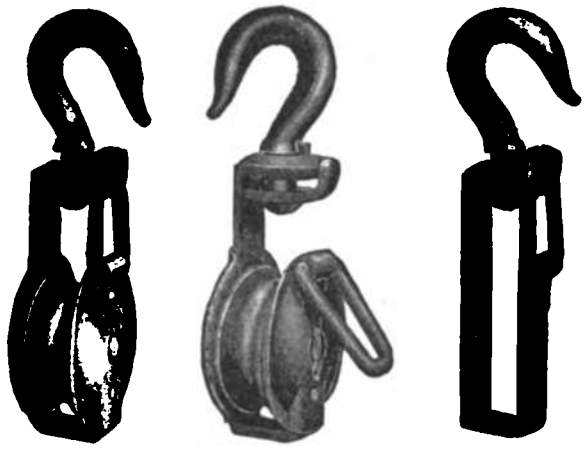


FIG. 7268

These Snatch Blocks are fitted with Self-Lubricating Graphite Bronze Bushings and need no oil. The heavy strap goes completely around the whole block and inside the shell, rendering the block practically unbreakable.

Plain Bushings.

Lengths of Strap, Ins.	Sizes of Sheaves.	Diameters of Rope.	Each
7	3½ x 1¼ x ½	¾ and ⅞	$4 75
8	4 x 1½ x ⅝	1 " 1⅛	5 75
10	5½ x 1⅞ x ⅞	1¼ " 1⅜	8 50
12	7 x 2 x 1	1½ " 1⅝	10 00
14	8 x 2¼ x 1⅛	1¾ " 1⅞	13 00
16	9 x 2½ x 1¼	2 " 2¼	17 00

Self-Lubricating Graphite Bronze Bushings.

Lengths of Strap, Ins.	Sizes of Sheaves.	Diameters of Rope.	Each.
7	3½ x 1¼ x ½	¾ and ⅞	$5 50
8	4 x 1½ x ⅝	1 " 1⅛	7 00
10	5½ x 1⅞ x ⅞	1¼ " 1⅜	9 00
12	7 x 2 x 1	1½ " 1⅝	11 50
14	8 x 2¼ x 1⅛	1¾ " 1⅞	15 00
16	9 x 2½ x 1¼	2 " 2¼	20 00

In ordering Snatch Blocks always specify whether plain or bronze bushed sheaves are desired. Unless otherwise ordered we always send bronze bushed blocks.

METALLINE BUSHED CARGO HOISTING DOCK BLOCK

With Swivel Screw and Ball and Socket Joint.

Metalline Bushed, Self-Lubricating.



FIG. 7272

Sizes Sheave.	For Diams. Rope.	Sizes Block, Inches.	Each.
6½x1¾x¾	1⅛	8½	$9 50
8 x1½x¾	1¼	10	12 50
9 x1⅝x¾	1¼	11½	15 00
9½x1¾x⅞	1½	12½	18 00
11½x1⅞x⅞	1½	14	23 00
13½x2 x1	1¾	16½	29 00

IRON DOCK BLOCK



FIG. 7273

PRICES, FIG. 7273

With rolls on side to prevent wear of the rope,

Swivel Screw and Ball and Socket Joint.

Metalline Bushed, Self-Lubricating.

Size Sheaves.....10x1¾x⅞

For Diam. rope, inches..1½

Each.....$20 00

HEAVY GIN BLOCK

Wrought Iron Straps and Swivel Hook.

For Manila Rope.

PRICES, FIG. 7269

Diams. Sheave, Inches.	Diams. Rope, Inches.	Weight, Lbs.	Common Bushed.	Roller Bushed.	Metalline Bronze Bushed, Each.
8	1¼	23	$6 00	$7 00	$8 00
10	1⅜	30	8 00	9 00	10 00
12	1½	38	10 00	11 00	12 00
15	1¾	50	12 00	14 00	15 00
18	1¾	65	15 00	19 00	20 00



FIG. 7269

GIN BLOCK OR RUBBISH PULLEY, AND CRANE PULLEY BLOCK

Crane Pulley Block.

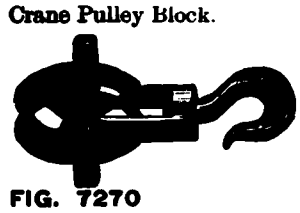


FIG. 7270

Gin Block.

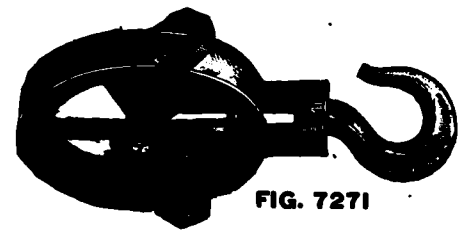


FIG. 7271

PRICES, FIG. 7270

The frame is wrought iron in all sizes except 9 inch and smaller, which are malleable iron. Wrought iron swivel hooks, sheaves bored and pins turned.

Diameters of Sheave, inches.....	4¾	6	7	8	9
Takes Chain, diameters, "	5/16	5/16	⅜	7/16	½
Approximate Weight, pounds.....	4¼	9	13	23	30
Test Load, tons.....	¾	1½	2	3	4
Each.....	$1 55	2 35	3 30	4 85	6 00
Diameters of Sheave, inches..	10	11	12	14	15	16
Takes Chain, diameters, " ..	9/16	⅝	11/16	¾	13/16	⅞
Approximate Weight, pounds	56	72	90	121	184	220
Test Load, tons.....	5	6	8	10	12	13
Each.....	$15 50	20 00	29 50	45 00	56 00	84 00

PRICES, FIG. 7271

The frame is wrought iron in all sizes except 6 and 7 inch, which are malleable iron. Wrought iron swivel hooks, sheaves bored and pins turned.

Diameters of Sheave, inches.	6	7	8	9	10	11
Rope Diameters, " ..	⅞	1⅛	1	1	1	1⅛
Weight, pounds.....	8	12	13	14	16	18
Each.....	$2 35	3 30	4 85	5 10	5 50	5 80
Extra Sheaves, each.....	60	70	1 00	1 10	1 25	1 55
Diameters of Sheave, inches.	12	14	16	18	20	22
Rope Diameters, " .	1⅛	1¼	1½	1½	1½	1½
Weight, pounds.....	22	31	44	49	59	64
Each.....	$6 90	7 70	9 70	10 20	12 00	13 00
Extra Sheaves, each.....	1 80	2 35	3 60	4 20	5 00	6 00

METALLINE BUSHED DOCK BLOCK

With Swivel Screw and Ball and Socket Joint.

Fitted with New Style Metal Sheave, with Lignum Vitae Projecting Cheeks. Will swivel in any direction and follow the lead of the rope.

PRICES, FIG. 7274

Dimensions. Sizes Sheave.	For Diams. Rope.	Sizes Block, Inches.	Metalline Bushed, Self-Lubricating, Each.	Improved Five Roll Steel Roller Bushed, Each.
6½x1⅜x¾	1⅛	10	$8 25	$7 50
8 x1½x¾	1¼	12	12 00	11 00
9½x1⅝x¾	1⅜	14	15 00	14 00
10 x1¾x⅞	1½	15	17 00	16 00
11 x1⅞x⅞	1½	16	19 00	18 00
12 x2 x 1	1¾	18	24 00	22 00



FIG. 7274

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IRON CARGO HOISTING BLOCK



FIG. 7275

Metalline bushed, self-lubricating, with malleable shell and new style sheave with lignum vitae cheeks. Wrought iron straps extend to the pin.

PRICES, FIG. 7275

Sizes Sheave, Inches.	For Dia. Rope, Inches.	Sizes Block, In.	Single.
6½ x 1⅜ x ¾	1⅛	10	$6 00
8 x 1½ x ¾	1¼	12	10 50
9½ x 1⅝ x ¾	1⅜	14	13 00
10 x 1¾ x ⅞	1½	15	16 00
11 x 1⅞ x ⅞	1½	16	18 00

METALLINE BUSHED, SELF-LUBRICATING

Has wooden cheeks, malleable iron frame and wrought iron strap, and fitted with new style sheaves.

PRICES, FIG. 7276

Sizes Sheave, Inches.	For Dia. Rope. Inches.	Sizes Block, In.	Single.
4¼ x 1 x ½	¾	5½	$4 00
5 x 1⅛ x ⅝	⅞	6½	5 00
5½ x 1¼ x ⅝	1	7½	6 00
6½ x 1⅜ x ¾	1⅛	8½	8 00
7½ x 1½ x ¾	1¼	10	10 50
9 x 1⅝ x ¾	1¼	11½	13 00
10 x 1¾ x ⅞	1½	12½	16 00
11½ x 1⅞ x ⅞	1½	14	20 00
13½ x 2 x 1	1¾	16½	26 00

CARGO HOISTING BLOCK



FIG. 7276

COAL AND CARGO HOISTING BLOCK

WITH SELF-LUBRICATING BOXES

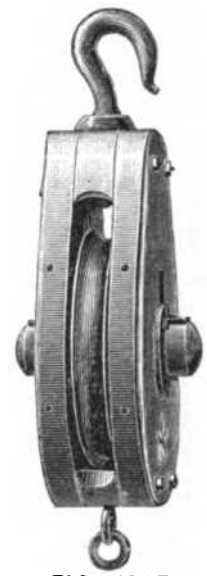


FIG. 7277

The feature of this improved box block is that the sheave never heats, being always cold when running at quickest rate of speed, thus saving the rope from burning out on the inside; and the score of the sheave being just wide enough to take the rope saves the rope from flattening, which occurs invariably when run on a wide score sheave, and soon wears out a new fall in coal and cargo hoisting.

PRICES, FIG. 7277

Sizes of Sheave, Inches.	Each.
12	$15 00
13½	18 00
16	20 00

CARGO HOISTING BLOCK

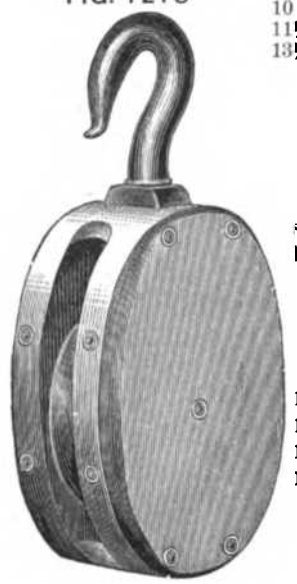


FIG. 7278

Metalline bushed, self-lubricating, with new style sheave, with lignum vitae cheeks, swivel hooks and cross bolted.

Sizes Sheave, Inches.	For Dia. Rope, Inches.	Sizes Block, In.	Single.
6½ x 1⅜ x ¾	1⅛	10	$6 00
8 x 1½ x ¾	1¼	12	8 50
9½ x 1⅝ x ¾	1⅜	14	11 00
10 x 1¾ x ⅞	1½	15	13 00
11 x 1⅞ x ⅞	1½	16	15 00
12 x 2 x 1	1¾	18	20 00
14 x 2¼ x 1	2	20	25 00

WOOD SNATCH BLOCK

DESCRIPTION, FIG. 7279

For oil derricks; iron sheaves, with patent self-oiling bushing, 16 inch to 24 inch sizes mostly used. Shackle pin adjustable.

Prices on application.

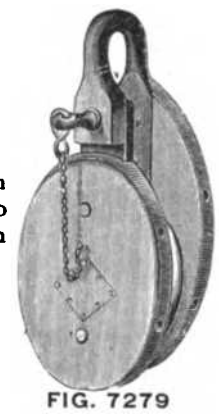


FIG. 7279



Hook Detached.

WOOD SNATCH BLOCKS



FIG. 7281



FIG. 7282



FIG. 7283

STEEL AND WROUGHT IRON SNATCH BLOCK

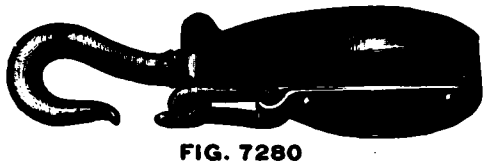


FIG. 7280

PRICES, FIG. 7280

Sizes of Sheave, Inches.	For Diameter Rope, Inches.	Lengths of Shell, Inches.	Common Iron Bushed, Each.	Self-Lubricating, Metalline or Bronze Bushed, Each
3 x 1⅛ x ½	⅞	6	$5 00	$5 50
3½ x 1¼ x ½	⅞	7	5 50	6 00
4½ x 1⅜ x ⅝	1	8	7 00	7 65
5 x 1⅜ x ⅝	1⅛	9	8 00	9 00
5¾ x 1⅞ x ¾	1¼	10	9 00	10 50
6¾ x 2⅛ x ¾	1½	12	11 50	13 00
8 x 2¼ x ⅞	1¾	14	15 00	16 25
9 x 2⅝ x 1	2	16	20 00	21 75
10 x 3 x 1	2¼	18	25 00	28 00
11 x 3½ x 1¼	2½	20	36 00	39 50
11¾ x 4¼ x 1½	3	22	52 00	60 50
12½ x 4½ x 1½	3½	24	72 00	85 00

PRICES, FIGS. 7281 TO 7283

Sizes of Sheave, Inches.	For Diameter Rope, Inches.	Lengths of Shell, Inches.	Common Iron Bushed, Each.	Patent Roller Bushed, Each.	Self-Lubricating Metalline or Bronze Bushed, Each.	Galvanized Straps, Extra List, Each.
3 x 1⅛ x ½	⅞	6	$4 00	$4 65	$5 25	$0 20
3½ x 1¼ x ½	⅞	7	4 75	5 50	6 00	25
4½ x 1⅜ x ⅝	1	8	5 75	6 60	7 25	35
5 x 1⅜ x ⅝	1⅛	9	6 75	7 75	8 50	40
5¾ x 1⅞ x ¾	1¼	10	8 50	10 00	11 00	65
6¾ x 2⅛ x ¾	1½	12	10 00	11 50	13 00	90
8 x 2¼ x ⅞	1¾	14	13 00	15 00	16 50	1 20
9 x 2⅝ x 1	2	16	17 00	20 00	22 00	....
10 x 3 x 1	2¼	18	25 00	28 50	31 00	....
11 x 3½ x 1¼	2½	20	38 00	43 00	46 00	....
11¾ x 4¼ x 1½	3	22	55 00	63 00	68 00	....
12½ x 4½ x 1½	3½	24	70 00	78 00	86 00	

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RAILROAD WRECKING BLOCKS

EXTRA HEAVY HOISTING

Diams. of Rope, Inches.		Plain Bushed — Prices.	Plain Bushed — Trade Nos.	Self-Lub. Phos. Bronze Bushed. Prices.	Self-Lub. Phos. Bronze Bushed. Trade Nos.
2½	Single.	$21 00	401	$32 00	400
	Double.	37 00	403	54 00	402
	Triple.	54 00	405	77 00	404
3	Single.	26 00	407	38 00	406
	Double.	48 00	409	70 00	408
	Triple.	70 00	411	100 00	410
3½	Single.	32 00	413	46 00	412
	Double.	56 00	415	85 00	414
	Triple.	84 00	417	125 00	416
4	Single.	40 00	419	55 00	418
	Double.	66 00	421	95 00	420
	Triple.	102 00	423	140 00	422

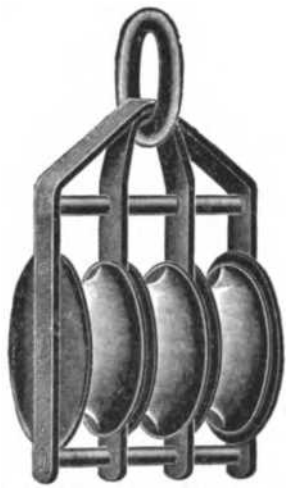


FIG. 7284

The steel shells protect the sheaves and have rounded edges. All the steel straps go to the bottom of the blocks to stiffen them and support the becket.



FIG. 7285

WROUGHT IRON AND STEEL PULLEY BLOCKS

No. 1. Snatch, Self-Acting.



FIG. 7286

With Swivel Eye. For 2¼ inch and larger rope.



FIG. 7287

No. 2 Snatch.



FIG. 7288

No. 3



FIG. 7289

No. 4



FIG. 7290

No. 5



FIG. 7291

No. 6



FIG. 7292

No. 7



FIG. 7293

Rope Sizes, inches...	½	⅝	¾	⅞	1	1¼	1½	1¾	2	2¼	2½	2¾	3
Chain " "	..	..	..	5/16	¼	5/16	⅜	7/16	½	⅝	11/16	¾	13/16
Lengths of Straps, in.	4¾	6	7½	8½	9½	10½	12	13	14½	17	19	21	23
Diams. of Sheave, "	2½	3½	4	4¾	5	6	7	8	9	10	11	12	14
Diameters of Mortise	¾	⅞	1	1¼	1⅜	1½	1¾	2	2⅜	2¾	3¼	3½	3¾
Single, as No. 3, with Hook, each.	$1 65	$2 00	$2 25	$2 75	$3 45	$4 15	$5 50	$7 45	$10 60	$18 70	$28 00	$34 00	$44 00
Double, as No. 4, with Hook, each.....	2 20	2 75	3 40	4 20	5 50	6 35	8 85	12 50	18 00	31 50	53 00	66 00	86 00
Triple, as No. 5, with Hook, each.....	2 65	3 25	4 20	5 30	7 00	8 65	12 25	17 75	....	....	....	....	....
Triple, as No. 7, with Eye, each.....	....	....	....	....	....	....	....	....	24 60	45 00	69 00	89 00	119 00
Triple, as No. 8, with Shackle, each....	....	....	....	....	....	....	....	....	24 60	28 90	45 00	58 00	80 00
Fourfold, as No. 6, with Hook, each,	3 25	4 00	5 00	7 50	9 00	11 50	17 35	....	....	....	....	....	...
Fourfold, as No. 7, with Eye, each,	...	....	....	...	....	....	....	26 00	37 50	70 00	105 00	135 00	198 00
Fourfold, as No. 8, with Shackle, each,	....	....	....	....	....	....	....	26 00	37 50	40 00	58 00	73 00	108 00
Snatch, as No. 1, " " 2, "	4 15	4 20	4 40	5 25	6 35	7 45	9 20	11 60	15 60	27 00	39 00	51 00	63 00
Extra Iron Sheaves, Plain, each.....	15	20	30	50	60	90	1 20	2 00	2 35	2 70	3 60	4 80	7 20
Extra Iron Sheaves, Roller Bushed, each,	60	70	85	1 30	1 45	1 80	4 25	6 00	7 50	....	....	....	....

N. B.—The Single and Double Blocks and Snatch Blocks for 2¼ in. and larger rope have swivel eye instead of hook. Blocks, if required with roller bushed sheaves, will be charged the extra price for said sheaves minus the price of plain sheaves. On the larger blocks we generally supply the upper one of a pair with a shackle and the lower one with a swivel eye, but they may be ordered with shackle or eye as desired. Becket or chain eye supplied to one block of every pair.

No. 8



FIG. 7294

FORGED STEEL TACKLE BLOCKS

Single.

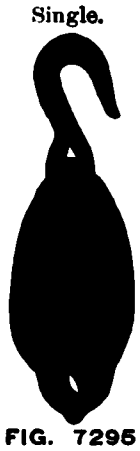


FIG. 7295

REGULAR MORTISE, JAPANNED

Sizes, Inches	Diameters of Rope, Inches.	Description.	Plain Bushing, Prices, Each.	Self-Adjusting Steel Roller Bushing, Prices, Each.	Self-Lubricating Graphite Bronze Bushing, Prices, Each.
3½	3/8	Single	$0 75	....	$1 40
		Double	1 45	....	2 75
4	½	Single	85	$1 20	1 50
		Double	1 60	2 25	2 90
5	5/8	Single	90	1 25	1 65
		Double	1 75	2 35	3 25
6	¾	Single	1 10	1 50	1 95
		Double	2 00	2 85	3 70
7	⅞	Single	1 30	1 70	2 25
		Double	2 40	3 35	4 30
8	1	Single	1 65	2 25	2 75
		Double	2 85	4 15	5 05

These blocks are elegantly japanned (not painted), which gives a durable, handsome finish.

Common, roller, or self-lubricating bronze bushed sheaves are interchangeable. These blocks are made only in the above sizes No triple blocks made in this style.

REGULAR MORTISE, GALVANIZED

Sizes, Inches.	Diameters of Rope, Inches.	Description.	Plain Bushing, Prices, Each.	Self-Adjusting Steel Roller Bushing, Prices, Each.	Self-Lubricating Graphite Bronze Bushing, Prices, Each.
3½	3/8	Single	$0 90	....	$1 70
		Double	1 65	....	3 25
4	½	Single	1 00	$1 35	1 80
		Double	1 80	2 45	3 40
5	5/8	Single	1 10	1 45	2 05
		Double	2 05	2 65	3 90
6	¾	Single	1 35	1 75	2 45
		Double	2 45	3 30	4 55
7	⅞	Single	1 75	2 15	2 95
		Double	3 15	4 10	5 50
8	1	Single	2 25	2 95	3 65
		Double	3 85	5 15	6 50

These blocks are completely galvanized, making them thoroughly rust proof.

Double.



FIG. 7296

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STEEL TACKLE BLOCKS

EXTRA HEAVY WIDE MORTISE BLOCKS, WITH LASHING SHACKLE AND OUTSIDE STRAPS

DOUBLE



FIG. 7297

The edges are nicely rounded and rolled out to prevent the chafing of the rope. Especially adapted for railroad wrecking and other hard work.

TRIPLE

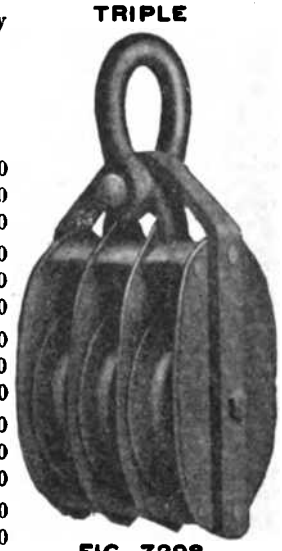


FIG. 7298

PLAIN BUSHING					SELF-LUBRICATING GRAPHITE BRONZE BUSHING				
Lengths of Shell, Inches.	Sizes of Sheave, Inches.	Diameters of Rope, Inches.	Description.	Each.	Lengths of Shell, Inches.	Sizes of Sheave, Inches.	Diameters of Rope, Inches.	Description.	Each.
17	10 x 2⅝ x 1¼	2¼	Single	$40 00	17	10 x 2⅝ x 1¼	2¼	Single	$43 00
			Double	51 00				Double	61 00
			Triple	66 00				Triple	76 00
18	11 x 3¼ x 1½	2½	Single	44 00	18	11 x 3¼ x 1½	2½	Single	48 00
			Double	66 00				Double	72 00
			Triple	80 00				Triple	90 00
20	13 x 4 x 1½	3	Single	52 00	20	13 x 4 x 1½	3	Single	58 00
			Double	70 00				Double	83 00
			Triple	95 00				Triple	115 00
22	15 x 4½ x 1½	3½	Single	62 00	22	15 x 4½ x 1½	3½	Single	70 00
			Double	90 00				Double	106 00
			Triple	110 00				Triple	134 00
24	17 x 5 x 1¾	4	Single	75 00	24	17 x 5 x 1¾	4	Single	85 00
			Double	110 00				Double	130 00
			Triple	140 00				Triple	170 00

EXTRA HEAVY WIDE MORTISE PURCHASE BLOCKS, WITH EITHER SAFETY LINK HOOKS, LOOSE COMMON HOOKS, RINGS OR SHACKLES

SINGLE DOUBLE TRIPLE

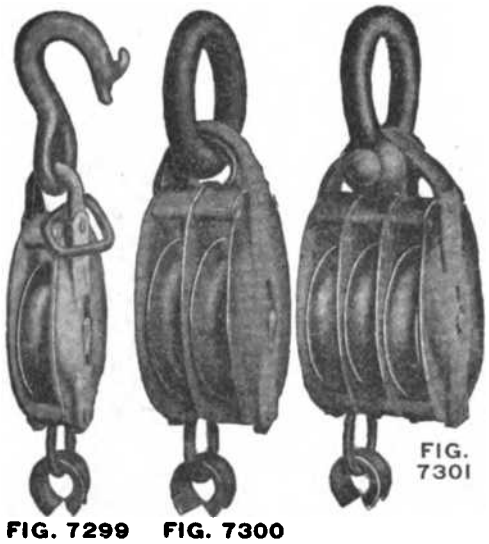


FIG. 7301

FIG. 7299 FIG. 7300

PLAIN BUSHING					SEL-FLUBRICATING GRAPHITE BRONZE BUSHING				
Lengths of Shell, Inches.	Sizes of Sheave, Inches.	Diameters of Rope, Inches.	Description.	Each.	Lengths of Shell, Inches.	Sizes of Sheave, Inches.	Diameters of Rope, Inches.	Description.	Each.
12	7½ x 2 x ⅞	1½	Single	$7 00	12	7½ x 2 x ⅞	1½	Single	$8 75
			Double	10 50				Double	14 50
			Triple	15 00				Triple	20 00
14	8½ x 2⅛ x 1	1¾	Single	9 00	14	8½ x 2⅛ x 1	1¾	Single	10 75
			Double	15 00				Double	18 50
			Triple	20 00				Triple	25 50
16	10 x 2⅜ x 1¼	2	Single	13 00	16	10 x 2⅜ x 1¼	2	Single	15 00
			Double	21 00				Double	25 00
			Triple	32 00				Triple	38 00

All sheaves for same size of blocks are interchangeable. All straps run inside of shell. All pins are steel and are fastened securely by spring cotters. If desired, these blocks will be galvanized to order at lowest prices. Unless otherwise ordered, we furnish all of the single, half of the double and one-third of the triple blocks with beckets.

GALVANIZED STEEL TACKLE BLOCKS

WITH SAFETY LINK HOOKS

Lengths of Shell, Inches.	Sizes of Sheave, Inches.	Diameters of Rope, Inches.	Description.	With Plain Bushing, Each.	With Long Bearing Five and Six Steel Roller Bushing, Each.	With Self-Lubricating Graphite Bronze Bushing, Each.
4	2¼ x 11/16 x ⅜	½	Single	$1 00	$1 35	$1 80
			Double	1 80	2 45	3 40
			Triple	2 70	3 80	5 05
5	2¾ x ⅜ x 5/16	⅝	Single	1 10	1 45	2 05
			Double	2 05	2 65	3 90
			Triple	2 85	4 10	5 60
6	3¼ x 1 x ½	¾	Single	1 35	1 75	2 45
			Double	2 45	3 30	4 55
			Triple	3 75	5 25	6 85
7	4¼ x 1⅛ x 9/16	⅞	Single	1 75	2 15	2 95
			Double	3 15	4 10	5 50
			Triple	4 85	6 35	8 35
8	4¾ x 1¼ x ⅝	1	Single	2 35	2 95	3 65
			Double	3 85	5 15	6 50
			Triple	5 75	7 50	9 85
9	5½ x 1½ x 11/16	1⅛	Single	2 75	3 50	4 40
			Double	4 75	6 05	7 75
			Triple	6 75	9 25	11 20
10	6 x 1⅝ x ¾	1¼	Single	3 95	4 70	5 65
			Double	6 40	7 90	9 80
			Triple	9 00	11 25	14 30
12	7½ x 1¾ x ⅞	1⅜	Single	6 20	7 05	8 05
			Double	10 00	11 70	13 90
			Triple	15 00	17 50	20 90
14	8½ x 1⅞ x 1	1½	Single	9 50	10 65	11 65
			Double	14 00	16 30	18 40
			Triple	21 00	24 50	27 60

SINGLE DOUBLE TRIPLE

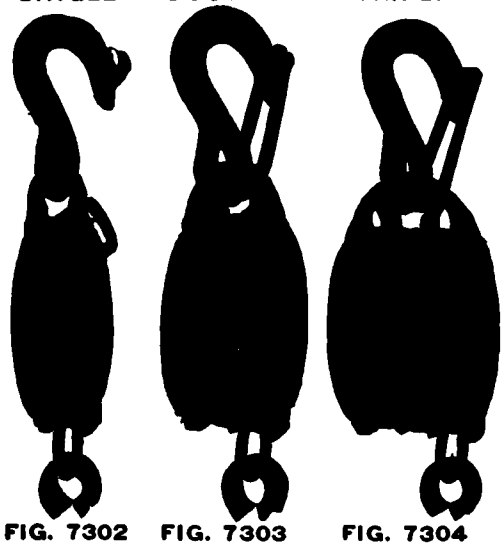


FIG. 7302 FIG. 7303 FIG. 7304

These blocks are thoroughly galvanized in every part, perfectly rust proof in every respect. While made especially for ocean and salt water use, they are equally adapted to any place where there is much dampness. Sheaves are interchangeable. All straps run inside of shell. All pins are steel, securely fastened by spring cotters.

Loose, common style hooks furnished at same prices, if desired. We can furnish all sizes of above blocks with regular mortise; japanned when desired; prices on application. All the above blocks with bronze bushings larger than 8 inch are virtually wide mortise blocks. Unless otherwise ordered, we furnish all of the single, half of the double, and one-third of the triple blocks with beckets

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WIDE MORTISE STEEL TACKLE BLOCKS

WITH STIFF SWIVEL HOOKS

With Either Plain or Self Lubricating Bushings.

Lengths Shell, Inches.	Sizes Sheave.	Diameters Rope, Inches.	Description.	Plain Bushing, Each.	Self Lubricating Graphite Bronze Bushing, Each.
4	2¼ x 11/16 x ⅜	½	Single	$1 35	$2 00
			Double	2 25	3 55
			Triple	3 25	5 20
5	2¾ x ⅞ x 7/16	⅝	Single	1 50	2 25
			Double	2 50	4 00
			Triple	4 00	5 50
6	3¼ x 1 x ½	¾	Single	1 75	2 60
			Double	2 85	4 55
			Triple	4 75	6 80
7	4¼ x 1⅛ x 9/16	⅞	Single	2 00	2 85
			Double	3 25	5 00
			Triple	5 50	7 50
8	4¾ x 1¼ x ⅝	1	Single	2 75	3 80
			Double	4 75	6 85
			Triple	7 00	10 00
9	5½ x 1½ x 11/16	1⅛	Single	3 50	4 65
			Double	6 00	8 30
			Triple	9 50	12 50
10	6 x 1⅝ x ¾	1¼	Single	4 50	5 80
			Double	7 50	10 00
			Triple	14 00	15 00
12	7½ x 2 x ⅞	1½	Single	6 50	8 00
			Double	11 00	14 25
			Triple	18 00	21 00
14	8½ x 2⅛ x 1	1¾	Single	9 00	11 00
			Double	15 00	18 50
			Triple	22 00	26 00
16	10 x 2⅝ x 1¼	2	Single	13 00	15 00
			Double	22 00	26 00
			Triple	32 00	38 00

Unless otherwise ordered, we furnish all of the single, half of the double and one third of the triple blocks with beckets. These blocks are made with the same score as Wide Mortise Blocks, taking the same sizes of rope. The sheaves are interchangeable. All straps run on inside of shell. Pins fastened by spring cotters. All these Stiff Swivel Blocks have extra heavy hooks. We can furnish them galvanized, if so required.

SINGLE DOUBLE

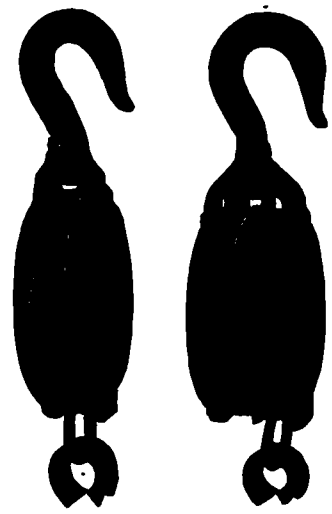


FIG. 7305 FIG. 7306

INSIDE IRON STRAPPED WOOD TACKLE BLOCKS

WITH LOOSE SIDE OR FRONT HOOKS

SINGLE DOUBLE TRIPLE

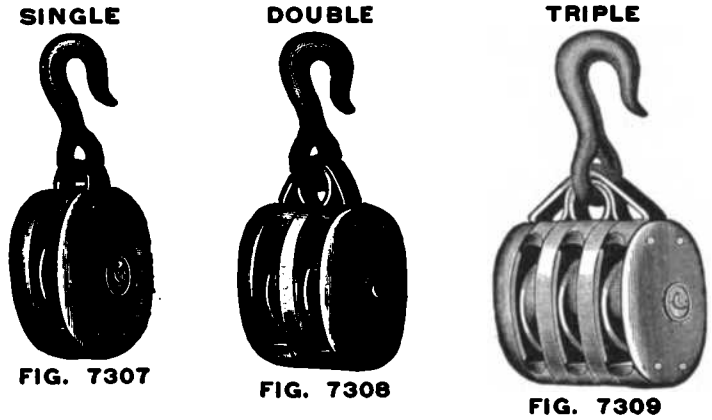


FIG. 7307 FIG. 7308 FIG. 7309

WITH LOOSE SIDE OR FRONT HOOKS AND BECKETS

SINGLE DOUBLE TRIPLE

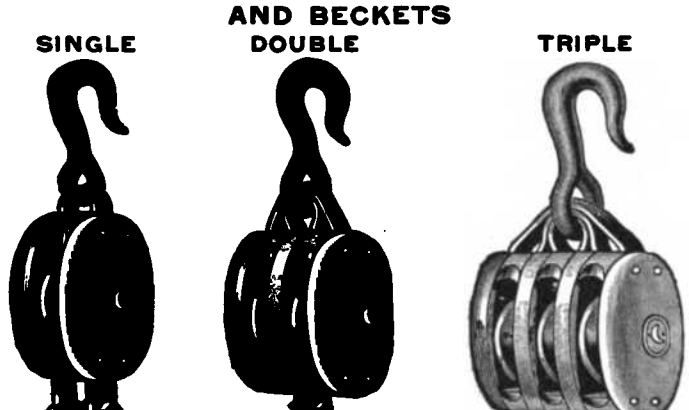


FIG. 7310 FIG. 7311 FIG. 7312

WITH STIFF SWIVEL HOOKS AND BECKETS

SINGLE DOUBLE TRIPLE

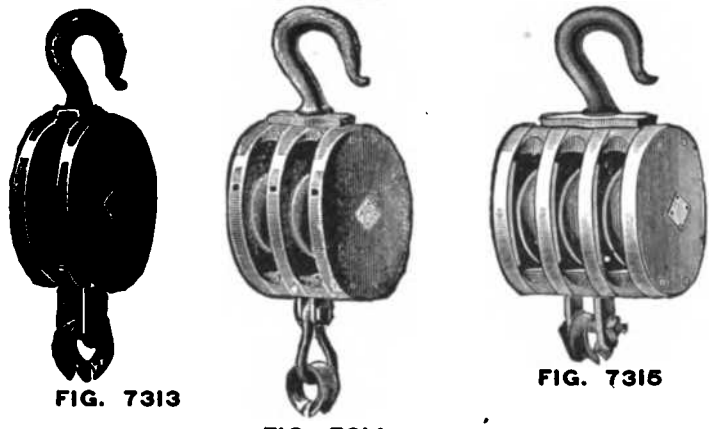


FIG. 7313 FIG. 7314 FIG. 7315

WITH STIFF SWIVEL HOOKS

SINGLE DOUBLE TRIPLE

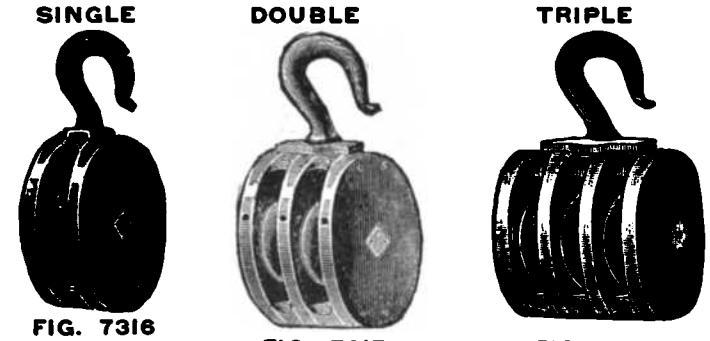


FIG. 7316 FIG. 7317 FIG. 7318

PRICES, EITHER, FIGS. 7307 TO 7318

Sheaves, Inches.	For Rope, Inches.	Shell, Inches.	Iron Bushed Single, Each.	Iron Bushed Double, Each.	Iron Bushed Triple, Each.	Roller Bushed Single, Each.	Roller Bushed Double, Each.	Roller Bushed Triple, Each.	Extra Galvanizing Straps Single, Each.	Extra Galvanizing Straps Double, Each.	Extra Galvanizing Straps Triple, Each.	Metalline Bushed Single, Each.	Metalline Bushed Double, Each.	Metalline Bushed Triple, Each.
1¾ x ½	5/16	3	$0 70	$1 30	$1 75	$1 10	$2 00	$2 90	$0 04	$0 06	$0 10	.....	.....	.....
2 x ⅝	⅜	3½	75	1 45	2 00	1 15	2 20	3 15	04	06	10	.....	.....	.....
2¼ x ⅝	½	4	85	1 60	2 15	1 20	2 25	3 25	05	07	11	$1 50	$2 90	$4 15
3 x 13/16	⅝	5	90	1 75	2 25	1 25	2 35	3 50	06	08	12	1 75	3 35	4 75
3½ x 1	¾	6	1 10	2 00	2 90	1 50	2 85	4 40	10	12	15	2 20	4 00	5 80
4¼ x 1	⅞	7	1 30	2 40	3 50	1 70	3 35	5 00	12	15	18	2 50	4 50	6 70
4¾ x 1⅛	1	8	1 65	2 85	4 25	2 25	4 15	6 00	16	21	30	3 25	5 70	8 50
5½ x 1⅛	1	9	1 85	3 40	4 75	2 50	4 70	7 25	22	28	38	3 70	6 75	10 00
6½ x 1¼	1⅛	10	2 75	4 50	6 25	3 50	6 00	8 50	28	38	50	4 75	8 50	12 50
7 x 1¼	1⅛	11	4 45	7 50	10 65	5 30	9 20	13 20	35	45	60	6 75	12 50	18 50
8 x 1⅜	1¼	12	4 45	7 50	10 65	5 30	9 20	13 20	35	45	60	6 75	12 50	18 50
9 x 1⅜	1¼	13	7 00	10 50	15 00	8 15	12 80	18 45	55	75	1 00	9 75	17 00	25 00
9½ x 1½	1⅜	14	7 00	10 50	15 00	8 15	12 80	18 45	55	75	1 00	9 75	17 00	25 00
10 x 1⅝	1½	15	8 00	13 00	18 00	9 25	15 50	21 75	75	95	1 25	11 00	19 50	28 50
10½ x 1¾	1⅝	16	10 00	15 00	22 00	11 50	18 00	26 50	85	1 20	1 50	.....	.....	.....

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INSIDE IRON STRAPPED WOOD TACKLE BLOCKS

LOOSE SWIVEL BLOCKS

SINGLE



FIG. 7319

DOUBLE

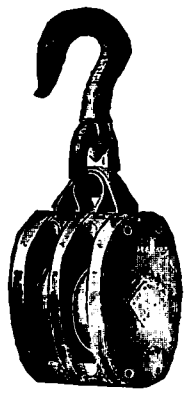


FIG. 7320

TRIPLE



FIG. 7321

SINGLE AND BECKET



FIG. 7322

DOUBLE AND BECKET



FIG. 7323

TRIPLE AND BECKET



FIG. 7324

PRICES, EITHER, FIGS. 7319 TO 7324

Sheaves, Inches.	For Rope, Inches.	Shell, Inches.	Iron Bushed. Single, Each.	Iron Bushed. Double, Each.	Iron Bushed. Triple, Each.	Roller Bushed. Single, Each.	Roller Bushed. Double, Each.	Roller Bushed. Triple, Each.	Extra Galvanizing Straps. Single, Each.	Extra Galvanizing Straps. Double, Each.	Extra Galvanizing Straps. Triple, Each.	Metalline Bushed. Single, Each.	Metalline Bushed. Double, Each.	Metalline Bushed. Triple, Each.
1¾x ½	5/16	3	$1 20	$1 80	$2 25	$1 60	$2 50	$3 40	$0 04	$0 06	$0 10	....	....	....
2 x 5/8	3/8	3½	1 25	1 95	2 50	1 65	2 70	3 65	04	06	10	....	....	....
2¼x 5/8	½	4	1 35	2 10	2 65	1 70	2 75	3 75	05	07	11	$2 00	$3 40	$4 65
3 x1 3/16	5/8	5	1 40	2 25	2 75	1 75	2 85	4 00	06	08	12	2 25	3 85	5 25
3½x1	¾	6	1 60	2 50	3 50	2 00	3 35	5 00	10	12	15	2 70	4 50	6 40
4¼x1	⅞	7	1 80	3 00	4 25	2 20	3 95	5 75	12	15	18	3 00	5 10	7 45
4¾x1⅛	1	8	2 25	3 60	5 15	2 85	4 90	6 90	16	21	30	3 85	6 45	9 40
5½x1⅛	1	9	2 60	4 30	5 95	3 25	5 60	8 45	22	28	38	4 45	7 65	11 20
6½x1¼	1⅛	10	3 65	5 70	8 00	4 40	7 20	10 25	28	38	50	5 65	9 70	14 25
7 x1¼	1⅛	11	5 65	9 25	13 15	6 50	10 95	15 70	35	45	60	7 95	14 25	21 00
8 x1⅜	1¼	12	5 65	9 25	13 15	6 50	10 95	15 70	35	45	60	7 95	14 25	21 00
9 x1⅜	1¼	13	9 50	13 50	18 50	10 65	15 80	21 95	55	75	1 00	12 25	20 00	28 50
9½x1½	1⅜	14	9 50	13 50	18 50	10 65	15 80	21 95	55	75	1 00	12 25	20 00	28 50
10 x1⅜	1½	15	11 00	16 50	....	12 25	19 00	....	75	95	1 25	14 00	23 00	....
10½x1¾	1⅝	16	13 50	....	....	15 00	....	....	85	1 20	1 50	....	....	....

THICK MORTISE HEAVY TACKLE BLOCKS, CHEEKS EDGE BOLTED

EXTRA HEAVY INSIDE IRON STRAPS AND HOOKS

SINGLE

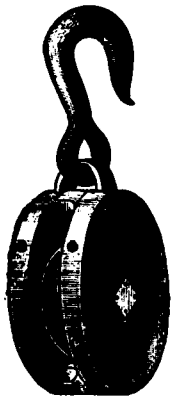


FIG. 7325

DOUBLE



FIG. 7326

TRIPLE

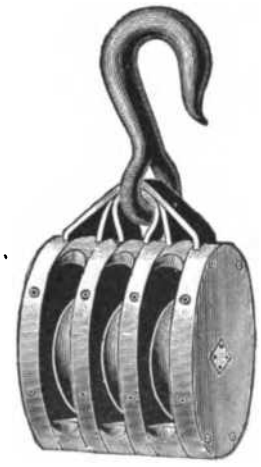


FIG. 7327

SINGLE AND BECKET

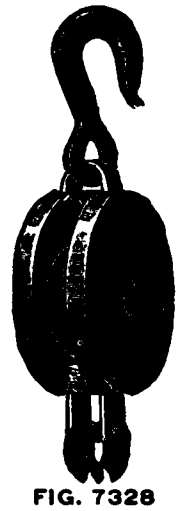


FIG. 7328

DOUBLE AND BECKET



FIG. 7329

TRIPLE AND BECKET



7330

PRICES, EITHER, FIGS. 7325 TO 7330

Sheaves, Inches.	For Rope, Inches.	Shell, Inches.	Iron Bushed. Single, Each.	Iron Bushed. Double, Each.	Iron Bushed. Triple, Each.	Roller Bushed. Single, Each.	Roller Bushed. Double, Each.	Roller Bushed. Triple, Each.	Metalline Bushed. Single, Each.	Metalline Bushed. Double, Each.	Metalline Bushed. Triple, Each.
4¼x1⅝x ½	1	7	$2 25	$4 00	$5 50	$3 00	$5 50	$7 75	$4 50	$8 00	$11 50
4¾x1⅜x 5/8	1⅛	8	2 75	4 50	6 30	3 50	6 00	8 55	5 00	9 00	13 00
5⅜x1⅜x 5/8	1⅛	9	3 15	5 25	7 25	4 00	6 95	9 80	5 75	10 50	15 00
6¼x1½x ¾	1¼	10	4 00	6 50	8 50	5 25	9 00	12 25	7 25	15 50	19 00
7 x1½x ¾	1¼	11	5 25	8 50	12 50	6 50	11 00	16 25	9 25	17 00	25 00
8 x1⅝x ¾	1½	12	5 25	8 50	12 50	6 50	11 00	16 25	9 25	17 00	25 00
9 x1¾x ⅞	1½	13	8 00	13 00	17 00	9 75	16 50	22 25	13 00	23 50	33 00
9½x1⅞x ⅞	1¾	14	8 00	13 00	17 00	9 75	16 50	22 25	13 00	23 50	33 00
10 x1⅞x 1	1¾	15	9 00	15 00	20 00	11 00	19 00	26 00	15 00	26 50	37 00
10½x2⅛x 1	2	16	11 50	18 00	28 00	14 00	23 00	35 50	18 00	32 00	49 00

Above, with rings, shackles or swivel hooks, furnished to order.

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EXTRA HEAVY, THICK MORTISE WOOD TACKLE BLOCKS
CHEEKS EDGE BOLTED

PRICES, FIGS. 7331 AND 7332

Dimensions: Sheaves, Inches.			For Rope.	Shells, Inches.	Common or Iron Bushed: Single, Each.	Double, Each.	Triple, Each.	Patent or Roller Bushed: Single, Each.	Double, Each.	Triple, Each.
12 x 2⅜ x 1			2¼	18	$15 00	$29 00	$42 00	$18 00	$35 00	$52 00
14	2⅞	1¼	2½	20	21 00	37 00	54 00	25 00	45 00	65 00
15	3⅜	1¼	3	22	26 00	48 00	70 00	....	....	....
16	3⅞	1½	3½	24	32 00	56 00	84 00	....	....	....

Dimensions: Sheaves, Inches.			For Rope.	Shells, Inches.	Self-Lubricating or Metalline Bushed: Single, Each.	Double, Each.	Triple, Each.
12 x 2⅜ x 1			2¼	18	$23 00	$44 00	$63 00
14	2⅞	1¼	2½	20	32 00	54 00	77 00
15	3⅜	1¼	3	22	38 00	70 00	100 00
16	3⅞	1½	3½	24	46 00	85 00	125 00

Above with rings, shackles or hooks furnished to order.

DOUBLE LASHING SHACKLE

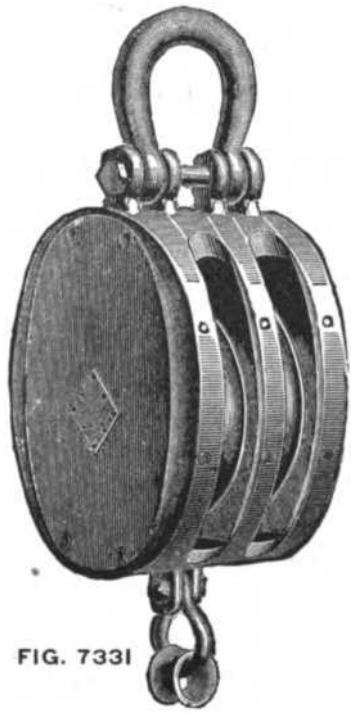


FIG. 7331

TRIPLE LASHING SHACKLE

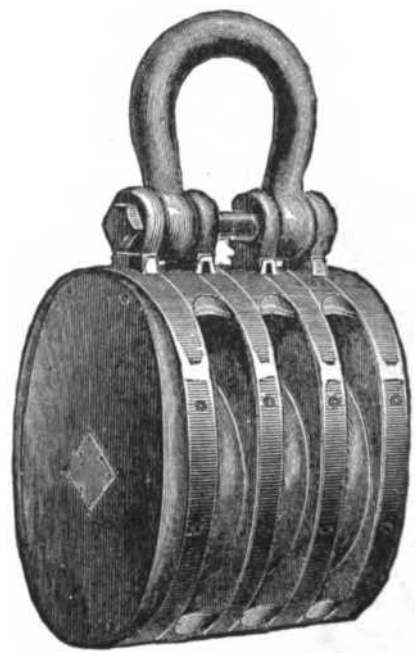


FIG. 7332

OPEN IRON SHEAVES FOR BLOCKS
IRON OR WOOD

IRON BUSHED

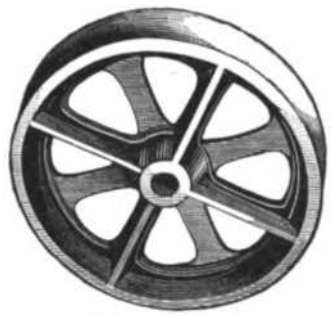


FIG. 7333

ROLLER BUSHED

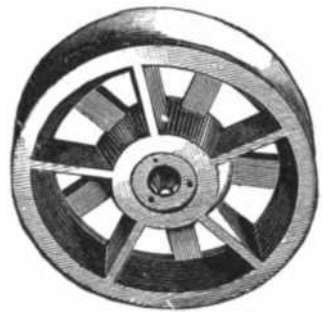


FIG. 7334

PRICES

Sizes of Sheaves, Inches.		Hole for Pin, Full Size, Inches.	For Blocks, Inches.	Common Bushed, Each.	Patent Rollers, Each.	Metalline, Each.
1¾ x ½		⅜	3	$0 09	$0 40	....
2	⅝	⅜	3½	10	42	$0 60
2¼	⅝	⅜	4	12	45	70
2¾	¾	⅜	4½	15	50	80
3	13/16	⅜	5	20	55	90
3½	1	½	6	25	65	1 40
4¼	1	½	7	30	75	1 50
4¾	1⅛	⅝	8	35	1 00	1 85
5½	1⅛	⅝	9	45	1 10	1 95
6½	1¼	¾	10	55	1 35	2 40
7	1¼	¾	11	70	1 65	2 60
8	1⅜	¾	12	90	1 90	2 95
9	1⅜	¾	13	1 20	2 40	3 05
9½	1½	¾	14	1 40	2 65	3 35
10	1⅝	⅞	15	1 50	2 85	3 80
10½	1¾	⅞	16	1 70	3 20	4 25

LIGNUM VITAE AND IRON SHEAVES
FOR THICK MORTISE BLOCKS

For block, inches...	8	9	10	11	12	13	14	15	16
Diams. of sheaves, in.	4¾	5⅜	6¼	7	8	9	9½	10	10½
Iron bushed, each...	$0 40	$0 50	$0 65	$0 85	$1 05	$1 35	$1 50	$1 70	$2 00
Roller " " ...	1 15	1 25	1 60	1 80	2 10	2 65	2 85	3 15	3 50
Metalline bushed, ea.	2 00	2 10	2 75	2 95	3 25	3 60	3 75	4 10	5 50

BLOCKS FOR ROPE STRAPS, SHELLS RIVETED

SINGLE



FIG. 7337

DOUBLE

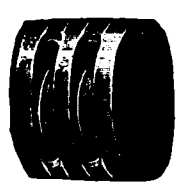


FIG. 7338

TRIPLE

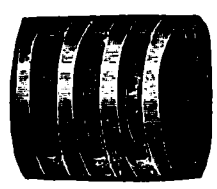


FIG. 7339

LIGNUM VITAE SHEAVES FOR BLOCKS
IRON OR WOOD

IRON BUSHED

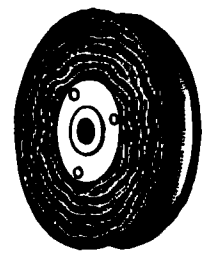


FIG. 7335

ROLLER BUSHED

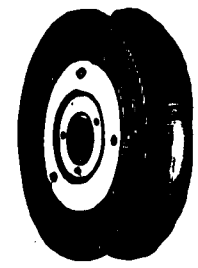


FIG. 7336

PRICES

Sizes of Sheaves, Inches.		Hole for Pin, Full Size, Inches.	For Blocks, Inches.	Common Bushed, Each.	Patent Rollers, Each.	Metalline, Each.
1¾ x ½		⅜	3	$0 09	$0 40	....
2	⅝	⅜	3½	10	42	$0 60
2¼	⅝	⅜	4	12	45	70
2¾	¾	⅜	4½	15	50	80
3	13/16	⅜	5	20	55	90
3½	1	½	6	25	65	1 40
4¼	1	½	7	30	75	1 50
4¾	1⅛	⅝	8	35	1 00	1 85
5½	1⅛	⅝	9	45	1 10	1 95
6½	1¼	¾	10	55	1 35	2 40
7	1¼	¾	11	70	1 65	2 60
8	1⅜	¾	12	90	1 90	2 95
9	1⅜	¾	13	1 20	2 40	3 05
9½	1½	¾	14	1 40	2 65	3 35
10	1⅝	⅞	15	1 50	2 85	3 80
10½	1¾	⅞	16	1 70	3 20	4 25

PRICES, FIGS. 7337 TO 7339

Dimensions: Shells, Inches.	Mortises, Inches.	Iron Bushed: Single, Each.	Double, Each.	Triple, Each.	Roller Bushed: Single, Each.	Double, Each.	Triple, Each.
2	....	$0 22	$0 40	$0 56	....	....	....
2½	....	25	45	65	....	....	....
3	9/16	28	48	72	$0 54	$1 08	$1 54
3½	9/16	31	56	80	67	1 23	1 75
4	11/16	36	66	90	77	1 41	1 92
4½	⅞	41	74	1 02	87	1 58	2 16
5	⅞	45	82	1 12	96	1 76	2 40
6	1	54	99	1 35	1 08	2 07	2 97
7	1⅛	72	1 33	1 84	1 28	2 45	3 52
8	1¼	96	1 76	2 40	1 75	3 34	4 77
9	1¼	1 26	2 34	3 24	2 05	3 92	5 61
10	1⅜	1 80	3 30	4 50	2 98	5 66	8 04
12	1½	2 16	3 96	5 40	3 46	6 56	9 30
14	1⅝	3 30	6 50	9 00	5 02	9 94	14 16

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BRASS PINION WIRE

MACHINE CUT TEETH



Full Size, No. G 40. 8 Teeth, 32 Pitch.

All in 12 inch lengths.

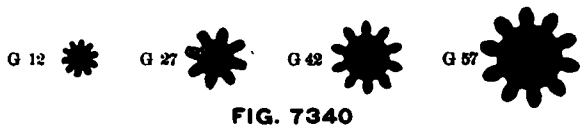


FIG. 7340

64 PITCH			48 PITCH			32 PITCH			24 PITCH		
Nos.	Teeth.	Prices.	Nos.	Teeth.	Prices.	Nos.	Teeth.	Prices.	Nos.	Teeth.	Prices.
G 10	8	$0 40	G 25	8	$0 40	G 40	8	$0 50	G 55	8	$0 60
G 11	9	40	G 26	9	40	G 41	9	60	G 56	9	70
G 12	10	40	G 27	10	40	G 42	10	60	G 57	10	80
G 13	11	50	G 28	11	50	G 43	11	70	G 58	11	90
G 14	12	60	G 29	12	50	G 44	12	70	G 59	12	1 00
G 15	14	70	G 30	14	50	G 45	14	80	G 60	14	1 10
G 16	16	80	G 31	15	60	G 46	15	80	G 61	15	1 10
G 17	20	90	G 32	16	60	G 47	16	90	G 62	16	1 15
G 18	24	1 00	G 33	18	60	G 48	18	90	G 63	18	1 20
G 19	26	1 10	G 34	20	70	G 49	20	1 00	G 64	20	1 40
G 20	30	1 20	G 35	22	80	G 50	22	1 10	G 65	22	1 60
G 21	32	1 30	G 36	24	1 00	G 51	24	1 20	G 66	24	2 00

These will mesh correctly with the list brass gears of the same pitch. The above prices are for one foot lengths. Six inches will cost one-half the list price plus ten cents

Special estimates given for large quantities and special pitches. Made to order of any material—brass, composition, steel, phosphor bronze, etc. When the pitch diameter is ¼ inch or less, we usually cut in 6 inch or less lengths. We do this to get more accurate cutting than can be obtained when cut in 12 inch lengths.

DOUBLE GALVANIZED TELEGRAPH AND TELEPHONE WIRE

Of the Highest Electrical Qualities

Nos. Roebling Gauge.	Diameters, Inches.	Weight in Pounds per Mile.	Put up in Bundles of	Approximate Breaking Strain in Pounds. E. B. B.	B. B.	Steel.	Average Resistance in Ohms at 68° F. E. B. B.	B. B.	Steel.
4	.225	730	¼ mile.	2,190	2,409	2,701	6.44	7.53	8.90
6	.192	540	⅓ "	1,620	1,782	1,998	8.70	10.19	12.04
8	.162	380	½ "	1,140	1,254	1,406	12.37	14.47	17.10
9	.148	320	½ "	960	1,056	1,184	14.69	17.19	20.31
10	.135	260	½ "	780	858	962	18.08	21.15	25.00
11	.120	214	½ "	642	706	792	21.96	25.70	30.37
12	.105	165	½ "	495	545	611	28.48	33.33	39.39
14	.080	96	½ "	288	317	355	48.96	57.29	67.71

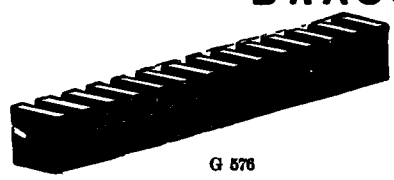
HARD COPPER TELEGRAPH AND TELEPHONE WIRE

Sizes, Weights and Strengths of Hard Copper Telegraph and Telephone Wire.

Nos B. & S. Gauge.	Diameters, Inches.	Weight in Pounds per Mile.	Breaking Strain in Pounds.	Resistance in International Ohms per Mile at 75° F.	Approximate Sizes, Roebling Gauge, of E. B. B. Iron Wire of Equal Resistance.
9	.114	208	653	4.39	2
10	.102	166	540	5.49	3
11	.091	132	426	6.90	4
12	.081	105	334	8.70	6
13	.072	83	274	11.01	6½
14	.064	65	220	13.91	8
15	.057	52	174	17.57	9
16	.051	42	139	21.95	10

Prices on application.

BRASS RACKS



G 576

FIG. 7341

All made in two foot lengths.

SQUARE RACKS MADE FROM SQUARE DRAWN BRASS RODS

Nos.	Square.	Pitch.	Prices per Inch.
G 572	½	20	$0 12
G 573	½	16	12
G 574	⅝	16	10
G 575	⅝	24	10
G 576	5/16	16	08
G 577	5/16	24	08
G 578	5/16	32	08
G 579	¼	24	06
G 580	¼	32	06
G 581	¼	48	06
G 582	3/16	24	05
G 583	3/16	32	05
G 584	3/16	48	05
G 585	1/8	64	05
G 586	1/8	48	05

⅝, ¾, 1 inch and larger made to order.

Racks are cut only in the following lengths at list prices:

2, 4, 6, 8, 12, 18, 24 inches.

Cut to any other lengths 10 cents extra over list price.

Racks over 24 inches will cost 50 cents extra over list price.

COPPER AND BRASS WIRE

IN COILS

For lots of 100 pounds or more in one order.

Nos. B. & S. Gauge.	Prices of Common High Brass per Pound.	Prices of Low Brass, per Pound.	Prices of Spring Brass, per Pound.	Prices of Copper per Pound.
0 to 10	$0 23	$0 27	$0 25	$0 28
10¼ to 16	23½	27½	25½	28½
17 and 18	24	28	26	32
19 and 20	25	29	27	33
21	26	30	28	34
22	27	31	29	35
23	28	32	30	36
24	30	34	32	38
25	32	36	34	40
26	35	39	37	43
27	38	42	40	46
28	42	46	44	51
29	45	49	47	54
30	48	52	50	62
31	51	55	53	67
32	55	59	57	73
33	59	63	61	82
34	64	68	66	95
35	70	74	72	30
36	76	80	78	1 50

For spooling add to above list.

1 2 3 4 5 6 7 8 9 10-lb. spools.
12c. 11c. 10c. 9c. 8c. 7c. 6c. 5c. 4c. 3c. per lb.

For spools of less than one pound, add 24 cents per pound.

ANNEALED STONE OR WEAVING WIRE

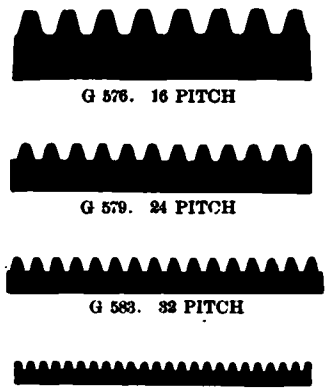
Nos.	Per Lb.	Nos.	Per Lb.	Nos.	Per Lb.
16	$0 14	23	$0 23	30	$0 32
17	15	24	24	31	33
18	16	25	25	32	35
19	19	26	26	33	37
20	20	27	28	34	40
21	21	28	29	35	45
22	22	29	30	36	55

EXTRA FINE STONE WIRE

Nos.	Per Lb.	Nos.	Per Lb.	Nos.	Per Lb.
37	$0 40	41	$0 60	45	$1 00
38	45	42	65	46	1 15
39	50	43	75	47	1 40
40	55	44	85		

TINNED WIRE

Nos.	Per Lb.	Nos.	Per Lb.
0 to 9	$0 15	15 and 16	$0 17½
10 and 11	16	17	18
12 to 14	17	18	18½



G 576. 16 PITCH

G 579. 24 PITCH

G 583. 32 PITCH

G 586. 48 PITCH.

FIG. 7342

All made in two foot lengths.

RACKS MADE FROM SAWED, FLAT STRIPS, AND CUT ON THE NARROW EDGE

Nos.	Flats.	Pitch.	Prices, per Inch.
G 590	⅝ x ½	16	$0 12
G 591	¾ x ¾	16	15
G 592	5/16 x ½	16	12
G 593	5/16 x 5/8	16	12
G 594	¼ x ⅝	24	10
G 595	¼ x ½	24	10
G 596	5/16 x ¼	32	08
G 597	5/16 x ⅜	32	08
G 598	⅛ x ¼	48	06
G 599	⅛ x ⅜	48	06
G 600	1/16 x 5/16	32	05
G 601	1/16 x ¼	32	05
G 602	1/32 x 5/16	64	05
G 603	1/32 x ¼	64	05
G 604	1/32 x ¼	80	05

⅝, ¾, 1 inch and larger made to order.

Racks are cut only in the following lengths at list prices:

2, 4, 6, 8, 12, 18, 24 inches.

Cut to any other lengths 10 cents extra over list price.

Racks over 24 inches will cost 50 cents extra over list price.

IRON AND STEEL WIRE

Nos.	Per Lb.	Nos.	Per Lb.
0000 to 9	$0 10	15 and 16	$0 14
10 and 11	11	17	15
12	11½	18	16
13 and 14	12½		

TINNED STONE WIRE

Nos.	Per Lb.	Nos.	Per Lb.	Nos.	Per Lb.
18	$0 18½	25	$0 22	32	$0 32
19	19	26	23	33	33
20	20	27	24	34	34
21	20	28	25	35	40
22	20	29	26	36	48
23	21	30	27		
24	21	31	28		

TINNED BROOM WIRE

Nos.	Per Lb.	Nos.	Per Lb.
18 to 20	$0 20	23 and 24	$0 22
21 and 22	21		

GALVANIZED MARKET WIRE

Nos.	Per Lb.	Nos.	Per Lb.
0 to 9	$0 10	15 and 16	$0 14
10 and 11	11	17	15
12	11½	18	16
13 and 14	12½		

STRAIGHTENING AND CUTTING WIRE TO LENGTHS

Nos.	Per Lb.	Nos.	Per Lb.
00000 to 5	$0 01	12 to 16	$0 04
6 to 9	02	17 to 20	05
10 and 11	03		

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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PHOSPHOR BRONZE WIRE IN COILS

Brown & Sharpe's Gauge the Standard.

Nos.	Diameters.	Prices, per Lb.	Nos.	Diameters.	Prices, per Lb.
To 10	.101890	$0 58	26	.015940	$0 78
11 to 16	.050820	60	27	.014195	84
17	.045257	61	28	.012641	90
18	.040303	61	29	.011257	1 00
19	.035890	62	30	.010025	1 10
20	.031961	62	31	.008928	1 25
21	.028462	64	32	.007950	1 50
22	.025347	66	33	.007080	1 75
23	.022571	68	34	.006304	2 00
24	.020100	70	35	.005614	2 50
25	.017900	74	36	.005000	4 25

Flat Rolled Wire, No. 12 to 30, gauged the thin way, add to list for round wire 10 cents per lb. Thinner than No. 30, special prices.

Square Wire to No. 16, add to list 5 cents per lb.

Square Wire, No. 17 to 20, add to list 10 cents per lb.

Tinned Binding Wire, to No. 20 (round), add to list 5 cents per lb.

Straightened Wire, No. 12 to 20, inclusive, add to list 10 cents per lb.

Straightened Wire, smaller than No. 20, special prices.

For Cutting Straightened Wire to lengths not smaller than No. 20, same additions as for rods.

For Spooling Wire add to list per pound as follows.

Sizes of Spools.	1 Lb.	5 Lb.	10 Lb.	Larger.
No. 25 and larger..	12 cts.	8 cts.	3 cts.	2 cts.
" 26 to 30.....	12 "	8 "	5 "	3 "
" 31 to 36.....	15 "	10 "		

COPPER ROD

Round, Square and Rectangular.

Can furnish any diameter in round and square from ⅛ to 2½ inches, and any width and thickness in rectangular.

TOBIN BRONZE RODS

Round Rods for Studs, Bolts, Forgings, Etc.

⅝ to 3 inches in diameter, both inclusive, ordinary lengths, base price per lb.

All rods smaller than ⅝ inch diameter, not smaller than ⅜ inch diameter, ordinary lengths, add 1 cent per lb.

All rods smaller than ⅜ inch diameter, not smaller than ¼ inch diameter, ordinary lengths, add 3 cents per lb.

All rods smaller than ¼ inch diameter, and not less than ⅛ inch diameter, add 10 cents. Cut in lengths shorter than 12 inches, special prices.

All rods cut to particular lengths, not shorter than 12 inches nor longer than 216 inches, are 1 cent per lb. extra.

All rods larger than 3 inches diameter are piston finish and are at piston rod prices.

Square, hexagon and octagon rods, 1 cent per lb. advance.

PUMP PISTON RODS AND YACHT SHAFTING

(Finished true, smooth and straight.)

⅝ inch to 2½ inches diameter, both inclusive.

Longer Than	Not Longer Than	Add to Base Price
12 inches	120 inches	1c. per lb.
120 "	180 "	3 "
180 "	216 "	4 "

Longer than 216 inches, add 10 cents.

Larger than 2½ inches diameter, not larger than 5 inches diameter.

Longer Than	Not Longer Than	Add to Base Price
12 inches	120 inches	3c. per lb.
120 "	180 "	5 "
180 "	216 "	6 "

Less than ⅝ inch and not less than ⅜ inch diameter; longer than 12 inches and not longer than 120 inches, add 4 cents.

Over 2½ inches and not over 5 inches diameter; longer than 216 inches, add 12 cents.

All rods smaller than ⅝ inch diameter, and all rods cut in lengths shorter than 12 inches, special prices.

Prices of dimension sheets and plates furnished on application.

In ordering always state for what purpose the metal is to be used.

HIGH BRASS ROD

Brown & Sharpe's Gauge the Standard.

Not less than 2 feet lengths.

Per Lb.

¼ inch to 1 inch diameter, both inclusive..24c
No. 8, and less than ¼ inch diameter.....26c
Over 1 inch diameter.....27c
Smaller than No. 8 to No. 11, inclusive....30c
Smaller than No. 11, see wire list.

Hexagon, octagon and square, 2 cents per pound advance over round rods.

Rectangular, half round and fancy shapes, not less than 4 cents per pound advance over round rods. (Rectangular, half round, oval and fancy shape rods are measured the thinner way.)

Rods less than 2 foot lengths, add to above prices for cutting :

12 in. to 24 in.....2c
9 in. to 12 in.....3c
6 in. to 9 in.....4c
4 in. to 6 in.....5c
2 in. to 4 in.....8c
1 in. to 2 in.....12c
Shorter than 1 inch, special.

Gilding and bronze rods, add to above prices, 8c. per lb.

Low brass rods, add to above prices, 4c. per lb.

We can furnish round brass and bronze rod

	Feet Long.		Feet Long.
Up to 1¾ in. diam.,	18	Up to 2¾ in. diam.,	8
" 2 " "	14	" 3 " "	7
" 2½ " "	10		

WEIGHTS OF TOBIN BRONZE RODS IN POUNDS PER LINEAL FOOT

Diameters, Inches.	Weight per Foot. Round, Lbs.	Hexagon, Lbs.	Diameters, Inches.	Weight per Foot. Round. Lbs.	Hexagon, Lbs.
¼	.177	.200	1⅞	10.00	11.250
5/16	.279	.313	2	11.38	12.800
⅜	.399	.450	2⅛	12.87	14.500
7/16	.544	.612	2¼	14.43	16.200
½	.711	.800	2⅜	16.06	17.980
9/16	.899	1.012	2½	17.80	
⅝	1.11	1.177	2⅝	19.60	
11/16	1.34	1.512	2¾	21.53	
¾	1.60	1.694	2⅞	23.52	
13/16	1.88	2.112	3	25.63	
⅞	2.18	2.306	3¼	30.05	
15/16	2.50	2.812	3½	34.86	
1	2.84	3.250	3¾	40.01	
1⅛	3.60	4.050	4	45.57	
1¼	4.46	5.000	4¼	51.44	
1⅜	5.36	6.050	4½	57.64	
1½	6.42	7.120	4¾	64.24	
1⅝	7.50	8.450	5	71.16	
1¾	8.70	9.800	5½	86.95	

STUBS' BRIGHT STEEL

PRICES ROUND STEEL PER LB.

Number sizes by Stubs' Drill Gauge.

¾ in. to No. 15.	$1 10	66 to 68.....	$4 30
16 to 30.....	1 25	69 " 70.....	4 70
31 " 38.....	1 35	71 " 73.....	5 15
39 " 46.....	1 55	74	5 60
47 " 50.....	1 80	75	5 80
51 " 54.....	2 10	76	6 00
55 " 57.....	2 60	77	6 45
58 " 60.....	3 00	78	6 85
61 " 62.....	3 40	79	7 30
63 " 65.....	3 90	80	7 75

PRICES SQUARE STEEL PER LB.

(One foot lengths.)

Inch, 1/16, 3/32, ⅛, 5/32, 3/16; price, $2.40. Inch, 7/32, ¼, 5/16, ⅜; price, $1.75.

Oval steel, in one foot lengths, assorted sizes for jewelers' mandrils, $2.40 per lb.

SMITH'S STEEL MUSIC WIRE

This wire is used by pianoforte makers, sewing machine and other manufacturers who desire to get a spring without tempering. It is very tough and springy, and ready for use as soon as wound. It comes in packages of one pound each.

No. 00..	per lb.	$8 75	No. 5..	per lb.	$2 65
" 0..	"	6 75	" 6..	"	1 25
" 1..	"	5 50	" 7..	"	1 25
" 2..	"	4 70	" 8..	"	1 20
" 3..	"	4 15	" 9..	"	1 10
" 4..	"	3 25	" 10 to 36	"	1 00

CRESCENT DRILL RODS

Made for small taps, reamers, punches, twist drills, dental tools, watch parts, electric work, etc.

Nos.	Sizes in Decimals of 1 Inch.	Nearest Sizes in Fractions of 1 Inch.	Prices per Pound.	Nos.	Sizes in Decimals of 1 Inch.	Nearest Sizes in Fractions of 1 Inch.	Prices per Pound.
	1.500	1½	$0 50	10	0.191		$0 75
	1.4682	1 15/32	50	11	0.188	3/16	75
	1.4375	1 7/16	50	12	0.185		75
	1.4062	1 13/32	50	13	0.182		75
	1.375	1⅜	50	14	0.180		75
	1.3437	1 11/32	50	15	0.178		75
	1.3125	1 5/16	50	16	0.175		83
	1.2812	1 9/32	50	17	0.172	11/64	83
	1.250	1¼	50	18	0.168		83
	1.2187	1 7/32	50	19	0.164		83
	1.1875	1 3/16	50	20	0.161		83
	1.1562	1 5/32	50	21	0.157		83
	1.125	1⅛	50	22	0.155	5/32	83
	1.093	1 3/32	50	23	0.153		83
	1.062	1 1/16	50	24	0.151		83
	1.031	1 1/32	50	25	0.148		83
	1.	1	50	26	0.146		83
	0.969	31/32	50	27	0.143		83
	0.937	15/16	50	28	0.139	9/64	83
	0.906	29/32	50	29	0.134		83
	0.875	⅞	50	30	0.127	⅛	83
	0.844	27/32	50	31	0.120		90
	0.812	13/16	50	32	0.115		90
	0.781	25/32	50	33	0.112		90
	0.750	¾	55	34	0.110		90
	0.719	23/32	55	35	0.108	7/64	90
	0.687	11/16	55	36	0.106		90
	0.656	21/32	55	37	0.103		90
	0.625	⅝	55	38	0.101		90
	0.594	19/32	55	39	0.099		1 05
	0.562	9/16	55	40	0.097		1 05
	0.531	17/32	55	41	0.095		1 05
	0.500	½	60	42	0.092	3/32	1 05
	0.469	15/32	60	43	0.088		1 05
	0.437	7/16	60	44	0.085		1 05
	0.425		75	45	0.081		1 05
Z	0.413		75	46	0.079		1 05
Y	0.404	13/32	75	47	0.077	5/64	1 20
X	0.397		75	48	0.075		1 20
W	0.386	25/64	75	49	0.072		1 20
V	0.377	⅜	75	50	0.069		1 20
U	0.368		75	51	0.066		1 45
T	0.358	23/64	75	52	0.063	1/16	1 45
S	0.348		75	53	0.058		1 45
R	0.339	11/32	75	54	0.055		1 45
Q	0.332		75	55	0.050		1 80
P	0.323	21/64	75	56	0.045	3/64	1 80
O	0.316	5/16	75	57	0.042		1 80
N	0.302		75	58	0.041		2 10
M	0.295	19/64	75	59	0.040		2 10
L	0.290		75	60	0.039		2 10
K	0.281	9/32	75	61	0.038		2 40
J	0.277		75	62	0.037		2 40
I	0.272		75	63	0.036		2 70
H	0.266	17/64	75	64	0.035		2 70
G	0.261		75	65	0.033		2 70
F	0.257		75	66	0.032		3 00
E	0.250	¼	75	67	0.031	1/32	3 00
D	0.246		75	68	0.030		3 00
C	0.242		75	69	0.029		3 30
B	0.238		75	70	0.027		3 30
A	0.234	15/64	75	71	0.026		3 60
1	0.227		75	72	0.024		3 60
2	0.219	7/32	75	73	0.023		3 60
3	0.212		75	74	0.022		3 90
4	0.207		75	75	0.020		4 05
5	0.204		75	76	0.018		4 20
6	0.201	13/64	75	77	0.016	1/64	4 50
7	0.199		75	78	0.015		4 80
8	0.197		75	79	0.014		5 10
9	0.194		75	80	0.013		5 40

Regular lengths, 1 and 3 feet.

Intermediate sizes to order, in quantity not less than 50 lbs. of each size.

We will furnish odd sizes above 1⅛ inches in lots of 50 lbs. or more, if a multiple is given to cut by.

SQUARE SPECIAL RODS

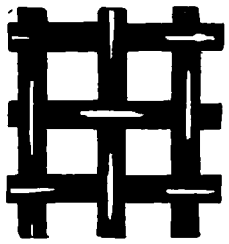
Prices on application.

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IRON, STEEL, BRASS, OR COPPER WIRE CLOTHS

The following cuts are drawn to gauge, showing full size of wire and mesh.

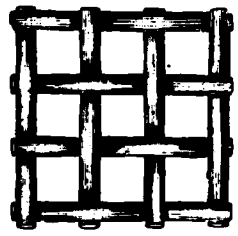
No. 2½ Mesh, No. 10 Wire.



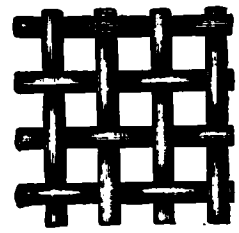
No. 3 Mesh, No. 11 Wire.



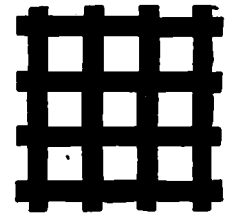
No. 3 Mesh, No. 12 Wire.



No. 3½ Mesh, No. 12 Wire.



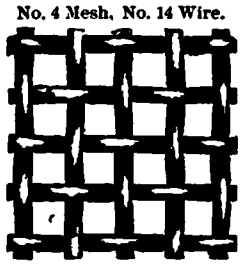
No. 3½ Mesh, No. 13 Wire.



No. 4 Mesh, No. 12 Wire.



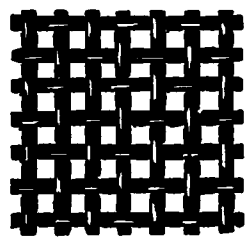
No. 4 Mesh, No. 14 Wire.



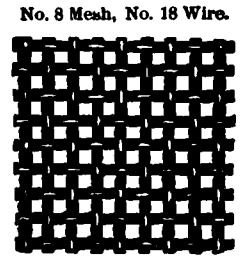
No. 5 Mesh, No. 15 Wire.



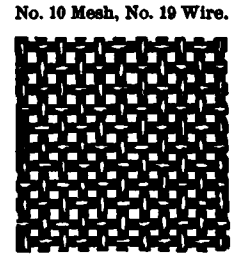
No. 6 Mesh. No. 16 Wire.



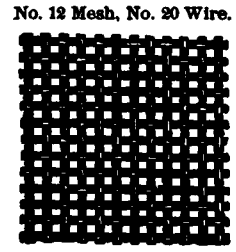
No. 8 Mesh, No. 18 Wire.



No. 10 Mesh, No. 19 Wire.



No. 12 Mesh, No. 20 Wire.



ALL FIG. 7343

When ordering Wire Cloth, please be particular and give the width, length, and size of wire, or grade wanted, as we can not exchange wire cloth after being cut from the roll.

PRICES OF ALL GRADES WIRE CLOTH ON APPLICATION

The mesh in wire cloth is the distance from the center to the center of wire. No length less than 100 feet shall be understood to be a roll.

PERFORATED METAL SHEETS

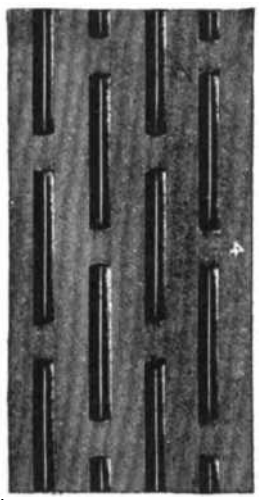


FIG. 7344



FIG. 7345

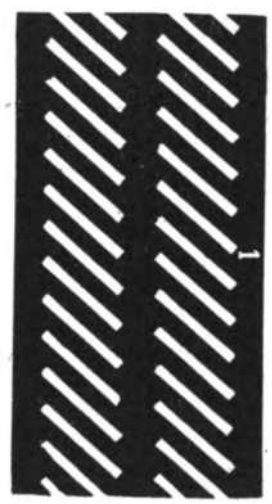


FIG. 7346

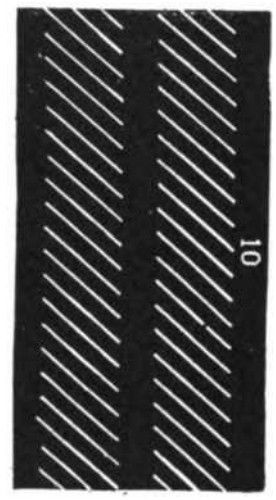


FIG. 7347

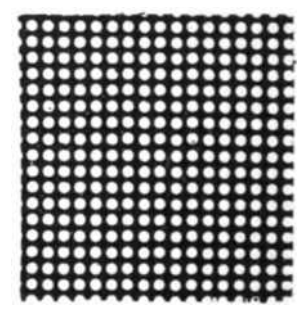


FIG. 7348

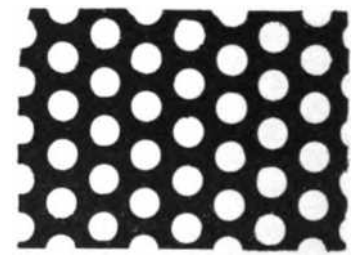


FIG. 7349

BARBED STEEL WIRE FENCING



FIG. 7350

Galvanized four point barb wire, with barbs 6 inches apart, 15 feet to the pound.

Thick set, with barbs 3 inches apart, 12 feet to the pound.

GALVANIZED TWIST WIRE



FIG. 7351

To parties objecting to barbs on wire, the twisted strand affords a good substitute.

Prices for all fencing on application, on reels of about 100 pounds each.

PLAIN OR GALVANIZED STEEL FENCE STAPLE



FIG. 7352

Either regular for wire, or wide top for ribbon wire.

Prices on application, in kegs of 100 pounds.

DESCRIPTION, FIGS. 7344 TO 7349

The following information is necessary in order to enable us to execute orders promptly:

State exact dimensions of the sheets required, in inches. State what kind of material is required. The thickness of the iron or steel by Birmingham, English, wire gauge, or Brown & Sharpe, American, wire gauge. State thickness of copper, brass and bronze by Stubs' gauge, or American gauge. State thickness of zinc by zinc gauge. Whether or not a blank margin or selvage edge is required, of what width and on which sides; state all particulars as to size and location of bolt holes in the margin; send sketch if possible. Whether holes are to be round, square, or oblong; give approximately the distance from centers; state whether holes are to be staggered or in line both ways; and specify, in the case of oval holes, the direction in which the holes are to run. Whether or not the sheets are to be curved; to what diameter and in what direction; and how many sheets go to make up the circumference. Whether or not the sheets are to be corrugated, and to what depth and pitch. State for what purpose the plate will be required and the kind of service on which it is to be used.

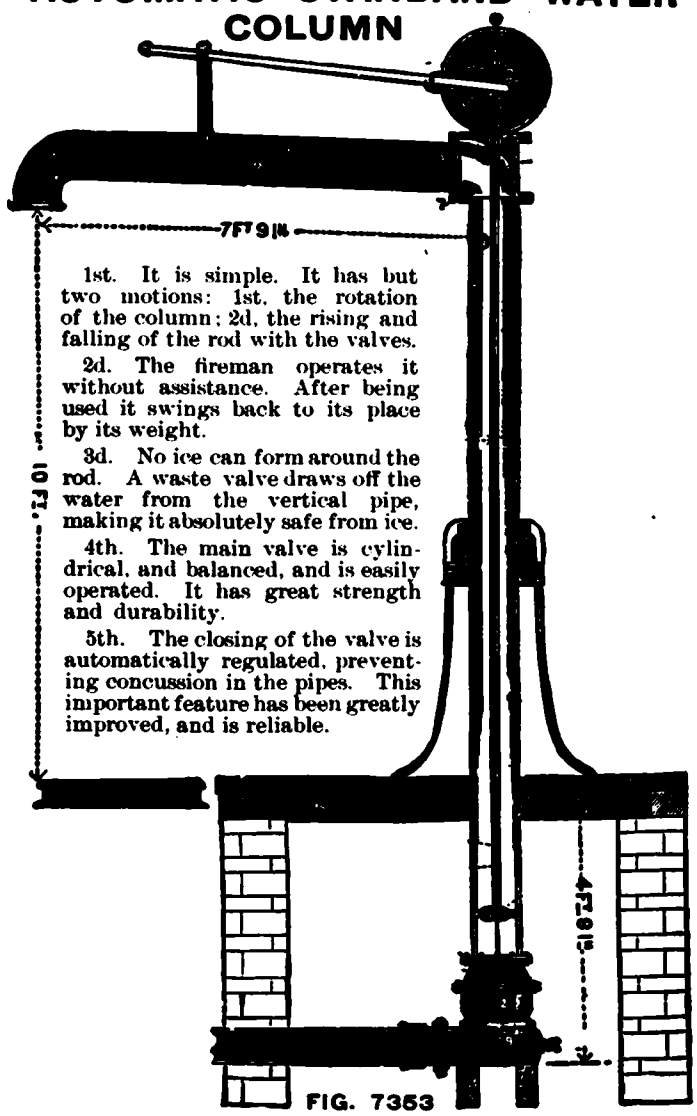
If possible, send templet or drawing, where bolt holes are required, or the sheets are irregular in size; send a sample of any plate which it may be desired to duplicate for perforations and thickness of plate. Prices on application.

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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WATER COLUMNS

AUTOMATIC STANDARD WATER COLUMN



1st. It is simple. It has but two motions: 1st, the rotation of the column; 2d, the rising and falling of the rod with the valves.

2d. The fireman operates it without assistance. After being used it swings back to its place by its weight.

3d. No ice can form around the rod. A waste valve draws off the water from the vertical pipe, making it absolutely safe from ice.

4th. The main valve is cylindrical, and balanced, and is easily operated. It has great strength and durability.

5th. The closing of the valve is automatically regulated, preventing concussion in the pipes. This important feature has been greatly improved, and is reliable.

FIG. 7353

VALVE BOX OF AUTOMATIC STANDARD WATER COLUMN

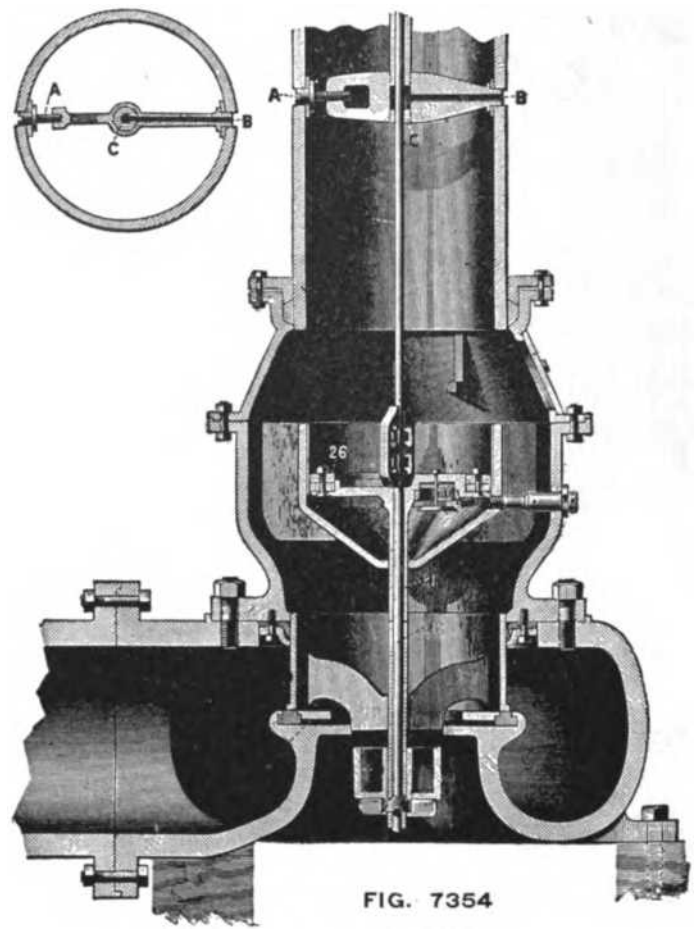


FIG. 7354

PRICES, FIGS. 7353 AND 7354

10 inch	$210 00
8 "	189 00
6 "	173 00

For regular length spout and column.

NEW AUTOMATIC FLOAT VALVE, 1898

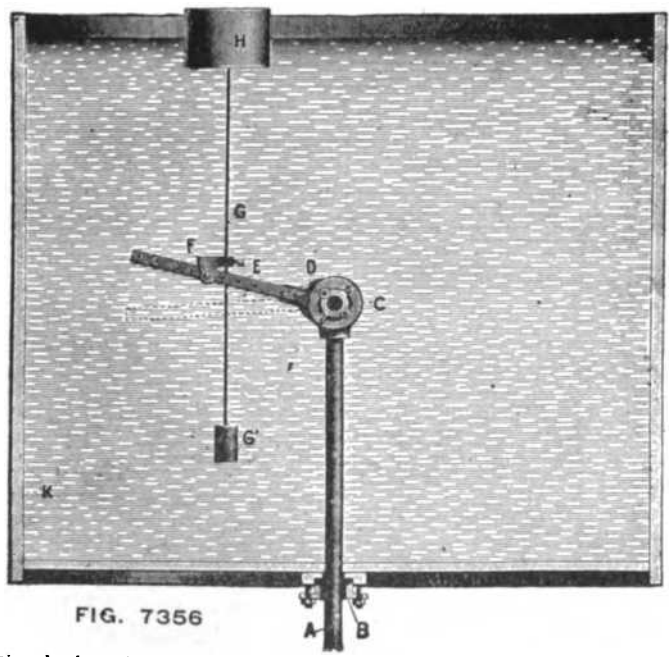


FIG. 7356

This valve is made of brass, is cylindrical, and is very heavy and strong. It has no valve seats or valve packings. It is very durable, and will require little attention. It is better to set the valve not far from the floor of the tank. Directions for setting up will be sent with the valve when shipped. In ordering, be sure to give the diameter of the supply pipe and the water pressure. With the valve C will be shipped the parts B, D, E, F, G and H. H to fit wrought iron pipe.

PRICES

4 inch	$40 00
3 "	35 00
2 "	25 00

TANK PIPE VALVE

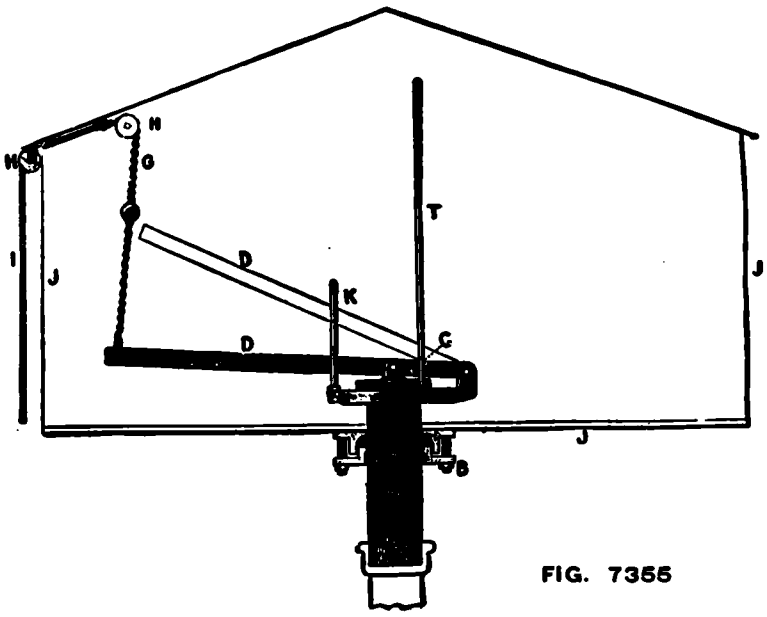


FIG. 7355

The use of this valve in connection with feed tank for water columns enables draining of pipe in the event of necessary repairs to either the pipe or column.

PRICES

12 inch	$45 00
10 "	35 00
8 "	28 00
6 "	20 00

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TANK FIXTURES

TANK VALVE
FOR INCLOSED TANK

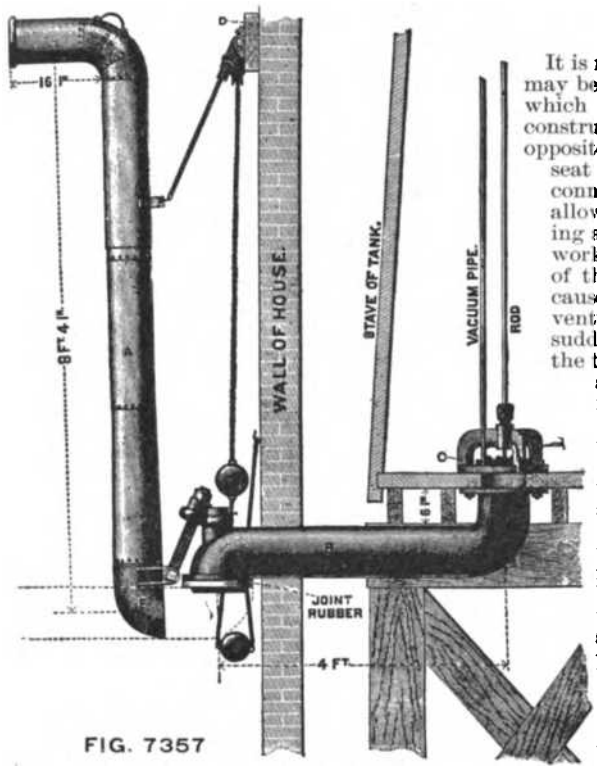


FIG. 7357

DESCRIPTION, FIGS. 7357 AND 7358

It is raised and lowered the same as the common tank valve. It may be moved around laterally. It has a perfect universal joint, which is made tight with heavy molded rubber packing. This construction obviates the necessity of bringing the train exactly opposite to the spout. The valve is provided with a gun metal seat and heavy rubber packing. The valve rod connects with the valve with ball joint, which allows the valve to adjust itself to the seat, making a tight joint. On the valve rod is a piston working in a cylinder formed in the central part of the valve frame. It acts as a guide, and also causes the valve to settle slowly to its seat, preventing the valve from being hammered out by sudden closing. A vacuum pipe, extending from the top of the tank to the valve, screws into the side of the valve seat, and an opening communicates with the inner part of the valve under the valve plates, preventing the formation of a vacuum upon the shutting off of the water. In setting up, have the point where the chain passes from the spout into the sheave wheel directly over the swivel.

The spouts are galvanized. An order for a tank valve includes: Cast iron spout, wrought iron spout, galvanized; valve complete with bolts, rod and weights; three balls and chain, vacuum pipe, lever and fulcrum, set of sheaves, making the apparatus complete, as per cut.

PRICES, FIG. 7357

The above cut represents the tank valve set to a tank that is in a tank house. It is four feet from center to center of pipe B, so that it will reach through the wall, and pipe B is 6 in. below the bottom of the tank, as shown in cut. In ordering, give diameter of pipe desired.

Pipes, 6 inches in diameter	$60 00
" 7 " "	70 00
" 8 " "	80 00
" 10 " "	100 00

TANK VALVE
WITH UNIVERSAL JOINT

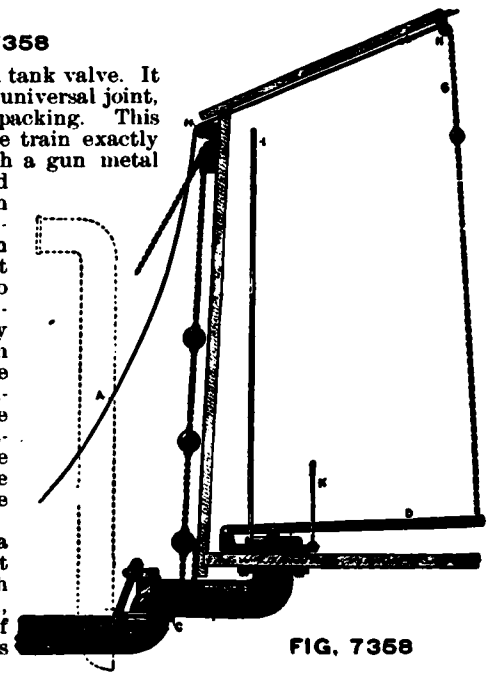


FIG. 7358

PRICES, FIG. 7358

In this style the valve is very strong, the lever is attached directly to the valve, and gives it a wide opening and a great capacity, and through the chain G, rollers HH and rope A is very conveniently operated. There is a valve rubber in the valve J and a joint rubber at C between the pipes B and E. The following parts constitute the valve:

1st—The valve seat, consisting of a cast iron base and brass valve seat. 2d—The valve rubber, held between the valve plates. 3d—The large valve plate, with lugs to hold the lever. 4th—The small valve plate below it. The two plates hold the valve rubber 5th—The lever guide K. With pipe B 2 feet 9 inches long. This is the one generally ordered, and will be sent where tank valve is ordered without specially ordering the kind of cast iron goose neck wanted. The standard length of pipe A is 8 feet 4 inches. Stock of this length on hand; other lengths made to order.

Pipes, 6 inches in diameter	$55 00
" 7 " "	65 00
" 8 " "	75 00

FROST PROOF HALLADAY VALVE, OUTLET PIPE, GALVANIZED SPOUT AND FIXTURES

PRICES, FIG. 7359

6 inch valve	$12 00
7 " "	15 00
8 " "	18 00
10 " "	30 00

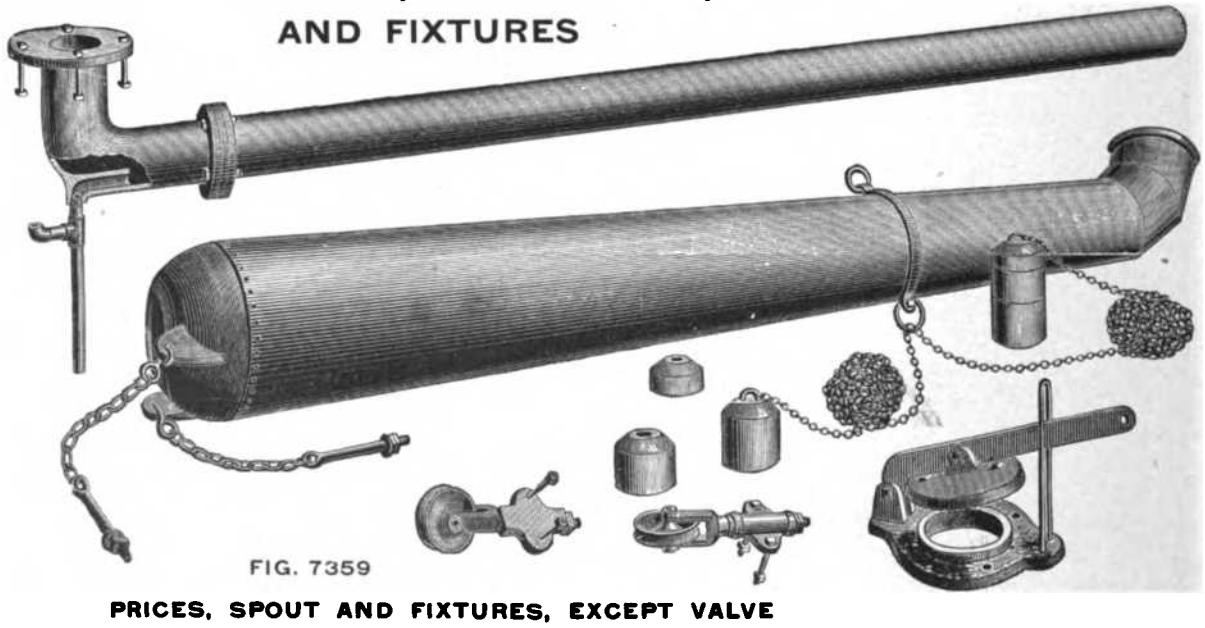


FIG. 7359

PRICES, SPOUT AND FIXTURES, EXCEPT VALVE

6 inches for 16 feet diameter tank	$65 00	8 inches for 16 feet diameter tank	$85 00
6 " " 20 " " "	70 00	8 " " 20 " " "	90 00
6 " " 24 " " "	75 00	8 " " 24 " " "	95 00
7 " " 16 " " "	75 00	10 " " 16 " " "	110 00
7 " " 20 " " "	80 00	10 " " 20 " " "	117 50
7 " " 24 " " "	85 00	10 " " 24 " " "	125 00

N. B.—When ordering, always state the diameter of tank and gauge of track.

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HALLADAY OUTLET PIPE, SPOUT AND FIXTURES FOR RAILROAD TANKS

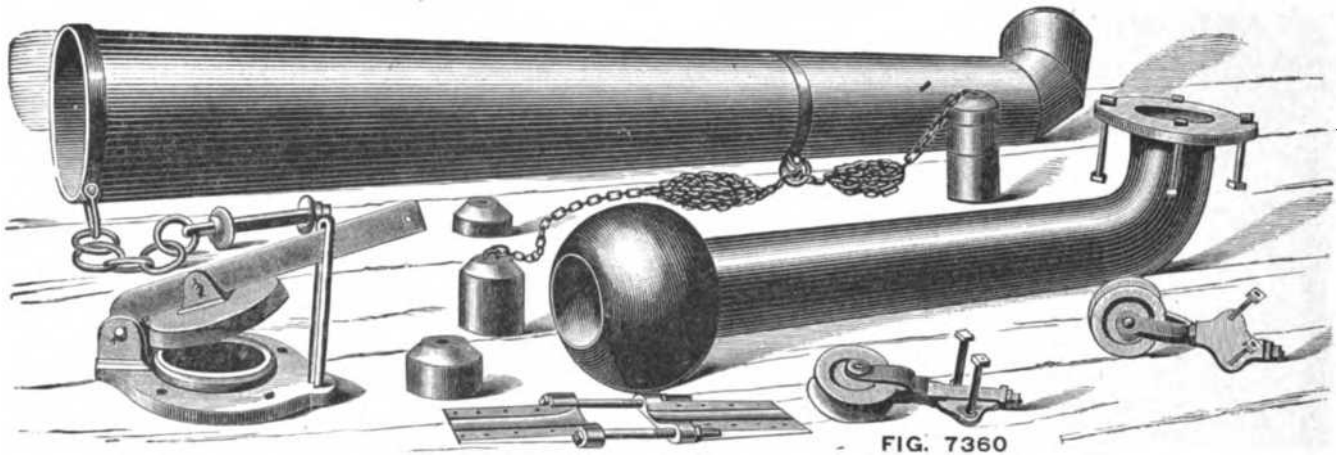


FIG. 7360

PRICES

6 inch Pipe, Spout and Fixtures, except Valve, each	$55 00	8 inch Valve, each	$18 00
7 " " " " " " " "	68 00	10 " " "	30 00
8 " " " " " " " "	75 00	12 " " "	40 00
6 " Valve, each	12 00	14 " " "	55 00
7 " " "	15 00		

WATER TANKS



FIG. 7361

DESCRIPTION
FIG. 7361

All Tanks, unless otherwise specified, will be made from selected pine, free from sap shake or unsound knots that will cause leak; small black heart knots bored and plugged. All joints are machine made and perfect. All pieces full length without splicing. The outside of staves surfaced convex to conform to the true circle of the tank. Crozing at bottom of stave cut at an angle to allow for the pitch of the staves, and making a perfect fit at this important point. Tanks are secured with heavy double bolt lug hoops. If drive hoops are wanted, ask for special price. All Tanks are set up and marked in the shop. This is equivalent to a 5 per cent. reduction to the party erecting.

Material for Roofs of large sizes of Tanks, including Finial and Brackets and Frost Proof Ceilings. Brackets for Eaves not included.

PRICES OF ROOFS

12 foot diameter	$60 00
14 " "	65 00
16 " "	75 00
18 " "	100 00
20 " "	115 00
22 " "	120 00
24 " "	135 00
26 " "	150 00
28 " "	175 00
30 " "	220 00

Water Indicators, complete with chains and pulley, 50 cents per foot in height.

RAILROAD SIZES HALLADAY PUMPING WIND MILLS

For Railroads, Drainage, Irrigation, Etc.

Nos.	Diameters, Feet.	Revolutions per Minute.	Lengths of Stroke, Inches.	Weight, Pounds.	Each.
5	14	42	6, 8, 9 and 10	1,520	$200 00
6	16	40	8, 9, 10 " 12	1,940	280 00
7	18	37	8, 9, 10 " 12	2,160	325 00
8	20	34	8, 9, 10 " 12	2,600	375 00
8½	22	32	8, 9, 10 " 12	2,900	425 00
9	25	30	12, 15 " 18	3,500	500 00
9½	28	28	12, 15 " 18	3,720	550 00
10	30	26	12, 15 " 18	3,866	575 00

When ordering these Wind Mills state height of tower, so that a suitable amount of blue wood rod connection and shut off wire may be sent with each Mill. The bed plates to the Nos. 5, 6, 7 and 8 Mills are made for three post towers, other sizes four post towers. N. B.—Prices given above do not include any part of the tower, pump or pipe.

U. S. SOLID WHEEL PUMPING WIND MILLS

For Dairy and Stock Farms, Railways, Drainage, Irrigation, etc.

Nos.	Diameters, Feet.	Revolutions per Minute.	Lengths of Stroke, Inches.	Weight, Pounds.	Each.
2	10	50	4, 5 and 6	540	$70 00
3	12	48	6, 7 " 8	750	90 00
4	13	45	6, 8 " 10	880	100 00
5	14	43	6, 8 " 10	990	130 00
6	16	40	6, 8, 10 " 12	1,770	250 00
7	18	37	6, 8, 10 " 12	1,900	280 00
8	20	37	6, 8, 10 " 12	2,950	350 00
8½	22	35	6, 8, 10 " 12	3,250	400 00

STEEL TOWERS FOR WIND MILLS

In ordering Towers, care should be taken to give sufficient elevation to the Wind Mill to elevate it at least 15 feet above surrounding wind obstructions to avoid the eddying ground currents of air.

PRICES ON APPLICATION

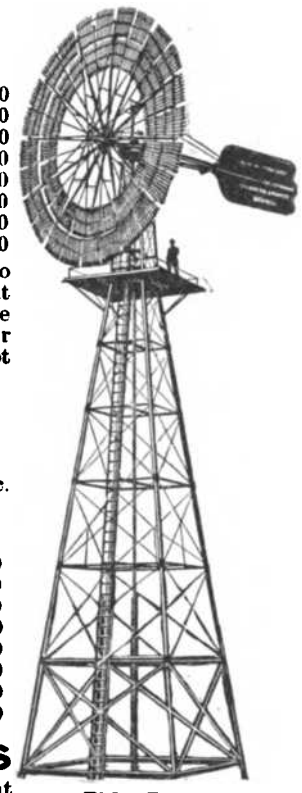


FIG. 7362

PRICES OF STORAGE TANKS
MADE OF THREE INCH LUMBER

Staves.	Diams., Feet.	Hoops.	Capacity, Gallons.	Capacity, Barrels.	Pine, Weight.	Pine, Each.	Cypress, Weight.	Cypress, Each.
10	12	8	7,053	224	4,000	$110 00	4,800	$165 00
12	12	9	8,488	269	4,500	125 00	5,600	190 00
14	12	10	9,902	314	5,200	140 00	6,300	215 00
16	12	11	11,293	358	5,800	155 00	7,100	240 00
10	14	8	9,773	310	4,800	130 00	5,900	200 00
12	14	9	11,774	374	5,500	150 00	6,700	230 00
14	14	10	13,750	436	6,200	165 00	7,600	260 00
16	14	11	15,701	498	6,900	185 00	8,500	290 00
10	16	8	12,935	410	5,700	155 00	7,000	240 00
12	16	9	15,597	495	6,700	180 00	8,200	270 00
14	16	10	18,229	579	7,300	200 00	9,000	305 00
16	16	11	20,833	661	8,200	225 00	10,000	340 00
18	16	13	23,406	743	9,200	255 00	11,200	375 00
12	18	9	19,956	633	7,700	210 00	9,300	320 00
14	18	10	23,340	741	8,700	240 00	10,600	360 00
16	18	12	26,689	847	9,700	265 00	11,800	400 00
18	18	14	30,004	952	10,900	310 00	13,200	450 00
20	18	15	33,288	1,057	11,900	335 00	14,400	485 00
12	20	9	24,852	788	9,000	250 00	10,100	375 00
14	20	10	29,080	923	10,100	280 00	12,200	415 00
16	20	12	33,270	1,056	11,200	305 00	13,600	455 00
18	20	14	37,423	1,191	12,500	350 00	15,100	510 00
20	20	15	41,540	1,319	13,700	380 00	16,500	550 00
22	20	17	45,636	1,448	14,900	$430 00	18,100	$600 00
24	20	20	49,660	1,576	16,300	480 00	20,000	665 00
12	22	10	30,285	961	10,300	290 00	12,500	425 00
14	22	11	35,451	1,125	11,500	320 00	13,900	470 00
16	22	12	40,576	1,288	12,600	350 00	15,300	515 00
18	22	14	45,660	1,449	14,000	395 00	17,000	565 00
20	22	16	50,702	1,609	15,400	435 00	18,600	615 00
22	22	18	55,705	1,768	17,000	485 00	20,400	675 00
24	22	20	60,666	1,926	18,600	540 00	22,300	740 00
12	24	10	36,254	1,151	11,600	330 00	14,000	475 00
14	24	11	42,453	1,347	12,900	360 00	15,600	525 00
16	24	13	48,606	1,543	14,300	400 00	17,300	580 00
18	24	14	54,714	1,737	15,700	445 00	19,000	640 00
20	24	16	60,778	1,929	17,300	490 00	20,800	690 00
22	24	18	66,797	2,120	19,100	545 00	22,900	755 00
24	24	20	72,771	2,310	20,800	610 00	24,900	825 00
16	26	13	57,360	1,821	15,700	450 00	19,000	670 00
18	26	14	64,587	2,050	17,200	500 00	20,800	730 00
20	26	16	71,766	2,278	19,000	550 00	22,900	790 00
16	30	14	77,044	2,446	19,900	570 00	23,900	820 00
18	30	15	86,790	2,755	21,500	630 00	25,800	890 00
20	30	17	96,480	3,063	23,700	690 00	28,300	960 00

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BALANCE FLOAT VALVE

Fig. 7363 shows Balance Float Valve in connection with expansion or slip joint.
Upper end fitted for wood or iron bottom.
Lower end fitted for flanged, screw or bell end pipe.

PRICES OF BALANCE FLOAT VALVE ONLY

4 inch.	6 inch.	8 inch.	10 inch.
$30 00	$36 00	$50 00	$70 00

PRICES OF EXPANSION JOINTS ONLY

4 inch.	6 inch.	8 inch.	10 inch.
$30 00	$50 00	$75 00	$110 00

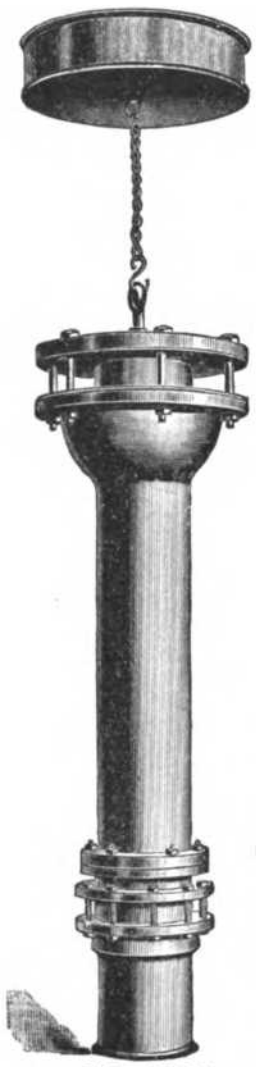


FIG. 7363

IRON HINGED FLOAT VALVE

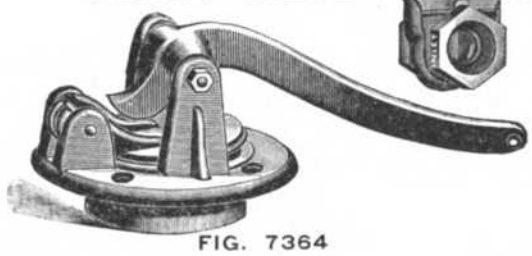


FIG. 7364

PRICES

For ½ inch pipe	$0 75
" ¾ and 1 inch pipe	0 80
" 1¼ inch pipe	1 00
" 1½ " "	1 25
" 2 and 2½ inch pipe	4 00
" 3 inch pipe	5 00
" 3½ and 4 inch pipe	6 00
" 5 and 6 " "	12 00
" 7 inch pipe	15 00
" 8 " "	18 00
" 10 " "	30 00
" 12 " "	40 00

N. B.—These prices apply also to outlet valves.

FLOAT VALVE FOR HEAVY PRESSURE

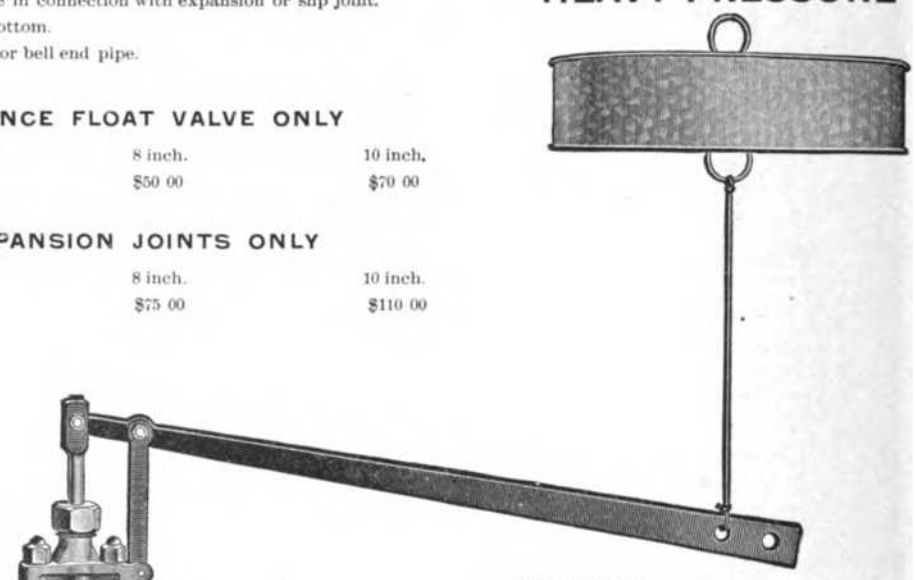


FIG. 7365

1½	with	4 x 16	inches.	Galvanized	Float	$7 50
2	"	4	24	"	"	12 50
3	"	4	36	"	"	22 50
4	"	4	48	"	"	35 00

FLOAT

PRICES FIG. 7366

Japanned Tin, 3 x 11 inches	$0 90
Galvanized Iron, 3 x 11 inches	1 10
Galvanized Iron, 4 x 16 inches	2 40
Galvanized Iron, 4 x 24 inches	5 00
Galvanized Iron, 4 x 36 inches	8 00
Galvanized Iron, 4 x 48 inches	14 00



FIG. 7366

RAILROAD COPYING PRESSES

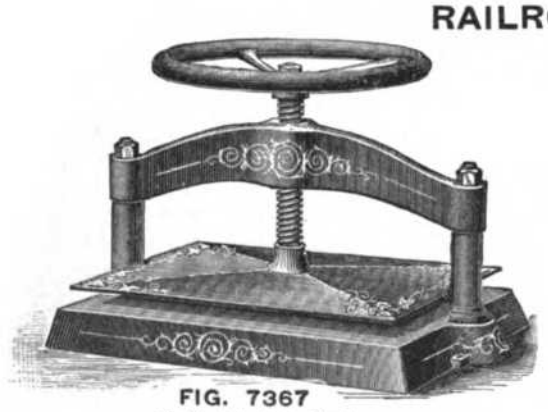


FIG. 7367

Finished in Plain Black.

Nos.						Prices.
4C	Receives	Book	10 x 12½	inches		$5 25
5C	"	"	10	15	"	6 00
6C	"	"	11	16	"	9 00
8C	"	"	12	18¼	"	12 00

Railroad Presses.

Nos.						Prices.
9C	Receives	Book	14 x 18½	inches		$16 50
10C	"	"	15	20	"	18 00
11C	"	"	16	20½	"	23 00
13C	"	"	18	22½	"	25 50
15C	"	"	20	24½	"	29 50

STYLE D.
Finished in Black and Bronze.

Nos.						Prices.
4D	Receives	Book	10 x 12½	inches		$5 75
5D	"	"	10	15	"	7 00
6D	"	"	11	16	"	10 50
8D	"	"	12	18½	"	13 50

Railroad Presses.

Nos.						Prices.
9D	Receives	Book	14 x 18½	inches		$18 00
10D	"	"	15	20	"	20 00
11D	"	"	16	20½	"	25 50
13D	"	"	18	22½	"	28 00
15D	"	"	20	24½	"	32 00

Order by letter and number.

G PATTERN PRESS, WITH TANK FOR MOISTENING PADS



FIG. 7368

Black, with Gilt Stripe.

Nos.	Length of Base, Inches.	Holds Book.	Prices, Each.
G1	17	10 x 13	$25 00
G2	19	11 15½	30 00
G3	22¾	14 18	45 00
G4	26	16 21	60 00
G5	31⅝	18 24	75 00

Finished in Colors.

Nos.	Length of Base, Inches.	Holds Book.	Prices, Each.
G10	17	10 x 13	$27 50
G20	19	11 15½	33 00
G30	22¾	14 18	50 00
G40	26	16 21	65 00
G50	31⅝	18 24	80 00

H PATTERN, WITH BOOK REST



FIG. 7369

Black, with Gilt Stripe.

Nos.	Length of Base, Inches.	Holds Book.	Prices, Each.
H1	17	10 x 13	$15 00
H2	19	11 15½	20 00
H3	22¾	14 18	30 00
H4	26	16 21	40 00
H5	31⅝	18 24	50 00

Finished in Colors.

H10	$17 50
H20	22 50
H30	34 00
H40	45 00
H50	55 00

W PATTERN, IMPROVED MOISTENING APPLIANCE ONLY. NOT ILLUSTRATED

Nos.	For Pads, Inches.	Prices, Each.
W10	10 x 13	$12 00
W20	11 15½	15 00
W30	14 18	23 00
W40	16 21	30 00
W50	18 24	37 50

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FULL ENGINEER'S TRANSIT

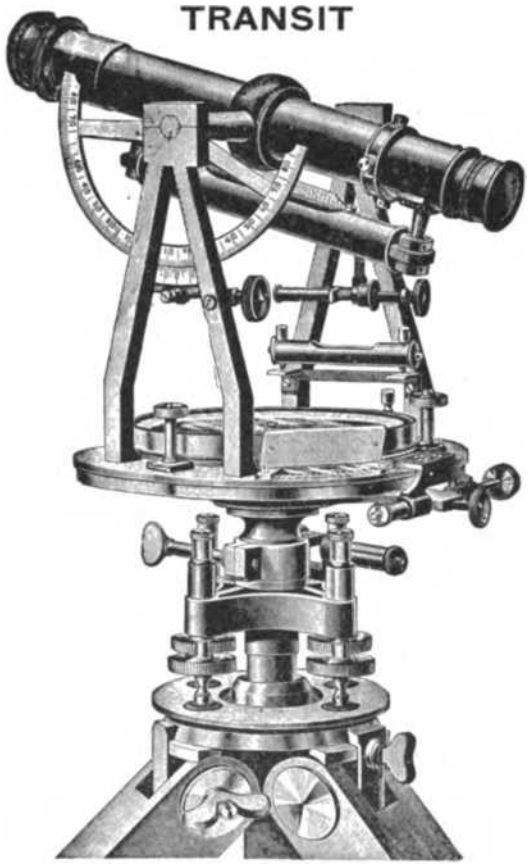


FIG. 7370

A 1494.

Engineer's Transit, with achromatic telescope 12 inches long, with dust cover to draw tube. Object glass aperture, $1\frac{3}{16}$ inches; power of telescope, 24 diameters; improved rack and pinion movement to object slide; special formulæ eye piece lenses, giving high power without reducing the light or field; patent spiral screw focussing arrangement to eye piece; improved cross wires; 20 second ground level, 6 inches long, mounted under telescope; 6 inch silvered vertical arc graduated to ½ degree, with adjustable verniers reading to single minutes; figuring of graduations on arc from 0 to 90 each way from center line; clamp and tangent screw with opposing spring to axle of telescope; 5 inch special magnet steel needle, swung on jeweled center, supported by hardened and well pointed center pin; variation plate, with improved clamp and rack and pinion movement; silvered horizontal circle (graduated edge), 6¾ inches in diameter, graduated to ½ degree, with double vernier reading to single minutes; figuring of graduations on circle, in two rows, from 0 to 360 degrees in opposite directions; verniers fitted with ground glass reflectors; clamp and opposing spring tangent to horizontal limb and centers; two graduated right angle levels, one placed on horizontal circle and one on left hand standard; compound extra long centers of special formulæ metal to reduce friction; special skeleton leveling plate; capped and packed leveling screws; shifting center tripod head; solid leg tripod; hardwood box, containing sunshade, plum bob, screw driver and adjusting pins. Weight of transit, 17 pounds; weight of tripod, 7 pounds. Each.....$185 00

A 1495.

Engineer's Transit, as above in every detail, excepting that the graduations are on solid silver. Each....$210 00

LAND LEVEL

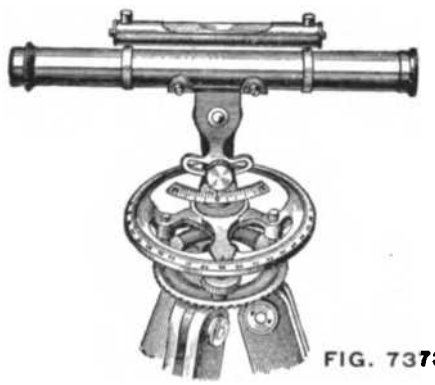


FIG. 7373

A 1535.

It is a great labor saver to the wheelwright in lining and setting up shafting; to the builder and bricklayer in setting up foundations, floors, etc. It can be used for angulation, level lines, grading streets, sewers and drains.

A 1534. Land Level, for horizontal angles. Each..$20 00
A 1535. Land Level, for horizontal and vertical angles. Each..... 25 00

PLAIN ENGINEER'S TRANSIT

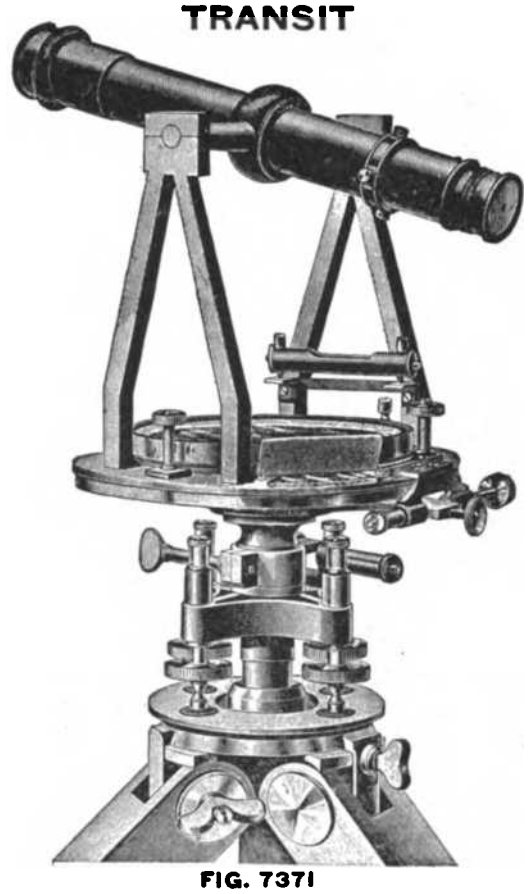


FIG. 7371

A 1498.

Engineer's Transit, with achromatic telescope 12 inches long, with dust cover to draw tube. Object glass aperture, $1\frac{3}{16}$ inches; power of telescope, 24 diameters; improved rack and pinion movement to object slide; special formulæ eye piece lenses, giving high power without reducing the light or field; patent spiral screw focussing arrangement to eye piece; improved cross wires; 5 inch special magnet steel needle, swung on jeweled center, supported by hardened and well pointed center pin; variation plate, with improved clamp and rack and pinion movement; silvered horizontal circle (graduated edge), 6¾ inches in diameter, graduated to ½ degree, with double vernier reading to single minutes; figuring of graduations on circle, in two rows, from 0 to 360 degrees in opposite directions; verniers fitted with ground glass reflectors; clamp and opposing spring tangent to horizontal limb and centers; two graduated right angle levels, one placed on horizontal circle and one on left hand standard; compound extra long centers, of special formulæ metal, to reduce friction; special skeleton leveling plate; capped and packed leveling screws; shifting center tripod head; solid leg tripod; hardwood box, containing sunshade, plumb bob, screw driver and adjusting pins. Weight of transit, 16 pounds; weight of tripod, 7 pounds. Each.....$150 00

A 1499.

Engineer's Transit, as above in every detail, excepting that the graduations are on solid silver. Each..... $170 00

PRICES, FIG. 7374

A 1508.

Light Mountain Transit, with achromatic telescope 9 inches long, with dust cover to draw tube. Power of telescope, 24 diameters; improved rack and pinion movement to object slide; special formulæ eye piece lenses, giving high power without reducing the light or field; patent spiral screw focussing arrangement to eye piece; improved cross wires; 10 seconds ground level, mounted under telescope; 4 inch silvered vertical arc graduated to ½ degree reading by adjustable verniers to single minutes; figuring of graduations on arc from 0 to 90 each way from center line; clamp and tangent screw with opposing spring to axle of telescope; 4 inch special magnet steel needle, swung on jeweled center, supported by a hardened and well pointed center pin; variation plate, with improved clamp and rack and pinion movement; silvered horizontal circle (graduated edge), 5½ inches in diameter; graduated to ½ degree with double verniers reading to single minutes; figuring of graduations on circle, in two rows, from 0 to 360 degrees in opposite directions; verniers fitted with ground glass reflectors; clamp and opposing spring tangent to horizontal limb and centers; two graduated right angle levels, one placed on horizontal circle and one on left hand standard; compound extra long centers of special formulæ metal to reduce friction; special skeleton leveling plate; capped and packed leveling screws; shifting center tripod head; extension leg tripod; hardwood box, containing sunshade, plumb bob, screw driver and adjusting pins. Weight of transit, 10 pounds; weight of tripod, 6 pounds. Each.....$185 00

A 1509.

Light Mountain Transit, as above in every detail, excepting that the graduations are on solid silver. Each.....$210 00

FULL SURVEYOR'S TRANSIT



FIG. 7372

A 1502.

Surveyor's Transit, with achromatic telescope 11 inches long. Power of telescope, about 24 diameters; improved rack and pinion movement to object slide; straight draw focussing arrangement to eye piece; 10 second ground level 6 inches long, mounted under telescope; clamp and opposing spring tangent screw to axle of telescope; 5 inch silvered vertical circle, graduated to ½ degree, with fixed vernier reading to minutes; 5 inch special magnet steel needle, swung on jeweled center, supported by a hardened and well pointed center pin; variation plate with improved clamp; silvered horizontal circle (graduated edge), 6⅝ inches in diameter, graduated ½ degree, with double verniers reading to single minutes; figuring of graduations on circle, in two rows, from 0 to 360 in opposite directions; clamp and opposing spring tangent to horizontal limb and centers; two graduated right angle levels, one placed on horizontal circle and one on left hand standard; capped and packed leveling screws; shifting center tripod head; solid leg tripod; hardwood box, containing sunshade, plumb bob, screw driver and adjusting pins. Weight of transit, 15½ pounds; weight of tripod, 7 pounds. Each.....$140 00

A 1508.

Surveyor's Transit, same as above instrument in every detail, excepting that the graduations are on solid silver. Each.....$160 00

LIGHT MOUNTAIN OR MINING TRANSIT

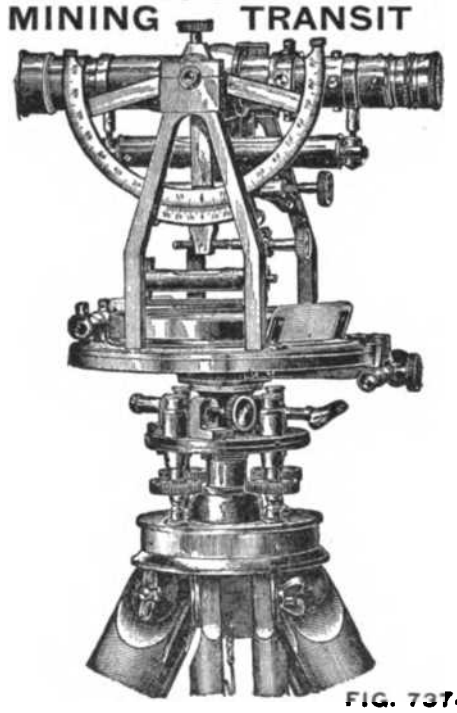


FIG. 7374

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ENGINEER'S LEVEL

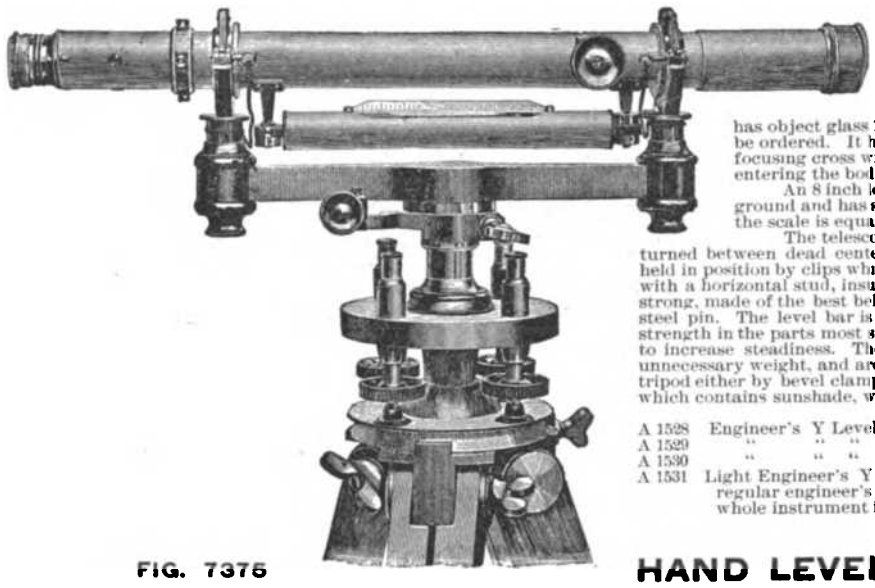


FIG. 7375

DESCRIPTION, FIG. 7375

The illustration represents an engineer's Y level of the most improved construction, with telescope of the finest optical qualities. It is made in three lengths, either 18, 20 or 22 inches long, and is mounted in proportional Y supports and different lengths of bars. The telescope has object glass 1¼ inches diameter with magnifying power about 35 to 45 diameters, as may be ordered. It has improved and patented screw adjustment to eye piece of telescope for focusing cross wires. The draw tube is provided with dust cap to prevent dirt or grit from entering the body tube.

An 8 inch level is securely mounted on the under side of the telescope and is uniformly ground and has scale graduated in tenths of inches. The run of bubble over one division of the scale is equal to 15 seconds elevation.

The telescope revolves truly in the Y's and has bell metal collars at each end, which are turned between dead centers of exactly the same diameter. These collars rest in the Y's and are held in position by clips which are hinged on the Y's and lock with taper pins. One Y clip is furnished with a horizontal stud, insuring the accurate position of the horizontal wire. The Y's are large and strong, made of the best bell metal, each Y having 2 nuts, one of which is adjustable with the ordinary steel pin. The level bar is made square of fine bronze, and so proportioned as to have the greatest strength in the parts most subject to severe strain. The center is made of bell metal and is extra long, to increase steadiness. The leveling screws are made large with broad edge and concave, to avoid unnecessary weight, and are capped and packed to prevent injury from dust. The level is fastened on tripod either by bevel clamps or by screw, as may be desired. The instrument is packed erect in box which contains sunshade, wrench, a screw driver and adjusting pins.

		Each.
A 1528	Engineer's Y Level, 18 inch telescope complete with tripod, as above	$110 00
A 1529	" " " 20 " " " " " "	110 00
A 1530	" " " 22 " " " " " "	115 00
A 1531	Light Engineer's Y Level, 15 inch telescope, has the same general arrangement as the regular engineer's level, but the leveling head remains attached to the spindle, and the whole instrument is somewhat smaller and lighter; complete with tripod	100 00

MACHINIST'S LEVEL OF PRECISION

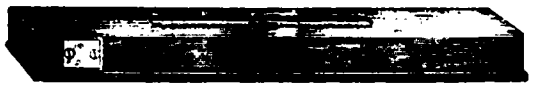


FIG. 7376

In furnishing Machinist's Level of Precision, we are prepared to supply a level of any requisite degree of curvature and, consequently, any required degree of sensitiveness. This level is carefully mounted in iron case, with brass top and accurately planed surfaces, also adjustable laterally and vertically. They are supplied with short cross level carefully ground, and the main bulb is graduated in inches and tenths. This form of spirit level has long been recognized as the best constructed and most suitable form for setting up locomotives, stationary engines, boilers, planers, lathes and all fine machinery, and is guaranteed to give satisfaction.

		Each.
A 1649	Machinist's Level, 8 inches long	$8 00
A 1650	" " 10 "	10 00
A 1651	" " 12 "	12 00
A 1652	" " 13 "	15 00
A 1652¼	" " 18 "	18 00
A 1652½	" " 24 "	24 00

HAND LEVELS



FIG. 7377

		Each.
A 1638	Locke Hand Level, 5 inch, brass	$6 00
A 1639	" " 5 " German silver	8 00
A 1640	" " 5 " nickel plated	8 00



FIG. 7378

		Each.
A 1641	Hand Level, square tube, 5 inch nickel plated	$4 50

In this hand level the reflector is an oval polished plate, crossing the center of the field of view, so that the field appears on all four sides of the reflected bubble.

LINTON'S HAND LEVEL AND CLINOMETER

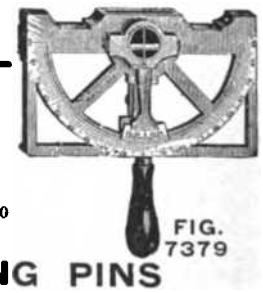


FIG. 7379

A 1648 Linton's Hand Level and Clinometer, each $20 00

MARKING PINS

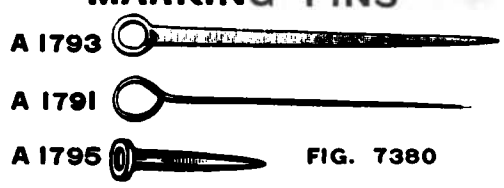


FIG. 7380

A 1790	Marking Pins, No. 4 iron wire, 11 in. set	$1 25
A 1791	Marking Pins, No. 6 steel wire, 11 in. set	2 00
A 1792	Marking Pins, No. 6 steel wire, 11 in. set, weighted point	3 00
A 1793	Marking Pins, tempered steel, 11 in. set, ¾ inch wide	6 00
A 1794	Canvas Case, with shoulder straps for pins	2 00
A 1795	Stake Tacks, galvanized, ¼ pound boxes	30

THE VERNIER RAILROAD COMPASS

A clamp and tangent screw with opposing spring is attached to facilitate the reading of the Vernier. The sights are graduated into half degrees on the edge for angles of elevation or depression. The lower part has four leveling screws and clamp and tangent movement. The instrument is readily attached to the tripod by a screw fastened on head of tripod. The sights are detachable and are packed in case with the compass. The box is fitted with plumb bob, screw drivers, wrench, etc.

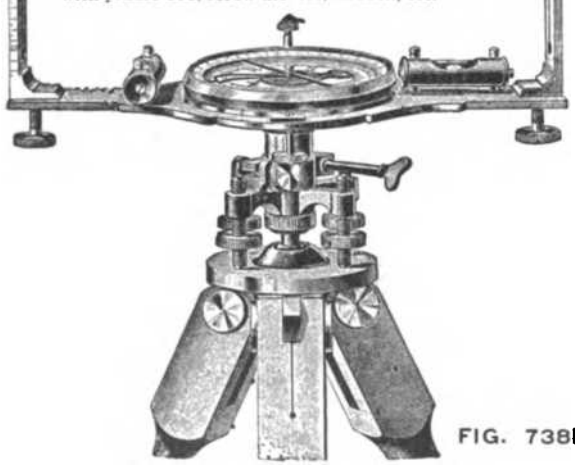


FIG. 7381

		Each.
A 1622	Vernier Railroad Compass, 4 inch needle, 13 inch plate, with tripod and leveling screws, complete	$45 00
A 1623	Vernier Railroad Compass, 5 inch needle, 14 inch plate, with tripod and leveling screws, complete	55 00
A 1624	Vernier Railroad Compass, 6 inch needle, 16 inch plate, with tripod and leveling screws, complete	65 00

PRICES, FIG. 7382

	Each.
A 1546 Philadelphia Rod, divided into feet, tenths and hundredths of a foot, verniers reading to thousandths; with target, vernier and clamp; 7⁹⁄₁₀ feet closed, sliding to 13 feet	$16 00
A 1547 Philadelphia Rod, divided into feet and tenths, vernier reading to hundredths; with target, vernier and clamp; 7⁹⁄₁₀ feet closed, sliding to 13 feet.	14 00
A 1548 Philadelphia Mining Rod, divided into feet and tenths, vernier reading to hundredths; with target, vernier and clamp; 4 feet closed, sliding to 7 feet	12 00
A 1550 New York Rod, divided into feet, tenths and hundredths, vernier reading to thousandths; with target, vernier and clamp; 6⁹⁄₁₀ feet closed, sliding to 12 feet	14 00
A 1554 Architect's Rod, divided into feet, tenths and hundredths, vernier reading to thousandths; target, vernier and clamp; 5½ feet closed, sliding to 10 feet	6 00
A 1555 Architect's Rod, divided into feet, inches and sixteenths; target and clamp; 5½ feet closed, sliding to 10 feet	6 00

LEVELING POLES

A 1560 Leveling Pole, octagonal, tapered, steel shoe, divided in feet; painted red and white alternately; 6 feet, $2.00; 8 feet, $2.25; 10 feet, $2.50.

A 1562 Iron Tubular Pole, ⅞ inch in diameter, painted red and white alternately; 6 feet, $2.75; 8 feet, $3.00; 10 feet, $3.50.

LEVELING RODS

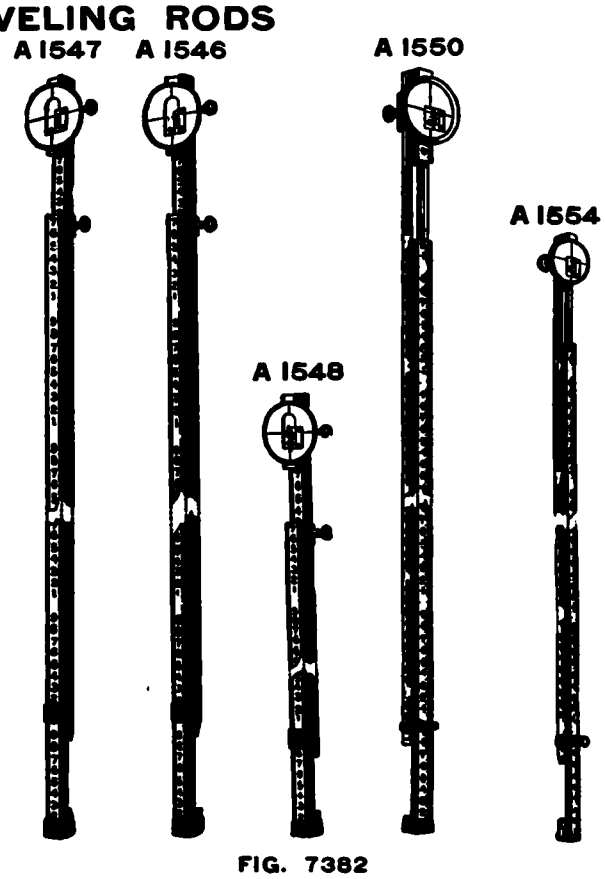


FIG. 7382

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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ENGINEERS' AND SURVEYORS' CHAINS

A 1761.



FIG. 7383

	Surveyor's Iron Chain.	Each.
A 1760	W. G. 9, 33 feet, 2 poles, oval rings	$2 00
A 1761	" 8, 33 " 2 " "	2 50
A 1762	" 7, 33 " 2 " "	3 00
A 1763	" 9, 66 " 4 " "	3 50
A 1764	" 8, 66 " 4 " "	4 50
A 1765	" 7, 66 " 4 " "	5 50
A 1766	Surveyor's Steel Chain, W. G. 12, 33 feet, brazed links and rings	5 50
A 1767	Surveyor's Steel Chain, W. G. 12, 66 feet, brazed links and rings	10 00
A 1768	Engineer's Iron Chain, W. G. 7, 50 feet, oval rings	4 00
A 1769	Engineer's Iron Chain, W. G. 7, 100 feet, oval rings	6 00
A 1770	Engineer's Steel Chain, W. G. 12, 50 feet, brazed links and rings	6 00
A 1771	Engineer's Steel Chain, W. G. 12, 100 feet, brazed links and rings	11 00

METER AND VARA CHAINS

		Each.
A 1773	Steel Chain. W. G. 10, 10 meter, oval rings	$3 50
A 1774	" " 10, 15 " "	5 00
A 1775	" " 10, 20 " "	6 25
A 1776	" " 10, 10 " brazed links and rings	5 50
A 1777	Steel Chain, W. G. 10, 15 meter, brazed links and rings	7 50
A 1778	Steel Chain, W. G. 10, 20 meter, brazed links and rings	10 00
A 1779	Steel Chain, W. G. 10, 10 varas, oval rings	3 50
A 1780	" " 10, 20 " "	6 50
A 1781	" " 10, 10 " brazed links and rings	5 50
A 1782	Steel Chain. W. G. 10, 20 varas, brazed links and rings	10 00

CROWN BRAND SET

A 424

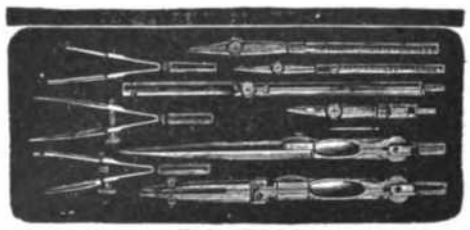


FIG. 7386

A 424. Morocco Case, containing: Dividers, 6 inches long, with pen and pencil points and lengthening bar, A 361. Hair spring dividers, 6 inches long, A 355. Steel spacing divider, 3 inches long, A 364. Steel bow pen, 3 inches long, needle point, A 365. Steel bow pencil, 3 inches long, needle point, A 366. Drawing pen, 4½ inches long, A 381. Drawing pen, 5½ inches long, A 382. Box of leads, per set..... $13 50

A 424 P. C. Same set as A 424, in folding pocket case, per set..... $14 50

GERMAN SILVER INSTRUMENTS IN SETS

For Engineers, Architects and Mechanical Draughtsmen. In Fine Velvet Lined Morocco Pocket Cases.

A 340.

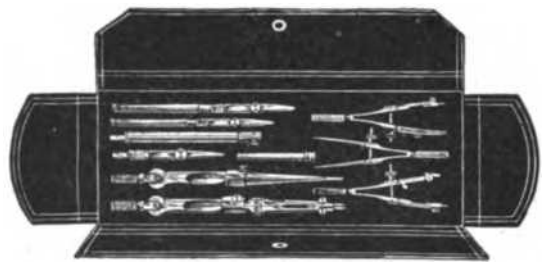


FIG. 7384

A 340. Morocco Pocket Case, containing: Dividers, 5½ inches long, with fixed needle point, pen and pencil points and lengthening bar, No. A 224. Hair spring dividers, 5 inches long, No. A 217. Steel spacing dividers, 3 inches long, metal handle, No. A 231. Steel bow pen, 3 inches long, metal handle, needle point, No. A 232. Steel bow pencil, 3 inches long, metal handle, needle point, No. A 233. Drawing pen, 4½ inches long, ebony handle, spring on upper blade, No. A 265. Drawing pen, 5 inches long, ebony handle, spring on upper blade, No. A 266. Box of leads and 1 adjusting key, per set..... $24 00

A 341. Morocco Pocket Case, containing: Dividers, 5½ inches long, with fixed needle point, pen and pencil points, and lengthening bar with hair spring attachment, No. A 225. Hair spring dividers, 5 inches long, No. A 217. Steel spacing dividers, 3 inches long, metal handle, No. A 231. Steel bow pen, 3 inches long, metal handle, needle point, No. A 232. Steel bow pencil, 3 inches long, metal handle, needle point, No. A 233. Drawing pen, 4½ inches long, ebony handle, spring on upper blade, No. A 265. Drawing pen, 5 inches long, ebony handle, spring on upper blade, No. A 266. Box of leads and 1 adjusting key, per set..... $25 00

A 343.

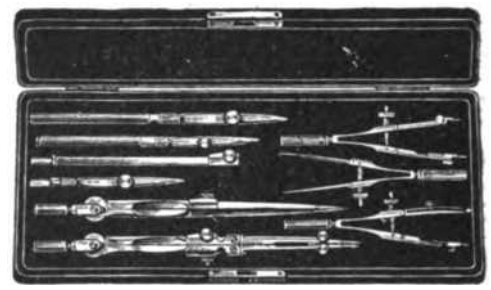


FIG. 7385

A 342. Morocco Case, containing: Dividers, 5½ inches long, with fixed needle point, pen and pencil points, and lengthening bar, No. A 224. Hair spring dividers, 5 inches long, No. A 217. Steel spacing dividers, 3 inches long, metal handle, No. A 231. Steel bow pen, 3 inches long, metal handle, needle point, No. A 232. Steel bow pencil, 3 inches long, metal handle, needle point, No. A 233. Drawing pen, 4½ inches long, ebony handle, spring on upper blade, No. A 265. Drawing pencil, 5 inches long, ebony handle, spring on upper blade, No. A 266. Box of leads and 1 adjusting key, per set. $24 00

A 343. Morocco Case, containing: Dividers, 5½ inches long, with fixed needle point, pen and pencil points, and lengthening bar with hair spring attachment, No. A 225. Hair spring dividers, 5 inches long, No. A 217. Steel spacing dividers, 3 inches long, metal handle, No. A 231. Steel bow pen, 3 inches long, metal handle, needle point, No. A 232. Steel bow pencil, 3 inches long, metal handle, needle point, No. A 233. Drawing pen, 4½ inches long, ebony handle, spring on upper blade, No. A 265. Drawing pen, 5 inches long, ebony handle, spring on upper blade, No. A 266. Box of leads and 1 adjusting key, per set..... $25 25

STAR BRAND SET

A 460.

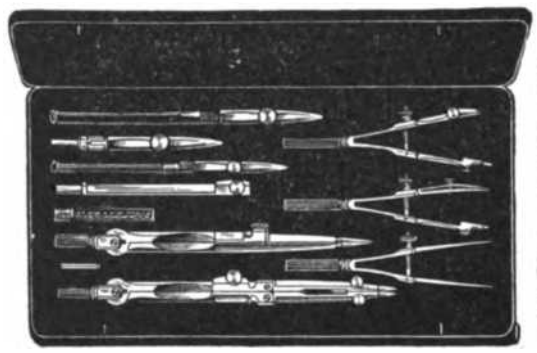


FIG. 7387

A 460. Morocco Case, containing: Needle point dividers, 5½ inches long, with pen and pencil points and lengthening bar. A 434. Hair spring dividers, 5½ inches long, A 433. Steel spring bow dividers, A 440. Steel spring bow pen, A 442. Steel spring bow pencil, A 441. Drawing pen, 4½ inches long, ebony handle, spring on upper blade, A 447. Drawing pen, 5½ inches long, ebony handle, spring on upper blade, A 448. Box leads, per set..... $11 00

A 460 P. C. Same set as A 460, in folding pocket case, per set..... $12 00

ANCHOR BRAND SET

A 473.

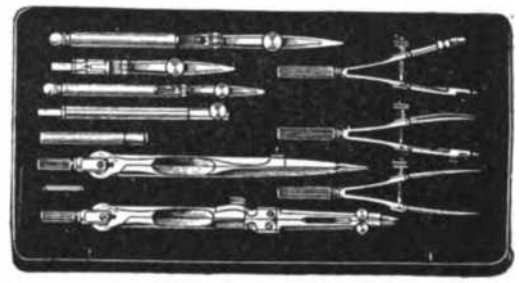


FIG. 7388

A 473. Morocco Case, containing: Needle point dividers, 5½ inches long, with pen and pencil points and lengthening bar. Hair spring dividers, 5½ inches long. Steel spring bow dividers. Steel spring bow pen. Steel spring bow pencil. Drawing pen, 4½ inches long, ivory handle, with hinge and pricker point. Drawing pen, 5½ inches long, ivory handle, with hinge and pricker point. Box leads, per set..... $8 40

A 473 P. C. Same set as A 473, in folding pocket case, per set..... $9 50

PAPER PROTRACTOR

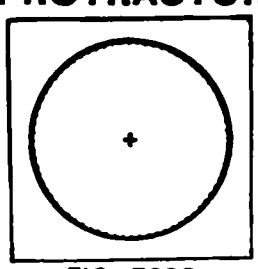


FIG. 7389

A 602. Circular Protractor, 13 in. diameter, drawing paper. $0 30
A 603. Circular Protractor, 13 in. diameter, bristol board.. $0 40
A 604. Circular Protractor, 13 in. diameter, tracing paper.. $0 30
A 605. Circular Protractor, 8 in. diameter, drawing paper. $0 20
A 606. Circular Protractor, 8 in. diameter, bristol board.. $0 20
A 607. Circular Protractor, 8 in. diameter, tracing paper.. $0 20
A 608. Semi-circular Protractor, 5 in. diameter, bristol board..... $0 10

STANDARD SECTION LINER

A 648.

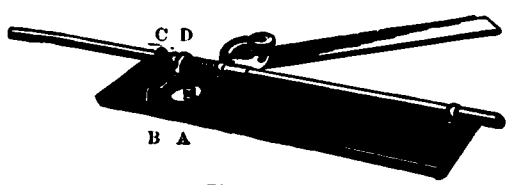


FIG. 7390

A 648. The Standard Section Liner is made of hard wood bases and nickel plated metal parts. It is especially adapted for school purposes, pattern, architectural or mechanical sectional drawing, each..... $1 50

INSTRUCTIONS.—Lay Section Liner on the work with rod and ruler on your right hand side. Begin with ruler all the way up as shown in cut. After adjusting at A to suit the work, move ruler by pushing and holding B against A with one finger of your left hand.

When ruler gets to the lower end hold C toward D while pushing rod back to starting point, as shown in cut.

MANNHEIM SLIDE RULES

BRASS INDICATOR

A 697.

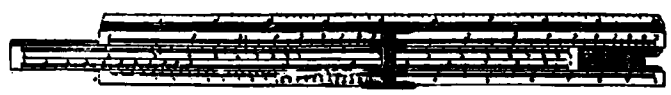


FIG. 7391

GLASS INDICATOR

A 697 B.



FIG. 7392

A 697 A. Mannheim Slide Rule, 10 inches long, divided on celluloid facings, with brass indicator, in case, with directions, each..... $4 50

A 697 B. Mannheim Slide Rule, 10 inches long, divided on celluloid facings, with glass indicator, in case, with directions..... $5 00

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TRIANGULAR BOXWOOD CHAIN SCALE

ENGINE DIVIDED U. S. STANDARD



FIG. 7393

Graduated, 10, 20, 30, 40, 50 and 60 parts to the inch.

		Each.
A 747 A	Triangular Boxwood Chain Scales, 6 in.	$0 75
A 747 B	" " " 12 "	1 00
A 747 C	" " " 18 "	2 50
A 747 D	" " " 24 "	4 50

Graduated, 20, 30, 40, 50, 60 and 80 parts to the inch.

		Each.
A 748 A	Triangular Boxwood Chain Scales, 6 in.	$0 75
A 748 B	" " " 12 "	1 00
A 748 C	" " " 18 "	2 50
A 748 D	" " " 24 "	4 50

Graduated, 100, 200, 300, 400, 500 and 600 parts to the foot.

		Each.
A 748½	Triangular Boxwood Chain Scales, 12 in.	$1 50

TRIANGULAR BOXWOOD SCALE

ENGINE DIVIDED U. S. STANDARD

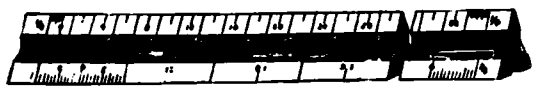


FIG. 7396

Graduated, 3/32, 3/16, 1/8, 1/4, 3/8, 3/4, 1/2, 1, 1½, 3 inches to the foot, and 1 edge inches and 16ths.

		Each.
A 752 A	Triangular Boxwood Scales, 6 inches	$0 75
A 752 B	" " 12 "	1 00
A 752 C	" " 18 "	2 50
A 752 D	" " 24 "	4 25

Graduated, 1/8, 1/4, 1/2, 1, 3/8, 3/4, 1/2, 1, 1½, 3, 2 and 4 inches to the foot, and 1 edge inches and 16ths.

		Each.
A 753 A	Triangular Boxwood Scales, 6 inches	$0 75
A 753 B	" " 12 "	1 00
A 753 C	" " 18 "	2 50
A 753 D	" " 24 "	4 25

BOX WOOD FOLDING RULE

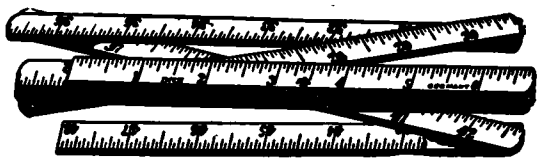


FIG. 7399

These Folding Pocket Rules are provided with strong spring joints, which hold the rule in a straight line when open. Graduated in 16ths on both sides, or 16ths and millimeters

		Feet.	Fold.	Division.	With Springs, Each.
A 805	Folding Rule	2	4	1/16 x 1/16	$0 25
A 806	"	3	6	1/16 " 1/16	35
A 807	"	4	8	1/16 " 1/16	50
A 808	"	5	10	1/16 " 1/16	60
A 809	"	6	12	1/16 " 1/16	75
A 810	"	8	16	1/16 " 1/16	1 00
A 811	"	4	8	1/16 x meter	50
A 812	"	4	8	1/16 x 1/20	50

ASH T SQUARE

A 986

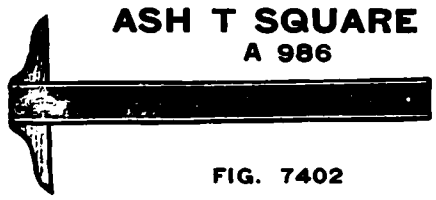


FIG. 7402

A 986 Ash, Maple Lined, Black Walnut, Fixed Head.

In.	Each.	In.	Each.	In.	Each.	In.	Each.
24	$0 75	36	$1 05	48	$1 50	60	$2 25
30	90	42	1 25	54	1 75	72	3 00

A 987 Ash, Maple Lined, Black Walnut, Double Shifting Head.

In.	Each.	In.	Each.	In.	Each.	In.	Each.
24	$1 35	36	$1 65	48	$2 15	60	$3 00
30	1 50	42	1 85	54	2 50	72	4 00

ACME TRIANGULAR WHITE EDGE CHAIN SCALE

ENGINE DIVIDED U. S. STANDARD



FIG. 7394

Graduated, 10, 20, 30, 40, 50, 60 parts to the inch.

		Each.
A 749 A	Triangular White Edge Chain Scales, 6 inches.	$1 50
A 749 B	" " " 12 "	2 50
A 749 C	" " " 18 "	4 50
A 749 D	" " " 24 "	6 50

Graduated, 20, 30, 40, 50, 60 and 80 parts to the inch.

		Each.
A 750 A	Triangular White Edge Chain Scales, 6 inches.	$1 50
A 750 B	" " " 12 "	2 50
A 750 C	" " " 18 "	4 50
A 750 D	" " " 24 "	6 50

Graduated, 100, 200, 300, 400, 500 and 600 parts to the foot.

		Each.
A 751 A	Triangular White Edge Chain Scales, 12 inches.	$3 00

ACME TRIANGULAR WHITE EDGE SCALE

ENGINE DIVIDED U. S. STANDARD

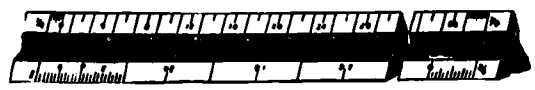


FIG 7397

Graduated, 3/32, 3/16, 1/8, 1/4, 3/8, 3/4, 1/2, 1, 1½, 3 inches to the foot, and 1 edge inches and 16ths.

		Each.
A 754 A	Acme Triangular White Edge Scales, 6 inches.	$1 50
A 754 B	" " " 12 "	2 50
A 754 C	" " " 18 "	4 50
A 754 D	" " " 24 "	6 50

Graduated, 1/8, 1/4, 1/2, 1, 3/8, 3/4, 1½, 3, 2 and 4 inches to the foot, 1 edge inches and 16ths.

		Each.
A 755 A	Acme Triangular White Edge Scales, 6 inches	$1 50
A 755 B	" " " 12 "	2 50
A 755 C	" " " 18 "	4 50
A 755 D	" " " 24 "	6 50

WOODEN TRIANGLES

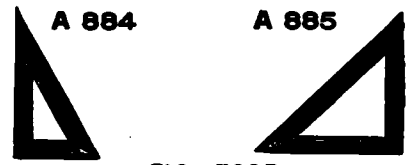


FIG. 7395

A 884 Pearwood Triangles, framed, open center, 30 x 60 degrees.

In.	Each.	In.	Each.	In.	Each.	In.	Each.
3	$0 15	7	$0 20	10	$0 30	13	$0 40
4	15	8	20	11	30	14	40
5	15	9	25	12	35	15	50
6	20						

A 885 Pearwood Triangles, framed, open center, 45 degrees.

In.	Each.	In.	Each.	In.	Each.	In.	Each.
3	$0 15	7	$0 25	10	$0 40	13	$1 50
4	15	8	30	11	45	14	50
5	20	9	35	12	45	15	60
6	20						

RUBBER TRIANGLES

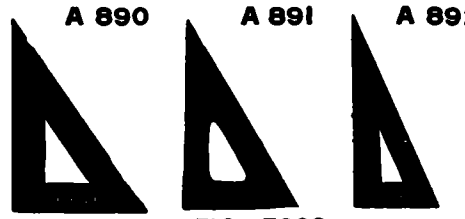


FIG. 7398

A 890 Hard Rubber Triangles, medium thick, 30 x 60 degrees.

In.	Each.	In.	Each.	In.	Each.	In.	Each.
3	$0 15	7	$0 30	11	$0 55	15	$1 30
4	15	8	35	12	60	16	1 50
5	20	9	40	13	80	17	1 75
6	25	10	45	14	1 00		

A 891 Hard Rubber Triangles, extra thick, 30 x 60 degrees.

In.	Each.	In.	Each.	In.	Each.	In.	Each.
4	$0 30	8	$0 60	12	$1 15	15	$1 75
5	35	9	70	13	1 25	16	2 00
6	40	10	80	14	1 50	17	2 25
7	50	11	95				

A 892 Hard Rubber Triangles, medium thick, 22½ x 67½ degrees.

In.	Each.	In.	Each.	In.	Each.	In.	Each.
4	$0 30	8	$0 45	11	$0 75	14	$1 25
5	25	9	55	12	90	15	1 40
6	30	10	65	13	1 00	16	1 50
7	35						

RUBBER TRIANGLES

PRICES, FIG. 7400

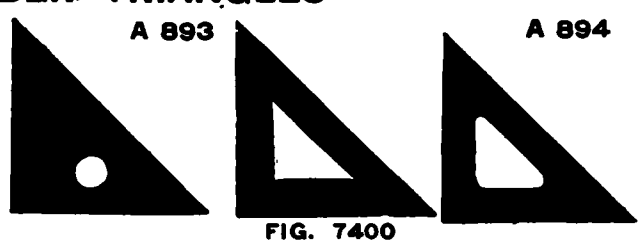


FIG. 7400

A 893 Hard Rubber Triangles, medium thick, 45 degrees.

In.	Each.	In.	Each.	In.	Each.	In.	Each.
3	$0 15	7	$0 40	11	$0 80	14	$1 50
4	25	8	45	12	1 00	15	1 80
5	30	9	55	13	1 30	16	2 20
6	35	10	60				

A 894 Rubber Triangles, extra thick. 45 degrees.

In.	Each.	In.	Each	In.	Each.	In.	Each.
4	$0 35	8	$0 75	11	$1 40	14	$2 10
5	45	9	95	12	1 60	15	2 25
6	55	10	1 20	13	1 90	16	2 50
7	65						

ACME TRANSPARENT TRIANGLE

These triangles are made from the finest material obtainable, the lines of the drawing showing through as clearly as though seen through a piece of glass, enabling work to be done with a celerity and precision hitherto unknown, while the toughness of the material does away with the liability to damage from the ordinary accidents of the drawing room.

A 903 Celluloid Triangles, 30 x 60 degrees.

In.	Each.	In.	Each.	In.	Each.	In.	Each.	In.	Each.
4	$0 25	7	$0 45	10	$0 75	13	$1 40	15	$2 00
5	35	8	55	11	85	14	1 65	16	2 50
6	40	9	65	12	1 00				

A 904 Celluloid Triangles, 45 degrees.

In.	Each.	In.	Each.	In.	Each.	In.	Each.	In.	Each.
4	$0 35	7	$0 65	10	$1 10	13	$2 00	15	$2 75
5	45	8	75	11	1 40	14	2 20	16	3 10
6	55	9	95	12	1 65				

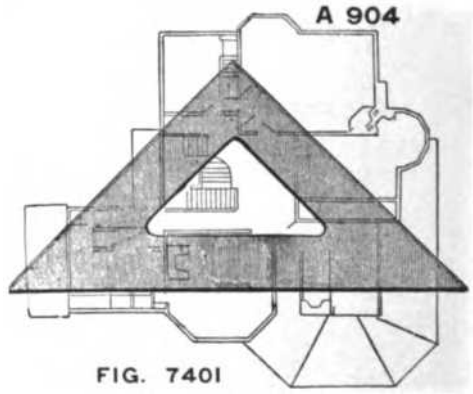


FIG. 7401

MAHOGANY T SQUARES

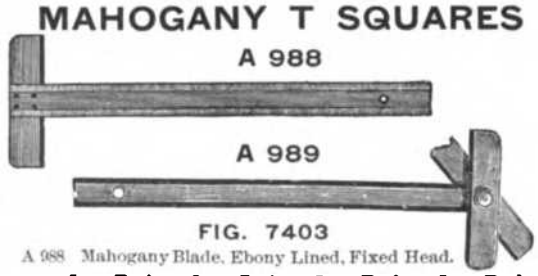


FIG. 7403

A 988 Mahogany Blade, Ebony Lined, Fixed Head.

In.	Each.	In.	Each.	In.	Each.	In.	Each.
24	$1 00	36	1 40	48	$1 85	60	$2 50
30	1 20	42	1 60	54	2 25		

A 989 Mahogany Blade, Ebony Lined, Double Head.

In.	Each.	In.	Each.	In.	Each.	In.	Each.
24	$1 75	36	$2 25	48	$2 80	60	$3 75
30	2 00	42	2 50	54	3 25		

ACME T SQUARE

A 996

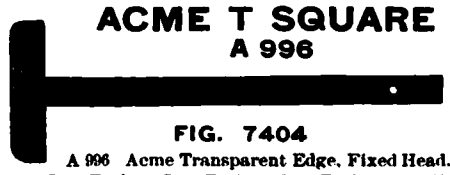


FIG. 7404

A 996 Acme Transparent Edge, Fixed Head.

In.	Each.	In.	Each.	In.	Each.	In.	Each.
18	$1 10	30	$1 85	42	$2 50	54	$4 00
24	1 50	36	2 15	48	3 00	60	5 00

A 997 Acme Transparent Edge, Shifting Head.

In.	Each.	In.	Each.	In.	Each.	In.	Each.
18	$1 50	30	$2 80	42	$3 60	54	$5 00
24	2 45	36	3 20	48	4 20	60	6 00

MANNING, MAXWELL & MOORE, 85, KNOX AVEN, TEENTH AVENUE, 87 AND

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OPEN STEEL TRIANGLES
FOR DRAUGHTSMEN

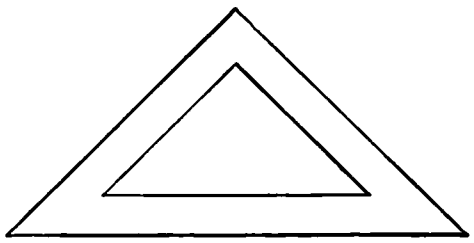


FIG. 7405

Nos.	Angles, Degrees.	Lengths of Sides, Inches.
540	30, 60, 90	6, 10⅜, 12
542	30, 60, 90	3½, 6 1/16, 7
544	45, 45, 90	8, 8, 11¼
546	45, 45, 90	5, 5, 7 1/16

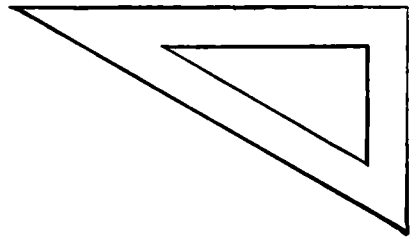


FIG. 7406

Width of Sides, Inch.	Prices.
¾	$4 00
⅝	3 00
¾	4 00
⅝	3 00

DRAUGHTSMEN'S PROTRACTOR

Cut About One-Half Size.

This protractor can be quickly set to any angle. It can be used either side up and on either of the two straight edges, and it is of advantage in dividing a circle, transferring angles or laying off a given angle, without resetting, on either side of a line. The vernier reads to five minutes. It forms a convenient extension to a T square, and frequently takes the place of 45 degree and 60 degree triangles.

No. 530.....Price, $6 50
In morocco case..... " 7 75

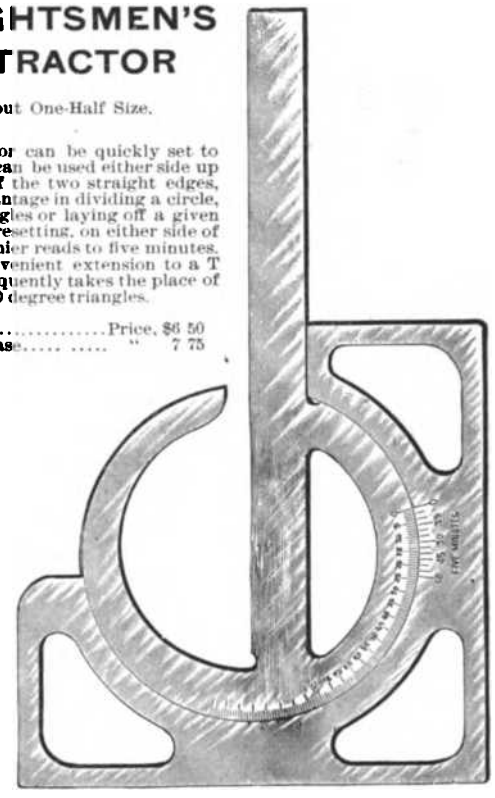


FIG. 7407

GOLD SCALES

Nos. 0 to 5.

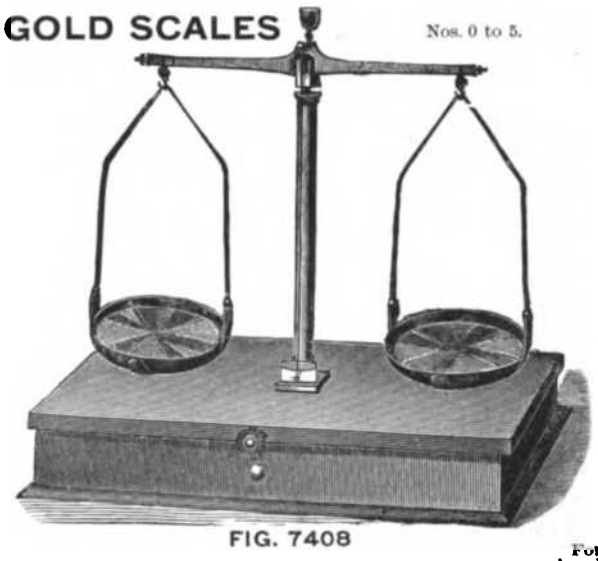


FIG. 7408

All of brass, highly finished, of superb workmanship and lacquered to prevent tarnishing. Movable pans, with improved lever for lifting; adjusting screws on ends of beam. On polished walnut boxes, or in glass case with drawer.

PRICES, FIG. 7408

Scale Nos.	Diameters of Pans, Inches.	Lengths of Beam, Inches.	Capacity in Each Pan, Ounces.	Lengths of Boxes, Inches.	On Box.	In Glass Case.
0	3½	7	8	12	$10 00	$18 00
1	4	8	16	13½	12 00	20 00
2	4½	9	30	15	14 00	24 00
3	5½	10	50	17½	16 00	28 00
4	7	12	64	20	20 00	34 00
5	7½	15	75	24	25 00	40 00
6	10	18	100	on base.	40 00	65 00

Prices do not include weights.

No. 6 is well adapted for silverware, owing to its 10 inch wide bows and great height.

FINE BALANCE

No. 14. Balance in Glass Case.

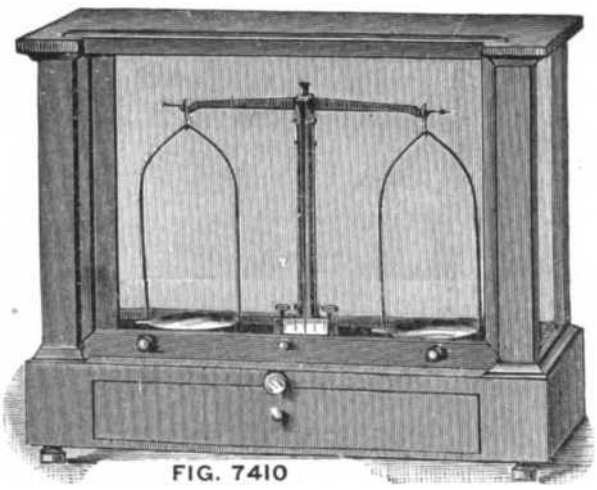


FIG. 7410

BALANCE NO. 26
FOR BULLION OR SILVERWARE

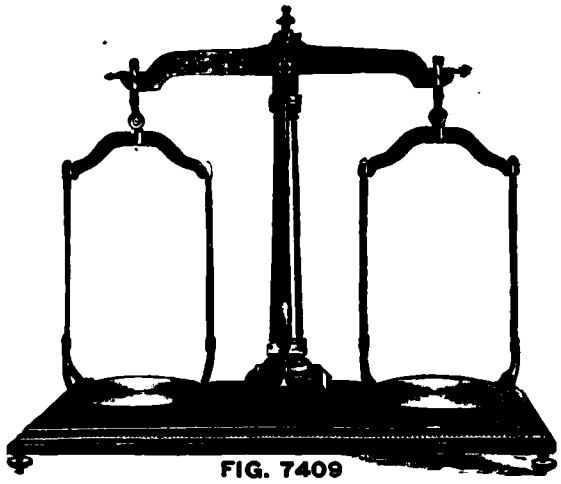


FIG. 7409

PRICES, FIGS. 7410 AND 7412

For weighing chemicals, ores, gold and silver, jewelry, color tests, etc., with eccentric movements, in polished mahogany glass cases, or on boxes with drawers, with adjusting screws on ends of beam.

Nos.	All balances below 12A, prices include screw feet and spirit level.	Each.
9	On box, capacity 2 ounces, sensitive to 1/50 grain, pans 3 inches diameter.....	$11 00
10	Same in glass case.....	20 00
10a	Same in glass case, with screw feet and spirit level.....	24 00
11	On box, capacity 5 ounces, sensitive to 1/50 grain, pans 3½ inches diameter.....	15 00
12	Same in glass case.....	24 00
12a	Same in glass case, with screw feet and spirit level, sugar sample, also regular assaying pulp scale.....	28 00
13	On box, capacity 10 ounces, sensitive to 1/20 grain, with screw feet and spirit level, pans 4½ inches diameter.....	22 00
14	Same in glass case, most practical sugar sample scale, with screw feet and spirit level.....	34 00
15	Same with arrest for pans, for quicker weighing.....	38 00
16	On box, capacity 30 ounces, sensitive to 1/20 grain, pans 5½ inches diameter, with screw feet and spirit level.....	26 00
17	Same in glass case.....	42 00
18	On box, capacity 50 ounces, sensitive to ¼ grain, pans 7 inches diameter.....	35 00
19	Same in glass case.....	52 00
20	On box capacity 100 ounces, pans 8 inches diameter.....	48 00
21	Same in glass case.....	72 00

FINE BALANCE ON BOX

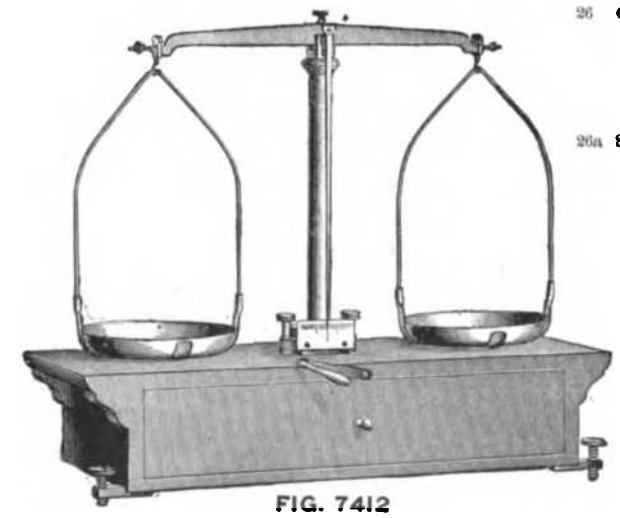


FIG. 7412

PRICES, FIG. 7409

26	On walnut base, with screw feet and spirit level, adjusting screws on ends of beam, capacity 1,000 ounces, sensitive to 2 grains. Improved lever lift, space between bows 16 inches, beam, bows and pans of brass, highly finished and heavily lacquered, column of iron nicely ornamented.....	$100 00
26a	Same balance, capacity 1,500 ounces.....	125 00

FINE TROY WEIGHTS
FOR GOLD AND SILVER

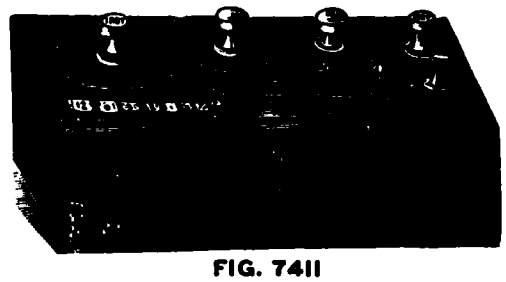


FIG. 7411

PRICES, FIG. 7411

In polished boxes and blocks, accurately adjusted and finely finished, divided in ounces, pennyweights and grains. Grains of aluminum. Brass, heavily lacquered to prevent tarnishing.

Nos.			Capac., Oz.	In Box.	In Block.
42	One	1 oz. piece down to ¼ gr.	2	$3 50	$3 00
43	One	2 " " " ½ "	4	4 00	3 50
44	Two	2 " " " ½ "	6	4 50	4 00
45	One	5 " " " ½ "	10	6 00	5 00
46	"	10 " " " ½ "	20	7 50	6 50
47	"	20 " " " ½ "	40	11 00	9 00
48	Two	20 " " " ½ "	60	13 00	11 00
49	One	50 oz. piece down to ½ gr.	100	$15 50	$13 50
50	"	100 " " " ½ "	200	20 00	18 00
51	Two	100 " " " ½ "	300	25 00	23 00
52	One	200 " " " ½ "	400	29 00	26 00
53	Two	200 " " " ½ "	600	36 00	33 00
54	One	500 " " " ½ "	1000	43 00	40 00

10 pennyweights to ¼ grain, in paper box, flat weights, per set.....75c.
6 " " ¼ " " " " " .....50c.

Single Brass Weights, Separate from Full Sets.

	500	200	100	50	20	10	5	2	1 oz.	10	5	2	1 pwts.
Each,	$11 00	$6 50	$4 50	$2 50	$1 40	$1 00	$0 70	$0 55	$0 40	$0 30	$0 25	$0 20	$0 20

Aluminum grain weights, 12 to ½ per set, 40 cents.

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CHARCOAL FURNACE



FIG. 7413

PRICES, FIG. 7413

Nos.	Diameters at Top, Inches.	Each.
1	10	$0 80
2	12	95
3	13	1 20
4	14	1 40
5	15	1 65

PLUMBER'S FURNACE



FIG. 7414

Diameter, 9 inches; height, 14 inches; weight, 9 pounds.

No. 4 Diam., 8 in., height, 14 in., weight, 9 lbs., each, $1 25
" 5 " 9 " " 14 " " 10 " " 1 50
" 6 " 10 " " 14 " " 11 " " 2 00
Extra grates, Nos. 4 and 5, each.....$0 15; No. 6..... 0 25

TINNERS' FIRE POTS

CAST IRON, BRICK LINED, NO. 1

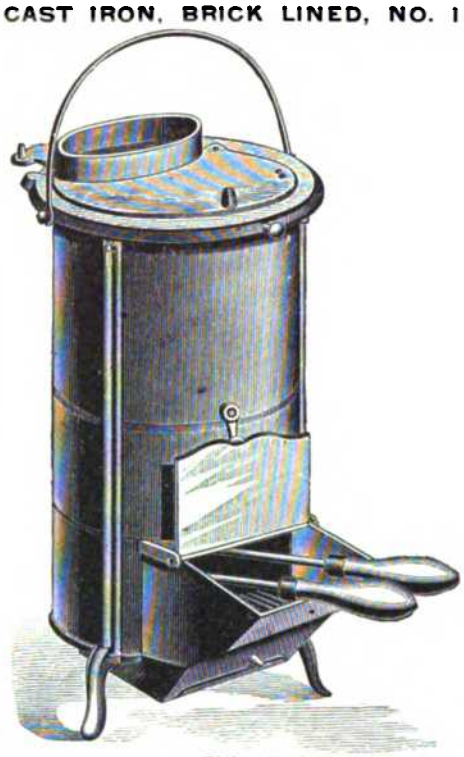


FIG. 7417

SHEET IRON, JAPANNED, NO. 2



FIG. 7418

PRICES, FIGS. 7417 AND 7418

No. 1. Tinner's Fire Pot, Cast Iron, Brick Lined, each..... $3 50
No. 2. Tinner's Fire Pot, Sheet Iron, Japanned, each 3 00

SOLDER POT



FIG. 7415

PRICES
FIG. 7415

Nos.	Diams. on Top, Inches.	Each.
1	5	$0 35
2	6	45
3	6½	55
4	8	85
5	9	1 10
6	10½	1 55
7	13½	2 85

SOLDERING IRON GAS FURNACE

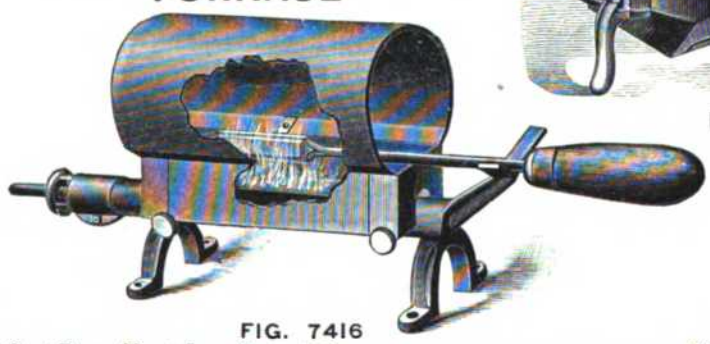


FIG. 7416

Cast Base, Sheet Iron Top. Price..... $1 60

SOLDERING COPPERS

HATCHET PATTERN



FIG. 7419

3, 4, 5, 6, 7, 8, 9, 10 pounds, per pair.....per pound

POINTED PATTERN



FIG. 7420

1, 1½, 2, 2½, 3, 4, 5, 6, 7, 8, 10 and 12 pounds, per pair.....per pound

FLAT PATTERN



FIG. 7421

3, 4, 5, 6, 7, 8 pounds, per pair.....per pound

PLUMBER'S BLAST FURNACE



FIG. 7423

PRICES

Furnace with Two Shields, suitable for large or small Solder Pot, each..... $6 00
Furnace with Two Shields and Hood for Solder Coppers, each... 7 50

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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LADLES



FIG. 7424

PRICES

Cast Bowl, Wrought Handle.

Inches across bowl.	2½	3	3½	4	4½	5	6
Per dozen.....	$1 90	2 00	2 75	3 25	4 50	5 60	7 25

Steel Bowl, Double Lipped.

Inches.....	2½	3	3½	4	5	6
Per dozen.....	$2 75	3 50	4 00	4 75	6 50	8 00

Extra Heavy Steel Bowl.

For use in mines and foundries. 6 and 7 are made of 3/16, and balance of ¼ inch steel.

Inches.....	6	7	8	9	10
Per dozen.....	$10 00	12 00	15 00	20 00	24 00

Socket Handles.

Handles Riveted to Bowl—Steel Bowl.

Inches....	2½	3	3½	4	5	6	7	8	9	10
Per doz.	$2 15	2 70	3 10	3 70	5 00	12 00	14 50	18 00	24 00	28 75

MELTING LADLE

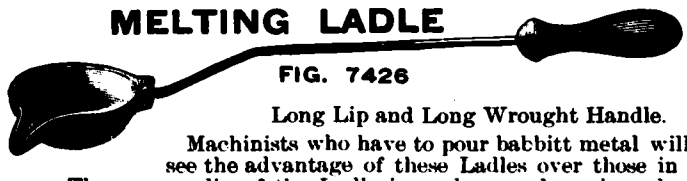


FIG. 7426

Long Lip and Long Wrought Handle.

Machinists who have to pour babbitt metal will at once see the advantage of these Ladles over those in common use. The nose or lip of the Ladle is made very long, in order that the metal can be poured in places difficult to reach with the ordinary Ladle. They have a long wrought and wooden handle.

PRICES

No. 10	Diameter, 2 inches; will hold ¾ pound, per dozen.....				$2 00
" 11	" 2½ "	"	"	1¼ "	" " 2 25
" 12	" 3 "	"	"	1¾ "	" " 2 75

SOLDERING PAN

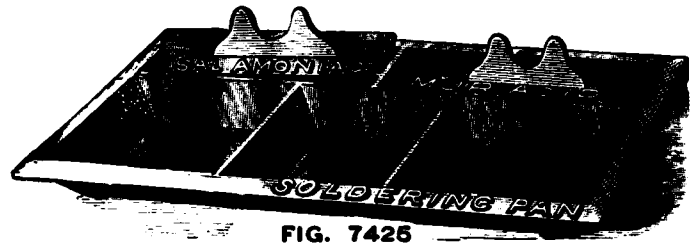


FIG. 7425

PRICES

Cast Iron, Plain.

No. 6. Soldering Pan, for tinners' use, per dozen.....$5 00

SOLDER		SOLDERING FLUID	
Coarse, per pound.....		In 10 gallon kegs, per gallon.....	
Medium, " "		" barrels, per gallon.....	
Fine " "		" smaller packages, per gal.....	

PLUMBERS' CALKING TOOLS



FIG. 7427



FIG. 7428



FIG. 7428A

PRICES, EITHER

Octagon, ½, ⅝, ¾ inch, per pound.....$0 35

BRASS BIBBS

PLAIN BIBB, LEVER HANDLE SCREWED FOR IRON PIPE



FIG. 7429

Sizes.	Rough, per Dozen.	Finished, per Dozen.	Nickel Plated, per Doz.
¼	$11 00	$12 00	$14 00
⅜	13 00	14 00	16 00
½	16 00	17 00	19 50
⅝	18 00	20 00	22 50
¾	23 00	26 00	28 50
1	35 00	39 00	42 00
1¼	56 00	64 00	.....
1½	78 00	90 00	.....
2	160 00	180 00	.....

HOSE BIBB, LEVER HANDLE SCREWED FOR IRON PIPE

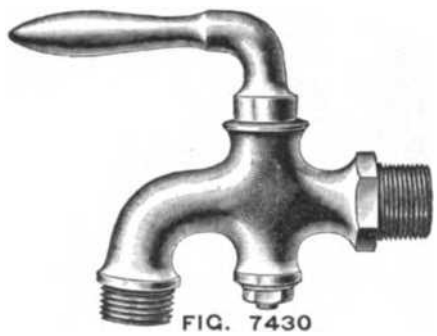


FIG. 7430

Sizes.	Rough, per Dozen.	Finished, per Dozen.	Nickel Plated, per Doz.
½	$18 00	$19 00	$21 50
⅝	20 00	22 00	24 50
¾	25 00	28 00	30 50
1	38 00	42 00	45 00
1¼	60 00	68 00	.....
1½	84 00	96 00	.....
2	170 00	190 00	.....

COMPRESSION PLAIN BIBB, SCREWED FOR IRON PIPE



FIG. 7431

Sizes.	Rough, per Dozen.	Finished, per Dozen.	Nickel Plated, per Doz.
⅜	$11 50	$12 00	$14 00
½	12 50	13 00	15 50
⅝	14 00	15 00	17 50
¾	19 00	20 00	22 50
1	33 00	37 00	40 00

COMPRESSION HOSE BIBB, SCREWED FOR IRON PIPE



FIG. 7432

Sizes.	Rough, per Dozen.	Finished, per Dozen.	Nickel Plated, per Doz.
½	$14 50	$15 00	$17 50
⅝	16 00	17 00	19 50
¾	21 00	22 00	24 50
1	36 00	40 00	43 00

ROUGH T HANDLE SCREWED FOR IRON PIPE

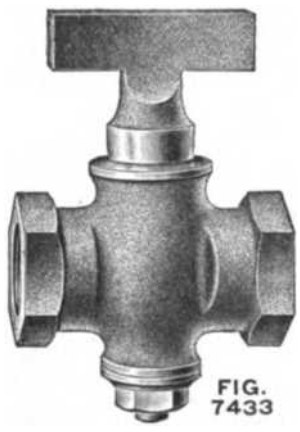


FIG. 7433

BRASS STOPS

PRICES, FIG. 7433

Sizes.....	⅜	½	⅝	¾	1	1¼	1½	2
Per dozen...	$13 00	15 00	18 00	22 00	32 00	51 00	71 00	120 00

PRICES, FIG. 7434

Sizes.....	⅜	½	⅝	¾	1	1¼	1½	2
Per dozen...	$14 00	16 00	19 50	23 50	34 00	53 50	74 50	125 00

ROUGH LEVER HANDLE SCREWED FOR IRON PIPE

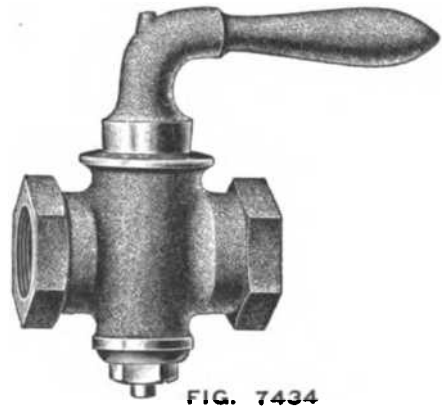


FIG. 7434

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BRASS STOPS, WITH WASTE

ROUGH T HANDLE

Screwed for Iron Pipe.

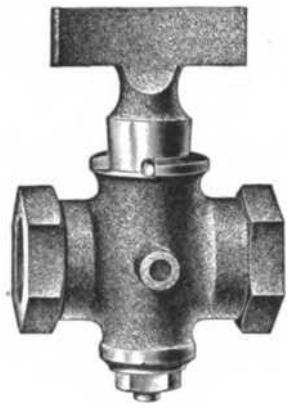


FIG. 7435

PRICES, FIG. 7435

Sizes	⅜	½	⅝	¾	1	1¼
Per dozen	$15 00	17 00	20 00	24 00	35 00	55 00

ROUGH LEVER HANDLE

Screwed for Iron Pipe.

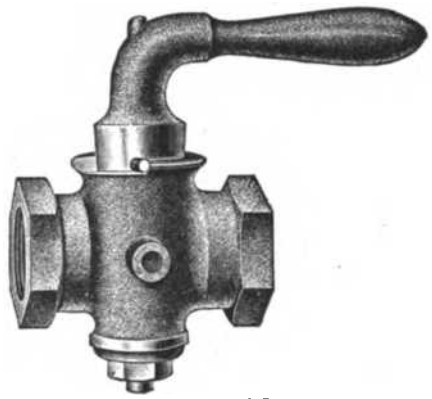


FIG. 7436

PRICES, FIG. 7436

Sizes	⅜	½	⅝	¾	1	1¼
Per dozen	$16 00	18 00	21 50	25 50	37 00	57 50

ROUGH T HANDLE

Round Way, With Stop on Key, Screwed for Iron Pipe.

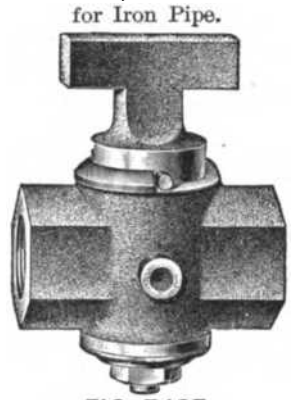


FIG. 7437

ROUGH LEVER HANDLE

Round Way, With Stop on Key Screwed for Iron Pipe.

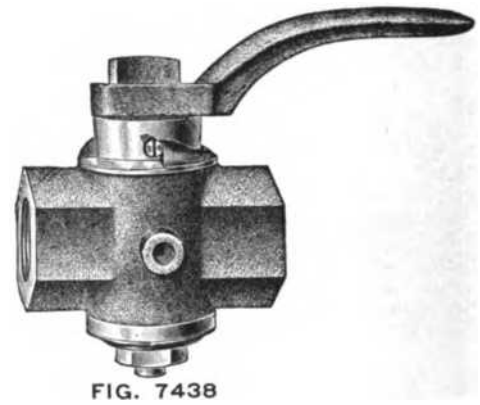


FIG. 7438

PRICES FIG. 7437

Sizes	½	¾	1	1¼	1½	2
Without waste, per dozen	$15 00	20 00	40 00	65 00	90 00	160 00
With waste, Fig. 7437, per dozen	16 00	21 50	42 00	68 00	94 00	170 00

PRICES, FIG. 7438

Sizes	½	¾	1	1¼	1½	2
Without waste, per dozen	$15 00	20 00	40 00	65 00	90 00	160 00
With waste, Fig. 7438, per dozen	16 00	21 50	42 00	68 00	94 00	170 00

BRASS HYDRANT COCKS WITH WASTE

ROUGH, SCREWED FOR IRON PIPE

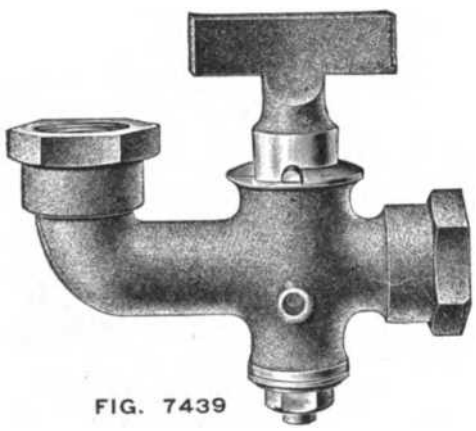


FIG. 7439

PRICES

Sizes	½	⅝	¾	1
Per dozen	$16 00	20 00	24 00	37 00

PLAIN BRASS STOP, LEVER HANDLE, SCREWED FOR IRON PIPE



FIG. 7440

PRICES, FIG. 7440

Sizes	⅜	½	⅝	¾	1
Finished, Fig. 7440, per dozen	$17 50	19 50	23 00	29 50	43 00
Nickel plated, " "	19 50	22 00	25 50	32 00	46 00

BRASS SOLDERING UNION

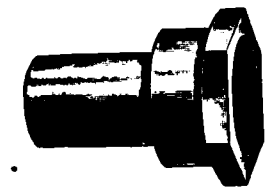


FIG. 7441

PRICES

Sizes	⅛	¼	⅜	½	¾	1
Per dozen	$2 00	2 25	2 75	3 25	4 00	6 00

Sizes	1¼	1½	2	2½	3
Per dozen	$8 50	12 00	18 00	30 00	42 00

IMPROVED BALL COCK

FLANGE, NUT AND BENT COUPLING

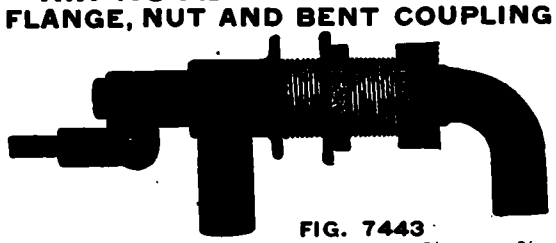


FIG. 7443

Sizes, inches	½	⅝	¾
Prices, per dozen	$27 00	34 00	46 00

IMPROVED BALL COCK WITH LUGS



FIG. 7445

Sizes, inches	½	⅝
Prices, per dozen	$14 00	$16 00

BALL COCKS

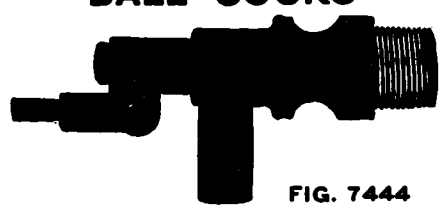


FIG. 7444

Sizes, in.	⅜	½	⅝	¾	1
Per doz.	$12 00	14 00	16 50	20 00	34 00
Sizes, in.	1¼	1½	2	3	4
Per doz.	$56 00	80 00	150 00	400 00	800 00



FIG. 7446

Sizes In.	½	¾	1	1¼	1½	2
Per Doz.	$13 00	21 50	33 00	54 00	96 00	144 00

BRASS SOLDERING NIPPLES

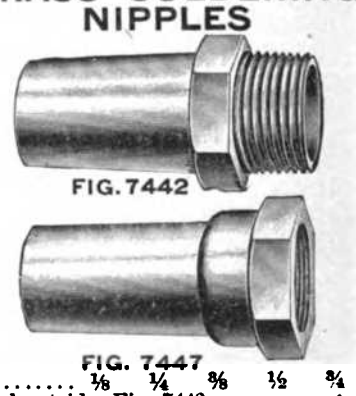


FIG. 7442

FIG. 7447

Sizes	⅛	¼	⅜	½	¾	1
Screwed outside, Fig. 7442, per dozen	$1 50	1 75	2 25	2 50	3 00	5 00
Screwed inside, Fig. 7447, per dozen	$1 50	1 75	2 25	2 50	3 00	5 00

Sizes	1¼	1½	2	2½	3
Screwed outside, Fig. 7442, per dozen	$7 50	10 00	14 00	20 00	28 00
Screwed inside, Fig. 7447, per dozen	$7 50	10 00	14 00	20 00	28 00

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TINSMITHS' TOOLS AND MACHINES

STOVE PIPE FORMER

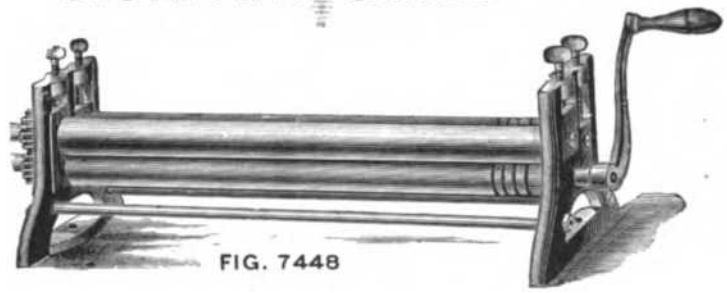


FIG. 7448

No.	1	Stove pipe former,	2	in. rolls,	30	in. long				$19	00
"	2	" " "	1¾	" "	30	" "				18	00
"	1	Tin " "	1½	" "	20	" "				10	00
"	2	" " "	1½	" "	16	" "				9	00
"	5	" " "	1	" "	12	" "				12	00

GRANNIS SLIP ROLL FORMER

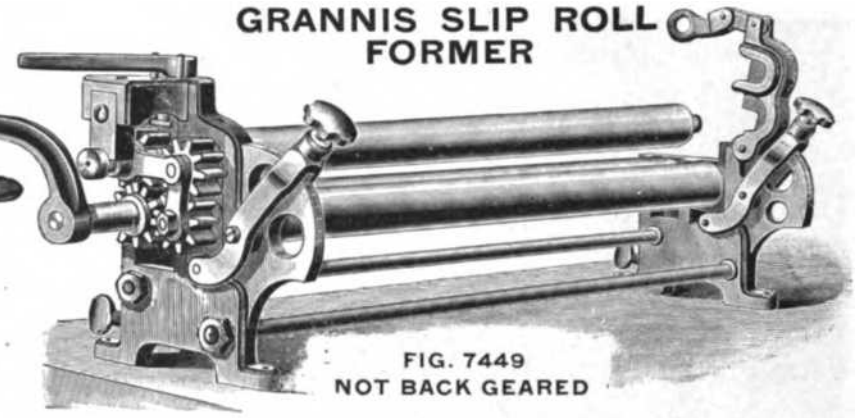


FIG. 7449
NOT BACK GEARED

No.	300	Former,	2½	inch rolls,	37	in. long,	Back Geared,	2	to 1,	$50	00
"	400	"	2½	" "	31	" "	"	2	" 1,	45	00
"	100	Stove pipe former,	2	inch rolls,	30	inches long				22	00
"	200	" " "	1¾	" "	30	" "				20	00
"	0100	" " "	2	" "	37	" "				30	00
"	01	" " "	2	" "	30	" "	back geared,			35	00
"	101	Tin " "	1½	" "	20	inches long				12	00
"	102	" " "	1½	" "	16	" "				11	00

TIN PIPE FORMER

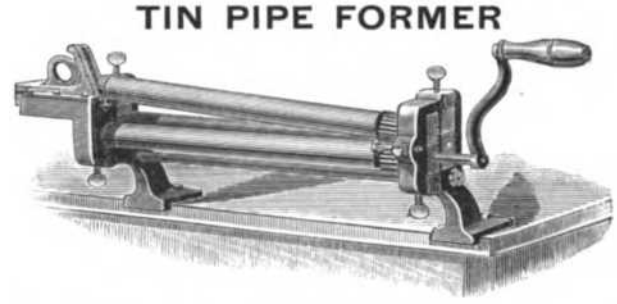


FIG. 7450

No. 3. Tin pipe former, 1 in. steel rolls, 14 in. long $20 00
No. 4. Tin pipe former, 1 in. steel rolls, 20 in. long 30 00

SLIP ROLL FORMER



FIG. 7451

TUBE FORMER

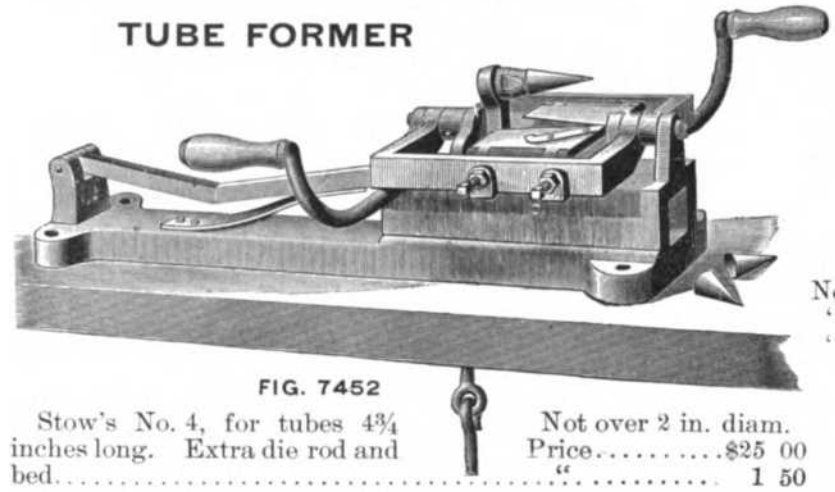


FIG. 7452

Stow's No. 4, for tubes 4¾ inches long. Extra die rod and bed ..... Not over 2 in. diam. Price $25 00
" 1 50

PRICES, FIG. 7453

Where no size rod is specified in the order, 1 inch rod will be sent with each No. 000, 00, 0 and 1.

A large variety of rods and beds for special work at extra prices.

No.	000	To form speaking tubes 24 in. long	$60 00
"	00	To form tubes 20 in. long	45 00
"	0	" " " 15 " "	30 00
"	1	For candle molds or ladle handles, 11 in. long	25 00
"	2	For tea kettle spouts, etc., 8 in. long	20 00
"	3	For rattle, box handles, 5 in. long	20 00

PRICES

These formers have been especially constructed for forming tubing for hydraulic mining or water works, where the pressure demands extra heavy iron.

No. 00 is made in the same manner, except it has not the slip roll.

No.	0000	will form	No. 12	iron; weight,	830 lbs.
"	000	" "	No. 14	" "	450 "
"	00	" "	No. 16	" "	360 "

No.	0000.	Back G'red,	4	to 1,	4	in. slip rolls,	48	in. long,		$160	00
"	000	" "	3	" 1,	3	" "	37	" "		90	00
"	00	" "	3	" 1,	3	" rolls,	37	" "		75	00

TUBE FORMER

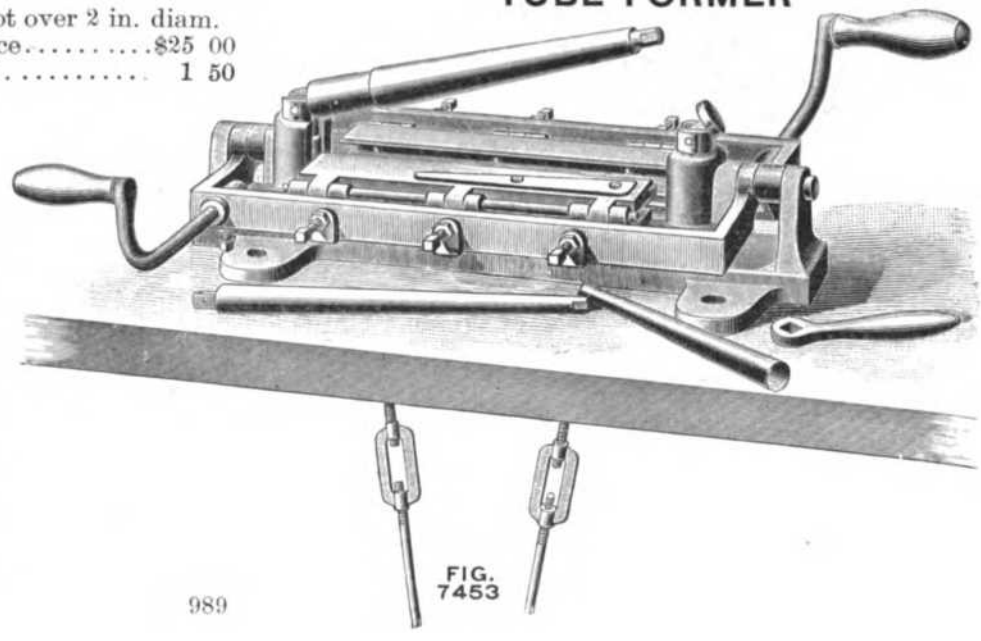


FIG. 7453

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VAN BRAMER'S WIRE CUTTER AND BAIL FORMER

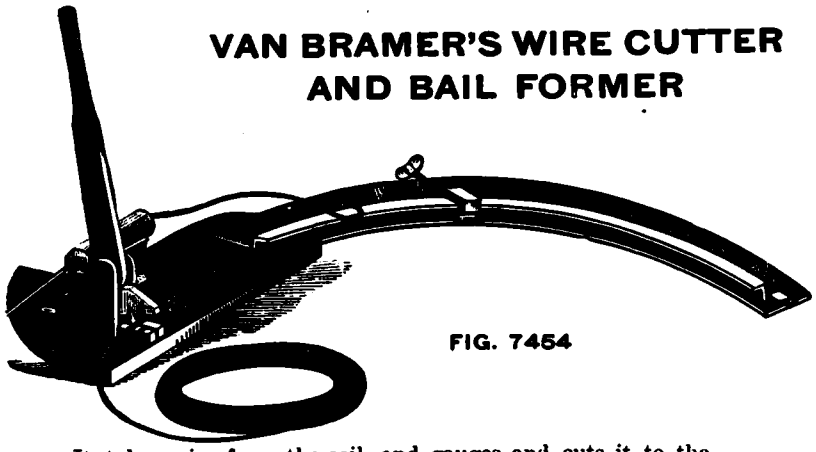


FIG. 7454

It takes wire from the coil, and gauges and cuts it to the desired length. It cuts easily one-quarter inch wire, as well as all smaller sizes.

PRICE, $10.00

SMITH'S OVAL HANDLE FORMER



FIG. 7457

Three sets of rolls for forming different size handles accompany each machine.

PRICE, $6.00

WIRE RING FORMER



FIG. 7458

PRICE

Ring former or winder.....$3 00

WOOD BOTTOM SHEET IRON FOLDER

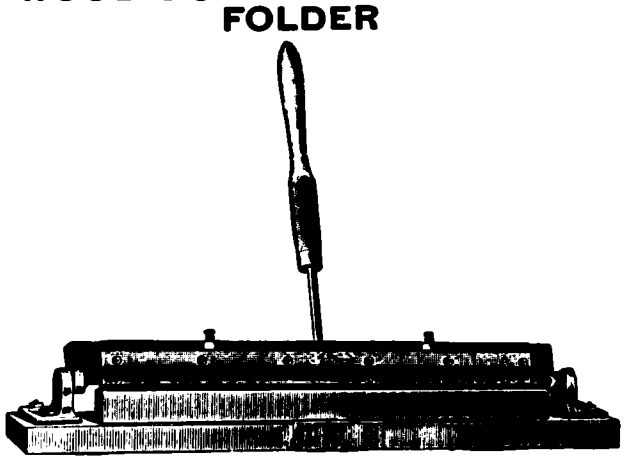


FIG. 7461

PRICES

No. 0 Wood bottom sheet iron folder, 48 inches.....$20 00
" 1 " " " " " 30 " 10 00

The No. 0 wood bottom folder can be constructed to turn locks 1½ inches wide at an extra cost of $5.00.

SPAULDING'S TUBE FORMER

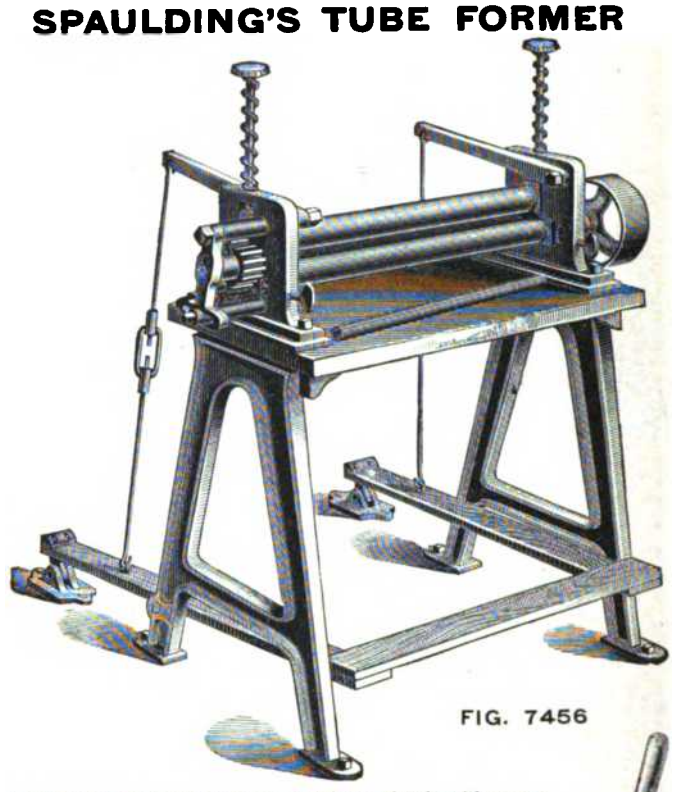


FIG. 7456

The machine represented in the above cut can be used only with power. It is so constructed that the same machine will form tubes or cylinders 24 inches long and of diameters ¾ to 1¾ inches, and any intermediate size.

Price, with one forming roll.....$75 00

CHAMPION SHEET IRON FOLDER



FIG. 7460

DESCRIPTION

They have an improvement consisting of a round steel rod, against which the fold is completed, thus insuring a lock of uniform width the entire length, as variations in the hardness of the material will have no effect upon the uniformity of the lock. The gauge is adjustable to form locks of any width from 3/16 to ½ inch. Folders longer than 33 inches have a handle at each end, one of which can be removed when not needed.

PRICES

No. 11 Champion Sheet Iron Folder, 33 inches long, will fold No. 26 iron.....$12 00
" 13 " " " " 43 " " " " " 22 " 30 00
" 14 " " " " 43 " " " " " 20 " 32 00

ROTARY SLITTING SHEAR WITH GAUGE TABLE

This slitting shear is designed for cutting thin metal into strips from ½ to 9 inches in width. It is arranged with gauges and a supporting table, so that accuracy may be secured.



FIG. 7462

PRICES

No. 20 Rotary Slitting Shear, will cut No. 20 iron, with stand....$25 00
Extra cutters.....per pair, 6 00

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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TINSMITHS' TOOLS AND MACHINES

STOW'S SHEET IRON FOLDER



FIG. 7464

IRON BOTTOM GUTTER BEADER

Inclosed Rod.

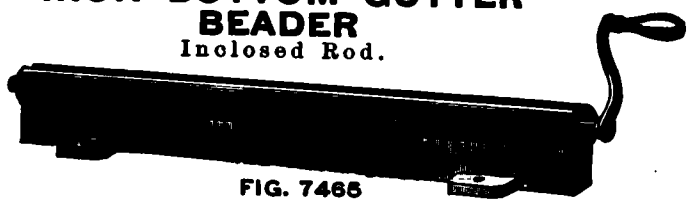


FIG. 7465

PRICES

No. A3	Iron Bottom, with Inclosed Rod,			120	inches	$40 00
" A2	"	"	"	96	"	30 00
" A1	"	"	"	60	"	20 00
" 01	"	"	"	42	"	9 00
" 02	"	"	"	30	"	6 00
" 11	"	"	"	20	"	4 00
" 12	"	"	"	15	"	3 50

In ordering the above Gutter Beaders be sure to specify the diameter of rod wanted.

POWER SQUARING SHEAR

Back Geared, With Hold Down Attachment.

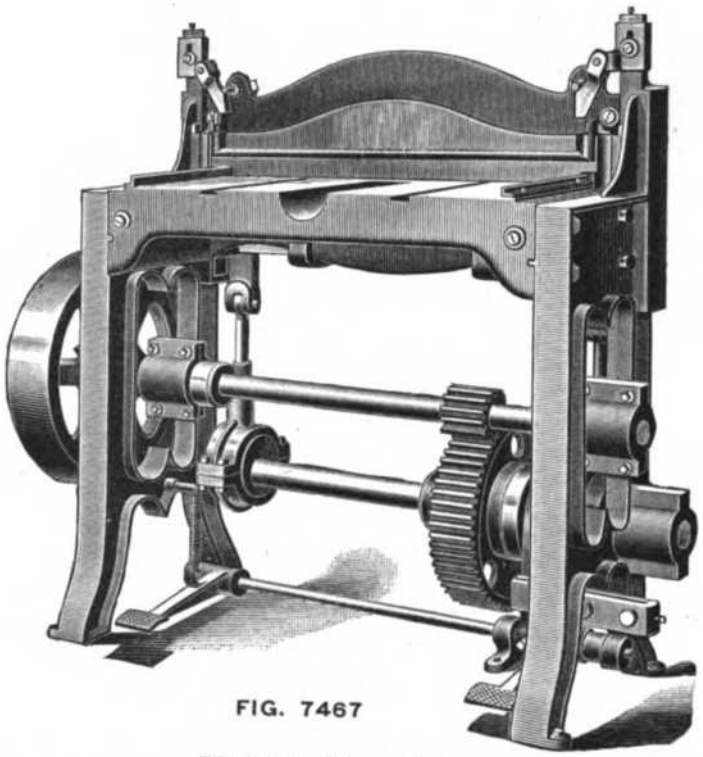


FIG. 7467

PRICES, FIG. 7467

No. 020	Will cut No. 16 iron,			20	inches long	$146 00
" 030	"	"	16	"	30	" 210 00
" 040	"	"	16	"	42	" 250 00
" 050	"	"	16	"	50	" 300 00
" 060	"	"	16	"	60	" 350 00
" 072	"	"	16	"	72	" 450 00
" 084	"	"	16	"	84	" 600 00

These Shears may be ordered without Hold Down Attachment.

PRICES, FIG. 7468

No. 120	Will cut No. 20 iron,			22	inches long	$27 00
" 130	"	"	18	"	31	" 32 00
" 136	"	"	18	"	37	" 82 00
" 140	"	"	18	"	42	" 134 00

PRICES, FIG. 7469

No. 0130	Will cut No. 16 iron,			31	inches long	$70 00
" 0136	"	"	16	"	37	" 90 00
" 0140	"	"	16	"	42	" 150 00

STEEL GUTTER ROD

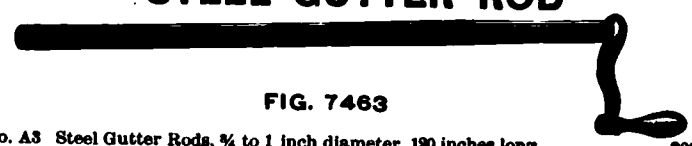


FIG. 7463

No. A3	Steel Gutter Rods,	3/4	to	1	inch diameter, 120 inches long	$20 00
" A2	"	"	7/8	"	1	" 96 " 16 00
" A1	"	"	5/8	"	1	" 60 " 8 00
" 01	"	"	1/2	"	7/8	" 42 " 4 50
" 02	"	"	1/2	"	3/4	" 30 " 3 00
" 11	"	"	3/8	"	5/8	" 20 " 2 00
" 12	"	"	3/8	"	5/8	" 15 " 1 75

Steel Gutter Rods of other diameters and lengths made to order.

PRICES, FIG. 7464

Will turn edges from 3/16 to 3/8 of an inch in width.

No. 25 is constructed on the same principle as the other machines, but is extra heavy, and will turn edges on iron No. 20 gauge, from 1/4 to 2 1/4 inches in width, and at any angle.

No. 10	30	inches	$10 00		No. 25	42	inches	$80 00
" 15	42	"	18 00		" 30	48	"	90 00
" 20	60	"	25 00		" 35	60	"	125 00

STOW'S GUTTER BEADER

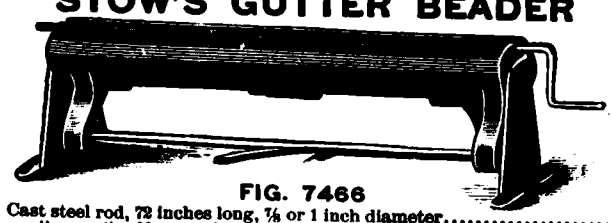


FIG. 7466

No. 00	Cast steel rod,		72	inches long,	7/8	or	1	inch diameter $35 00
" 0	"	"	80	"	1/2	"	3/4	" 10 00
" 1	"	"	20	"	5/8	to	5/8	" 5 50
" 2	"	"	15	"	5/16	"	1/2	" 4 50

Special lengths furnished to order.

SQUARING SHEAR

For Cutting Sheet Metal.



FIG. 7468

EXTRA HEAVY SQUARING SHEAR

Without Hold Down Attachment.



FIG. 7469

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POWER SLITTING SHEAR

With Supporting Arm.

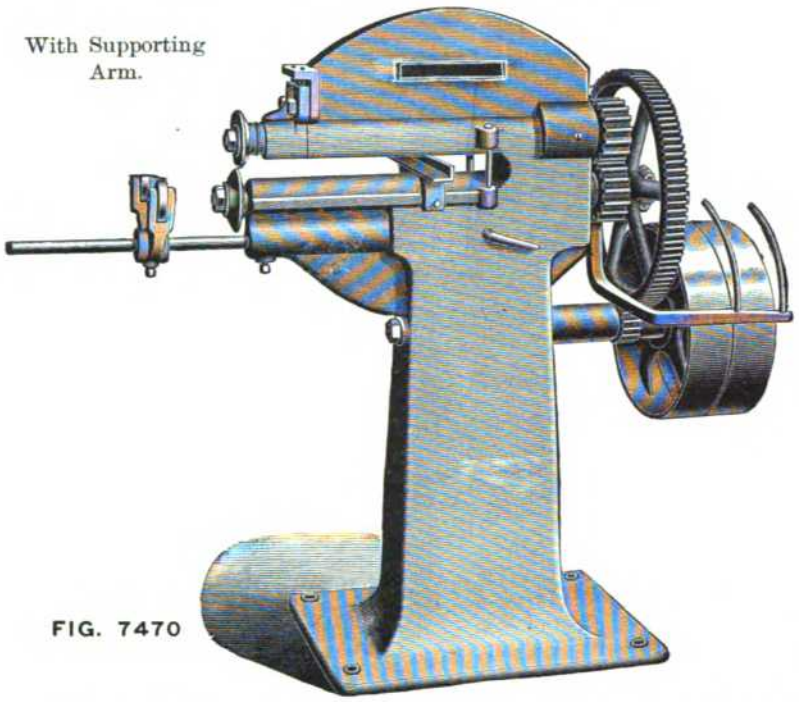


FIG. 7470

COMBINED BENCH AND SLITTING SHEAR

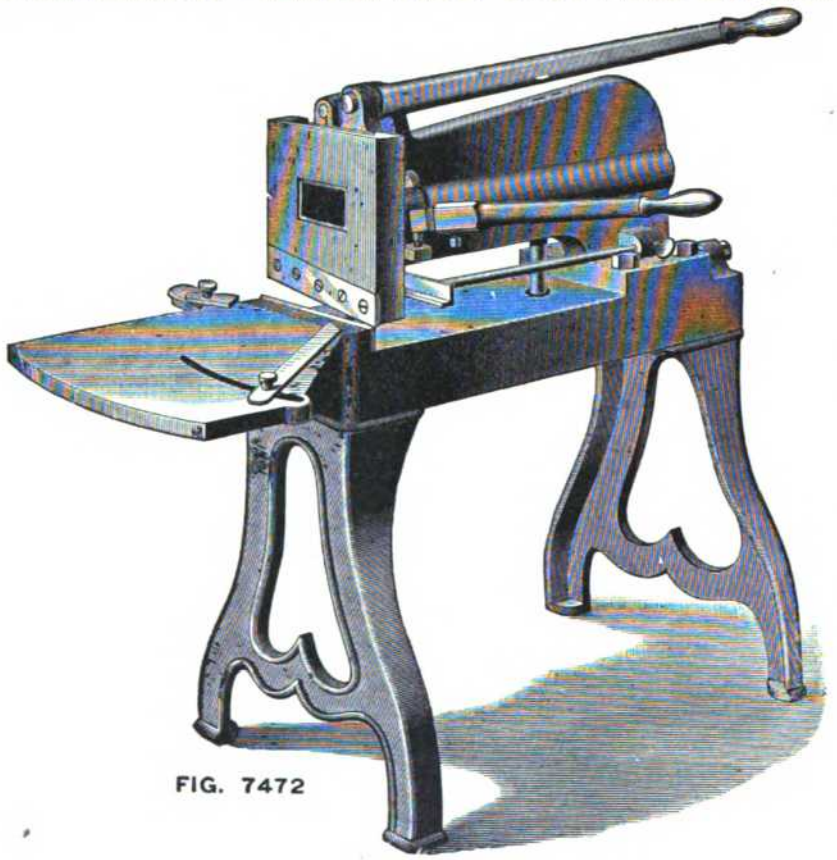


FIG. 7472

CONTINUOUS CUTTING SQUARING SHEAR

With Hold Down Attachment.

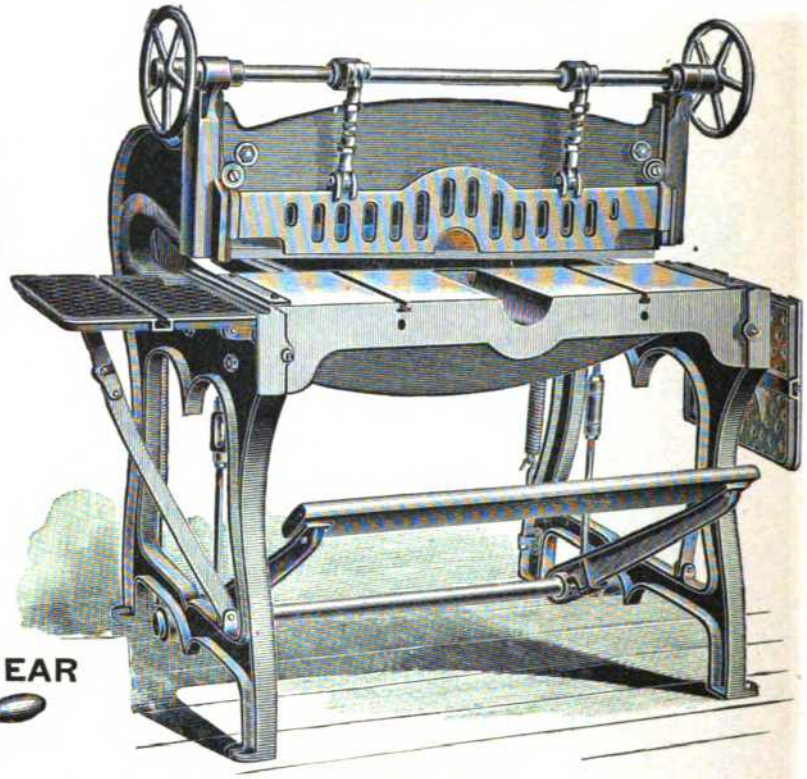


FIG. 7471

DESCRIPTION AND PRICES, FIG. 7470

This is a strong, heavy shear for cutting brass, copper, sheet iron and other metals into strips of any length. It is arranged with gauges easily adjusted to cut different widths up to 17 inches.

No. 12	Back geared, will cut No. 12 iron	$150 00
" 18	Not back geared, will cut No. 18 iron	120 00
Extra Cutters.	Per pair	18 00

DESCRIPTION AND PRICES, FIG. 7471

This shear is arranged with gauges for cutting sheet metal of any length into strips from ½ inch to 15 inches in width. Sheet metal 37 inches long may be cross cut at any point desired. The treadle is arranged so that the connecting rod can be instantly changed to give increased leverage for cutting heavy metal. The No. 85 shear is now furnished with an extension treadle, not shown in the illustration, which will be found useful when cutting metal heavier than No. 18 gauge.

No. 85	For Foot Power, 37 inches, will cut No. 16 iron	$125 00
" 185	For Power, 37 inches, will cut No. 16 iron	225 00

DESCRIPTION AND PRICE, FIG. 7472

This shear will cut sheet metal as thick as No. 12 gauge. The blades are 9 inches long. The length of reach on to a sheet of thick metal is 15½ inches; on to a sheet of thin metal, 19 inches. To cut heavy iron, or thicker than No. 18, the stay bolt should always be in its place; when cutting No. 18 iron, or thinner, it may be removed to give it more reach. It has a compound lever attachment, to be used to increase its power when required. This should not be used when the stay bolt is removed.

No. 9	Combined Bench and Slitting Shear	$150 00

DESCRIPTION AND PRICES, FIG. 7475

This shear will cut any square or bevel under 20 inches, and can be changed instantly so as to cut circles. Each machine includes a rim gauge for cutting rims or cover hoops, bevel or straight.

No. 1	Will cut circles from tin, 2¼ to 15 inches	$33 00
" 1	With Bevel and Squaring Attachment (Fig. 7474)	43 00
" 2	Will cut circles from tin, 2¼ to 20 inches	38 00
" 2	With Bevel and Squaring Attachment (Fig. 7474)	48 00
" 3	Will cut circles from No. 20 iron, 4½ to 40 inches	75 00
" 3	With 20 inch Bevel and Squaring Attachment (Fig. 7474)	90 00
" 3	" 30 " " " " " (Fig. 7474)	100 00
" 4	Will cut circles from No. 18 iron, 4 to 48 inches	150 00
" 5	" " " " " 14 " 5 " 30 "	175 00

ROTARY SHEARS

SQUARING ATTACHMENT

For Fig. 7475.

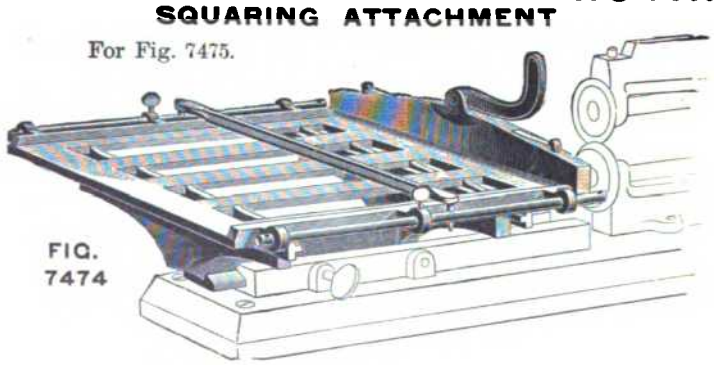


FIG. 7474

WAUGH'S BEVEL SQUARE AND CIRCULAR

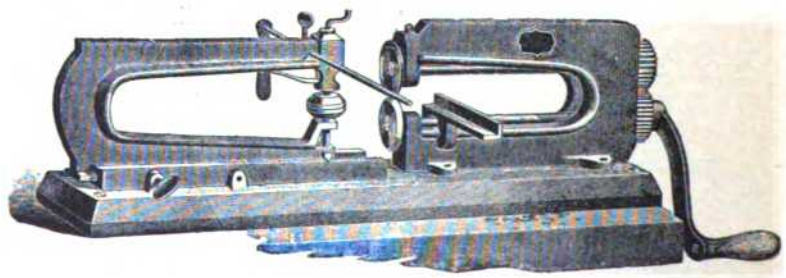


FIG. 7475

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TINSMITHS' TOOLS AND MACHINES

FLANDERS' CIRCULAR SHEAR

FOR CUTTING AND BENDING

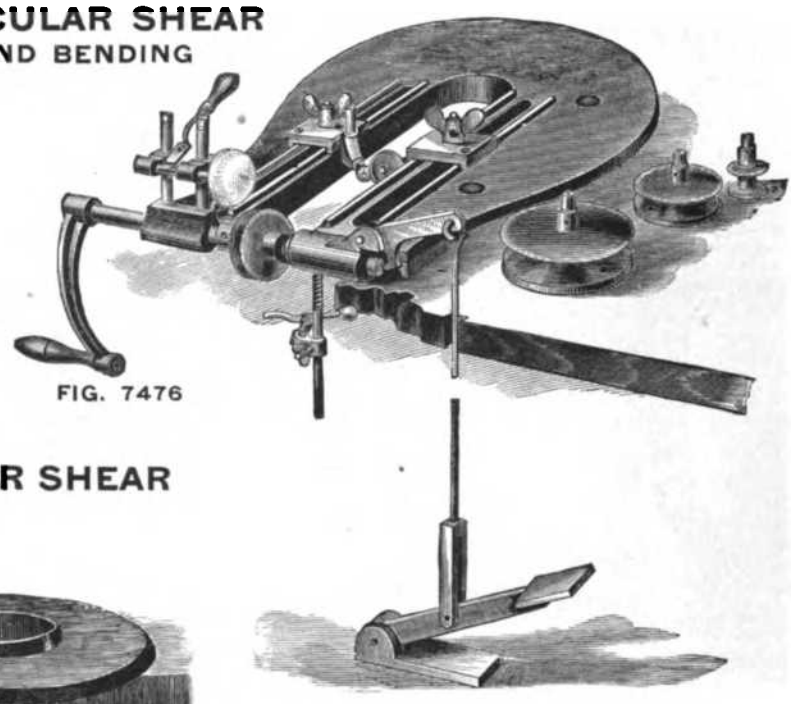


FIG. 7476

PRICES, FIG. 7476

No. 1 will cut circles from 2½ to 23 inches in diameter.

No. 1 For Hand, for Tin, etc., with four pairs Disks, one pair each of 1⅞, 3, 4⅞ and 7⅝ inches in diameter, one pair Cutters and Edge Turner.....$30 00

No. 1 Without Edge Turner..... 25 00

SAVAGE'S COMBINATION CIRCULAR SHEAR

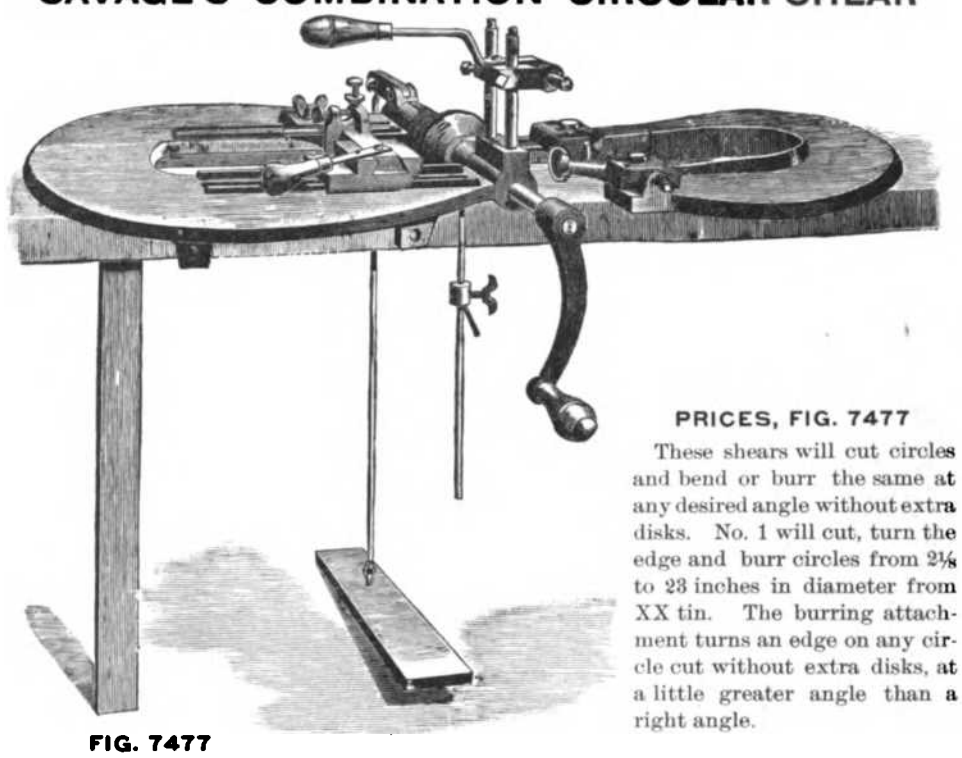


FIG. 7477

PRICES, FIG. 7477

These shears will cut circles and bend or burr the same at any desired angle without extra disks. No. 1 will cut, turn the edge and burr circles from 2⅛ to 23 inches in diameter from XX tin. The burring attachment turns an edge on any circle cut without extra disks, at a little greater angle than a right angle.

No. 1 For Light Metal, with Burring Attachment and 4 pairs Disks; one pair, each 2¼, 3, 4⅞ and 7⅝ inches in diameter.....$35 00

" 1 For Light Metal, without Burring Attachment..... 30 00

" 1 With both Burring Attachment and Edge Turner..... 40 00

SHEAR FOR CUTTING PARALLEL CURVES

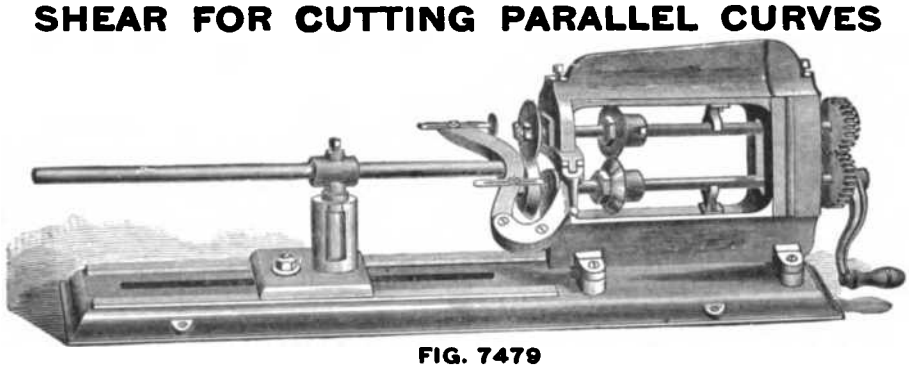


FIG. 7479

DESCRIPTION

The above cut represents a machine designed for cutting from sheet metal parallel curves at one operation, such as pan sections, etc. They can be readily adjusted for cutting parallel curves of any ordinary flaring vessel. They do the same work as is ordinarily done by the aid of dies in large establishments. No. 1 will cut the segments of circles from 4½ feet in diameter down to 9 inches, with a range in width from 12 inches to 3¾ inches. No. 2 will cut the segments of circles from 9 feet in diameter down to 9 inches, with the same range in width as No. 1. Attachments for cutting circles can be furnished for these machines at an extra cost, varying according to size. These machines can be constructed for power at an additional expense of $15.00, without countershafts. These machines will not cut metal heavier than XXXX tin plate.

PRICES

No. 1 Parallel Shear.....$80 00

" 2 " " 100 00

BEVELING AND PARALLEL SHEAR

FOR CUTTING THE ENDS OF PAN SECTIONS

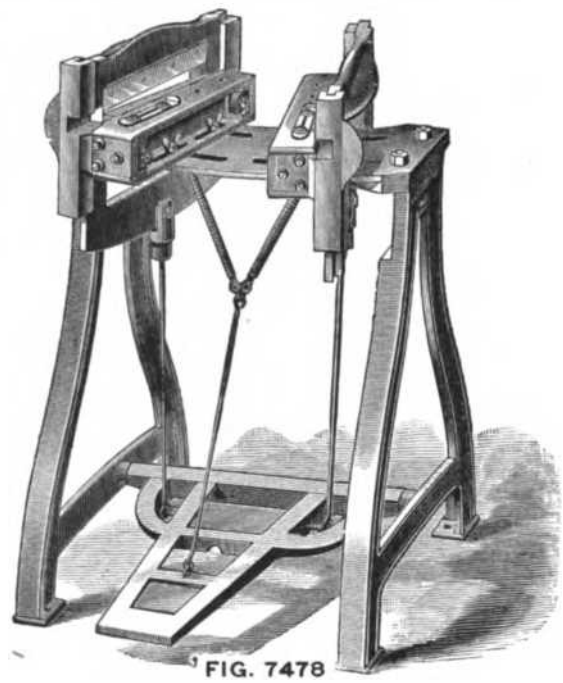


FIG. 7478

PRICES

The cut represents a Beveling Shear, designed for cutting at one operation and at any desired angle the ends of the section, after having been cut by the parallel shears. No. 1 will cut segments of circles 10 inches wide or less, and in length from 8 to 18 inches. No. 2 will cut segments of circles 12 inches wide or less, and in length from 5 to 24 inches. No. 3 will cut segments of circles 20 inches wide or less, and in length from 5 to 26 inches.

No. 1 Beveling Shears, 10 inch blades.....$45 00

" 2 " " 12 " 55 00

" 3 " " 20 " 75 00

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HARE'S FOUR LEAF CORNICE BRAKE

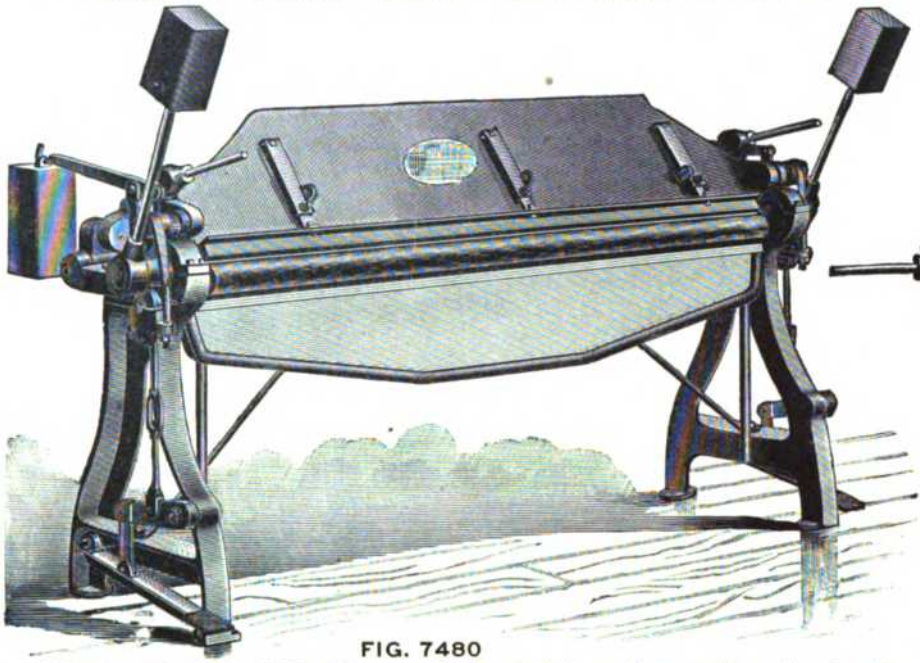


FIG. 7480

This brake will bend No. 20 iron perfectly straight and square its entire length without springing. Seven formers are furnished with each machine, to be attached to the brake for making circular bends, as follows: one each, 3, 2½, 2, 1¾, 1½, 1¼, 1 inch.

No. 36	Clamps 37½	inches		$65 00
" 42	" 45	"		80 00
" 50	" 52	"		110 00
" 72	" 74	"		160 00
" 96	" 98	"		250 00

NO. 0 BEADING MACHINE

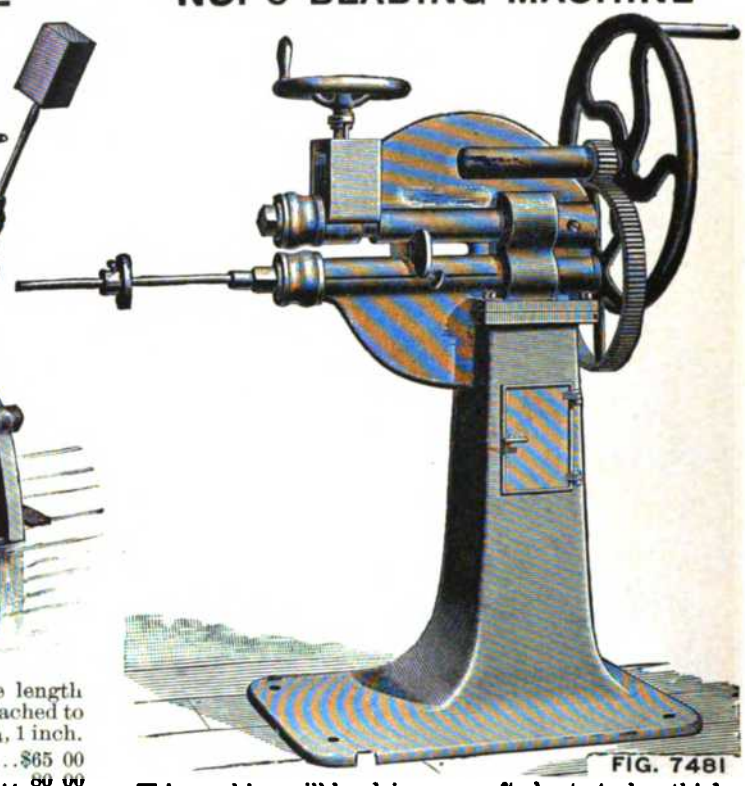


FIG. 7481

This machine will bead iron or soft sheet steel as thick as No. 14 wire gauge, and 10½ inches from the edge of the article to the bead. The bead shown is Ogee, and is about 2 inches wide. Other styles or designs can be furnished to order. Cutting disks can be applied to this beader so that it can be used as a circular or slitting shear.

No. 0 beader complete, with one pair rolls	$150 00
Extra rolls, per pair	16 00
Cutting disks, per pair	18 00

BRASS MOUNTED GROOVER

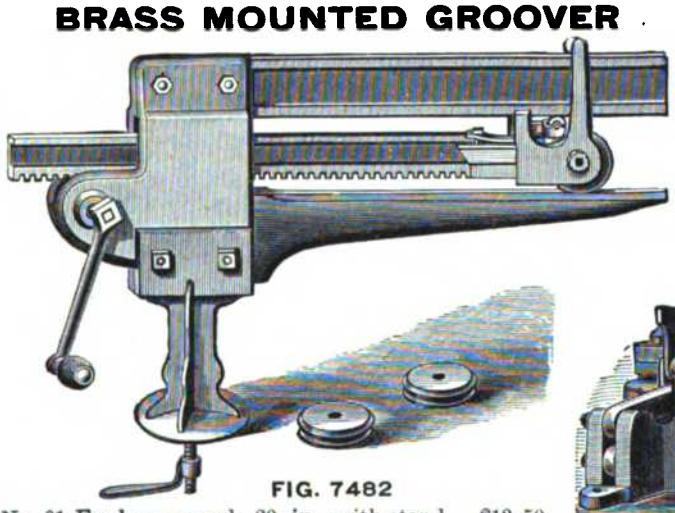


FIG. 7482

No. 01	For heavy work, 20 in., with stand	$13 50
" 02	" common " 17 " "	11 00
Extra rollers, (3 constitute a set), grooves ⅛, 5/32, 7/32 in., each		75
Groover rachet, with brass mounting		3 25
" " without "		2 25

Special groovers furnished to order.

STOW'S ADJUSTABLE BAR TIN FOLDER

Will Turn Locks from 3/32 to 1 Inch in Width.



FIG. 7483

These machines will form square joints or angles, turn narrow or wide locks, turn a round edge for wiring and form these locks on medium plate with ease. They will also form open or close locks as desired. Nos. 52 to 58 will bend any sheet metal of a thickness not greater than No. 22 wire gauge. When sent from factory these machines are adjusted properly for common and IX tin plate or other sheet metal of same thickness. If thicker stock is to be used the machine must be adjusted according to the thickness, for which convenient and necessary means are provided; otherwise any of the machines may be broken. We also furnish special folders for forming any width locks, on light or heavy plate, of any length desired.

No. 50. 17 inches, for tin, will turn locks from 3/32 to ½ inch	$25 00
No. 52. 20 inches, will turn locks from 3/32 to 1 inch	30 00
No. 54. 30 inches, will turn locks from 3/32 to 1 inch	40 00
No. 54½. 36 inches, will turn close locks only from 3/16 to 1½ inches	60 00
No. 55. 36 inches, will turn open or close locks, 3/16 to 1½ inches	70 00
No. 56. 42 inches, will turn close locks only from 3/16 to 1⅝ inches	80 00
No. 58. 42 inches, will turn open or close locks, 3/16 to 1⅝ inches	90 00

BIGELOW'S GROOVER



FIG. 7484

This machine is adapted to both grooving and flattening the seam at one operation. In addition to grooving and finishing stove pipe nicely, all articles made of tin plate can be grooved in this machine by simply changing the rolls, and these rolls can be adapted to all kinds of work.

No. 1. For tin and sheet iron, 30 in., complete, with standards	$40 00
No. 2. For tin and sheet iron, 36 in., complete, with standards	50 00

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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TINSMITHS' TOOLS AND MACHINES

STOW'S ENCASED TURNER

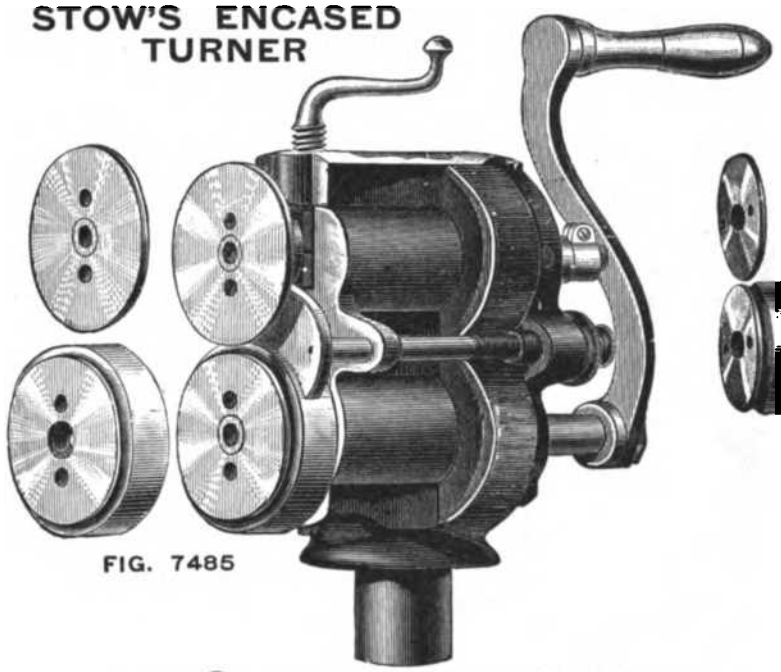


FIG. 7485

STOW'S ENCASED TURNER

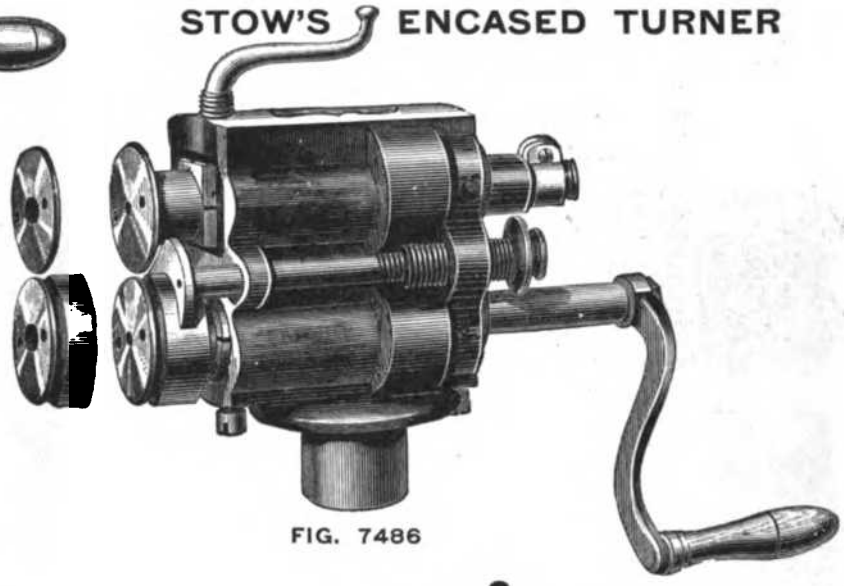


FIG. 7486

AMERICAN SETTING DOWN MACHINE

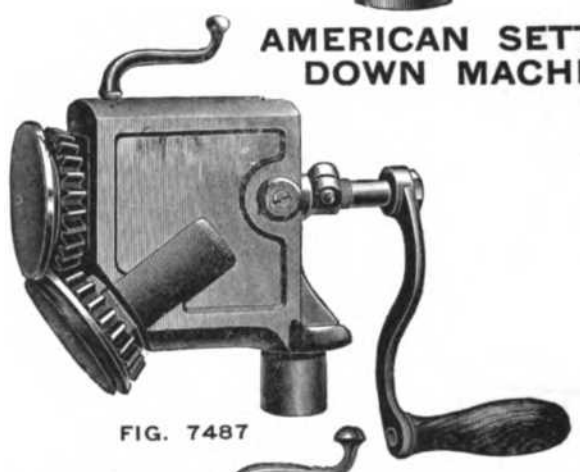


FIG. 7487

WIRING MACHINE

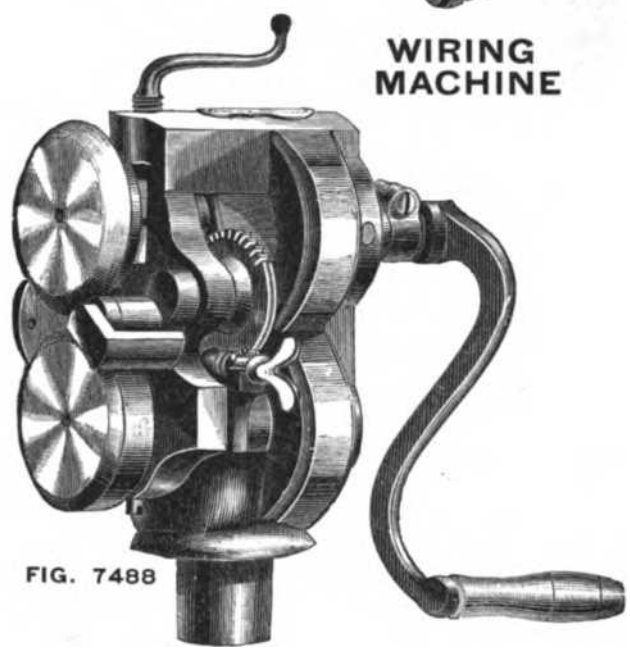


FIG. 7488

ENCASED BURRING MACHINE

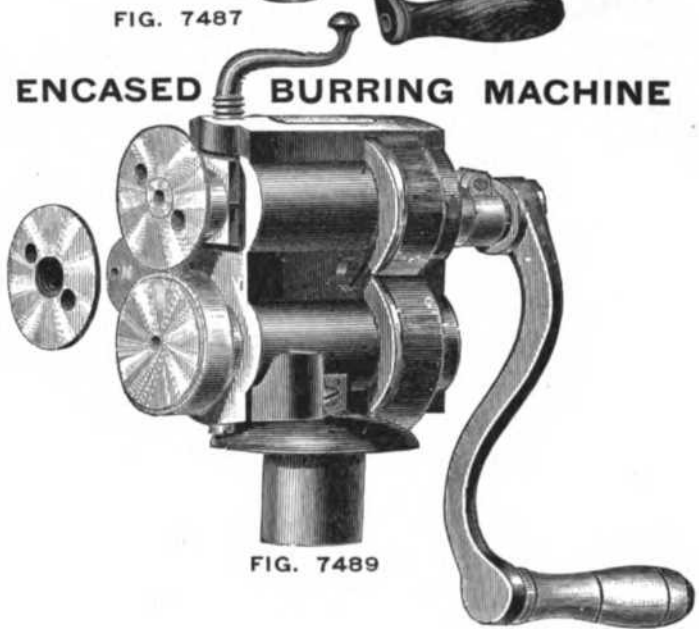


FIG. 7489

ENCASED BURRING MACHINE

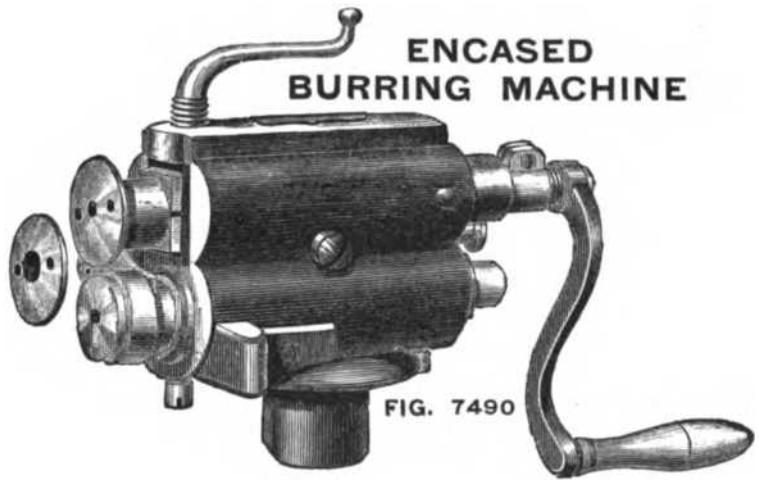


FIG. 7490

PRICES, FIG. 7485

With Adjustable Boxes and Extra Faces.

Large Turning, with extra Upper and Lower face, with Standard..$11 50
" " " " " " " " without Standard 10 75

PRICES, FIG. 7487

It can be Used on Metal as Heavy as No. 22 Gauge.

American Setting Down Machine, with Standard.....$9 75
" " " " without Standard..... 9 00
Extra Upper or Lower rolls for Setting Down Machine..... 3 00

PRICES, FIG. 7489

Encased Large Burr, with extra Upper Face, with Standard....$10 50
" " " " " " " without Standard... 9 75

PRICES, FIG. 7486

With Adjustable Boxes and Extra Faces.

Small Turning, with extra Upper and Lower Face, with Standard.$11 25
" " " " " " " without Standard 10 50
Extra Small Turning Machine, same size faces as Small Burr, with Standard 12 00

PRICES, FIG. 7488

Encased Wiring Machine, with Standard.....$14 00
" " " without Standard..... ..... 13 25

Extra faces for Encased Wiring Machines are only furnished with the arbor or shaft

PRICES, FIG. 7490

Encased Small Burr, with extra Upper Face, with Standard....$10 00
" " " " " " " without Standard... 9 25

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TINSMITHS' TOOLS AND MACHINES

STOVE PIPE CRIMPER AND BEADER

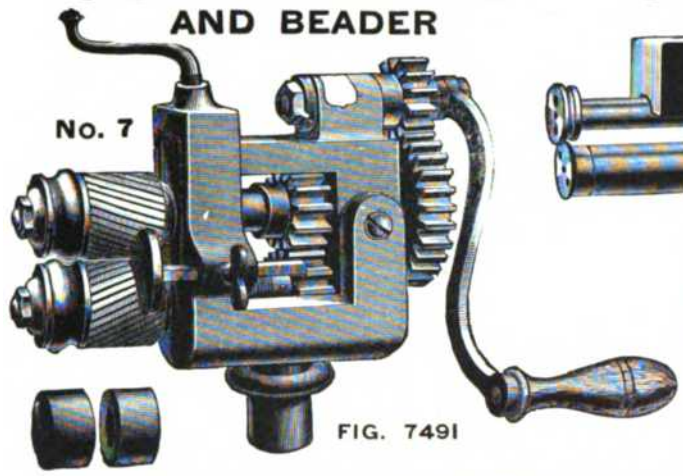


FIG. 7491

This machine is designed to facilitate the making and putting together of metal pipe of different diameters. It crimps and turns in the edges of stove and conductor pipe, so that the lengths are put together easily. It is also provided with beading rolls, which bead the pipe at the same time it is corrugated. It has steel rolls.

Price, with Standard.....$12 00

CRIMPING MACHINE

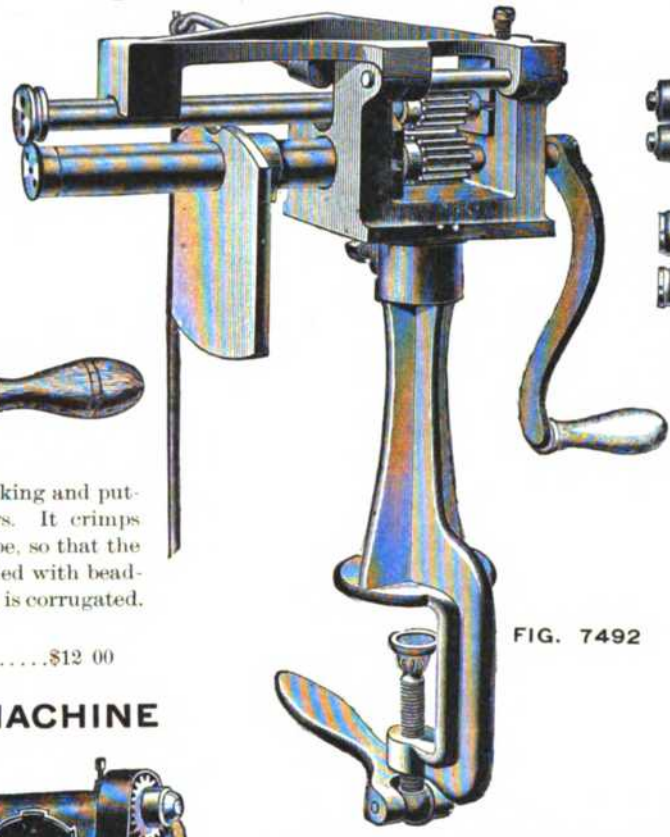


FIG. 7492

BEADING MACHINE

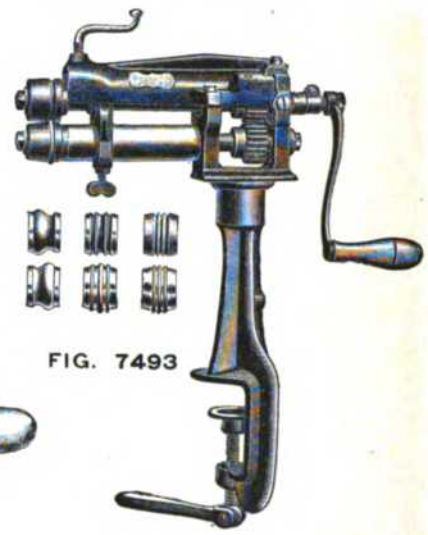
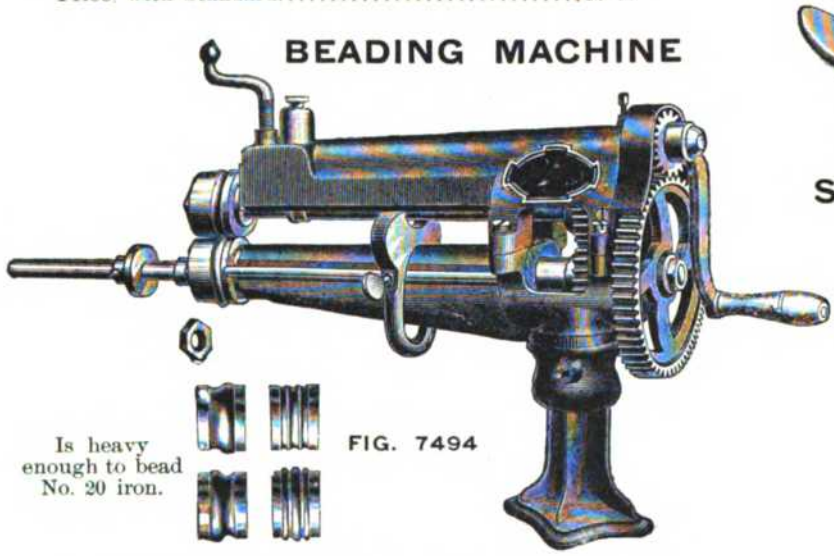


FIG. 7493

BEADING MACHINE



Is heavy enough to bead No. 20 iron.

FIG. 7494

STOW'S DOUBLE SEAMING MACHINE
WITH SETTING DOWN ATTACHMENT

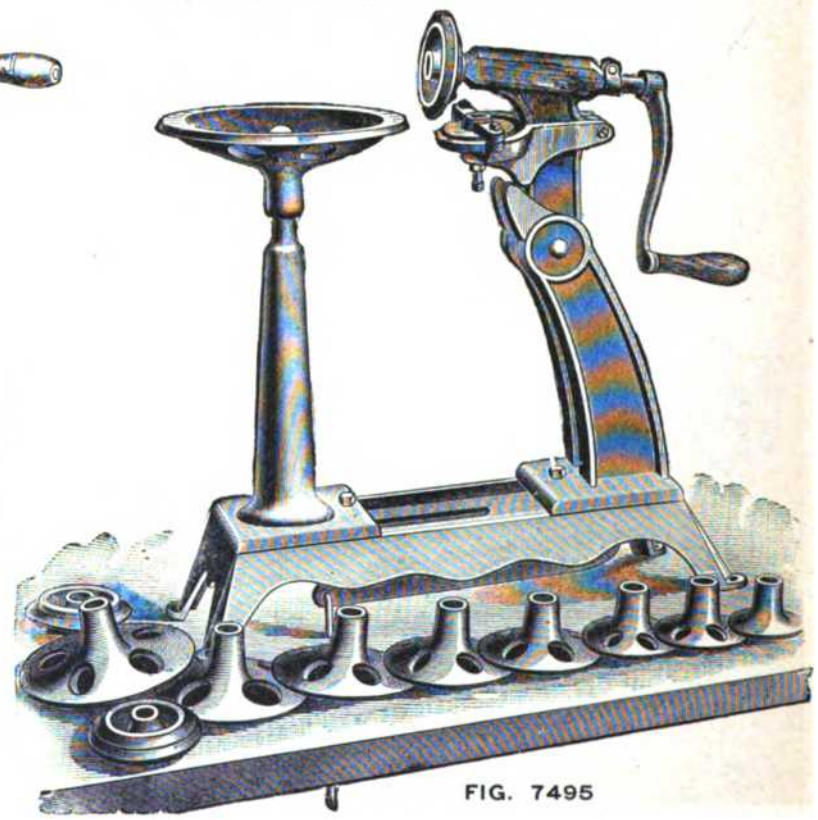


FIG. 7495

DESCRIPTION AND PRICES, FIG. 7492

No. 1 will put bottoms on all cylinders of a diameter not less than 2½ inches, and in length not exceeding 7½ inches. No. 2 can be used for cylinders of a diameter not less than 1½ inches and not longer than 6 inches.

No. 1 Crimping, for putting Tops and Bottoms on Boxes, Cans Cups, etc., with Standard.....$18 00
No 2 Crimping, for similar purposes, with Standard..... 15 00

DESCRIPTION AND PRICES, FIG. 7493

No. 4 Stow's 6 inch, with four pairs Rollers and Rotary Stand..$19 75
Sizes of beads as follows: Ogee, ¾ inch; Triple, ⅝ inch; Triple Coffee Pot, ½ inch; Single, 3/16 inch.

No. 5 Stow's 4 inch, for tin, with five pairs Rollers and Rotary Stand.....$16 75
Sizes of Beads as follows: Astral, 7/16 inch; Ogee, 7/16 inch; Triple Coffee Pot, ⅜ inch; Triple Coffee Pot, fine, 5/16 inch; Single Bead, ⅛ inch.

DESCRIPTION AND PRICES, FIG. 7494

No. 1 13 inches, with three pairs Rollers and Rotary Stand.....$32 25
" 2 10 " " "

TINSMITHS' TOOLS AND MACHINES

DOUBLE SEAMING MACHINE

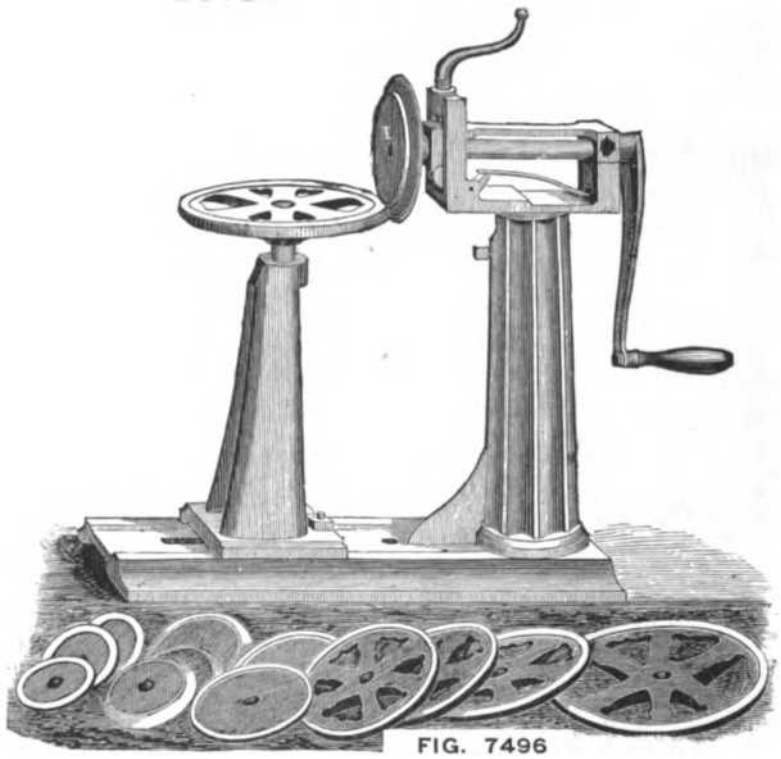


FIG. 7496

PRICES

This machine is adapted to all kinds of flaring and straight work, coffee and tea pots, oval and round boilers and raised work. It deflects the ware after it is soldered, thereby adding both strength and durability to the article. Ten disks are furnished with each machine, as follows: Flaring disks, 4⅛, 7⅛, 8⅞, 11½ inches. Straight disks, 4¼, 5¾, 6¼, 8⅛, 10¼ inches. Oval edge disk, 5⅞ inches.

Extra disks of any size and bevel and duplicate parts of the machine furnished to order.

No. 1. Double seamer, with deflector, $30.00.
No. 2. Double seamer, without deflector, $25.00.

POLISHED CAST IRON BENCH PLATE

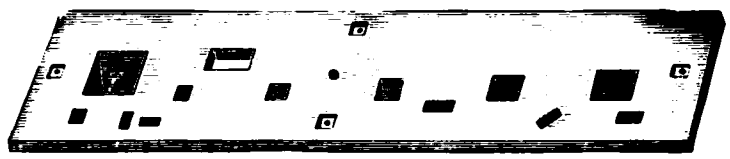


FIG. 7500

IMPROVED BENCH PLATE
POLISHED SURFACE

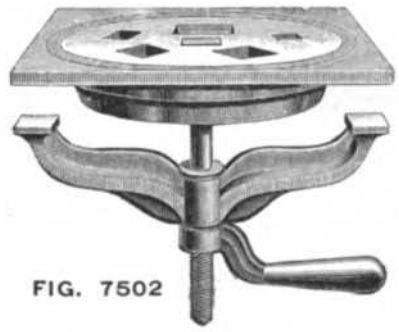


FIG. 7502

PRICES, FIG. 7500

Nos.		Each.
0	48 x 12 inches, weighs 94 lbs.	$9 00
1	37 x 8 "	5 00
2	30 x 8 "	3 00

PRICES, FIG. 7502

This new and improved bench plate is so made that it can be readily inserted in any bench of ordinary thickness, and revolves so that different tools may be used in the same position. No. 3, 9 x 9 in., each, $3.50.

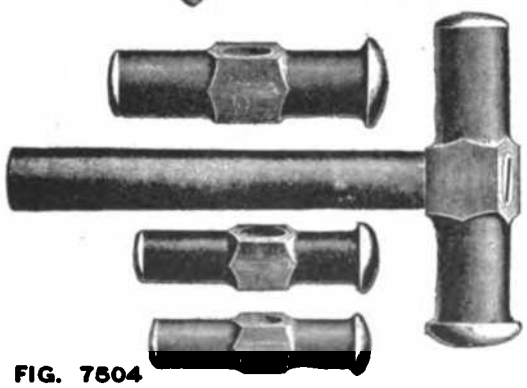


FIG. 7504

RAISING HAMMERS

PRICES

Nos.		Each.
1	Weighs 5 lbs.	$2 25
2	" 3¾ lbs.	1 75
3	" 2¼ "	1 25
4	" 1¼ "	75
Handles, per dozen extra		1 25

TINNER'S SHEARS OR SNIPS
LEFT HAND

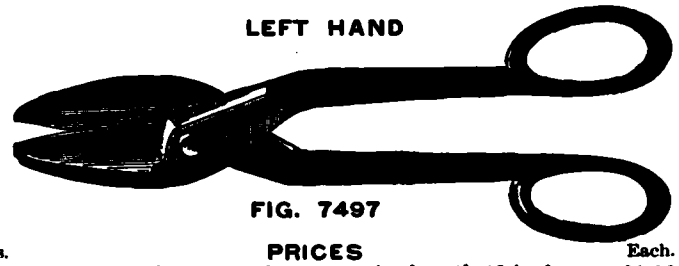


FIG. 7497

PRICES

Nos.		Each.
06½	Cut 4½ inches, extra heavy, entire length 18 inches	$4 50
6½	" 4½ "	3 00
7	" 4 "	2 50
8	" 3½ "	2 00
9	" 3 "	1 50
10	" 2½ "	1 40

CIRCULAR HAND SHEARS



FIG. 7498

PRICES

Nos.	Each.	Nos.	Each.
7	$3 50	9	$2 50
8	3 00	10	2 25

LYON SHEARS
FOR CUTTING SCROLLS AND CIRCLES

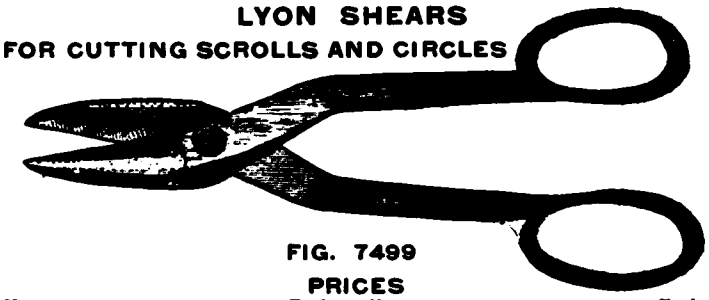


FIG. 7499

PRICES

Nos.		Each.	Nos.		Each.
165	Cut 4½ inches	$3 00	180	Cut 3½ inches	$2 00
170	" 4 "	2 50	190	" 3 "	1 50

BENCH SHEARS

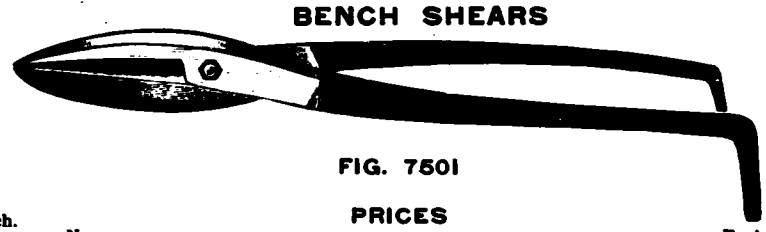


FIG. 7501

PRICES

Nos.		Each.
00	Bench, cut 12 inches	$13 50
0	" " 10½ "	12 00
1	" " 9 "	8 00
2	" " 8⅝ "	7 00
3	" " 8⅜ "	6 00
4	" " 8 "	5 00
5	" " 7 "	4 00
6	" " 6 "	3 50
Elbow Bench, cut 4 "		5 25
" "	extra heavy, cut 6 inches	12 00
" "	double extra heavy, cut 7½ inches, will cut No. 12 iron	25 00

HAWK'S BILL CIRCULAR SHEARS

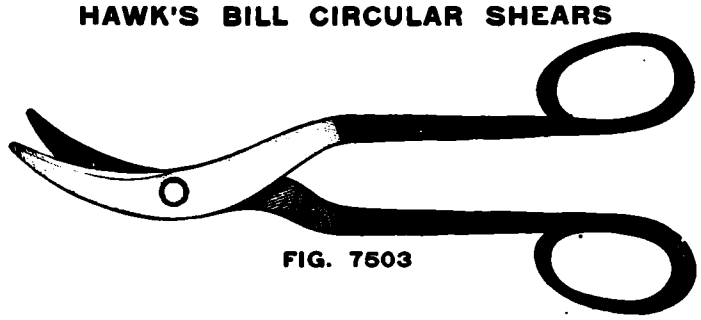


FIG. 7503

Each $3 00

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TINSMITHS' TOOLS AND MACHINES

RIVETING HAMMER

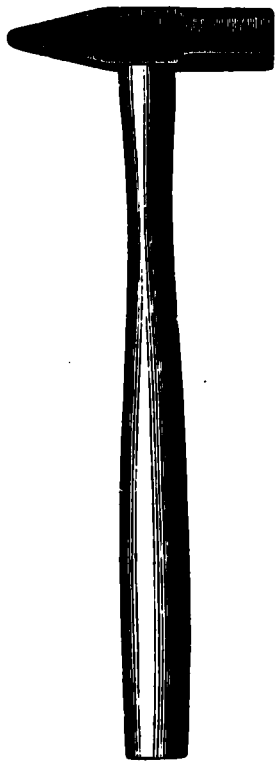


FIG. 7505

SETTING HAMMER

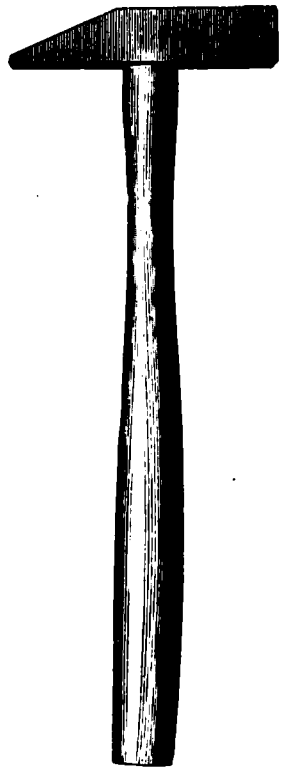


FIG. 7506

PRICES, HANDLED, FIG. 7505

Numbers.				Per Dozen.
0	Heavy work, bright,	1½	inches	$15 50
1	Sheet iron, "	1⅛	"	9 75
2	Tin, etc., "	1	"	8 31
3	" " "	⅞	"	6 75
4	" " "	¾	"	5 31
5	" " "	⅝	"	4 75

PRICES, HANDLED, FIG. 7506

Numbers.				Per Dozen.
1	Setting, bright,	1⅛	inches	$9 75
2	" "	1	"	8 31
3	" "	⅞	"	6 75
4	" "	¾	"	5 31
5	" "	⅝	"	4 75

DOUBLE SEAMING STAKE

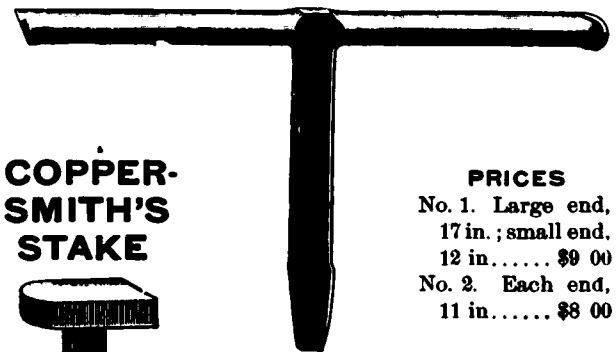


FIG. 7509

COPPER-SMITH'S STAKE



FIG. 7511

Square, 2⅝ x 4½
PRICE, $3.50

BEVEL EDGE SQUARE STAKE



FIG. 7512

PRICES

No. 1	Face, 3 x 5 inches,	$6 00
No. 2	" 2½ x 4½ "	5 00

STOW'S UNIVERSAL STAKE HOLDER

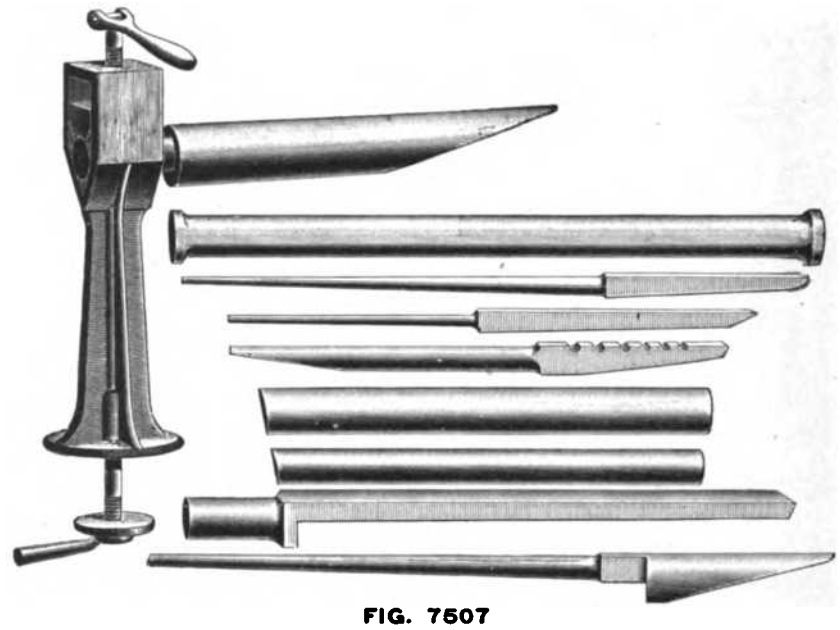
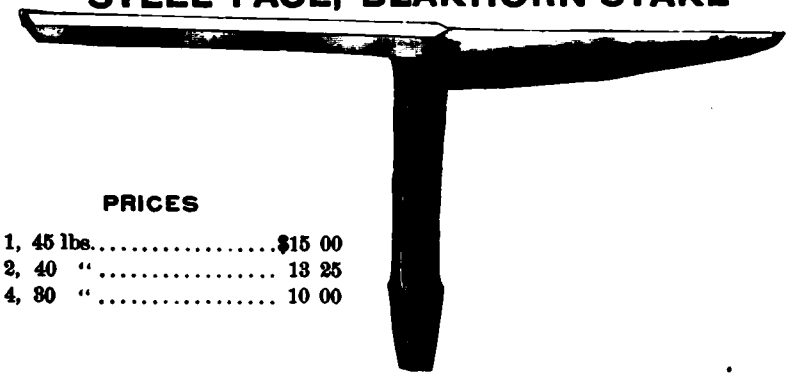


FIG. 7507

PRICES

Stake holder, only	$4 00
Beakhorn for stake holder, two pieces	10 00
Blowhorn for stake holder	3 75
Creasing and horn for stake holder	3 50
Double seaming No. 1 for stake holder	6 00
Conductor for stake holder, two pieces	4 00
Candle mold for stake holder	3 00
Needle case for stake holder	1 75
Full set as above, complete, with stake holder, weighs 139 lbs	35 00

TINNER'S STAKE, WROUGHT IRON STEEL FACE, BEAKHORN STAKE



PRICES

No. 1,	45 lbs.	$15 00
No. 2,	40 "	13 25
No. 4,	30 "	10 00

FIG. 7508

BLOWHORN STAKE



PRICE

Round end, 9 inches; small end, 17 inches long $5 00

FIG. 7510

CREASING STAKE WITH HORN

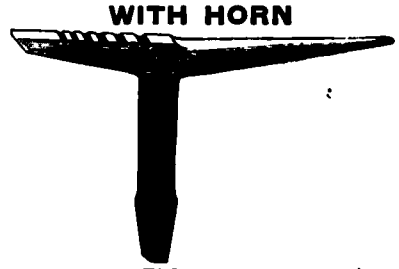


FIG. 7513

Round end, 9½ inches.
Flat " 6½ "
PRICE, $4.50

CREASING STAKE



FIG. 7514

Top, 14½ inches long.
PRICE, $4.00

MANNING, MAXWELL & MOORE, 85, 87, AND 89 LIBERTY STREET, NEW YORK

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TINSMITHS' TOOLS AND MACHINES

STAKES, WROUGHT IRON, WITH STEEL FACES

SQUARE

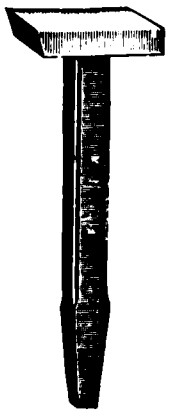
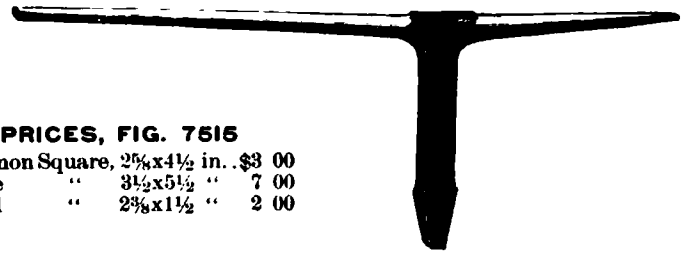


FIG. 7515

CANDLE MOULD STAKE



PRICES, FIG. 7515

Common	Square,	2⅝x4½ in.	$3 00
Large	"	3½x5½ "	7 00
Small	"	2⅜x1½ "	2 00

FIG. 7516

Small End, 18 inches; Horn, 8½ inches..$2 75

NEEDLE CASE STAKE



FIG. 7517

Flat End, 8 inches; Small End, 10½ inches..$2 25

MANDREL STAKE

Cast Iron, Polished Face.



FIG. 7518

Nos.								Each.
00	Mandrel,	5	feet	long	to the	Standard	.....	$10 00
0	"	3	"	4	inches	long to the Standard.		6 00
1	"	2	"	10	"	"	" ...	5 00
2	"	2	"	6	"	"	" ...	4 00
3	"	2	"	3	"	"	" ...	3 00

HATCHET STAKE



FIG. 7519

BOTTOM STAKE

PRICES, FIG. 7519

Nos.				Each.
1	Blade, 16	inches	long...	$5 00
2	" 14½	"	...	4 25
3	" 13	"	...	3 50
4	" 11	"	...	2 75
5	" 9	"	...	2 25
6	" 7	"	...	1 75

PRICES, FIG. 7521

Nos.				Each.
1	Bottom width,	1¾	inches.	$1 00
2	"	1½	"	80
3	"	1¼	"	75
4	"	1	"	50



FIG. 7521

ROUND HEAD STAKE



FIG. 7520

Price, $1.25.

CONDUCTOR STAKE

Cast Iron, Polished Face.

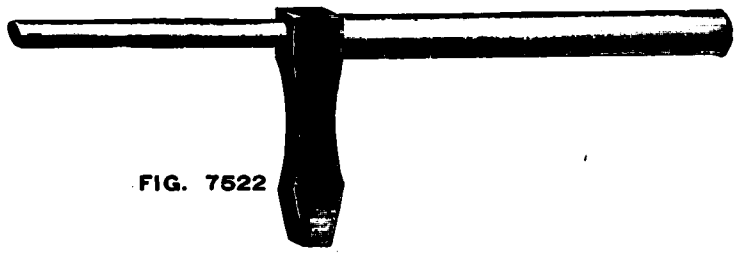


FIG. 7522

No. 1 Turned; Large End, 15 inches; Small End, 11½ inches long..$4 00
" 2 " " 14 " " 10 " .. 3 00

HOLLOW MANDREL STAKE

Wrought and Cast Iron.

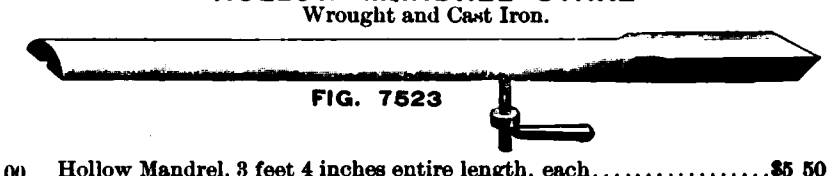


FIG. 7523

Hollow Mandrel, 3 feet 4 inches entire length, each.....$5 50
Extra Hollow Mandrel, 4 feet entire length; round part, 11¾ inches diameter; flat part, 15 inches wide; weight 300 pounds 25 00

SOLID PUNCHES

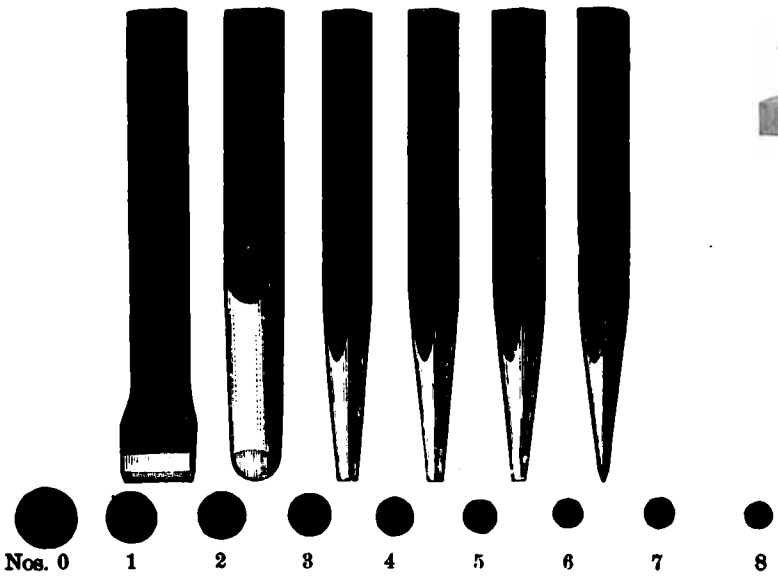


FIG. 7524

Nos. 1 to 8 indicate exact size at ends.

PRICES, SOLID PUNCHES

Set Solid Punches—4 Punches, 2 Chisels, per set	$0 72
Square, Cast Steel, Numbers 0, 1, 2, 3, 4, 5, 6, 7, 8, and prick, each	12
Solid Punches, assorted, per dozen.....	1 44

PRICES, FIGS. 7526 AND 7527

All sizes to and including 1¾ inches diameter, round, per inch...	$1 00
" above 1¾ " " " " ...	1 25
Oval ..... " ...	1 50

SPECIAL HOLLOW PUNCHES

We furnish all sizes, shapes and kinds for cutting sheet metal, straw board, paper, etc. Prices for same will be given on receipt of a sample to be cut.

DOUBLE SEAMING STAKE

Wrought and Cast Iron, with 4 Heads.

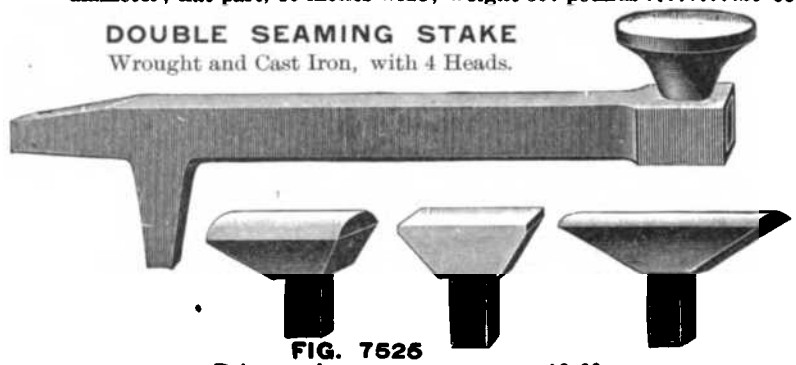


FIG. 7525

Price, each $9 00

HOLLOW PUNCHES

Wrought Shank. Forged Steel.



FIG. 7526

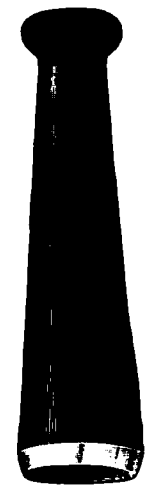


FIG. 7527

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TINSMITHS' TOOLS AND MACHINES

SOLID CAST STEEL CHISELS, RIVET SETS, ETC.

PRICES, FIG. 7530

Wire, inches..	¼	⅜	½	⅝	¾	⅞	1	1⅛	1¼	1⅜	1½	1¾	2
Each	$0 08	$0 09	$0 10	$0 11	$0 12	$0 13	$0 14	$0 15	$0 17	$0 19	$0 20	$0 24	$0 29

Circular Chisels, per inch.....$0 25

PRICES, FIG. 7532. GUN METAL FINISH

Full size of holes.



Nos.	00	0	1	2	3	4	5	6	7	8
For Iron Rivets,	14	10 and 12	8	6	4 and 5	2½ and 3	1¾ and 2	1½	1¼ lbs.	10 and 12 oz.
For Copper Rivets, Nos.	5		6	7	8	9	10 and 11	12	13	14

Nos	00 and 0	1 and 2	3 and 4	5 and 6	7 and 8
Each	$0 75	$0 63	$0 50	$0 37	$0 32

HAND GROOVER

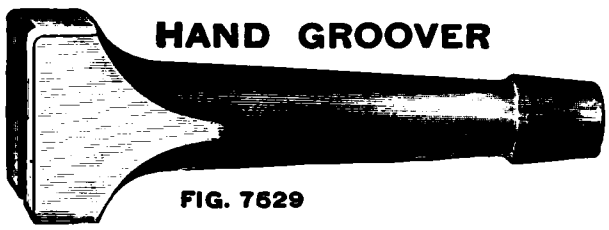


FIG. 7529

PRICES, FIG. 7529

Nos.	00 and 0	1 and 2	3 and 4	5 and 6	7 and 8
Each,	$0 75	$0 63	$0 50	$0 37	$0 25

WIRE CHISEL



FIG. 7530

LANTERN CHISEL



FIG. 7531
PRICE, 12c.

RIVET SET AND HEADER



FIG. 7532

REESE'S ROOFING TONGS

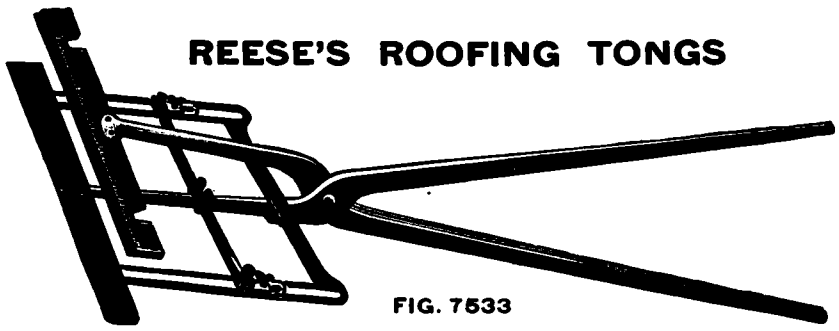


FIG. 7533

With Adjustable and Removable Gauge.

These Tongs will turn any edge from ½ inch to 10 inches by simply adjusting the thumb screw and sliding the gauge to the desired position. They are adapted to edging and bending all kinds of ordinary sheet metal. They are simple in construction, strong, light and durable. Can be used on No. 22 iron. Price, $6.50.

COMMON ROOFING TONGS



FIG. 7534

CLAMP ROOFING TONGS



FIG. 7535

PRICES, FIGS. 7534, 7535 AND 7538

The Clamp Tongs are used on the roof for drawing together the two layers of tin before cleating them. The Improved Roofing Tongs are so made that a single pair may be easily adjusted to turn any size edge from ¾ inch up to 3 inches by simply adjusting the thumb screws and sliding the gauge to the desired width.

Improved Roofing Tongs, steel, per pair.....$4 00
Common " " " sizes ½, ¾, 1, 1¼, 1½, 1¾ inches, per set, two pairs..... 6 00
Clamp Roofing Tongs, per pair..... 2 25

IMPROVED WOOD ROOFING FOLDER

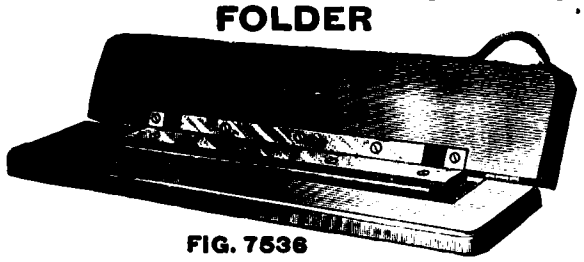


FIG. 7536

PRICES

Roofing Folder,	Common,	30	inch,	wood	$3 50
"	"	"	20	"	2 50
"	"	"	14	"	2 50
"	"	Improved,	30	"	with gauge 5 00
"	"	"	20	"	" " 3 50
"	"	Adjustable, for 20 or 30 inch, wood, with gauge			6 00

DESCRIPTION, FIG. 7537

The movable bar, marked A in the illustration, is set in the jaw of the Seamer to make the first or single seam. By sliding the movable bar to one side it is released and thrown up against the handles, as shown by the dotted lines in the illustration. The machine is then ready for the second or double seam. There are two openings in the bottom of this Roofing Double Seamer—one for bending the tin at a slightly acute downward angle, the other for locking or flattening the angle thus made. A down and outward pressure of the handles performs either of these operations.

NOTE.—When ordering, state whether for common or wide gauge. One pair constitutes a complete set.

PRICE

Double Seamer, for tin roofing, per set of one pair.....$16 00

ROOFING DOUBLE SEAMER FOR STANDING LOCK

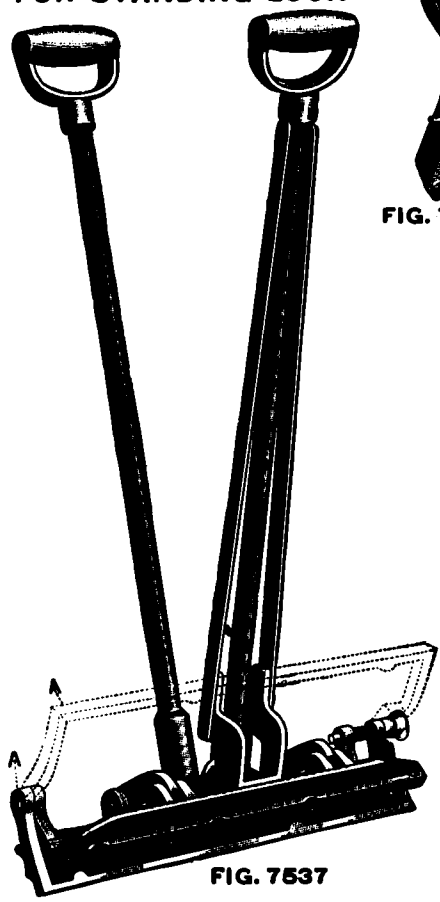


FIG. 7537

IMPROVED ROOFING TONGS

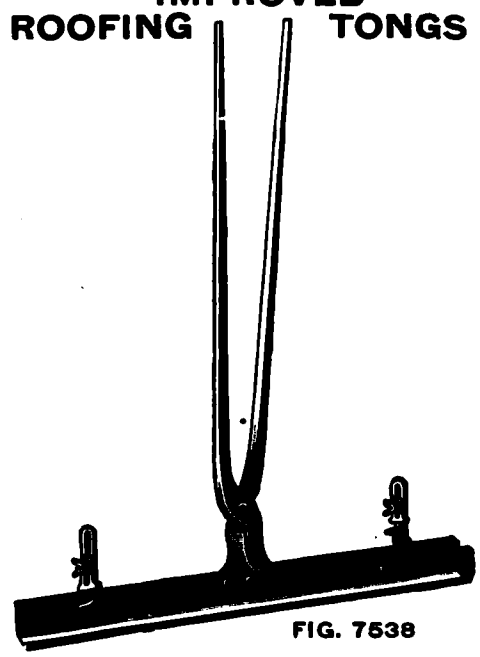


FIG. 7538

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BAR STEEL

Base prices for Bar Steel are made on application. The prices quoted below, on classifications of the different grades noted, for sizes outside of base sizes, are extras and are to be added to base prices.

CLASSIFICATION OF TOOL STEEL

Round, Square and Octagon.

Extra, per pound.

5/8 to 2 in.	Base	9/16 to 1/2 in.	0.5c.
2 1/4 " 3 "	1.0c.	7/16 " 3/8 "	1.0c.
3 1/8 " 4 "	1.5c.	5/16 and 11/32 in.	2.0c.
4 1/8 " 5 "	2.0c.	1/4 " 9/32 "	3.0c.
5 1/8 " 6 "	2.5c.	3/16 in.	5.0c.
6 1/8 " 7 "	3.0c.	5/32 "	10.0c.
7 1/8 " 8 "	3.5c.	1/8 "	18.0c.

Flat.

5/8 to 2 in. thick x 9/16 to 2 in. wide ..... Base

Extra, per pound.

Inches.		Inches.	
1/8 x 3/16	20.0c.	5/16 x 3/8 to 5/8	1.5c.
1/8 x 1/4	15.0c.	5/16 x 11/16 " 8	1.0c.
1/8 x 5/16	8.0c.	3/8 x 7/16 " 8	1.0c.
1/8 x 3/8	4.0c.	7/16 x 1/2 " 8	1.0c.
1/8 x 7/16 to 1/2	3.0c.	1/2 x 9/16 " 8	1.0c.
1/8 x 9/16 " 7	2.0c.	9/16 x 2 1/8 " 8	1.0c.
1/8 x 7 1/8 " 8	3.0c.	5/8 to 2 x 2 1/8 to 7	1.0c.
3/16 x 1/4	5.0c.	5/8 " 1 3/4 x 7 1/8 " 8	1.0c.
3/16 x 5/16	4.0c.	1 7/8 " 2 x 7 1/8 " 8	1.5c.
3/16 x 3/8	3.0c.	2 1/8 " 3 x 2 1/8 " 5	1.0c.
3/16 x 7/16 to 5/8	2.0c.	2 1/8 " 3 x 5 1/8 " 8	1.5c.
3/16 x 11/16 " 2	1.5c.	3 1/8 " 4 x 3 1/8 " 6	1.5c.
3/16 x 2 1/8 " 7	1.0c.	3 1/8 " 4 x 6 1/8 " 8	2.0c.
3/16 x 7 1/8 " 8	2.0c.	4 1/8 " 5 x 4 1/8 " 7	2.0c.
1/4 x 5/16 " 3/8	2.0c.	4 1/8 " 5 x 7 1/8 " 8	2.5c.
1/4 x 7/16 " 2	1.5c.	5 1/8 " 6 x 5 1/8 " 8	2.5c.
1/4 x 2 1/8 " 7	1.0c.	6 1/8 " 7 x 6 1/8 " 7	3.0c.
1/4 x 7 1/8 " 8	2.0c.	6 1/8 " 8 x 7 1/8 " 8	3.5c.

Cutting to multiples or specified lengths, 1/2 cent per pound for over 24 inches; under, according to contract.

CLASSIFICATION OF BAR IRON

BASE SIZES

Round and Square Iron, 1 to 1 7/8 inches.
Flat Iron, 1 1/2 to 4 inches x 3/8 to 1 inch.

Base sizes no extra.

Flat.

Inches.					Extra.
3/8	to 9/16	x 1/4	to	5/16	1.5c.
1/2	" 9/16	x 1/4	"	5/16	1.0c.
1/2	" 9/16	x 3/8	"	1/2	0.9c.
5/8	" 11/16	x 1/4	"	5/16	0.8c.
5/8	" 11/16	x 3/8	"	5/8	0.5c.
3/4	" 15/16	x 1/4	"	5/16	0.5c.
3/4	" 15/16	x 3/8	"	3/4	0.4c.
1	" 1 3/8	x 1/4	"	5/16	0.3c.
1	" 1 1/16	x 3/8	"	7/8	0.2c.
1 1/8	" 1 3/8	x 3/8	"	1	0.1c.
1 1/2	" 4	x 1/4	"	5/16	0.2c.
1 1/2	" 4	x 3/8	"	1	Base.
1 3/8	" 4	x 1 1/16	"	1 1/2	0.3c.
2	" 4	x 1 5/8	"	2	0.5c.
2	" 4	x 2 1/8	"	3	0.6c.
4 1/4	" 6	x 1/4	"	5/16	0.3c.
4 1/4	" 6	x 3/8	"	1	0.1c.
4 1/4	" 6	x 1 1/16	"	1 1/2	0.4c.

Flats 7/32 thick 1/10 cent per pound higher than 1/4 to 5/16 thick.

Rounds and Squares.

Inches.		Extra.
9/16		2.5c.
7/32		1.4c.
1/4	to 9/32	0.9c.
5/16	" 11/32	0.7c.
3/8	" 13/32	0.5c.
7/16	" 15/32	0.4c.
1/2	" 9/16	0.3c.
5/8	" 11/16	0.2c.
3/4	" 7/8	0.1c.
1	" 1 7/8	Base.
2	" 2 7/8	0.2c.
3	" 3 1/2	0.5c.
3 5/8	" 4	0.8c.

CLASSIFICATION OF CRUCIBLE HAMMER AND CRUCIBLE MACHINERY

Round and Square.

Extra, per Pound.

3/4 to 3 in.	Base.	1/2 to 11/16 in.	0.3c.
3 1/8 " 4 "	0.5c.	3/8 " 7/16 "	0.5c.
4 1/8 " 5 "	1.0c.	5/16 and 11/32 "	1.0c.
5 1/8 " 6 "	1.5c.	1/4 " 9/32 "	1.5c.

Crucible machinery flats, one-half the extras of the flat tool steel classification.

In flat sizes of crucible hammer steel sections equivalent to the base sizes in squares may be sold at base.

Cutting to multiples or specified lengths, 1/2c. per pound, for anything over 24 inches long. For lengths, 24 inches or less, according to agreement.

CLASSIFICATION OF SPRING STEEL

Sizes, Inches.					Extra, per Pound.
1 1/4 to 4	x	No. 4 gauge	to	1/2 in. incl.,	Base.
1 " 1 1/8	x	" 1	"	" 4 g'ge "	0.2c.
1 " 3	x	" 5	"	" 7 " "	0.5c.
3/4 " 15/16	x	" 1	"	" 7 " "	0.5c.
3/8 " 11/16	x	" 1	"	" 7 " "	1.0c.
3/4 " 3	x	" 8	"	" 10 " "	1.0c.
1/2 " 3	x	" 11	"	" 16 " "	1.5c.

Round and Square.

Extra, per Pound.

5/8 to 1 1/2 in.	Base.	3/8 to 7/16 in.	0.5c.
1/2 " 9/16 "	0.2c.	5/16 in.	1.0c.
1/4 in.			1.5c.

Cutting to lengths, 24 inches and over, 3/10 cents per pound extra; under 24 inches, according to agreement.

STEEL AND IRON PLATES

STEEL	IRON
Per Pound.	
Tank	
Refined	
Shell	
Flange	
Fire box	

Sizes.

3/16 inch to 1/2 inch up to 60 inches wide x 144 inches long.

3/16 inch to 7/16 inch, 30 inches and narrower x 12 to 20 feet long.

No. 8 to 16 up to 44 inches wide x 15 feet long.
No. 17 to 20 up to 40 inches wide x 12 feet long.
Circles 5/8 inch to 3/16 inch, up to 72 inches diameter.

C NO. 1 BEST FLANGE — C H NO. 1 FLANGE CIRCLES

C H NO. 1 BEST FLANGE FIRE BOX

Boiler iron stamped and guaranteed.

SHEET LEAD

Weight per square foot, 2 1/2, 3, 3 1/2, 4, 4 1/2, 5, 6, 8, 9, 10 pounds and upward.

CLASSIFICATION OF OPEN HEARTH MACHINERY STEEL

Round.

Extra, per Pound.

3/4 to 3 in. inclusive	Base.
3 1/8 " 4 " "	0.3c.
4 1/8 in.	1.0c.
1/2 to 1 1/16 in. inclusive	0.3c.
3/8 " 7/16 " "	0.4c.
5/16 and 11/32 in. "	0.5c.
1/4 and 9/32 " "	0.7c.

Flat.

Sizes, Inches.						Extra, per Pound.
1 1/2	to 6	x 5/16	to	1	thick	Base
1 1/2	" 6	x 1/4	and	9/32	"	0.2c.
1 1/2	" 6	x 3/16	"	7/32	"	0.3c.
1 1/2	" 6	x 1/8	"	5/32	"	0.4c.
3/4	" 1 7/16	x 1/4	to	1	"	0.3c.
3/4	" 1 7/16	x 3/16	and	7/32	"	0.4c.
3/4	" 1 7/16	x 1/8	"	5/32	"	0.5c.
3/8	" 1 1/16	x 1/4	to	1/2	"	0.4c.
3/8	" 1 1/16	x 3/16	and	7/32	"	0.6c.
3/8	" 1 1/16	x 1/8	"	5/32	"	0.8c.
3/8	" 3/4	x 1/16	"	3/32	"	2.0c.
1 3/16	" 1 1/8	x 1/16	"	3/32	"	1.5c.
1 1/4	" 3	x 1/16	"	3/32	"	1.0c.

Extras for sizes larger than 6 inch x 1 inch are one-half the extras for same sizes of Tool Steel.

Cutting to multiples, 3/10 cent per pound extra.

Cutting to specified lengths, 24 inches and over, 3/10 cent per pound extra; under 24 inches, according to agreement.

Sawing or shearing, one-half of above extras for cutting.

CLASSIFICATION OF TIRE STEEL

All sizes 3/4 inch x 3/16 inch and larger. Base.
Extra on sizes less than 3/4 inch wide and less than 3/16 inch thick as per Bar Steel Classification.
Standard lengths 12 1/2 and 13 1/2 feet.

CLASSIFICATION OF TOE CALK STEEL

1/2 x 3/8 inches and over ..... Base

	Per 100 Pounds.
3/16 x 1/4 to 1/2 inch inclusive	$2 00
3/16 x 5/8 " 1 " "	1 00
1/4 x 5/16 " 3/8 " "	1 50
1/4 x 7/16 " 1 " "	75
5/16 x 3/8 " 7/16 " "	75
5/16 x 1/2 " 1 " "	50
3/8 x 7/16 " " "	75
3/8 inch square	75
5/16 " "	1 00
1/4 "	2 00

Put up in bundles of 50 pounds or 100 pounds each.

SOFT STEEL SHEETS AND BLUE ANNEALED IRON SHEETS

STEEL	IRON
Prices per Pound.	
No. 10 gauge	
" 12 "	
" 14 "	
" 16 "	
" 17 "	
" 18 "	
" 19 "	
" 20 "	
" 21 to 24 gauge,	
" 25 and 26 "	
" 27 gauge	
" 28 "	

Best Bloom Sheet Iron.
Russia " "
Cleaned Sheets, Iron and Steel.
Pickled and Cold Rolled Sheets, Iron and Steel.

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IRON

We can furnish Iron of the following brands, in regular lengths, sizes and shapes: Ulster, Burdens Best, H. B. & S., and Norway. We can also furnish Angles, Tees, Channels and Rolled Iron or Steel I Beams; also, Band, Scroll, Hoop, Oval, Half Oval and Half Round Iron, and Universal Mill Plates with straight edges of uniform width. Prices on application.

GALVANIZED SHEET IRON

We can supply Galvanized Sheet Iron from No. 10 to No. 30 gauge, in Best Bloom, or first quality, and Best Refined or second quality, in sheets of regular sizes. Pattern lengths and widths at extra prices. Prices on application.

BABBITT METALS

	Per Pound.
Genuine Babbitt	
X X X X	
Anchor	
Magnolia Metal	
Parsons' White Brass	
Zero Runskool Cyprus	
Solder, Half and Half	
" No. 1	

CORRUGATED SHEET IRON

We can furnish Corrugated Sheet Iron, for Roofing, Sidings, Ceilings, Doors, Shutters, etc., as follows: Galvanized, painted or black, from No. 16 to No. 26 gauge; Black, from 15 ounces to 42 ounces per square foot. Galvanized, from 16 ounces to 48 ounces per square foot. Painting extra. Galvanized and black Nails, Rivets, etc. Prices on application.

TOBIN BRONZE, MANGANESE BRONZE, PHOSPHOR BRONZE, CRESCENT PHOSPHORIZED METAL AND MUNTZ METAL

Cast for Pump Rods, rolled for Bolts, made for Ship Sheathing and Fastenings, Sheets and Plates, Pump Linings, Tube Sheets. Round, Square and Hexagon Bars. Prices on application.

METALS

	Per Pound.
Sheet Zinc	
Block Tin	
Pig Lead	
Antimony	
Ingot Copper	

BRONZE AND BRASS CASTINGS OF EVERY DESCRIPTION FOR STEAM AND STREET RAILWAY USE

MANNING, MAXWELL & MOORE, 85, 87 AND 89 LIBERTY STREET, NEW YORK

WEIGHT OF FLAT IRON PER LINEAL FOOT

Sizes.	1/16	1/8	3/16	1/4	5/16	3/8	7/16	1/2	9/16	5/8	3/4	7/8	1	1 1/8	1 1/4	1 1/2	1 3/4	2
1/2 in.	.106	.211	.317	.422	.528	.634	.738	.845	.951	1.056	1.265	1.477	1.690	1.901	2.112	2.535	2.957	3.379
5/8 "	.132	.264	.396	.528	.660	.792	.923	1.056	1.187	1.320	1.584	1.846	2.112	2.376	2.640	3.168	3.696	4.224
3/4 "	.158	.316	.475	.633	.792	.950	1.108	1.265	1.425	1.584	1.901	2.217	2.534	2.850	3.168	3.802	4.435	5.069
7/8 "	.185	.369	.554	.738	.923	1.108	1.294	1.477	1.663	1.846	2.217	2.588	2.956	3.325	3.696	4.435	5.178	5.914
1 "	.211	.422	.633	.845	1.056	1.267	1.478	1.690	1.901	2.112	2.534	2.956	3.380	3.802	4.224	5.069	5.914	6.758
1 1/8 "	.238	.475	.712	.950	1.187	1.425	1.663	1.901	2.139	2.375	2.850	3.326	3.802	4.277	4.752	5.703	6.653	7.603
1 1/4 "	.264	.528	.792	1.056	1.320	1.584	1.848	2.112	2.376	2.640	3.168	3.690	4.224	4.752	5.280	6.337	7.393	8.448
1 3/8 "	.291	.581	.871	1.161	1.452	1.742	2.032	2.325	2.613	2.904	3.484	4.065	4.646	5.650	5.808	6.970	8.132	9.294
1 1/2 "	.317	.633	.950	1.266	1.584	1.900	2.217	2.535	2.851	3.168	3.802	4.435	5.069	5.702	6.337	7.604	8.871	10.138
1 5/8 "	.343	.686	1.030	1.372	1.716	2.059	2.402	2.746	3.088	3.432	4.119	4.805	5.492	6.178	6.864	8.237	9.610	10.983
1 3/4 "	.363	.725	1.109	1.479	1.848	2.218	2.589	2.957	3.326	3.696	4.435	5.178	5.914	6.639	7.393	8.871	10.352	11.828
1 7/8 "	.396	.792	1.188	1.584	1.980	2.376	2.772	3.168	3.564	3.960	4.752	5.544	6.336	7.128	7.921	9.575	11.089	12.673
2 "	.422	.844	1.267	1.689	2.112	2.534	2.957	3.379	3.801	4.224	5.069	5.914	6.758	7.602	8.448	10.138	11.828	13.520
2 1/8 "	.449	.897	1.347	1.795	2.244	2.693	3.141	3.591	4.038	4.488	5.386	6.283	7.181	8.078	8.977	10.772	12.567	14.362
2 1/4 "	.475	.950	1.426	1.900	2.376	2.851	3.326	3.802	4.276	4.752	5.703	6.653	7.604	8.554	9.505	11.406	13.307	15.208
2 3/8 "	.502	1.003	1.504	2.006	2.508	3.009	3.511	4.013	4.513	5.016	6.019	7.022	8.025	9.028	10.032	12.038	14.045	16.051
2 1/2 "	.528	1.056	1.584	2.112	2.640	3.168	3.695	4.224	4.752	5.280	6.336	7.392	8.448	9.504	10.560	12.672	14.784	16.896
2 5/8 "	.555	1.109	1.663	2.218	2.772	3.327	3.879	4.436	4.988	5.545	6.654	7.763	8.872	9.981	11.090	13.308	15.526	17.744
2 3/4 "	.581	1.162	1.744	2.323	2.904	3.485	4.066	4.647	5.226	5.808	6.970	8.132	9.294	10.456	11.617	13.940	16.264	18.587
2 7/8 "	.607	1.214	1.822	2.429	3.036	3.644	4.249	4.858	5.464	6.072	7.287	8.502	9.716	10.930	12.145	14.574	17.003	19.432
3 "	.634	1.267	1.901	2.535	3.168	3.802	4.435	5.069	5.702	6.337	7.604	8.871	10.138	11.405	12.673	15.208	17.742	20.277
3 1/4 "	.687	1.373	2.059	2.746	3.432	4.119	4.805	5.492	6.177	6.865	8.237	9.610	10.983	12.356	13.730	16.475	19.221	21.967
3 1/2 "	.739	1.478	2.218	2.957	3.696	4.436	5.175	5.914	6.653	7.393	8.871	10.350	11.828	13.306	14.785	17.742	20.699	23.636
3 3/4 "	.792	1.584	2.376	3.168	3.960	4.752	5.544	6.336	7.127	7.921	9.505	11.089	12.673	14.257	15.841	19.009	22.178	25.346
4 "	.845	1.690	2.534	3.380	4.224	5.069	5.914	6.759	7.602	8.448	10.138	11.828	13.518	15.208	16.897	20.227	23.656	27.036
4 1/4 "	.898	1.796	2.693	3.591	4.488	5.386	6.282	7.181	8.078	8.977	10.772	12.566	14.364	16.160	17.953	21.544	25.135	28.725
4 1/2 "	.951	1.901	2.851	3.802	4.752	5.703	6.653	7.604	8.751	9.504	11.406	13.306	15.208	17.109	19.010	22.812	26.614	30.415
4 3/4 "	1.003	2.006	3.010	4.013	5.016	6.020	7.020	8.026	9.027	10.033	12.039	14.043	16.052	18.058	20.060	24.079	28.092	32.105
5 "	1.056	2.112	3.168	4.224	5.280	6.336	7.392	8.449	9.502	10.560	12.673	14.784	16.879	19.009	21.122	25.346	29.570	33.795
5 1/4 "	1.109	2.218	3.327	4.436	5.544	6.654	7.758	8.871	9 977	11.089	13.307	15.520	17.742	19.996	22.178	26.613	31.049	35.484
5 1/2 "	1.162	2.324	3.485	4.647	5.808	6.970	8.132	9.294	10.452	11.616	13.940	16.264	18.587	20.911	23.234	27.881	32.527	37.174
5 3/4 "	1.215	2.429	3.644	4.858	6.072	7.288	8.496	9.716	10.927	12.145	14.574	16.997	19.432	21.861	24.290	29.148	34.006	38.864
6 "	1.268	2.535	3.802	5.070	6.337	7.604	8.871	10.138	11.403	12.674	15.208	17.742	20.276	22.811	25.346	30.416	35.484	40.553

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TABLES OF WEIGHTS

WEIGHT OF ROUND IRON (Per Lineal Foot.)

Dia.	Wt.	Dia.	Wt.	Dia.	Wt.	Dia.	Wt.	Dia.	Wt.	Dia.	Wt.
1/16	.010	5/8	1.043	1 15/16	3.744	2	10.616	3 1/4	28.040	5 1/2	80.304
1/8	.041	1 1/16	1.255	1 1/4	4.147	2 1/8	11.988	3 1/2	32.512	5 3/4	87.776
3/16	.093	3/4	1.493	1 5/16	4.573	2 1/4	13.440	3 3/4	37.332	6	95.552
1/4	.165	13/16	1.752	1 3/8	5.019	2 3/8	14.975	4	42.464	6 1/2	111.800
5/16	.261	7/8	2.032	1 7/16	5.486	2 1/2	16 688	4 1/4	47.952	7	129.600
3/8	.373	15/16	2.333	1 1/2	5.972	2 5/8	18.293	4 1/2	53.760	7 1/2	148.800
7/16	.508	1	2.654	1 5/8	7.010	2 3/4	20.076	4 3/4	59.900	8	169.300
1/2	.663	1 1/16	2.997	1 3/4	8.128	2 7/8	21.944	5	66.350	8 1/2	191.100
9/16	.840	1 1/8	3.359	1 7/8	9.333	3	23.888	5 1/4	73.172	9	214.300

Rule—To find the weight of round iron, take the diameter in quarter inches, square it, and divide by 6.

WEIGHT OF SQUARE IRON (Per Lineal Foot.)

Sizes.	Wt.	Sizes.	Wt.	Sizes.	Wt.	Sizes.	Wt.	Sizes.	Wt.	Sizes.	Wt.
1/16	.013	5/8	1.320	1 1/4	5.280	2 5/8	19.066	3 1/2	41.408	5 1/2	102.240
1/8	.053	1 1/16	1.597	1 3/8	6.390	2 1/2	21.120	3 5/8	44.418	5 3/4	111.756
3/16	.118	3/4	1.901	1 1/2	7.604	2 5/8	23.292	3 3/4	47.534	6	121.664
1/4	.211	13/16	2.231	1 5/8	8.926	2 3/4	25.560	4	54.084	6 1/2	142.300
5/16	.330	7/8	2.588	1 3/4	10.352	2 7/8	27.939	4 1/4	61.055	7	165.000
3/8	.475	15/16	2.971	1 7/8	11.883	3	30.416	4 1/2	68.448	7 1/2	189.500
7/16	.647	1	3.380	2	13.520	3 1/8	33.010	4 3/4	76.264	8	215.600
1/2	.845	1 1/16	3.816	2 1/8	15.263	3 1/4	35.704	5	84.480	8 1/2	243.400
9/16	1.069	1 1/8	4.278	2 1/4	17.112	3 3/8	38.503	5 1/4	93.168	9	272.800

To find the weight of cast iron, multiply by 92%1000 or 15/14; or deduct 1/16 part. For steel add 1/48 part; for copper, 1/9; for cast brass, 1/12; and for lead, 1/2. A cubic inch of wrought iron weighs .2817 pounds; a cubic foot, 480 pounds. A cubic inch of cast iron weighs .2607 pounds; a cubic foot, 444½ pounds.

WIRE GAUGE

As everyone is well aware, the wire gauge is in a sad state of confusion. There are in common use about a dozen different gauges, designated by the town or locality where they originated, or by the name of the maker. No two of them are alike, as the following comparison of standard gauges shows. For common practice it may be sufficiently accurate to designate the gauge. But, as in gauges made by the same person serious discrepancies often exist, where absolute accuracy is required, the only safe way is to express dimensions in parts of an inch.

COMPARISON OF WIRE GAUGES.

Nos. of Gauge.	Birming'm (Stubs), Dec. Parts of an Inch.	Am. (Brown & Sharpe) Dec. Parts of an Inch.	London Decimal Parts of an Inch.
0000	.454	.460	.....
000	.425	.40964	.....
00	.380	.3648	.....
0	.340	.32495	.....
1	.300	.28930	.....
2	.284	.25763	.....
3	.259	.22942	.....
4	.238	.20431	.....
5	.220	.18194	.....
6	.203	.16202	.....
7	.180	.14428	.....
8	.165	.12849	.....
9	.148	.11443	.....
10	.134	.10189	.....
11	.120	.09074	.....
12	.109	.08081	.....
13	.095	.07196	.....
14	.083	.06408	.083
15	.072	.05706	.072
16	.065	.05082	.065
17	.058	.04525	.058
18	.049	.04030	.049
19	.042	.03589	.040
20	.035	.03196	.035
21	.032	.02846	.0315
23	.028	.025347	.0295
23	.025	.022571	.027
24	.022	.0201	.025
25	.020	.0179	.023
26	.018	.01594	.0205
27	.016	.014195	.01875
28	.014	.012641	.0165
29	.013	.011257	.0155
30	.012	.010025	.01375
31	.010	.018928	.01225
32	.009	.00795	.01125
33	.008	.00708	.01025
34	007	.0063	.0095
35	.005	.00561	.009
36	.004	.005	.0075

WEIGHT OF CIRCULAR BOILER HEADS

Diams. in Inches.	Thickness of Iron, Inches. 5/16	3/8	7/16	1/2	9/16	5/8	11/16
16	11	14	18	21	25	28	32
18	13	18	22	27	31	36	40
20	17	22	27	33	38	44	50
22	20	27	33	40	47	54	60
24	24	32	40	47	55	64	71
26	28	37	46	56	64	75	84
28	32	43	53	65	75	86	97
30	37	50	62	74	87	100	112
32	42	56	70	84	99	112	127
34	48	64	79	96	111	128	143
36	54	71	89	108	125	142	161
38	60	79	99	120	139	158	179
40	66	88	110	132	154	176	198
42	73	97	121	146	170	194	220
44	80	107	133	160	187	214	240
46	88	117	145	176	204	234	262
48	95	127	158	190	222	254	286
50	103	138	172	206	241	276	310
52	112	149	186	224	260	298	335
54	121	160	200	242	281	320	362
56	130	172	214	260	302	344	389
58	139	185	231	278	324	370	417
60	149	198	247	298	336	396	446

U. S. STANDARD GAUGE

For Sheet and Plate Iron and Steel

Numbers of Gauge.	Thickness: Approximate Thickness in Fraction of an Inch.	Thickness: Approximate Thickness in Decimal Parts of an Inch.	Weight: Weight per Square Foot in Ounces, Avoirdupois.	Weight: Weight per Square Foot in Pounds Avoirdupois.
0000000	1/2	.5	320	20.00
000000	15/32	.46875	300	18.75
00000	7/16	.4375	280	17.50
0000	13/32	.40625	260	16.25
000	3/8	.375	240	15.
00	11/32	.34375	220	13.75
0	5/16	.3125	200	12.50
1	9/32	.28125	180	11.25
2	17/64	.265625	170	10.625
3	1/4	.25	160	10.
4	15/64	.234375	150	9.375
5	7/32	.21875	140	8.75
6	13/64	.203125	130	8.125
7	3/16	.1875	120	7.5
8	11/64	.171875	110	6.875
9	5/32	.15625	100	6.25
10	9/64	.140625	90	5.625
11	1/8	.125	80	5.
12	7/64	.109375	70	4.375
13	3/32	.09375	60	3.75
14	5/64	.078125	50	3.125
15	9/128	.0703125	45	2.8125
16	1/16	.0625	40	2.5
17	9/160	.05625	36	2.25
18	1/20	.05	32	2.
19	7/160	.04375	28	1.75
20	3/80	.0375	24	1.50
21	11/320	.034375	22	1.375
22	1/32	.03125	20	1.25
23	9/320	.028125	18	1.125
24	1/40	.025	16	1.
25	7/320	.021875	14	.875
26	3/160	.01875	12	.75
27	11/640	.0171875	11	.6875
28	1/64	.015625	10	.625
29	9/640	.0140625	9	.5625
30	1/80	.0125	8	.5
31	7/640	.0109375	7	.4375
32	13/1280	.01015625	6 1/2	.40625
33	3/320	.009375	6	.375
34	11/1280	.00859375	5 1/2	.34375
35	5/640	.0078125	5	.3125
36	9/1280	.00703125	4 1/2	.28125
37	17/2560	.006640625	4 1/4	.265625
38	1/160	.00625	4	.25

PLATE IRON

Weight of Superficial Foot.

Thickness in Inches.	Weight, Pounds.	Thickness in Inches.	Weight, Pounds.
1/32 = .03125	1.25	5/16 = .3125	12.58
1/16 = .0625	2.519	3/8 = .375	15.10
3/32 = .0937	3.788	7/16 = .4375	17.65
1/8 = .125	5.054	1/2 = .5	20.20
5/32 = .1562	6.305	9/16 = .5625	22.76
3/16 = .1875	7.578	5/8 = .625	25.16
7/32 = .2187	8.19	3/4 = .75	30.20
1/4 = .25	10.09	7/8 = .875	35.30
9/32 = .2812	11.38	1 = 1.	40.40

To ascertain the weight of plate iron for rectangular sheets: Rule—Multiply the product of length by breadth in inches, by one of the following decimals, according to thickness, and the product will be the weight required.

1/16 thick	x .0526	9/16 thick	x .158
1/4 "	x .07	5/8 "	x .1748
5/16 "	x .0874	3/4 "	x .2096
3/8 "	x .1048	7/8 "	x .2452
7/16 "	x .1226	1 "	x .28
1/2 "	x .14		

For Circular Sheets.

Rule—Multiply the square of the diameter by one of the following decimals:

1/16 thick	x .0414	9/16 thick	x .124
1/4 "	x .055	5/8 "	x .1372
5/16 "	x .0686	3/4 "	x .1646
3/8 "	x .0823	7/8 "	x .1924
7/16 "	x .0962	1 "	x .22
1/2 "	x .11		

BOILER RIVETS

Number in a Keg of 100 pounds.

Length.	1/2 Inch.	9/16 Inch.	5/8 Inch.	11/16 Inch.	3/4 Inch.	7/8 Inch.
1	990	760	560	450	...	...
1 1/8	875	725	530	415	...	...
1 1/4	800	690	490	389	356	228
1 3/8	760	650	460	370	329	211
1 1/2	730	625	425	357	290	180
1 5/8	710	595	405	340	271	174
1 3/4	690	550	390	325	264	169
1 7/8	665	530	375	312	257	165
2	630	510	360	297	248	156
2 1/8	590	500	354	289	237	152
2 1/4	555	490	347	280	232	149
2 1/2	525	475	335	260	219	141
2 3/4	500	440	312	242	211	133
3	460	410	290	224	203	127
3 1/4	430	380	267	212	190	115
3 1/2	410	350	248	201	180	108
3 3/4	395	335	241	192	162	102
4	...	326	230	184	158	99
4 1/4	. .	312	220	177	150	96
4 1/2	...	298	210	171	146	94
4 3/4	...	284	200	166	138	89
5	...	270	190	161	135	87
5 1/4	...	256	180	156	130	84
5 1/2	...	244	172	151	124	80
5 3/4	...	233	164	145	120	77
6	...	223	157	140	115	74
6 1/4	...	213	150	137	111	71
6 1/2	...	207	146	134	107	69
6 3/4	...	203	143	129	104	67
7	...	198	140	125	100	64

TANK RIVETS

Socket Bolts. Cone Heads.

Sizes.	No. to Keg of 100 Lbs.	Length	Number to the Pound. 5/16 in. Diam. F. & R. H.	5/16 in. Diam. Cou. Sun.	1/4 in. Diam. F. & R. H.	1/4 in. Diam. Cou. Sun.	5/16 in. Diam. F. & R. H.	5/16 in. Diam. Cou. Sun.	3/8 in. Diam. F. & R. H.	3/8 in. Diam. Cou. Sun.
L. Di.	..	3/8	165	...	103	...	..	..	..	..
12×1	37	7/16	...	205	93	...	..	..	..	..
12×7/8	45	1/2	140	172	80	108	50	69	31	46
11×7/8	48	5/8	125	147	75	94	43	60	28	40
10×7/8	51	3/4	103	130	64	75	39	51	23	36
9×7/8	56	7/8	91	109	56	68	35	47	21	31
8×7/8	61	1	84	101	49	63	32	42	19	28
7×7/8	68	1 1/8	77	93	45	56	31	36	18	24
6×7/8	79	1 1/4	43	85	42	49	27	34	17	22
....	..	1 3/8	69	...	40	47	25	31	16	21
....	..	1 1/2	63	...	37	42	24	29	15	20
....	..	1 5/8	58	...	35	41	22	27	14	19
....	..	1 3/4	54	...	32	39	21	25	13	18
....	..	1 7/8	50	...	30	35	20	23	12	17
....	..	2	48	...	29	33	19	22	11	16

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CUT NAILS AND SPIKES

Number in a Pound.

Length in Inches.	Sizes.	Common.	Fence.	Casing.	Box.	Finish'g.	Cut Spike.
1	2 F	1050	..	...	...	...	..
1⅛	3 F	860	..	...	...	...	..
1	2	900	..	...	...	...	..
1¼	3	500	..	650	...	670	..
1½	4	300	..	480	450	500	..
1¾	5	212	..	350	300	370	..
2	6	160	85	240	212	260	..
2¼	7	135	65	190	160	210	..
2½	8	95	50	135	120	155	..
2¾	9	75	40	...	...	...	..
3	10	60	35	115	100	135	16
3¼	12	48	30	100	...	120	..
3½	16	34	25	80	...	100	14
4	20	24	20	65	...	85	12
4½	30	18	..	50	...	70	10
5	40	15	..	40	...	60	9
5½	50	12	..	..	...	..	8
6	60	10	..	..	...	..	6
7	..	..	..	..	...	..	4½
8	..	..	..	..	...	..	4

Clinch nails weigh about the same as common. Box nails are made ⅛ inch shorter than common nails of same sizes. Five pounds of 4d or 3¾ pounds of 3d will lay 1000 shingles; 5¾ pounds of 3d fine will put on 1000 laths, four nails to the lath. Prof. W. R. Johnson found that ⅜ inch square wrought spike, driven 3⅝ inches, required to extract it from seasoned yellow pine, 2000 pounds; seasoned white oak, about 4000; well seasoned locust, about 6000.

SHRINKAGE OF CASTINGS

In locomotive cylinders—1/16 inch in a foot. Pipes—⅛ inch in a foot. Girders, beams, etc.,—⅛ in 15 inches. Engine beams, connecting rods, etc.,—⅛ inch in 16 inches. Large cylinders, say 70 inch diameter, 10 foot stroke, the contraction of diameter—⅜ inch at top.

Ditto—½ inch at bottom.

" in length—⅛ inch in 16 inches. Thin brass—⅛ inch in 9 inches. Thick brass—⅛ inch in 10 inches. Zinc—5/16 inch in a foot. Lead—5/16 inch in a foot. Copper—5/16 inch in a foot. Bismuth—5/32 inch in a foot. Tin—¼ inch in a foot.

To find the weight of the casting from that of the pattern:

In order to determine beforehand the weight of the finished article when cast (in whatever metal), it is necessary to know the specific gravity both of the pattern or model, as well as the metal to be cast. The contraction or shrinkage of the casting must also be taken into account—in the case of iron, this is in the proportion of 1 to 32. If we designate in general the specific gravity of the model as s, the specific gravity of the casting as S, the ratio of shrinkage as a, the absolute weight of the model as M, and that of the casting as C, we shall have the general formula:

$$C = \frac{M \times S a - I}{s \times a}$$

By means of this formula, the weight of the casting, C, can be calculated for individual cases. To find the approximate weight of iron castings from that of the wooden pattern, the latter is multiplied by the figures corresponding to the material as given in the following table. Very accurate results can not be expected, as the specific gravity of wood as well as of the iron fluctuates: Pine wood, 14.0; oak wood, 9.0; beech wood, 9.7; linden wood, 13.4; birch wood, 10.6; alder wood, 12.6; pear tree wood, 10.

Reductions for round cores and core prints: Rule:—Multiply the square of the diameter by the length of the core in inches, and the product by 0.017 is the weight of the pine core, to be deducted from the weight of the pattern.

To find the weight of castings made from other metal: Multiply the weight of cast iron, obtained as above, by 1.1 for brass; 1.49 for lead; .97 for zinc; 1.08 for tin.

FLUXES FOR SOLDERING OR WELDING

Iron or steel.....Borax or sal-ammoniac.
Tinned iron.....Resin or chloride of zinc.
Copper and brass, sal-ammoniac or chloride of zinc.
Zinc.....Chloride of zinc.
Lead.....Tallow or resin.
Lead and tin pipes.....Resin and sweet oil.

BRAZING

The edges filed or scraped clean and bright, covered with spelter and powdered borax, and exposed in a clear fire to a heat sufficient to melt the solder.

WROUGHT SPIKES

Number to a Keg of 200 Pounds.

Lengths, Inches.	¼ Inch.	5/16 Inch.	⅜ Inch.	7/16 Inch.	½ Inch.
3	3000	....	....	...	...
3½	2520	1605	....	...	...
4	2200	1512	....	...	..
4½	1952	1418	....	...	...
5	1840	1240	1000	...	...
6	1722	1157	836	...	...
7	1548	1030	643	526	403
8	....	900	607	461	352
9	....	800	565	400	318
10	....	....	520	360	282
11	...	....	466	332	256
12	....	....	418	300	235

STREET AND TRAM RAIL SPIKES

Countersunk Heads.

Sizes.	No. to Keg of 200 Lbs.	No. to lay 1 m., the holes 2 feet apart. Pounds.	Kegs.
2½ x ¼	3067	345	2⅛
2½ x 5/16	2293	565	3¾
3 x 5/16	1667	640	4¼
3½ x 5/16	1533	690	4⅗
5 x 5/16	1200	880	5⅞
6 x 5/16	1120	940	6⅓
4 x ½	707	1500	10
4½ x ½	640	1650	11
6 x ½	480	2190	14⅝
6 x 9/16	360	2930	19½

ALLOYS

Alloys.	Tin.	Copper.	Zinc.	Antimony.	Lead.	Bismuth.
Brass, engine bearings	13	112	¼	..	..	..
Tough brass, engine work	15	100	15	..	..	..
" for heavy bearings	25	160	5	..	..	..
Yellow brass, for turning	..	2	1	..	..	..
Flanges to stand brazing	..	32	1	..	1	..
Bell metal	5	16	..	..	..	..
Babbitt's metal	10	1	..	1	..	..
Brass, locomotive bearings	7	64	1	..	..	..
" for straps and glands	16	130	1	..	..	..
Muntz's sheathing	..	6	4	..	..	..
Metal to expand in cooling	..	..	..	2	9	1
Pewter	100	..	..	17	..	..
Spelter	..	1	1	..	..	..
Statuary bronze	2	90	5	..	2	..
Type metal.....from	..	..	..	1	3	..
" .....to	..	..	..	1	7	..

Solders.

For lead	1	..	..	..	1½	..
" tin	1	..	..	..	2	..
" pewter	2	..	..	..	1	..
" brazing (hardest)	..	..	3	1	..	..
" " (hard)	..	..	1	1	..	..
" " (soft)	1	4	3	..	..	..
" " ".....or	2	..	..	1	..	..

DIFFERENT COLORS OF IRON, CAUSED BY HEAT

(Pouillet.)

Deg. Cen.	Deg. Fahr.	
261	502	Violet, purple, and dull blue, between 261° C. to 370° C. it passess to bright blue, sea green, and then disappears.
370	680	
500	932	Commences to be covered with a light coating of oxide; becomes a deal more impressible to the hammer and can be twisted with ease.
525	977	Becomes nascent red.
700	1292	Somber red.
800	1472	Nascent cherry.
900	1657	Cherry.
1000	1832	Bright cherry.
1100	2012	Dull orange.
1200	2192	Bright orange.
1300	2372	White.
1400	2552	Brilliant white welding heat.
1500	2732	Dazzling white.
1600	2912	

MELTING POINT OF METALS

Platinum	3080° Fahr.	(Pouillet.)
Wrought iron	2822 "	"
Steel	2462 "	"
Cast iron (gray)	2210 "	"
Gold	2192 "	"
Silver	1832 "	"
Antimony	842 "	(I. Lowthian Bell)
Zinc	782 "	"
Lead	620 "	"
Tin	475 "	"

WEIGHT OF GRINDSTONES

Rule.—Square the diameter (in inches); multiply by thickness (in inches); then by the decimal .06363; the product will be the weight of the stone in pounds.

FORMULA FOR WOOD SCREWS

N = number.
D = diameter.

$$D = (N \times .01325) + .056$$

$$N = \frac{D - .056}{.01325}$$

Diameter and Number of Wood Screws.

Nos.	Diams.	Nos.	Diams.	Nos.	Diams.	Nos.	Diams.	Nos.	Diams.	Nos.	Diams.
0	.056	6	.135	12	.215	16	.268	22	.347	28	.427
1	.069	7	.149	13	.228	17	.281	23	.361	29	.440
2	.082	8	.162	14	.241	18	.293	24	.374	30	.453
3	.096	9	.175	15	.255	19	.308	25	.387	..	...
4	.109	10	.188	..	...	20	.321	26	.401	..	...
5	.122	11	.201	..	...	21	.334	27	.414	..	...

EXPANSION OF METALS

(Faraday.)

The Length of the Bar at 32°=1.

	At 212°	Expan. per Degs. Fahr.
Brass	1.0019062	.0000106
Copper	1.001745	.0000097
Cast iron	1.0011112	.0000062
Steel	1.0011899	.0000066
Wrought iron	1.0012575	.000007
Tin	1.002	.0000111
Zinc	1.002942	.0000163

Almost all bodies expand in equal proportions for each degree between freezing and boiling.

To ascertain the expansion of a body, multiply the dimension of the body by the number of degrees of increase of temperature and then by the expansion per degree.

Example.—Required the expansion of a steel rail 30 feet long, with an increase of temperature of 100°:

30 x 100 = 3,000 x .0000066 = .0198 foot = ¼ inch.

Decrease of Strength of Wrought Iron at High Temperatures.

Experiments by W. Johnson and Benj. Reeves, Com. Franklin Ins., 1839.

Temperature. Cen.	Fahr.	Decrease per Cent. of Max. Tena'y.	Temp. Cen.	Temp. Fahr.	Decrease per Cent. of Max. Tena'y.
271°	520°	.0738	500°	932°	.3324
313	....	.0899	554	....	.4478
332	630	.1047	599	....	.5514
350	....	.1155	624	1154	.6
389	732	.1491	669	....	.6622
440	....	.2010	708	1306	.7001

TO FIND THE SPECIFIC GRAVITY OF A SUBSTANCE

W = weight of body in air.
w = " " " water.

$$\text{Specific Gravity} = \frac{W}{W - w}$$

If the substance be lighter than the water, sink it by means of a heavier substance, and deduct the weight of the heavier substance.

Weight and Specific Gravity of Metals.

Metals.	W. Pr. Cu. Ft. Lbs.	W. Pr. Cu. In. Lbs.	Specific Gravity.
Aluminum	166	.096	2.67
Antimony, cast	419	.242	6.72
Bismuth	613	.353	9.822
Brass, cast	524	.3	8.4
Bronze	534	.308	8.561
Copper, cast	537	.31	8.607
" wire	555	.32	8.9
Gold, 24 carat	1208	.697	19.361
" standard	1106	.638	17.724
Gun metal	528	.304	8.459
Iron, cast	450	.26	7.21
" wrought	485	.28	7.78
Lead, cast	708	.408	11.36
" rolled	711	.41	11.41
Mercury	849	.489	13.596
Platinum	1344	.775	21.531
" sheet	1436	.828	23.
Silver, pure	654	.377	10.474
" standard	644	.371	10.312
Steel	490	.284	7.85
Tin, cast	455	.262	7.291
Zinc	437	.252	7.

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AVERAGE LENGTH COIL AND WEIGHT PER 100 FATHOMS

MANILA AND SISAL ROPE — TARRED CORD

Diams., Inches.	Circumference, Inches.	Lgth, Feet.	Lbs., per 100 Fath's.	Lgth, Feet.	Lbs. per 100 Fath's.
¼ or 6th.	¾	1,300	12	840	18
5/16 or 9th.	15/16	1,300	17	840	29
⅜ or 12th.	1⅛	1,200	23	840	40
15 thread.	15 thread.	1,200	31	840	47
18 "	18 "	1,100	45	840	58
21 "	21 "	1,100	50	840	68
½	1½	990	52	960	64
9/16	1¾	990	70	960	79
5/8	2	990	83	960	94
¾	2¼	990	105	960	130
⅞	2½	990	125	960	140
15/16	2¾	990	155	960	170
1	3	990	175	960	207
1 1/16	3¼	990	205	960	238
1 3/16	3½	990	255	960	272
1¼	3¾	990	280	960	300
1 5/16	4	960	310	960	332
1⅜	4¼	960	355	960	376
1½	4½	960	410	960	440
1⅝	4¾	960	450	960	505
1 11/16	5	960	500	960	573
1¾	5¼	960	550	960	610
1⅞	5½	960	610	960	654
1 15/16	5¾	960	690	960	797
2	6	960	750	960	900
2 1/16	6½	960	845	960	1,057
2⅛	7	960	1,000	960	1,163
2½	7½	960	1,100	960	1,356
2⅝	8	960	1,270	960	1,613
3	9	960	1,595	960	2,013

RAILROAD SPIKES

Sizes, Measured Under Head, In.	Av. No. per Keg 200 Lbs.	No. to lay 1 m. Track, 4 to Tie, Ties 2 Ft. From Center to Cen. Lbs.	Rail Used, Weight Per Yard.
5½ x 9/16	370	5,670=	45 to 70
5 x 9/16	400	5,170=	40 " 56
4½ x ½	530	3,960=	35 " 40
4 x ½	600	3,520=	30 " 35
3½ x ½	680	3,110=	
4½ x 7/16	680	3,110=	28 " 30
4 x 7/16	840	2,560=	
3½ x 7/16	1,000	2,350=	20 " 28
3½ x ⅜	1,180	1,780=	
3 x ⅜	1,370	1,540=	16 " 20
2½ x ⅜	1,600	1,320=	12
2½ x 5/16	2,160	1,000=	8

CROSS TIES PER MILE OF SINGLE TRACK

18	inches from	center to	center, 3,520 ties.
20	"	"	" 3,168 "
22	"	"	" 2,889 "
22.5	"	"	" 2,816 "
24	"	"	" 2,640 "
25.7	"	"	" 2,464 "
27	"	"	" 2,347 "
27.7	"	"	" 2,288 "
30	"	"	" 2,112 "
33	"	"	" 1,920 "
36	"	"	" 1,760 "

CORRUGATED IRON ROOFING

B. W. Gauge Nos.	Weight per Square, (100 Square Feet) Plain or Painted, Pounds.	Galvanized.
28	97	
26	105	
24	128	
22	150	Galvanized iron weighs from 5 to 15 per cent. heavier than plain, according to the No. B.W. Gauge.
20	185	
18	270	
16	340	

For a good, durable roof, lighter than No. 22 is not recommended.

Corrugated iron is usually made in sheets from 6 to 8 feet long, and from 2 to 3 feet wide. The sheets when used for roofing should overlap about 6 inches in girth, and be double riveted at the joints. One-third of the net width may be allowed approximately for lappage and corrugations. From 2½ to 3½ pounds of rivets will be required for a square.

STRENGTH OF MANILA AND HEMP ROPES

The strength of rope is very irregular, much depending on the quality of the fiber used and the solidity in which the rope is put together. For instance, 3¼ inch circumference soft laid rope will not measure over 3 inch circumference hard laid. Tests of the various makes of rope from the manila fiber show about the following average maximum strength:

3 inch circumference, soft laid .....7,300 pounds.
3 " " medium laid, 8,000 "
3 " " hard laid.....9,000 "

We find it a safe rule, up to 5 inch circumference, to multiply the square of the circumference by 8 and the product will be the number of net 100 pounds required to break the rope.

From the tests we have from the U. S. Government Cordage Works, of the breaking strength of tarred Russia and American hemp cordage, we would say that the above rule will apply to tarred cordage as well as to manila.

Where blocks and falls are used it is a safe rule to put rope in use at ⅛ its breaking strain; and that in two double blocks of suitable size, say for instance, it is desired to raise regularly 1,000 pounds—two double 8 inch blocks reeved with 3 inch circumference manila rope should be used. For direct pulls on a single rope, say up to 5 inch circumference, we find it safe where in constant use, to put it at work at only 1/20 its breaking strain. For instance, on a hoisting machine in a warehouse where hoists of 1,000 to 1,500 pounds are made (the latter occasionally), we place for the hook rope 5 inch circumference manila rope. This gives durability, and allows for wear and tear. Of course wear and tear and the want of proper care must be allowed for as rope grows old. The best rope made will be quickly destroyed by allowing it to become wet and then putting it in a damp cellar or room where there is no circulation of air.

RAILROAD IRON REQUIRED FOR ONE MILE OF TRACK

Rule. To find the number of gross tons of rails to the mile: divide the weight per yard by 7 and multiply by 11.
Example. For 56 pound rail: 56÷7=8X11=88 tons.
The number of tons of 2,000 pounds required per mile is very nearly 1¼ times the weight per yard.

Weight of Rail per Yard, Lbs.	Tons per Mile, 2,240 Lbs. Tons.	Lbs.	Weight of Rail per Yard, Lbs.	Tons per Mile, 2,240 Lbs. Tons.	Lbs.
8	12	1,280	52	81	1.600
12	18	1,920	56	88	....
16	25	320	57	89	1,280
20	31	960	60	94	640
25	39	640	62	97	960
28	44	....	64	100	1,280
30	47	320	65	102	320
35	55	....	68	106	1,920
40	62	1,920	70	110	....
45	70	1,600	72	113	820
48	75	960	76	119	960
50	78	1,280	..	.	....

FISH PLATES AND BOLTS FOR ONE MILE SINGLE TRACK

Length of Rails.	No. Fish Plates Required.	No. Bolts.	No. of Rails or Complete Joints.
24 feet.	880	1760	440
25 "	844	1688	422
26 "	812	1624	406
27 "	782	1564	391
28 "	754	1508	377
30 "	704	1408	352
30 " 10# s't.	710	1420	355
30 feet. 8# s't.	708	1416	354
30 feet. 6# s't.	706	1412	353

NO. JOINT FASTENINGS REQUIRED TO THE TON OF RAILS

Weight of Rail per Yard, Pounds.	Length of Rails, in Feet. 24 Joi's.	25 Joi's.	26 Joi's.	27 Joi's.	28 Joi's.	30 Joi's.
30	9.33	8.95	8.61	8.29	8.00	7.46
35	8.00	7.67	7.38	7.10	6.85	6.40
40	7.00	6.71	6.45	6.22	5.99	5.60
45	6.22	5.96	5.74	5.52	5.33	4.97
50	5.60	5.37	5.16	4.97	4.79	4.48
56	5.00	4.79	4.61	4.44	4.28	4.00
60	4.66	4.47	4.30	4.14	4.00	3.73
62	4.51	4.33	4.16	4.01	3.86	3.61
64	4.37	4.19	4.03	3.88	3.74	3.50
67	4.17	4.00	3.85	3.71	3.58	3.34

No allowance is made for side tracks in above tables.

TABLE TIN PLATES

Showing Standard Weights and Number of Sheets per Box.

Sizes of Sheets.	No. Sheets per Box.	Weight per Box, Pounds. Light.	1 CL.	1 C.	1 XL.	1 X.	1 XX.	1 XXX.
14 x20	112	95	100	107	128	135	156	176
20 x28	112	190	200	214	256	270	312	352
10 x14	225	95	100	107	128	135	156	176
12 x24	112	98	103	110	132	139	160	181
13½x19½	112	89	94	100	120	127	147	165
18 x18	112	110	116	124	148	156	180	204
19 x19	112	122	129	138	165	174	201	227
20 x20	112	136	143	153	183	193	223	251
14 x21	112	100	105	112	134	142	164	185
14 x22	112	105	110	118	141	149	172	194
15 x21	112	107	113	120	144	152	176	197
14 x19¼	120	98	103	110	132	139	161	182

Flat Seam Tin Roofing.

A full box 14 x 20, 112 sheets, will cover approximately 180 square feet. A full box 20 x 28, 112 sheets, will cover approximately 380 square feet.

Standing Seam Tin Roofing.

A full box 14 x 20, 112 sheets, will cover approximately 170 square feet. A full box 20 x 28, 112 sheets, will cover approximately 370 square feet.

METRIC CONVERSION TABLE

Millimeters×.03937=inches.
Millimeters÷25.4=inches.
Centimeters×.3937=inches.
Centimeters÷2.54=inches.
Meters×39.37=inches. (Act Congress).
Meters×3.281=feet.
Meters×1.094=yards.
Kilometers×.621=miles.
Kilometers÷1.6093=miles.
Kilometers×3280.7=feet.
Square Millimeters×.0155=square inches.
Square Millimeters÷645.1=square inches.
Square Centimeters×.155=square inches.
Square Centimeters÷6.451=square inches.
Square Meters×10.764=square feet.
Square Kilometers×247.1=acres.
Hectare×2.471=acres.
Cubic Centimeters÷16.383=cubic inches.
Cubic Centimeters÷3.69=fluid drachms. (U.S.P.)
Cubic Centimeters÷29.57=fluid ounces. (U.S.P.)
Cubic Meters×35.315=cubic feet.
Cubic Meters×1.308=cubic yards.
Cubic Meters×264.2=gallons (231 cubic inches).
Liters×61.022=cubic inches. (Act Congress).
Liters×33.84=fluid ounces. (U. S. P.)
Liters×.2642=gallons (231 cubic inches).
Liters÷3.78=gallons (231 cubic inches).
Liters÷28.316=cubic feet.
Hectoliters×3.531=cubic feet.
Hectoliters×2.84=bushels (2150.42 cubic inches).
Hectoliters×.131=cubic yards.
Hectoliters÷26.42=gallons (231 cubic inches).
Grammes×15.432=grains. (Act Congress).
Grammes÷981=dynes.
Grammes (water)÷29.57=fluid ounces.
Grammes÷28.35=ounces avoirdupois.
Grammes per cubic centimeter÷27.7=pounds per cubic inch.
Joule×.7373=foot pounds.
Kilogrammes×2.2046=pounds.
Kilogrammes×35.3=ounces avoirdupois.
Kilogrammes÷1102.3=tons (2000 pounds).
Kilogrammes per square centimeter×14.223=pounds per square inch.
Kilogram meters×7.233=foot pounds.
Kilo per Meter×.672=pounds per foot.
Kilo per cubic meter×.026=pounds per cubic foot.
Kilo per Cheval×2.235=pounds per horse power.
Kilo Watts×1.34=horse power.
Watts÷746=horse power.
Watts÷.7373=foot pounds per second.
Calorie×3.968=B. T. U.
Cheval vapeur×.9863=horse power.
(Centigrade×1.8)+32=degree Fahrenheit.
Franc×.193=dollars.
Gravity Paris=980.94 centimeters per second.

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STRENGTH AND TENSION OF IRON

The breaking strength of good American iron is usually taken at 50,000 pounds per square inch, with an elongation of 15 per cent. before breaking. It should not set under a strain of less than 25,000 pounds. The proof strain is 20,000 pounds per square inch, and beyond this amount iron should never be strained in practice.

TENSILE STRAIN OF BOLTS

Diameters of Bolts in Inches.	Area at Bottom of Thread.	At 7,000 Pounds per Square Inch.	At 10,000 Pounds per Square Inch.	At 12,000 Pounds per Square Inch.	At 15,000 Pounds per Square Inch.	At 20,000 Pounds per Square Inch.
½	.125	875	1,250	1,500	1,875	2,500
⅝	.196	1,372	1,960	2,350	2,940	3,920
¾	.3	2,100	3,000	3,600	4,500	6,000
⅞	.42	2,940	4,200	5,040	6,300	8,400
1	.55	3,850	5,500	6,600	8,250	11,000
1⅛	.69	4,830	6,900	8,280	10,350	13,800
1¼	.89	5,460	7,800	9,360	11,700	15,600
1⅜	1.06	7,420	10,600	12,720	15,900	21,200
1½	1.28	8,960	12,800	15,360	19,200	25,600
1⅝	1.53	10,710	15,300	18,360	22,950	30,600
1¾	1.76	12,320	17,600	21,120	26,400	35,200
1⅞	2.03	14,210	20,300	24,360	30,450	40,600
2	2.3	16,100	23,000	27,600	34,500	46,000
2¼	3.12	21,840	31,200	37,440	46,800	62,400
2½	3.7	25,900	37,000	44,400	55,500	74,000
2¾	4.6	32,200	46,000	55,200	69,000	92,000
3	5.44	38,080	54,400	65,280	81,600	108,800
3¼	6.6	46,200	66,000	79,200	99,000	132,000
3½	7.54	52,780	75,400	90,480	113,100	150,800
3¾	8.6	60,200	86,000	103,200	129,000	172,000
4	9.9	69,300	99,000	118,800	148,500	198,000
4¼	11.3	79,100	113,000	135,600	169,500	226,000
4½	12.68	88,760	126,800	152,000	190,200	253,600
4¾	14.186	99,300	141,860	170,220	212,790	283,720
5	15.76	110,300	157,600	189,120	236,400	315,200
5¼	17.57	122,990	175,700	210,840	263,550	351,400
5½	19.24	134,680	192,400	230,880	288,600	384,800
5¾	21.237	148,660	212,370	254,840	318,555	424,740
6	23.07	161,490	230,700	276,840	346,050	461,400

TO FIND THE SPECIFIC GRAVITY OF A SUBSTANCE

W = weight of body in air.
w = " " " water.

$$\text{Specific gravity} = \frac{W}{W - w}$$

If the substance be lighter than the water, sink it by means of a heavier substance, and deduct the weight of the heavier substance.

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" Sheet	1,436	.828	23.
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" Standard	644	.371	10.312
Steel	490	.284	7.85
Tin, Cast	455	.262	7.291
Zinc	437	.252	7.

WORKSHOP RECIPES

PARTING SAND

Burnt sand scraped from the surface of castings.

LOAM

Mixture of brick, clay, and old foundry sand.

BLACKENING FOR MOLDS

Charcoal powder; or, in some instances, fine coal dust.

BLACK WASH

Charcoal, plumbago, and size.

MIXTURE FOR WELDING STEEL

1 Sal-ammoniac.
10 Borax.

Pounded together and fused until clear, when it is poured out, and after cooling, reduced to powder.

RUST JOINT CEMENT (Quickly Setting).

1 Sal-ammoniac in powder (by weight).
2 Flour of sulphur.
80 Iron borings made to a paste with water.

RUST JOINT (Slowly Setting).

2 Sal-ammoniac.
1 Flour of sulphur.
200 Iron borings.

The latter cement is the best if the joint is not required for immediate use.

RED LEAD CEMENT FOR FACE JOINTS

1 Of white lead.
1 Of red lead, mixed with linseed oil to the proper consistency.

CASE HARDENING

Place horn, hoof, bone dust, or shreds of leather, together with the article to be case hardened, in an iron box subject to a blood red heat, then immerse the article in cold water.

CASE HARDENING WITH PRUSSIATE OF POTASH

Heat the article after polishing to a bright red, rub the surface over with prussiate of potash, allow it to cool to a dull red, and immerse it in water.

CASE HARDENING MIXTURES

3 Prussiate of potash
1 Sal-ammoniac.

OR:

1 Prussiate of potash.
2 Sal-ammoniac.
2 Bone dust.

GLUE TO RESIST MOISTURE

1 Pound of glue melted in 2 quarts of skim milk.

MARINE GLUE

1 Of India rubber, 12 of mineral naphtha or coal tar. Heat gently, mix, and add 20 of powdered shellac. Pour out on a slab to cool. When used, to be heated to about 250°.

GLUE CEMENT TO RESIST MOISTURE

1 Glue.
1 Black Rosin.
¼ Red Ochre.
} Mixed with least possible quantity of water.

OR:

4 Of glue, or 1 oxide of iron.
1 Of boiled oil (by weight).

TO REMOVE RUST FROM STEEL

Steel which has been rusted can be cleaned by brushing with a paste compound of ½ ounce cyanide potassium, ½ ounce castile soap, 1 ounce whiting, and water sufficient to form a paste. The steel should be washed with a solution of ½ ounce cyanide potassium in 2 ounces water.

TO PRESERVE STEEL FROM RUST

1 Caoutchouc, 16 turpentine. Dissolve with a gentle heat, then add 8 parts boiled oil. Mix by bringing them to the heat of boiling water; apply to the steel with a brush, in the way of varnish. It may be removed with turpentine.

TO CLEAN BRASS

1 Roche alum and 16 water. Mix. The articles to be cleaned must be made warm, then rubbed with the above mixture, and finished with fine tripoli.

USEFUL NUMBERS

Lineal Feet×.00019=miles.
Lineal Yards×.0006=miles.
Square Inches×.007=square feet.
Square Feet×.111=square yards.
Square Yards×.0002067=acres.
Acres×.4840=square yards.
Cubic Inches×.00058=cubic feet.
Cubic Feet×.03704=cubic yards.
Circular Inches×.00546=square feet.
Cylindrical Inches×.0004546=cubic feet.
Cylindrical Feet×.02909=cubic yards.
Links×.22=yards.
Links×.66=feet.
Feet×1.5=links.
Width in Chains×8.=acres per mile.
183,346 Circular Inches=1 square foot.
2,200 Cylindrical Inches=1 cubic foot.
Cubic Feet×7.48=U. S. gallons.
Cubic Inches×.004329=U. S. gallons.
Cylindrical Feet×5.874=U. S. gallons.
Cylindrical Inches×.0034=U. S. gallons.
U. S. Gallons×.13367=cubic feet.
U. S. Gallons×231.=cubic inches.
Cubic Feet×.8036=U. S. bushels.
Cubic Inches×.000466=U. S. bushels.
U. S. Bushel×.0495=cubic yards.
U. S. Bushel×1.2446=cubic feet.
U. S. Bushel×2150.42=cubic inches.
Cylindrical Foot of Water×6.=U. S. gallons.
Pounds Avoirdupois×.009=cwt. (112).
Pounds Avoirdupois×.00045=tons (2,240).
Cubic Foot of Water×62.5=pounds avoir.
Cubic Inches of Water×.03617=pounds avoir.
Cylindrical Foot of Water×49.1=pounds avoir.
Cylindrical Inches of Water×.02842=pounds avoirdupois.
13.44 U. S. Gallons of Water=1 cwt.
268.8 U. S. Gallons of Water=1 ton.
1.8 Cubic Feet of Water=1 cwt.
35.88 Cubic Feet of Water=1 ton.
Column of Water 12 inches high, 1 inch diameter=.341 pounds.

WATER

32° Fahr. or 0 C.=freezing point under one atmosphere.
39.1° Fahr. or 4° C.=point of maximum density.
62° Fahr. or 16.66° C.=standard temperature.
212° Fahr. or 100° C.=boiling point under one atmosphere.

WEIGHT OF ONE CUBIC FOOT OF PURE WATER

At 32° Fahr.=62.418 pounds.
At 39.1° Fahr.=62.425 pounds.
At 62° Fahr. (standard temperature)=62.355 pounds.
At 212° Fahr.=59.640 pounds.

WEIGHT OF ONE CUBIC INCH OF PURE WATER

At 32°=.03612 pound, or 0.5779 ounce.
At 39.1°=.036125 pound, or 0.5780 ounce.
At 62°=.03608 pound, or 0.5773 ounce.
At 212°=.03451 pound, or 0.5522 ounce.

A column of water, at 62° Fahr., one foot high, presses on the base with a force of 0.433 pound, or 6.928 ounces per square inch. A column 100 feet high, presses with a force of 43⅓ pounds per square inch.

AIR

One atmosphere of pressure=(1) A column of air at 32° Fahr. 27,801 feet, or about 5¼ miles high, of uniform density, equal to that of air at sea level. (2) A column of mercury at 32° Fahr., 29.922 inches high; at 62° Fahr. the column is 30 inches. (3) A column of water, at 62° Fahr., 33.947 feet high—nearly 34 feet.

Pressure one pound per square inch=(1) A column of air, at 32° Fahr., 1891 feet high. (2) A column of mercury, at 32° Fahr., 2.035 inches high; at 62° the height is 2.04 inches. (3) A column of water, at 62° Fahr., 27.72 inches high.

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